

Survey of

Entrepreneurship

in Higher Education in Europe

Main Report



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The document does not represent the point of view of the European Commission. The interpretations and opinions contained in it are solely those of the authors.



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in Higher Education in Europe

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INDEX

| | |
|--|-----------|
| EXECUTIVE SUMMARY | 1 |
| 1. INTRODUCTION | 13 |
| 1.1 Europe's entrepreneurial challenge | 13 |
| 1.2 The purpose of the survey..... | 15 |
| 1.3 The consortium | 16 |
| 1.4 Approaches and definitions | 17 |
| 1.4.1 Definition of entrepreneurship | 17 |
| 1.4.2 Scope..... | 17 |
| 1.4.3 The Threshold..... | 17 |
| 1.4.4 Types of higher-education institutions (HEIs) | 17 |
| 1.4.5 The framework model and its dimensions | 18 |
| 1.5 Reading instructions | 18 |
| 2. CONCLUSIONS AND RECOMMENDATIONS..... | 21 |
| 2.1 Conclusions..... | 21 |
| 2.1.1 The scope of entrepreneurship in higher education across Europe..... | 22 |
| 2.1.2 The nature of entrepreneurial education in Europe | 22 |
| 2.2 Differences across Europe | 30 |
| 2.2.1 Types of institutions..... | 30 |
| 2.2.2 Time is a factor..... | 32 |
| 2.3 Differences across Europe (EU15 vs. EU > 15)..... | 34 |
| 2.4 Recommendations..... | 36 |
| 2.4.1 EU level..... | 38 |
| 2.4.2 National level | 38 |
| 2.4.3 Institutional level | 40 |
| 3. METHODOLOGY OF THE SURVEY..... | 43 |
| 3.1 The framework model | 43 |
| 3.1.1 An integrated approach to entrepreneurship education..... | 43 |
| 3.1.2 The input – six dimensions of entrepreneurship education | 44 |
| 3.1.3 Making the framework operational..... | 46 |
| 3.2 The quantitative survey..... | 46 |
| 3.2.1 A survey in two parts..... | 46 |
| 3.2.2 Data collection | 47 |
| 3.2.3 The questionnaire..... | 48 |
| 3.2.4 Conducting the survey..... | 49 |
| 3.2.5 Reliability and validity of the survey | 51 |
| 3.3 Qualitative data collection | 55 |
| 3.3.1 Selection criteria for the in-depth interviews..... | 55 |
| 3.3.2 Recruitment | 57 |
| 3.3.3 Development of the interview guides | 57 |
| 3.3.4 National distribution of in-depth case interviews | 58 |
| 3.3.5 Data processing..... | 59 |
| 3.4 The benchmark of performance and framework conditions | 60 |

| | | |
|-----------|--|------------|
| 3.4.1 | Weighing the sub-indices | 61 |
| 3.5 | Limitations | 61 |
| 4. | THE SCOPE OF ENTREPRENEURSHIP EDUCATION IN EUROPE | 65 |
| 4.1 | Main conclusions..... | 65 |
| 4.2 | The prevalence of entrepreneurship education..... | 66 |
| 4.2.1 | Entrepreneurship education across different types of institutions | 67 |
| 4.2.2 | Entrepreneurship education across different regions..... | 68 |
| 4.3 | A comparison of the three groups of institutions..... | 69 |
| 5. | BENCHMARKING ENTREPRENEURSHIP EDUCATION – LEARNING FROM GOOD-PRACTICE INSTITUTIONS..... | 73 |
| 5.1 | Main conclusions..... | 74 |
| 5.2 | Benchmark of performance..... | 75 |
| 5.2.1 | The make of the performance index..... | 76 |
| 5.2.2 | Benchmark of countries based on the ranking of the top-3 institutions in each country | 77 |
| 5.3 | Benchmark of framework conditions..... | 81 |
| 5.3.1 | The make of the framework conditions index | 81 |
| 5.3.2 | The correlation between performance and framework conditions | 81 |
| 5.3.3 | Benchmarking of framework conditions at country level | 82 |
| 5.4 | Identifying good-practice institutions in entrepreneurship education..... | 85 |
| 6. | STRATEGY | 91 |
| 6.1 | Introduction | 91 |
| 6.2 | Main conclusions..... | 92 |
| 6.2.1 | Strategic embeddedness | 93 |
| 6.2.2 | Entrepreneurship policy | 94 |
| 6.2.3 | Entrepreneurship goals..... | 94 |
| 6.2.4 | Type of institution | 95 |
| 6.2.5 | Regional differences | 95 |
| 6.2.6 | Development over time..... | 95 |
| 6.3 | The importance of the strategy dimension..... | 95 |
| 6.4 | Entrepreneurship policies..... | 101 |
| 6.5 | Strategic embeddedness | 103 |
| 7. | INSTITUTIONAL INFRASTRUCTURE..... | 107 |
| 7.1 | Introduction | 107 |
| 7.2 | Main conclusions..... | 108 |
| 7.2.1 | Approaches..... | 109 |
| 7.2.2 | Entrepreneurship research | 109 |
| 7.2.3 | Entrepreneurship appointments..... | 109 |
| 7.2.4 | Cross-discipline structures..... | 110 |
| 7.2.5 | Types of institutions..... | 110 |
| 7.2.6 | Regional differences | 110 |
| 7.2.7 | Development over time..... | 111 |
| 7.3 | Approaches..... | 112 |
| 7.3.1 | Entrepreneurship departments..... | 112 |
| 7.3.2 | Entrepreneurship centre..... | 113 |

| | | |
|------------|--|------------|
| 7.3.3 | Incubators and technology-transfer office | 116 |
| 7.4 | Entrepreneurship appointments | 118 |
| 7.5 | Research in entrepreneurship | 120 |
| 7.6 | Cross-discipline structures | 122 |
| 8. | TEACHING AND LEARNING | 125 |
| 8.1 | Introduction | 125 |
| 8.2 | Main conclusions..... | 126 |
| 8.2.1 | Courses | 127 |
| 8.2.2 | Degrees..... | 127 |
| 8.2.3 | Curriculum | 128 |
| 8.2.4 | Extracurricular activities | 128 |
| 8.2.5 | Teaching methods..... | 128 |
| 8.2.6 | Types of institutions..... | 129 |
| 8.2.7 | Regional differences | 129 |
| 8.2.8 | Development over time..... | 129 |
| 8.3 | Courses | 130 |
| 8.3.1 | Levels | 130 |
| 8.4 | Degrees..... | 134 |
| 8.5 | Curriculum | 137 |
| 8.5.1 | Exchange of curriculum/methods exist, but the potential is still large | 137 |
| 8.6 | Extracurricular activities | 139 |
| 8.6.1 | Extracurricular activities are widespread | 140 |
| 8.6.2 | Networking and business-accelerating activities..... | 141 |
| 8.7 | Teaching methods..... | 142 |
| 8.7.1 | Creative teaching methods – common in entrepreneurship..... | 142 |
| 9. | OUTREACH | 147 |
| 9.1 | Introduction | 147 |
| 9.2 | Main conclusions..... | 148 |
| 9.2.1 | Alumni..... | 149 |
| 9.2.2 | Links with stakeholders | 149 |
| 9.2.3 | Community engagement | 149 |
| 9.2.4 | Types of institutions..... | 150 |
| 9.2.5 | Regional differences | 150 |
| 9.2.6 | Development over time..... | 151 |
| 9.3 | Alumni..... | 151 |
| 9.4 | Links with external stakeholders | 153 |
| 9.5 | Community Engagement | 159 |
| 10. | DEVELOPMENT | 165 |
| 10.1 | Introduction | 165 |
| 10.2 | Main Conclusions | 166 |
| 10.2.1 | Human-resource management and development | 167 |
| 10.2.2 | Evaluation of entrepreneurship goals and strategies | 167 |
| 10.2.3 | User-driven improvement..... | 167 |
| 10.2.4 | Types of institutions..... | 168 |
| 10.2.5 | Regional differences | 168 |
| 10.2.6 | Development over time..... | 168 |

| | | |
|------------|--|------------|
| 10.3 | Human resource development and management | 169 |
| 10.3.1 | Personal experience in entrepreneurship outside academia | 171 |
| 10.3.2 | Academic recognition..... | 175 |
| 10.3.3 | Professional development | 176 |
| 10.4 | Evaluation | 178 |
| 10.5 | User-driven improvement..... | 179 |
| 11. | RESOURCES | 183 |
| 11.1 | Introduction | 183 |
| 11.2 | Main conclusions..... | 184 |
| 11.2.1 | Income generating activities..... | 185 |
| 11.2.2 | Budget allocation | 185 |
| 11.2.3 | Type and sources of funding..... | 185 |
| 11.2.4 | Types of institutions..... | 186 |
| 11.2.5 | Regional differences | 186 |
| 11.2.6 | Development over time..... | 186 |
| 11.3 | Income-generating activities | 187 |
| 11.4 | Budget allocation | 188 |
| 11.5 | Type and sources of funding..... | 194 |
| 12. | BARRIERS TO ENTREPRENEURSHIP EDUCATION..... | 199 |
| 12.1 | The three main barriers to entrepreneurship education | 199 |
| 12.2 | Obstacles identified in the interviews with good-practice institutions | 201 |
| 12.2.1 | Resources..... | 201 |
| 12.2.2 | Institutional infrastructure..... | 201 |
| 12.2.3 | Development..... | 202 |



EXECUTIVE SUMMARY

The focus on entrepreneurship education is fuelled by the understanding that the EU today is not fully exploiting its entrepreneurial potential and that enhancing this will help the member states and Europe as a whole in transforming its economy and building its future economic and competitive strength.

In most European countries today there is a policy commitment to promote entrepreneurship. However, it has until now been unclear whether this commitment has resulted in making entrepreneurship a widespread subject in higher-education systems, as no clear statistical picture of entrepreneurship in higher-education institutions across European countries existed.

Furthermore, the few available studies suggest that entrepreneurial activity at European universities is significantly lacking behind when compared with the United States and Canada. The background on which this survey was launched has been the lack of data and the lack of knowledge about, first, the scope of entrepreneurship education in European HEIs, and secondly about what the HEIs which do teach entrepreneurship actually do, the good practices, problems and obstacles for widespread and effective entrepreneurship teaching.

The objective of this report was to fill this knowledge gap at the higher educational level and provide recommendations for the future development of entrepreneurial education. The report focuses only on the higher education level.

Summing up, the study has had three concrete objectives:

- To provide factual information on the state of play of the teaching of entrepreneurship in European higher-education institutions
- To give good examples of entrepreneurship education as an inspiration for other institutions and interested parties
- To provide policy recommendations for how the various players (EU Commission, national governments and universities) can overcome the identified obstacles

In order to meet the above mentioned objectives, provide the answers and attempt to give an overview of entrepreneurship education in Europe, this study has mapped the extent to which entrepreneurship education is integrated in the HEIs as well as shown examples of how this is done. This has been achieved by conducting *a general survey* as well as *a specific survey*. The general survey attempted to answer the question of

how many institutions actually teach entrepreneurship; and the specific survey provides a deeper insight into what those higher-education institutions, which conduct entrepreneurship over the threshold¹ established by the consortium, actually do.

Furthermore, 46 case interviews have added a depth to the survey and provided a large number of ideas for other to get inspired by, or copy, as well as a comprehensive overview of the obstacles and success factors for entrepreneurship education in HEIs, which for their part have acted as a starting point for many of the recommendations that this survey puts forward.

The survey has been carried out by a Scandinavian consortium consisting of three partners, NIRAS Consultants, Denmark, FORA – an independent research and analysis division under the Danish Ministry for Economic and Business Affairs in Denmark – and Econ Pöyry, Norway.

The survey covers in total 31 countries, including the 27 EU member states, Iceland, Liechtenstein, Norway and Turkey. In analysing the data in the report all answers have been broken down to show differences and variations and special attention has been given to how time impacts on the development of entrepreneurship education.

Throughout the survey a broad definition of entrepreneurship and entrepreneurship education has been applied. The underlying assumption in the survey and in how the consortium understands entrepreneurship education is that it has the potential to encourage entrepreneurship, fostering the right mindset among students as well as providing them with relevant entrepreneurial skills. This will in time have a positive impact on future economic growth, job creation, innovation and wealth generation. Moreover, entrepreneurial skills and attitudes also provide benefits to society beyond their application to business activity.

The focus has subsequently been on creating and stimulating entrepreneurial mindsets, i.e. the willingness and capacity to turn ideas into practice, supported by the necessary skills. Therefore, general economic or business courses that do not include this specific element have not been considered as “entrepreneurship education” and have thus been excluded from the survey. This has been done by imposing an “entrepreneurship-education threshold”, ensuring that the institutions included in the specific part of the survey have at least one course where the subject of entrepreneurship account for at least 25 percent of the course curriculum.

The survey has included all institutions that offer education on a bachelor level or above. This has been the definition used to ensure that the institutions in the main sample were comparable, in an educational field with great variations across the 31 countries included in the survey. The study has looked not only at business schools or universities with economic departments, but has also encompassed multidisciplinary technical, medical, art and design, natural science and humanities departments to illustrate a variety of methods and approaches to entrepreneurship education.

¹ The threshold is explained in Chapter 3.

Where relevant, the study has dedicated special attention to the teaching of entrepreneurship within technical and scientific fields of study and has attempted to pay special attention to entrepreneurship activities and programmes in higher education that aim to foster entrepreneurial mindsets, attitudes and skills among young people. As a consequence of this, the survey has not explicitly involved training for adults, company executives or entrepreneurs, although there are some institutions where the activities for these target groups are not easily separated from activities for young people, and where there is an interesting interplay between the two.

The consortium identified and invited **2,899 higher-education institutions in total** to participate in the survey. Of the 2,899 HEIs invited, 664 institutions have responded to the invitation. Thus, the response rate is 24.5 percent, which the consortium consider as satisfying, taking into consideration that 1) the invitation was sent to a very broad spectrum of institutions; 2) there are many evaluation and monitoring activities going on around Europe, meaning the institutions get a lot of questionnaires; 3) that the point of entry was the president/rector; and 4) that the questionnaire was rather long, and not easily filled in, if it was to be completed fully. However, considering that the net response rate of the online survey, after the incomplete answers were excluded, is around 17 percent, so the results must be treated with some caution.

In the specific survey answers from just under 200 HEIs have been included. Their answers are what the consortium use to conclude on the nature of entrepreneurship education in Europe. A benchmark analysis was furthermore performed on the data in the specific survey. By benchmarking the institutions on their framework conditions the study identified the top ten and bottom ten institutions. The two groups have then been compared to each other to highlight where the front-runner institutions separate themselves from the lagging institutions when it comes to the framework conditions. Such information can serve as valuable inspiration for other institutions seeking to improve their performance as entrepreneurial institutions.

The Scope of entrepreneurship in higher education in Europe

The results of the analysis show that the scope of entrepreneurial education is worrisome. Based on the survey results it is estimated that more than half of Europe's students at the higher educational level do not even have access to entrepreneurial education. This means that about 11 million students have no opportunity to engage in in- or extra-curricular activities that can stimulate their entrepreneurial spirit.

In the institutions engaged in entrepreneurial education the survey shows that around half of the students were engaged in some kind of entrepreneurial educational activity. This implies that five million of the approximately 21 million students in Europe are currently engaged in entrepreneurship education.

As expected, European students are more likely to obtain access to entrepreneurial education if they attend either a business school or a multidisciplinary institution with a business school department. In contrast, the study indicates that particularly specialised HEIs (except specialised institutions within the technical area) are lagging behind when it comes to entrepreneurial education.

The survey also points to a difference in access to entrepreneurial education according to the students' country of residence. In general, students in the EU15 have better access to entrepreneurial education than students in the EU>15, i.e. countries that have recently joined the EU.

The nature of entrepreneurship education in Europe

Having identified institutions engaged in entrepreneurial education, the rest of the report focuses on the nature of entrepreneurial education in these European HEIs, and the conclusions and recommendations also takes their point of departure in the six dimensions: Strategy, Institutional Infrastructure, Teaching and Learning, Outreach, Development and Resources.

The benchmark analysis shows that the strategy dimension is crucial when engaging in entrepreneurial education. Compared to the other dimensions of entrepreneurial education included in the framework model, it is here that one of the greatest differences between the front-runner institutions and the lagging institutions is found..

In particular, the study has made it apparent that the acknowledgement among the top management at the HEIs of the importance of teaching entrepreneurship, both in terms of value for their institution and for society as a whole, can be a key driver of entrepreneurial education. A dedicated top management has the authority to ensure a quick implementation of the changes needed to become an entrepreneurial institution.

However, much initiative to implement entrepreneurial education has often been taken by dedicated individuals who want to teach entrepreneurship, either because they see a need, have a personal interest or have been inspired by other teachers or institutions. In the study there are also many good examples of how such a bottom-up approach can bring about institutional change. Nevertheless, the study – particularly through the case studies – suggests that neither the top-down approach nor the bottom-up approach can stand alone. Creating an entrepreneurial institution demands a joint effort from the top-management, as well as academic and other staff, in order to succeed in fully implementing entrepreneurial education throughout the entire institution.

Effective and sustainable entrepreneurial education can be facilitated by supportive institutional infrastructures at the institution. On an overall level the study shows that institutional infrastructures seem to be emerging at the European HEIs that are engaged in entrepreneurial education. Around half of the institutions participating in the specific survey have various structures (such as entrepreneurial centres, departments, incubators etc.) in place in order to support the entrepreneurial education.

The benchmark analysis also highlights the presence of cross-discipline structures as conducive to entrepreneurial education.

The study shows that the extent to which entrepreneurship is being taught at the HEIs in Europe varies. In some institutions it is offered at all levels of study, but the results show that bachelor students have access to a larger number of entrepreneurial

courses compared to both master's students and Ph.D. students. In general, Ph.D. students have access to the fewest courses on entrepreneurship. However, courses at Ph.D. level are also important as Ph.D. students in their research activities (particularly in the technical disciplines) can take advantage of an entrepreneurial mindset as well as skills. Institutions should therefore focus their attention on more than the early study levels in entrepreneurial education.

Moreover, the benchmark analysis shows that the key differences between the top ten and the bottom ten institutions are in entrepreneurial degrees and entrepreneurial curriculum development.

The presence of entrepreneurial degrees may bear witness to the institutions' engagement in entrepreneurial education, but during the interviews with good-practice institutions it was voiced that offering degrees in entrepreneurship was not necessarily better than offering no degrees. The argument was that it is more important to embed the entrepreneurial vision in all courses to get in touch with all students instead of just students that probably already have a positive notion of entrepreneurship because they have actively chosen an entrepreneurial degree. Nevertheless, the results indicate that entrepreneurial degrees constitute an important tool for the entrepreneurial institution.

In the development of the entrepreneurial curriculum the study indicates that there seems to be much room for improvement by learning from other institutions. Only around half of the institutions in the survey import entrepreneurial education from other institutions, and even fewer have formalised exchange of good practice. In some of the interviews it was stated that within the field of entrepreneurial education the "not-invented-here" syndrome is present. The survey seems to second this notion as almost all the respondents in the survey have in-house development of entrepreneurial curriculum and/or teaching methods. Therefore, there should still be plenty of room for more co-operation and exchanging experience and methodology between HEIs.

Both the survey and the in-depth interviews conducted in this study show that teaching methods in use vary considerably among HEIs. The most common teaching method in entrepreneurship is lecturing, but most of the HEIs often use case studies too. Other widespread teaching methods are project work and the use of guest lecturers. Many HEIs also include various kinds of business simulation in the curriculum. The in-depth interviews with good-practice institutions highlighted that many experimental and innovative teaching methods are applied in entrepreneurial education. All of these teaching methods are described in appendix B in this report.

Entrepreneurship is, to a large extent, a "learning by doing" subject, meaning that the practical aspect of learning from what others have done before is crucial. Therefore, entrepreneurial teaching is often based on cases, and many of the respondents in the in-depth interviews pointed out the importance of recognition and identification with the cases as well as the need for development of national and local case studies that can be used in entrepreneurial education.

On an overall note, the study shows that the institutions are well aware of the importance of outreach to be entrepreneurial, but there is still a considerable difference in the way that it is done. The alumni element seems to be a natural starting point for the institutions, and over two thirds of the HEIs responded that they use their alumni as good examples and bring them into the entrepreneurial teaching to some extent. For almost all of the institutions in the survey the use of entrepreneurs and/or former students as teachers or as good examples in entrepreneurial education is one of the ways in which the institution ensures that the entrepreneurial teaching is relevant and linked to the outside community.

The networks that the institutions build with their stakeholders – regional or national government, agencies, private companies, consultancy service providers etc. – vary slightly among the institutions. But the tendency is clear: teaching entrepreneurship is not seen as an activity that is designed to take place in the confinement of academia. There are slight differences in the extent to which the network is used: some institutions might have developed links to their stakeholders, but when it comes to developing these links into collaboration where the stakeholders make an actual contribution to entrepreneurial education, this is not done by all to the same degree.

In general, the issues covered under the Development dimension are some of the areas in which there is room for improvement. With regards to HR management and development the benchmark study shows this to be an area that both the top and bottom institutions struggle with, and one that shows that entrepreneurial education is still in its infancy in many of the institutions.

One of the major differences and areas for improvement is related to the experience of entrepreneurial teachers. It does not seem to be very widespread that staff teaching entrepreneurship have personal experience with entrepreneurship. Consequently, many students are being taught by teachers that have a theoretical knowledge about entrepreneurship, but lack the practical knowledge. However, since entrepreneurship to a large degree is a practical, hands-on subject, the teaching of it will likely be improved if the teachers have their own practical entrepreneurial experience that they can take advantage of.

Another important issue emphasised in the survey as well as in the interviews is the teachers' skills in relation to the actual entrepreneurial teaching pedagogy. The teaching methods deemed effective in entrepreneurial education are often different from the methods traditionally used in academia. Therefore, staff teaching entrepreneurship may need training to embrace this new pedagogy. However, the study reveals that few institutions offer their entrepreneurial teaching staff the training opportunities to enhance their skills. And even fewer institutions require the teaching staff to engage in training prior to teaching entrepreneurship.

The study shows that entrepreneurial education is still immature in the sense that it is often person driven and depends upon the efforts of individuals rather than a collective, strategic effort on the part of the HEI or national government. This has an impact on the number of academics involved in entrepreneurial education, and thereby, of course, on how well entrepreneurship can be spread in an institution. A majority of HEIs still have less than 20 academics involved in entrepreneurship education, which

makes the effort within each department of the HEI very vulnerable to changes in staff.

However, the study shows that the continuous evaluation and follow-up on the results of goals and strategies is somewhat lagging behind. Less than half of the HEIs in the specific survey report that they have procedures to follow up on entrepreneurial goals and strategies, which is in strong contrast to the 94 % of HEIs that have entrepreneurial goals. The overall tendency among the HEIs in the specific survey seems to be to evaluate the individual course and the individual activity, while monitoring and evaluating on a more general level seems to be less common.

Finally, to be able to establish entrepreneurial education as a part of a HEI dedicated funding is necessary, if not crucial. Without the necessary resources, activities such as appointing professors, developing courses, establishing an entrepreneurial centre or arranging extra-curricular activities for the students cannot be developed.

Lack of funding is mentioned as the most important obstacle to development, growth and continuation of entrepreneurial education by several of the interviewees in the in-depth cases. One way to overcome the lack of resources needed to develop entrepreneurial education is to seek external funding.

The survey shows that 75 percent of the HEIs in the specific survey engage in entrepreneurship related activities that generate income. The type of income generation ranges from obtaining admission fees from seminars and workshops, and fees from advisory services.

However, of the 200 institutions in the specific survey not one of them relies exclusively on the income generated by the institution through these means. Generally speaking, two thirds of the institutions support their entrepreneurial goals with dedicated funding. The size of this funding varies, but most institutions dedicate less than €50 per student to entrepreneurial activities. One remarkable difference is evident in the benchmark study that shows that seven of the top ten institutions support their entrepreneurial goals with dedicated funding, while only one of the bottom ten institutions does so.

An issue concerning resources has been raised by many of the interviewees – it seems that the sustainability of entrepreneurial education is closely related to the type and sources of funding. Repeatedly, we have heard that the more long-term the funding, the more sustainable the entrepreneurial education.

Differences across Europe

During the study it became apparent that entrepreneurial education is influenced by type of institution, years of experience with entrepreneurial education and geographic location.

Entrepreneurship has strong ties to the business field – to some extent it arose from the field of small business management. Therefore, the expectation going into this study was that business schools would be more involved in entrepreneurial education compared to other types of institutions. This study found evidence to support this

expectation. The vast majority of the business schools participating in the survey are involved in entrepreneurship education. The same goes for multidisciplinary institutions with a business school department. In contrast, only a quarter of the specialised institutions and a third of the multidisciplinary institutions without a business school department are engaged in entrepreneurial education.

However, it is not only the prevalence of entrepreneurial education that is influenced by the type of institution. The nature of entrepreneurial education also seems to be different in the various types of institutions. In general, the study shows that entrepreneurial education is not only more prevalent among business schools and multidisciplinary institutions with a business school department, but the way in which these institutions conduct entrepreneurial education also seems to be different and more elaborate. This can to some degree be explained by the fact that these types of institutions have been frontrunners in taking on entrepreneurial education and have therefore worked with it for a longer period of time.

Not unexpectedly, time is a factor for implementing entrepreneurship in higher education in Europe – the longer an institution has been engaged in entrepreneurial education, the more elaborate the entrepreneurial education is. This might be explained by the fact that entrepreneurial education is often started through a bottom-up approach at the institutions where dedicated people take the initiative to engage in entrepreneurial education. These pioneers are individual academics inspired by, in some cases, a more comprehensive entrepreneurial education in the US and who tended to see a need for this type of education in their own regions. Later in the process, the top-management becomes involved, strategies and policies are developed and the strategic responsibility seems to be transferred from professors to members of the top-management.

Finally, the survey also points to differences across the different regions of Europe. More institutions in Western Europe (EU15) offer entrepreneurial education compared to Eastern Europe (EU>15). However, the study does not support the expectation that entrepreneurial education in EU>15 is less elaborate than in EU15. In fact, in some of the dimensions it seems that more institutions in EU>15 have a broader model of entrepreneurial education with more institutions having entrepreneurial professors and degrees, placing the strategic responsibility at the top-management, and providing recognition for achievements in entrepreneurial education. However, more resources seem to be allocated to entrepreneurial education in institutions in EU15 compared to institutions in EU>15.

Recommendations

The conclusions show that Europe still has a long way to go before entrepreneurial education is available in all educational institutions. Consequently there is a long way to go, but our analysis highlights several recommendations on how to accelerate the way forward for the EU Commission, for national governments and for individual institutions.

A key recommendation that cuts across all levels is related to the definition of entrepreneurial education. All levels (EU, national governments and higher educational institutions) need to embrace a broad definition of entrepreneurship. Much of the

resistance from academics to pursue the entrepreneurial agenda is, in our understanding, a misconception of what entrepreneurship is.

The entrepreneurial agenda will only find its way into all fields of the HEIs if a broader definition is applied. The HEIs are advised to make the academics understand that the decision to engage in entrepreneurship does not equal business venturing (although it can be a part of the strategy), but it is a decision to expand the entrepreneurial spirit across the institution.

Furthermore the concrete recommendations cover the following:

The EU Commission could enhance their role in promoting entrepreneurial education in the HEIs by:

- Facilitating and allowing for the use of EU structural funds for financing of entrepreneurial education initiatives in HEIs.
- Including measurements and targets for the spread of entrepreneurial education in the Lisbon 2.0 and as part of the Commission's reviews of member states' National Reform Programmes.
- Initiate an EU-programme that facilitates the exchange of entrepreneurial teachers across Europe (scholarships).
- Give out a yearly award to the best entrepreneurial institution.

On a national level the survey draws up the following recommendations:

- develop a policy programme on how to mainstream entrepreneurship into higher education and set aside resources
- ensure that HEIs are not restricted in their pursuit of the entrepreneurial agenda by rules and regulations
- track and evaluate the effects of entrepreneurship.
- Make sure that the focus is on the entire educational system, as one study level feeds into the other. The formation of an entrepreneurial mindset is a joint effort from primary education to tertiary education.

At the institutional level there are a large number of recommendations to be used as inspiration for the institutions who want to develop their entrepreneurship education. Examples of these are:

- Ensure that the highest level of the institution support the entrepreneurial agenda in order for the institution to become entrepreneurial, and the entrepreneurial vision, the goals and aspirations need to be very explicit and known throughout the institution.

- The vision should reflect a broad definition of entrepreneurship. Entrepreneurship is much more than “just” starting businesses: it is a mindset for creating sustainable change.
- HEIs should track the alumni and actively involve them in their efforts to promote entrepreneurial education and build strong networks in the regional community.
- HEIs should set up an infrastructure that supports entrepreneurial education, entrepreneurial students and staff. The different elements of the infrastructure are not as important as taking the first step.
- Entrepreneurship courses should support and be aligned with the overall entrepreneurial goals and strategies.
- HEIs need to ensure that some parts of entrepreneurial education are credit bearing and they need to develop ways of evaluating the quality and relevance of their entrepreneurial teaching.
- HEIs need to be aware that entrepreneurial teaching staff act as role models for the students, and also consider the need to adopt more flexible reward and salary systems.
- Finally the HEIs need to allocate funds to promote the entrepreneurial agenda



Open

Tops

1. INTRODUCTION

1.1 Europe's entrepreneurial challenge

Today smaller enterprises and entrepreneurs play a central role in the EU economy. Entrepreneurship is a major driver of innovation, competitiveness and growth. A positive and robust correlation between entrepreneurship and economic performance has been found in terms of growth, enterprise survival, innovation, employment creation, technological change, productivity increases and exports.

However, the EU is not fully exploiting its entrepreneurial potential. Against that background, the EU has committed itself to strengthening entrepreneurship as part of its strategy to transform its economy and build its future economic and competitive strength.

The Commission has taken a number of initiatives to further the entrepreneurship agenda. In the Green Paper 'Entrepreneurship in Europe' published in 2003, the aim was to involve the largest possible audience of stakeholders in setting the future policy agenda. And in the follow-up to the Green Paper, the Entrepreneurship Action Plan, which was published in 2004, provided a strategic framework for strengthening entrepreneurship and set out five strategic policy areas to boost the current entrepreneurial dynamism in the EU. Fuelling entrepreneurial mindsets was one of the five strategic goals in order to face the challenge that the EU is failing to encourage enough people to become an entrepreneur.

The Lisbon process in 2000² emphasised the role of education as a policy instrument for economic growth, and it helped strengthen a growing recognition within higher-education institutions (HEIs) in Europe that HEIs can play a central part in promoting entrepreneurial mindsets and actual entrepreneurship. Increased focus on entrepreneurship can also be seen as a strategic investment from the various HEIs. Education in entrepreneurship can help single out the HEI as a modern institution with course structures that meet the needs of tomorrow.

However, the European pioneers within entrepreneurship education began long before the Lisbon process and the Action Plan. In various countries entrepreneurship education started already in the 1980's and 1990's. This took shape both as courses

² In 2000 in Lisbon the EU prime ministers agreed that in 2010 Europe should be "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable growth with more and better jobs and greater social cohesion".

that were included in the curriculum, and extracurricular activities. The pioneers were often individual academics inspired by a more comprehensive entrepreneurship education in the USA and who saw a need for this type of education in their own regions. The educational themes and methodologies were, however, often new for most of the HEIs, and it took time to get an understanding of the importance of education in and about entrepreneurship.

As often happens with new ideas, the idea of including entrepreneurship as a teaching subject met challenges at first. Not necessarily as a concept, but because entrepreneurship as a subject demanded new approaches as well as cross-curricular teaching methods and a multidisciplinary approach. But in time this has provided new experiences, from which those new in the field can benefit, and one of the objectives of this survey has been to show what those HEIs who work seriously with entrepreneurship education do inspire others who are just embarking on entrepreneurial education, or who want to develop the field further.

Fuelling entrepreneurial mindsets require actions throughout the entire education system. The EU Commission Communication "Fostering Entrepreneurial Mindsets through Education and Learning" from 2006 states this clearly: *"Universities and technical institutes should integrate entrepreneurship as an important part of the curriculum, spread across different subjects, and require or encourage students to take entrepreneurship courses. Combining entrepreneurial mindsets and competence with excellence in scientific and technical studies should enable students and researchers to better commercialize their ideas and new technologies developed."*³

In a time with increasing competition among European higher-education institutions and between European institutions and their American counterparts, aspects such as innovative teaching methods, practice orientation, problem-based learning and flexibility are keys to the development of the HEIs. The HEIs need the ability to adapt to the changing demands of society and business and the needs of the diminishing cohorts, and they need to be more aware that developing entrepreneurship can be through either a top-down, or a bottom-up approach – or by a mix of the two.

A serious thought could be put into whether it is possible to skip some of the steps along the way, by using the examples and the lessons in this report, and thereby strengthen entrepreneurship education in Europe to the benefit of all.

It is indeed one of the underlying assumptions in this report that institutions as well as countries can learn from each other. The institutions can learn from the interviews carried out with good-practice institutions and from the results of the survey. And in addition hereto, the benchmark analysis of the institutions that participated in the survey can also bring about valuable information to guide the individual institution's entrepreneurial efforts.

The benchmark analysis carried out is based on two important assumptions:

³ Commission Communication "Fostering Entrepreneurial Mindsets through Education and Learning" COM(2006) 33 final

- That the entrepreneurship education initiatives that higher-education institutions take have a significant impact on their performance as an entrepreneurial institution
- That a positive correlation between the performance and framework-condition indicators can be used as the basis of understanding policies across higher-education institutions and to identify good-practice institutions that can serve as inspiration for other institutions, remembering that good practice cannot be copied but must be adapted to the special characteristics, culture and traditions of a specific higher-education institution.

Although the consortium is aware that differences in the cultural and institutional framework might make acting on the inspiration difficult, we assume that the benchmark analysis, which shows some evident differences in how HEIs are pursuing their entrepreneurship-education agenda, will enable the higher-education institutions to further develop their strong areas and to address potential “weak spots”, and that it will give national governments working to support this development more insight into what can be done, and what could be the effect.

We hope and trust that the survey will provide food for thought, inspiration for future development at all levels, and in that way help the evolution of an entrepreneurial Europe.

1.2 The purpose of the survey

In most European countries today there is a policy commitment to promote entrepreneurship. However, it has until now been unclear whether this commitment has resulted in making entrepreneurship a widespread subject in higher-education systems, as no clear statistical picture of entrepreneurship in higher-education institutions across European countries existed.

Furthermore, the few available studies suggest that entrepreneurial activity at European universities is significantly lacking behind when compared with the United States and Canada. The background on which this survey was launched has been the lack of data and the lack of knowledge about, first, the scope of entrepreneurship education in European HEIs, and secondly about what the HEIs which do teach entrepreneurship actually do, the good practices, problems and obstacles for widespread and effective entrepreneurship teaching.

The study has consequently had three concrete objectives:

- To provide factual information on the state of play of the teaching of entrepreneurship in European higher-education institutions
- To give good examples of entrepreneurship education as an inspiration for other institutions and interested parties
- To provide policy recommendations for how the various players (EU Commission, national governments and universities) can overcome the identified obstacles

In order to meet these objectives, provide the answers and attempt to give an overview of entrepreneurship education in Europe, this study has mapped the extent to which entrepreneurship education is integrated in the HEIs as well as shown examples of how this is done. This has been achieved by conducting a *general survey* as well as a *specific survey*. The general survey attempts to answer the question of how many institutions actually teach entrepreneurship; and the specific survey has given a deeper insight into what those higher-education institutions, which conduct entrepreneurship over the threshold⁴ established by the consortium, actually do. Furthermore, 46 *case interviews* have added a depth to the survey and provided a large number of ideas for other to get inspired by, or copy, as well as a comprehensive overview of the obstacles and success factors for entrepreneurship education in HEIs, which for their part have acted as a starting point for many of the recommendations that this survey puts forward.

As a backbone for the survey the consortium has developed a framework model that structures the different aspects of entrepreneurship education under six dimensions. The framework model has been central to the work and to the understanding of how institutions develop into entrepreneurial HEIs.

However, becoming an entrepreneurial HEI does not happen overnight. It is a journey where the HEI can take a number of different pathways as this report will show. An HEI can for example take a path that focuses on developing an infrastructure that can facilitate entrepreneurial activity, e.g. by creating incubator facilities and interdisciplinary centres etc. in its efforts to become an entrepreneurial HEI, while another HEI focuses on the actual learning and teaching of entrepreneurship, e.g. by using entrepreneurs in the classroom, earmark funds to develop entrepreneurship curriculum, etc. And the different approaches do not exclude each other as we go on to argue that it seems that an HEI becomes “more entrepreneurial” by 1) increasing the “number of entrepreneurship actions” and 2) combining different pathways, i.e. create incubators *and* use entrepreneurs in the classroom *and* allocate dedicated funding *and* actively engage in the community etc.

1.3 The consortium

The survey has been carried out by a Scandinavian consortium consisting of three partners, NIRAS Consultants, Denmark, FORA – an independent research and analysis division under the Danish Ministry for Economic and Business Affairs in Denmark – and Econ Pöyry, Norway.

The partners represent a wide range of expertise, and they have worked together in a cross-company team, having all been involved in all phases of the survey.

The consortium has had the help of two very knowledgeable specialists in the entrepreneurship-education field: Karen Wilson and Paul Hannon. They have been the internal expert group for the consortium and have been involved all along the way, giving advice, helping and assisting.

⁴ The threshold will be explained in Chapter 3.

1.4 Approaches and definitions

1.4.1 Definition of entrepreneurship

To map such a complex field as entrepreneurship education the consortium has had to work from a solid and common understanding of entrepreneurship and entrepreneurship education. In the survey a broad definition of entrepreneurship education has been applied, seeing it as all activities aiming to foster entrepreneurial mindsets, attitudes and skills and covering a range of aspects such as idea generation, start-up, growth and innovation. Hence, entrepreneurship has not, as it is the case in some studies and in the minds of people not involved in entrepreneurship, been seen as only about starting up business ventures. However, it has been equally emphasised that general business and management courses are not considered as entrepreneurship education.

1.4.2 Scope

The study covers EU member states, the acceding and candidate countries and EEA countries participating in the European Commission's multi-annual programme for enterprise and entrepreneurship (i.e. Turkey, Iceland, Liechtenstein and Norway). In analysing the data in the report all answers have been broken down to show differences and variations. One of the areas in which this has been done is to illustrate a difference between the *EU15* countries and the countries newly integrated in the EU, to whom we refer in the text as the *EU>15*.

Turkey, Iceland, Liechtenstein and Norway have been included in the EU15 group.

1.4.3 The Threshold

The focus of the survey has been on mindsets, i.e. the willingness and capacity to turn ideas into practice, supported by the necessary skills. Therefore, general economic or business courses that do not include this specific element have not been considered as "entrepreneurship education" and have thus been excluded from the survey. This has been done by imposing an "entrepreneurship-education threshold". This threshold was imposed in the questionnaire as a screening question to ensure a sufficient level of entrepreneurship education in the institutions.

The threshold imposed for an institution to be considered to have entrepreneurship education was that the institution should have at least one course where the subject of entrepreneurship should account for at least 25 percent of the course curriculum.

For a course/module to be considered as an in curricular activity it should account for at least 5 ECTS points.

1.4.4 Types of higher-education institutions (HEIs)

The survey includes all institutions that offer education on a bachelor level or above. This has been the definition used to ensure that the institutions in the main sample were comparable, in an educational field with great variations across the 31 countries included in the survey.

The study has looked not only at business schools or universities with economic departments, but has also encompassed multidisciplinary technical, medical, art and design, natural science and humanities departments to illustrate a variety of methods and approaches to entrepreneurship education.

When breaking down the answers on types of institutions, the following distinction has been used:

- Multidisciplinary university without a business school department
- Multidisciplinary university with a business school department
- Specialised HEI
- Independent business school

Where relevant, the study has dedicated special attention to the teaching of entrepreneurship within technical and scientific fields of study and has attempted to pay special attention to entrepreneurship activities and programmes in higher education that aim to foster entrepreneurial mindsets, attitudes and skills among young people. As a consequence of this, the survey has not explicitly involved training for adults, company executives or entrepreneurs, although there are some institutions where the activities for these target groups are not easily separated from activities for young people, and where there is an interesting interplay between the two.

The following distinction has been used in breaking down the data on technical or non-technical orientation:

- Technical as part of a multidisciplinary HEI
- Specialised technical HEI
- Non-technical

1.4.5 The framework model and its dimensions

In order to structure the survey the consortium developed a conceptual framework of the many aspects of entrepreneurship education. This framework became the backbone of the survey and has helped bring about a structure that enables the consortium to present a comprehensive mapping of the dimensions that constitute entrepreneurship education. The framework model will be presented further in Chapter 3.

1.5 Reading instructions

The results presented in this report are a first attempt to give a comprehensive picture of European entrepreneurship education in HEIs, and to a level of detail that has not been seen before on a European level. It has been written to provide a map and give an overview and at the same time provide recommendations on both the European, the national, the institutional and the individual level, so that the survey will help strengthening the focus on entrepreneurship education in the future.

The report is structured as follows:

Chapter 1 – Introduction.

Chapter 2 – Conclusions and recommendations. In this chapter all conclusions from the survey are drawn together, and the recommendations for the different levels of governance presented;

Chapter 3 – Methodology. This chapter explains the methodology applied in the survey, as well as a discussion of the methodological choices made during the survey, and the implications hereof.

Chapter 4 – The Scope of Entrepreneurship Education in Europe. In this chapter the results of the general survey are presented and analysed. The chapter deals with all institutions in the survey – those who have answered that they do not do entrepreneurship education as well as those who have answered that they have entrepreneurship education under the threshold of 25 percent, and those who are above the threshold of 25 percent.

Chapter 5 – Benchmark. This chapter presents the benchmark of the European higher-education institutions.

Chapters 6-11 present the results from the specific survey on the six dimensions from the framework model: *Strategy, Institutional infrastructure, Teaching and learning, Outreach, Development* and *Resources*. In these chapters the answers stem from the group of HEIs who have answered that they have entrepreneurship education over the threshold of 25 percent.

Chapter 12 presents the barriers for entrepreneurship education.

Finally, the report has two appendices:

Appendix A contains the full set of tables from the e-survey and the 46 case studies.

Appendix B is the case study report, with 46 good-practice examples from 23 different countries which arose from the in-depth interviews performed in higher-education institutions across Europe.



2. CONCLUSIONS AND RECOMMENDATIONS

2.1 Conclusions

The European Union (EU) wishes to boost entrepreneurship as part of its strategy to transform its economy and build up its future economic and competitive strength. The Action Plan for Promoting Entrepreneurship states: “The EU is not fully exploiting its **entrepreneurial potential**. It is failing to encourage enough people to become entrepreneurs [...] Europe, unlike the US, suffers from low expansion rates after start-up[...]. Whereas US entrepreneurs appear to test the market and, if successful, expand rapidly, many business ideas in Europe never come to market, as their viability is questioned before they can be tested in the market place” (European Commission, 2004; pp. 3-4).

The Entrepreneurship Action Plan of 2004 highlights five strategic policy areas for entrepreneurial dynamics in Europe; fuelling entrepreneurial mindsets throughout the entire education system being one of these strategic areas.

Several member states are already focusing on and promoting entrepreneurship education. However, little knowledge exists of the current level of integration of entrepreneurship education at any level of education across the EU countries. Studies like the EFER study of entrepreneurship education in German speaking countries from 2004, the EFER mapping of entrepreneurship education in 28 universities and the NCGE survey of Enterprise and Entrepreneurship in higher education in England have provided some very useful initial data that have been a great help in conducting this study. Still, more knowledge on entrepreneurship education is needed. Furthermore, little is known about the differences of approaches taken at various institutions to promote entrepreneurship education. Finally, no coherent framework exists for addressing these issues.

The objective of this report was to fill this knowledge gap at the higher educational level and provide recommendations for the future development of entrepreneurial education. The report focuses only on the higher education level, where we were able to identify and contact around 3,000 higher education institutions (HEIs) in the 31 countries covered by the survey. These institutions included all types of HEIs that provide education at bachelor level and above (business schools, universities, technical universities, music academies, teacher training colleges etc.). These 3,000 HEIs were invited to participate in the online survey. In addition, 46 in-depth interviews were conducted with good-practice institutions, national policy makers and student associations to supplement the quantitative data.

The net response rate of the online survey was around 17 percent, so the results must be treated with some caution. Our response rates in countries that are known to have entrepreneurial education are higher than in countries assumed to have a lower level of entrepreneurial education. This could suggest a selection bias, where institutions that offer entrepreneurial education are more likely to answer the questionnaire. Therefore, we tend to believe that the bias is upwards, which means that the numbers in relation to the scope of entrepreneurial education are overrated. Hence, the real picture in Europe might consequently be worse than suggested here. This just amplifies the importance of the recommendations for the way forward.

2.1.1 *The scope of entrepreneurship in higher education across Europe*

The results of our analysis show that the scope of entrepreneurial education is worrisome. Based on the survey results it is estimated that more than half of Europe's students at the higher educational level do not even have access to entrepreneurial education. This means that about 11 million students have no opportunity to engage in in- or extra-curricular activities that can stimulate their entrepreneurial spirit.

In the institutions engaged in entrepreneurial education the survey shows that around half of the students were engaged in some kind of entrepreneurial educational activity. This implies that five million of the approximately 21 million students in Europe are currently engaged in entrepreneurship education.

As expected, European students are more likely to obtain access to entrepreneurial education if they attend either a business school or a multidisciplinary institution with a business school department. In contrast, the study indicates that particularly specialised HEIs (except specialised institutions within the technical area) are lagging behind when it comes to entrepreneurial education. The survey also points to a difference in access to entrepreneurial education according to the students' country of residence. In general, students in the EU15 have better access to entrepreneurial education than students in the EU>15, i.e. countries that have recently joined the EU.

2.1.2 *The nature of entrepreneurial education in Europe*

Having identified institutions engaged in entrepreneurial education, the rest of the report focuses on the nature of entrepreneurial education in these European HEIs. In the study, six elements that are important for implementing entrepreneurship education have been identified: Strategy, Institutional Infrastructure, Teaching and Learning, Outreach, Development and Resources. These elements have been incorporated into a framework model that has been the structural backbone for the analyses in the study.

A comprehensive questionnaire, which included questions aiming to uncover the six dimensions of entrepreneurial education, was sent out to all institutions that had a certain level of entrepreneurial education (to ensure a sufficient level of entrepreneurial education, thereby avoiding the general business/economics courses). Based on the results from the questionnaire, a general picture has been painted of the nature of entrepreneurial education at the approximately 200 European institutions that completed the comprehensive survey, hereafter called *the specific survey*.

A benchmark analysis was performed on the data. By benchmarking the institutions on their framework conditions the study identified the top ten and bottom ten institutions. The two groups are compared to each other to highlight where the front-runner institutions separate themselves from the lagging institutions when it comes to the framework conditions related to the six dimensions of entrepreneurial education included in the framework model. Such information can serve as valuable inspiration for other institutions seeking to improve their performance as entrepreneurial institutions.

The following sections highlight the main conclusions from these analyses for each of the six areas.

Strategy

The benchmark analysis shows that the strategy dimension is crucial when engaging in entrepreneurial education. Compared to the other dimensions of entrepreneurial education included in the framework model, it is here that one of the greatest differences between the front-runner institutions and the lagging institutions is found. The dimension consists of three sub-dimensions: entrepreneurial goals, entrepreneurial policies and strategic embeddedness.

In particular, the study has made it apparent that the acknowledgement among the top management at the HEIs of the importance of teaching entrepreneurship, both in terms of value for their institution and for society as a whole, can be a key driver of entrepreneurial education. A dedicated top management has the authority to ensure a quick implementation of the changes needed to become an entrepreneurial institution. The case of the Technical University of Munich – one of the 46 case studies in the report – can be seen as a good example of this approach.

However, much initiative to implement entrepreneurial education has often been taken by dedicated individuals who want to teach entrepreneurship, either because they see a need, have a personal interest or have been inspired by other teachers or institutions. In the study there are also many good examples of how such a bottom-up approach can bring about institutional change. Nevertheless, the study – particularly through the case studies – suggests that neither the top-down approach nor the bottom-up approach can stand alone. Creating an entrepreneurial institution demands a joint effort from the top-management, as well as academic and other staff, in order to succeed in fully implementing entrepreneurial education throughout the entire institution.

On a more detailed basis the study highlights some interesting findings with respect to the strategy dimension:

- Embedding entrepreneurship in the institution's overall strategy and setting out goals for the entrepreneurial activities seems to be an important aspect, as a great difference is found between the top and bottom institutions in the benchmark.
- The most common goal among the institutions that offer entrepreneurial education is to foster entrepreneurial behaviours, skills and mindsets among the students. It therefore seems that the institutions have embraced the broader concept

of entrepreneurship at the strategic level and the task at hand is related to having entrepreneurial activities and courses that to a greater extent also focus on the mindsets of students and not primarily on the skills needed as an entrepreneur.

- Only a few of the multidisciplinary HEIs have made entrepreneurial policies for all of their faculties – in more than two thirds of the institutions less than a third of the faculties have their own entrepreneurial policies. As expected, faculty-level entrepreneurial policies are most prevalent in the business faculties and technical faculties. Entrepreneurial education is largely a multidisciplinary concept – it is in the cross-section between different disciplines that innovation and creativity emerge and the study shows that institutions could take greater advantage of this aspect of entrepreneurial education.

Institutional Infrastructures

Effective and sustainable entrepreneurial education can be facilitated by supportive institutional infrastructures at the institution. This dimension consists of four sub-dimensions: approaches, entrepreneurial appointments, research in entrepreneurship and cross-discipline structures. On an overall level the study shows that institutional infrastructures seem to be emerging at the European HEIs that are engaged in entrepreneurial education. Around half of the institutions participating in the specific survey have various structures (such as entrepreneurial centres, departments, incubators etc.) in place in order to support the entrepreneurial education.

The interviews with good-practice institutions show that entrepreneurial centres in particular can play a crucial role for co-ordinating and rooting entrepreneurial education in HEIs. Moreover, the benchmark analysis shows that major differences exist between top and bottom institutions in relation to the approaches the institutions take to support the entrepreneurial education. For example, each of the top ten institutions has an entrepreneurial centre, while none of the bottom ten institutions has. Similar results can be seen for the other approaches, such as entrepreneurial departments, incubator facilities and technology transfer offices.

The benchmark analysis also highlights the presence of cross-discipline structures as conducive to entrepreneurial education. Among the top ten institutions, almost all have developed structures with a cross-discipline approach to ensure that entrepreneurship does not become a sort of add-on to the institution with activities taking place mainly in the business department. That is far from the case in the institutions lagging behind. Also, in contrast to the lagging institutions, the top ten institutions ensure that students from all disciplines are able to take the credit-bearing entrepreneurial courses and that the entrepreneurial activities are offered as a joint effort between different faculties.

Another institutional infrastructure that was emphasised in many of the case studies was the ability to conduct research into entrepreneurship and, in particular, into entrepreneurial education. The institutions conduct research into entrepreneurial education as a way to further develop their own activities in the field – to come up with new curricula, new teaching methods, pedagogy etc. The survey showed that around half of the institutions that offer entrepreneurial education also conduct research on the matter.

On a more detailed basis the study highlights some interesting findings with respect to the Institutional Infrastructure dimension:

- Around two thirds of the HEIs with entrepreneurial education participating in the specific study have a chair in entrepreneurship. The average number of tenured chairs is 2.6 and the average number of non-tenured chairs is 3.1. Cases show that these chairs might act as entrepreneurial champions in the different faculties supporting cultural change.
- More than half of the institutions provide the students with incubator facilities where they can start-up their own companies. Often these incubators facilities are also open to entrepreneurs from the community.
- Almost eight out of ten of the multidisciplinary institutions that participated in the specific study offered multidisciplinary entrepreneurial activities in the previous academic year. These include both inter-curricular and extra-curricular activities. However, the results do not elaborate on which disciplines are collaborating, but results from other questions continuously highlight that it is most often the business and technical disciplines that are involved in entrepreneurial education activities.

Teaching and Learning

The teaching and learning dimension focuses on aspects that are directly related to the teaching of entrepreneurship. This dimension consists of five sub-dimensions – entrepreneurial courses, entrepreneurial degrees, extra-curricular activities, curriculum development and teaching methods.

Compared to the other dimensions in the framework model, the benchmark analysis shows that the distance between front-runner institutions and the institutions lagging behind, with respect to the teaching & learning dimension, is relatively small. This can partly be explained by the fact that all the institutions included in the specific survey have passed the same screening criteria – that they have entrepreneurial courses (one of the sub-dimensions).

The study shows that the extent to which entrepreneurship is being taught at the HEIs in Europe varies. In some institutions it is offered at all levels of study, but the results show that bachelor students have access to a larger number of entrepreneurial courses compared to both master's students and Ph.D. students. In general, Ph.D. students have access to the fewest courses on entrepreneurship. However, courses at Ph.D. level are also important as Ph.D. students in their research activities (particularly in the technical disciplines) can take advantage of an entrepreneurial mindset as well as skills. Institutions should therefore focus their attention on more than the early study levels in entrepreneurial education.

Moreover, the benchmark analysis shows that the key differences between the top ten and the bottom ten institutions are in entrepreneurial degrees and entrepreneurial curriculum development.

The presence of entrepreneurial degrees may bear witness to the institutions' engagement in entrepreneurial education, but during the interviews with good-practice institutions it was voiced that offering degrees in entrepreneurship was not necessarily better than offering no degrees. The argument was that it is more important to embed the entrepreneurial vision in all courses to get in touch with all students instead of just students that probably already have a positive notion of entrepreneurship because they have actively chosen an entrepreneurial degree. Nevertheless, the results indicate that entrepreneurial degrees constitute an important tool for the entrepreneurial institution.

In the development of the entrepreneurial curriculum the study indicates that there seems to be much room for improvement by learning from other institutions. Only around half of the institutions in the survey import entrepreneurial education from other institutions, and even fewer have formalised exchange of good practice. In some of the interviews it was stated that within the field of entrepreneurial education the "not-invented-here" syndrome is present. The survey seems to second this notion as almost all the respondents in the survey have in-house development of entrepreneurial curriculum and/or teaching methods. Therefore, there should still be plenty of room for more co-operation and exchanging experience and methodology between HEIs.

Both the survey and the in-depth interviews conducted in this study show that teaching methods in use vary considerably among HEIs. The most common teaching method in entrepreneurship is lecturing, but most of the HEIs often use case studies too. Other widespread teaching methods are project work and the use of guest lecturers. Many HEIs also include various kinds of business simulation in the curriculum. The in-depth interviews with good-practice institutions highlighted that many experimental and innovative teaching methods are applied in entrepreneurial education. All of these teaching methods are described in appendix B in this report.

On a more detailed basis the study highlights some interesting findings with respect to the Institutional Infrastructure dimension:

- Some differences exist among the various institutions with respect to extra-curricula activities. The bottom ten institutions have fewer of these activities than the other institutions. This indicates that extra-curricular activities can supplement the inter-curricular activities in a positive way. The interviews also support the importance of extra-curricular activities for success in entrepreneurial education.
- Entrepreneurship is, to a large extent, a "learning by doing" subject, meaning that the practical aspect of learning from what others have done before is crucial. Therefore, entrepreneurial teaching is often based on cases, and many of the respondents in the in-depth interviews pointed out the importance of recognition and identification with the cases as well as the need for development of national and local case studies that can be used in entrepreneurial education.
- The survey shows that the subjects most likely to offer entrepreneurial courses are, as expected, the business and technical studies. The five subjects (as part of a mul-

tidisciplinary institution) least likely to offer entrepreneurial courses are agriculture, food industry, defence, health care and the arts.

Outreach

Outreach covers the way in which the institutions interact with their surroundings, the alumni, business community and public partners. This dimension includes the following elements: Alumni, Links with external stakeholders and Community engagement.

On an overall note, the study shows that the institutions are well aware of the importance of outreach to be entrepreneurial, but there is still a considerable difference in the way that it is done. The alumni element seems to be a natural starting point for the institutions, and over two thirds of the HEIs responded that they use their alumni as good examples and bring them into the entrepreneurial teaching to some extent. For almost all of the institutions in the survey the use of entrepreneurs and/or former students as teachers or as good examples in entrepreneurial education is one of the ways in which the institution ensures that the entrepreneurial teaching is relevant and linked to the outside community.

The networks that the institutions build with their stakeholders – regional or national government, agencies, private companies, consultancy service providers etc. – vary slightly among the institutions. But the tendency is clear: teaching entrepreneurship is not seen as an activity that is designed to take place in the confinement of academia. There are slight differences in the extent to which the network is used: some institutions might have developed links to their stakeholders, but when it comes to developing these links into collaboration where the stakeholders make an actual contribution to entrepreneurial education, this is not done by all to the same degree.

For some institutions consultancy seems to be a way in which they see themselves as engaging with the community. A majority of the HEIs in the specific survey responded that they transfer knowledge to society by doing consultancy work, and also to a large extent through academic spin-offs. In the case of consultancy there are no big variations across types of institutions, whereas concerning patents and licensing it is evident that this is not the focus of business schools at all.

When it comes to involvement in the community – especially in relation to the community's involvement in the institutions – the difference between top and bottom is not that great, relatively speaking. The majority of the bottom ten institutions provide the students with opportunities for internships and project work outside the organisation to enhance their entrepreneurial mindset.

With regards to the Outreach dimension it is noticeable that:

- The difference between top and bottom becomes apparent when looking at the institutions' engagement in the community. Here, the top ten institutions are much more active – hosting entrepreneurial events that are open to the community, offering advisory services to local entrepreneurs and companies and supporting entrepreneurial activities in local schools.

- From the case interviews the consortium has seen many good examples of outreach. But it also became apparent that outreach activities are time consuming and constitute a challenging task for the institutions. This is something the institutions need to take into consideration when engaging in entrepreneurial education – it is important to allocate sufficient resources in terms of time and money for outreach activities.

Development

The dimension development covers the way in which the institution develops its entrepreneurial activities and the teaching staff involved in the teaching of entrepreneurship. This dimension consists of three sub-dimensions: Evaluation, User-driven improvement and Human resources development and management.

In general, this area is one of the dimensions in which there is room for improvement. With regards to HR management and development the benchmark study shows this to be an area that both the top and bottom institutions struggle with, and one that shows that entrepreneurial education is still in its infancy in many of the institutions.

One of the major differences and areas for improvement is related to the experience of entrepreneurial teachers. It does not seem to be very widespread that staff teaching entrepreneurship have personal experience with entrepreneurship. Consequently, many students are being taught by teachers that have a theoretical knowledge about entrepreneurship, but lack the practical knowledge. However, since entrepreneurship to a large degree is a practical, hands-on subject, the teaching of it will likely be improved if the teachers have their own practical entrepreneurial experience that they can take advantage of.

Another important issue emphasised in the survey as well as in the interviews is the teachers' skills in relation to the actual entrepreneurial teaching pedagogy. The teaching methods deemed effective in entrepreneurial education are often different from the methods traditionally used in academia. Therefore, staff teaching entrepreneurship may need training to embrace this new pedagogy. However, the study reveals that few institutions offer their entrepreneurial teaching staff the training opportunities to enhance their skills. And even fewer institutions require the teaching staff to engage in training prior to teaching entrepreneurship.

The study shows that entrepreneurial education is still immature in the sense that it is often person driven and depends upon the efforts of individuals rather than a collective, strategic effort on the part of the HEI or national government. This has an impact on the number of academics involved in entrepreneurial education, and thereby, of course, on how well entrepreneurship can be spread in an institution. The findings show that on average only 7 % of the academic staff in an institution are involved in entrepreneurial education. The low proportion of staff involved can impede and slow the cultural change often needed to become an entrepreneurial institution.

The interviews revealed that entrepreneurial education is a dynamic and constantly evolving concept. Many of the good-practice institutions are constantly looking to improve their entrepreneurial education to fit new tendencies, demands from students etc. Therefore, it is important to continuously evaluate the entrepreneurial ef-

forts to investigate whether the expected effects can be detected and whether the entrepreneurial goals and strategies are being achieved.

However, the study shows that the continuous evaluation and follow-up on the results of goals and strategies is somewhat lagging behind. Less than half of the HEIs report that they have procedures to follow up on entrepreneurial goals and strategies, which is in strong contrast to the 94 % of HEIs that have entrepreneurial goals. The overall tendency among the HEIs seems to be to evaluate the individual course and the individual activity, while monitoring and evaluating on a more general level seems to be less common.

On a more detailed basis the findings highlight some interesting tendencies with respect to the Development dimension:

- It seems that the institutions are attempting to counteract the lack of entrepreneurial experience among the teaching staff by using external guest lecturers/entrepreneurs in entrepreneurial education. All of the institutions in the specific survey do this – a third of them to a great extent.
- The majority of the institutions in the specific survey are engaged in user-driven improvement. But whereas the bottom ten institutions focus on student evaluations, the top ten institutions obtain evaluations from students as well as from end-users, such as employers, investors etc.
- The spread of entrepreneurship in academia will depend on the academic credibility of the field. A way to improve academic credibility is for the institutions to provide recognition for the achievements the academic staff attains in relation to entrepreneurship. However, the study shows that half of the institutions engaged in entrepreneurial education do not provide such recognition.

Resources

To be able to establish entrepreneurial education as a part of a HEI dedicated funding is necessary, if not crucial. Without the necessary resources, activities such as appointing professors, developing courses, establishing an entrepreneurial centre or arranging extra-curricular activities for the students cannot be developed. The resource dimension includes the following elements: income generation from entrepreneurial activities, types and sources of funding and budget allocation.

If the institution can generate an income from its entrepreneurial activities, the likelihood that the activities will be sustained will probably be considerably greater than if the entrepreneurial activities needed a continuous stream of resources to uphold it. Therefore, a striking result is the difference found between top and bottom in relation to income generating activities related to entrepreneurship. All of the top ten institutions engage in income-generating activities, while only two of the bottom ten institutions do. The survey shows that 75 % of the HEIs in the specific survey engage in entrepreneurship related activities that generate income. The type of income generation ranges from obtaining admission fees from seminars and workshops, and fees from advisory services.

However, of the 200 institutions in the specific survey not one of them relies exclusively on the income generated by the institution through these means. Generally speaking, two thirds of the institutions support their entrepreneurial goals with dedicated funding. The size of this funding varies, but most institutions dedicate less than €50 per student to entrepreneurial activities. One remarkable difference is evident in the benchmark study that shows that seven of the top ten institutions support their entrepreneurial goals with dedicated funding, while only one of the bottom ten institutions does so.

An issue concerning resources has been raised by many of the interviewees – it seems that the sustainability of entrepreneurial education is closely related to the type and sources of funding. Repeatedly, we have heard that the more long-term the funding, the more sustainable the entrepreneurial education. Generally speaking, more than one third of the institutions base their entrepreneurial activities on short-term funding, while only one in every 10 is able to rely on more long-term funding (5+ years). And unfortunately this seems to be a general problem for all institutions; even the best-performing institutions are struggling, so that in the top ten institutions the majority relies on medium-term funding while only one single institution has long-term funding. In comparison, the results show that the majority of the bottom ten institutions primarily rely on short-term funding.

It is important to note the following about the resource dimension:

- Lack of funding is mentioned as the most important obstacle to development, growth and continuation of entrepreneurial education by several of the interviewees in the in-depth cases. One way to overcome the lack of resources needed to develop entrepreneurial education is to seek external funding. In the survey the institutions were asked to estimate what proportion of their entrepreneurial budget comes from external funding versus internal funding. On average, the ratio is 56 pct. internal funding and 44 pct. external funding.
- With regards to external funding the interviews with national policy makers emphasise that the institutions should do more to attract alternative sources of funding to the sources they mainly use. The survey shows that government funding is the primary source of funding – two thirds of the institutions participating in the study have this as their main source of funding. Sources such as private companies can be valuable in entrepreneurial education as they can help to strengthen the link to the business community. However, the survey shows that only one in ten institutions has companies as their primary source of funding.

2.2 Differences across Europe

During the study it became apparent that entrepreneurial education is influenced by type of institution, years of experience with entrepreneurial education and geographic location.

2.2.1 Types of institutions

Entrepreneurship has strong ties to the business field – to some extent it arose from the field of small business management. Therefore, the expectation going into this

study was that business schools would be more involved in entrepreneurial education compared to other types of institutions. This study found evidence to support this expectation. The vast majority of the business schools participating in the survey have entrepreneurship. The same goes for multidisciplinary institutions with a business school department. In contrast, only a quarter of the specialised institutions and a third of the multidisciplinary institutions without a business school department are engaged in entrepreneurial education.

However, it is not only the prevalence of entrepreneurial education that is influenced by the type of institution. The nature of entrepreneurial education also seems to be different in the various types of institutions. In general, the study shows that entrepreneurial education is not only more prevalent among business schools and multidisciplinary institutions with a business school department, but the way in which these institutions conduct entrepreneurial education also seems to be different and more elaborate (cf. table 2-1). This can to some degree be explained by the fact that these types of institutions have been frontrunners in taking on entrepreneurial education and have therefore worked with it for a longer period of time. The study also indicates that time is a positive factor in entrepreneurial education. The time issue will be elaborated below.

The following tables all reflect results from the specific survey.

| Table 2-1: Results for different types of institutions on key aspects of the six dimensions | | | | |
|--|---|---|--|--|
| | Business schools | Multidisciplinary institutions with a business school department | Multidisciplinary institutions without a business school department | Technical institutions* |
| Strategy | | | | |
| Entrepreneurship part of overall strategy | In the majority of institutions (79 %) | In the majority of institutions (73 %) | In two thirds of institutions (71 %) | In the majority of institutions (73 %) |
| Strategic responsibility for entrepreneurship | President: 36 % Rest of top-mgmt: 21 % | President: 19 % Rest of top-mgmt : 46 % | President: 15 % Rest of top-mgmt: 36 % | President: 17 % Rest of top-mgmt : 30 % |
| Institution-wide entrepreneurial action plans for how to achieve E-goals | In the majority of institutions (86 %) | In half of institutions (53 %) | In half of institutions (42 %) | In half of institutions (59 %) |
| Institutional Infrastructures | | | | |
| Entrepreneurial professors (avg.) | 3.7 | 2.3 | 2.7 | 4.0 |
| Presence of entrepreneurial centre | At two thirds of institutions (71 %) | At two thirds of institutions (61 %) | At half of institutions (46 %) | At half of institutions (59 %) |
| Research on entrepreneurial education | At majority of institutions (79 %) | At majority of institutions (80 %) | At two thirds of institutions (68 %) | At a third of institutions (36 %) |
| Teaching & Learning | | | | |
| Avg. number of entrepreneurial courses | Bachelor: 8.8 Master's: 10.1 | Bachelor: 9.7 Master's: 7.1 | Bachelor: 7.9 Master's:7.1 | Bachelor:9.5 Master's:7.5 |

| | Ph.D.: 3.9 | Ph.D.: 2.6 | Ph.D.: 3.5 | Ph.D.: 3.0 |
|--|---|--|--|--|
| Entrepreneurial degree available | In two thirds of institutions (71 %) | In two thirds of institutions (62 %) | In half of institutions (45 %) | In half of institutions (49 %) |
| Three most used teaching methods in entrepreneurial education | 1: Entrepreneur in classroom 2: Case studies 3: Project teams | 1: Lecturing 2: Case studies 3: Project teams | 1: Lecturing 2: Project teams 3: Case studies | 1: Lecturing 2: Project teams 3: Case studies |
| Outreach | | | | |
| Involve alumni in entrepreneurial education | Majority of institutions (93 %) | In two thirds of institutions (71 %) | In two thirds of institutions (67 %) | In two thirds of institutions (66 %) |
| Stakeholders contributing to entrepreneurial education | Company: 79 % Entrepreneur: 62 % Investors: 62 % | Company: 65 % Entrepreneur: 61 % Investors: 47 % | Company: 60 % Entrepreneur: 48 % Investors: 35 % | Company: 70 % Entrepreneur: 61 % Investors: 51 % |
| Support entrepreneurship in local schools | Two thirds of institutions (71 %) | Two thirds of institutions (64 %) | Third of institutions (34 %) | Two thirds of institutions (66 %) |
| Development | | | | |
| Avg. share of academic staff involved in entrepreneurial education | 22 % | 5 % | 4 % | 6 % |
| Provide recognition for achievements in entrepreneurial education | Majority of institutions (79 %) | Half of institutions (44 %) | Half of institutions (43 %) | In half of institutions (59 %) |
| Formalised procedures of evaluating entrepreneurial strategy | In third of institutions (38 %) | In third of institutions (33 %) | In half on institutions (41 %) | In third of institutions (33 %) |
| Resources | | | | |
| Income-generating activities related to entrepreneurial education | Majority of institutions (79 %) | Majority of institutions (81 %) | Two thirds of institutions (61 %) | Two thirds of institutions (69 %) |
| Allocate dedicated funding to entrepreneurial education | Half of institutions (54 %) | Two thirds of institutions (64 %) | Two thirds of institutions (66 %) | In half of institutions (54 %) |
| Average size of entrepreneurial education budget per student | €297 | €110 | €104 | €249 |

* Average of the two types of technical institutions (technical as part of multidisciplinary institution and specialised technical institution)

2.2.2 Time is a factor

Not unexpectedly, time is a factor for implementing entrepreneurship in higher education in Europe – the longer an institution has been engaged in entrepreneurial education, the more elaborate the entrepreneurial education is. In particular, it seems that the strategic embeddedness is developed over time (cf. table 2-2).

This might be explained by the fact that entrepreneurial education is often started through a bottom-up approach at the institutions where dedicated people take the initiative to engage in entrepreneurial education. These pioneers are individual aca-

demics inspired by, in some cases, a more comprehensive entrepreneurial education in the US and who tended to see a need for this type of education in their own regions. Later in the process, the top-management becomes involved, strategies and policies are developed and the strategic responsibility seems to be transferred from professors to members of the top-management.

| Table 2-2: Results for institutions according to experience with entrepreneurial education on key aspects of the six dimensions | | | | |
|--|--|--|--|---|
| | Less than four years of experience | Between four and less than eight years of experience | Between eight and 12 years of experience | More than 12 years of experience |
| Strategy | | | | |
| Entrepreneurship part of overall strategy | In half of institutions (56 %) | In half of institutions (57 %) | In majority of institutions (79 %) | In majority of institutions (85 %) |
| Strategic responsibility for entrepreneurship | President: 6 % Rest of top-mgmt: 47 % | President: 18 % Rest of top-mgmt : 41 % | President: 18 % Rest of top-mgmt: 44 % | President: 26 % Rest of top-mgmt : 35 % |
| Institution-wide entrepreneurial action plans for how to achieve E-goals | In half of institutions (45 %) | In half of institutions (45 %) | In half of institutions (51 %) | In two thirds of institutions (68 %) |
| Institutional Infrastructures | | | | |
| Entrepreneurial professors (avg.) | 1.3 | 1.2 | 1.5 | 2.6 |
| Presence of entrepreneurial centre | At half of institutions (41 %) | At half of institutions (44 %) | At half of institutions (55 %) | At two thirds of institutions (64 %) |
| Research into entrepreneurial education | At half of institutions (59 %) | At half of institutions (48 %) | At half of institutions (52 %) | At two thirds of institutions (63 %) |
| Teaching & Learning | | | | |
| Avg. number of entrepreneurial courses | Bachelor: 6.6 Master's: 5.6 Ph.D.: 0.3 | Bachelor: 6.9 Master's: 6.6 Ph.D.: 1.7 | Bachelor: 9.8 Master's: 5.9 Ph.D.: 2.6 | Bachelor: 12.1 Master's: 10.7 Ph.D.: 5.2 |
| Entrepreneurial degree available | In half of institutions (41 %) | In half of institutions (53 %) | In half of institutions (49 %) | In majority of institutions (74 %) |
| Three most used teaching method in entrepreneurial education | 1: Case studies 2: Project teams 3: Lecturing | 1: Lecturing 2: Project teams 3: Case studies | 1: Lecturing 2: Project teams 3: Case studies | 1: Lecturing 2: Case studies 3: Project teams |
| Outreach | | | | |
| Involve alumni in entrepreneurial education | In two thirds of institutions (65 %) | In two thirds of institutions (70 %) | In two thirds of institutions (68 %) | In majority of institutions (80 %) |
| Stakeholders contributing to entrepreneurial education | Company: 63 % Entrepreneur: 56 % Investors: 47 % | Company: 57% Entrepreneur: 57% Investors: 46 % | Company: 59 % Entrepreneur: 49 % Investors: 35 % | Company: 81% Entrepreneur: 73 % Investors: 52 % |
| Support entrepreneurial in local schools | Half of institutions (59 %) | Half of institutions (50 %) | Half of institutions (52 %) | Majority of institutions (76 %) |
| Development | | | | |
| Avg. share of academic staff | 4 % | 5 % | 4 % | 8 % |

| involved in entrepreneurial education | | | | |
|---|-------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|
| Provide recognition for achievements in entrepreneurial education | Half of institutions (41 %) | Half of institutions (40 %) | Half of institutions (46 %) | Half of institutions (58 %) |
| Formalised procedures of evaluating entrepreneurial strategy | In a quarter of institutions (24 %) | In a quarter of institutions (24 %) | In half of institutions (40 %) | In half of institutions (48 %) |
| Resources | | | | |
| Income-generating activities related to entrepreneurial education | Two thirds of institutions (71 %) | Majority of institutions (73 %) | Two thirds of institutions (70 %) | Majority of institutions (85 %) |
| Allocate dedicated funding to entrepreneurial education | Half of institutions (53 %) | Two thirds of institutions (64 %) | Half of institutions (58 %) | Two thirds of institutions (67 %) |
| Average size of entrepreneurial education budget per student | €59 | €111 | €635 | €242 |

As can be seen in table 2-2, changes are taking place in the other five dimensions of entrepreneurial education as the institutions become more experienced. More resources are allocated, entrepreneurial degrees are instigated, more staff, alumni and stakeholders are involved in the activities etc. In particular, institutions with more than 12 years of experience seem to have a more elaborate model of entrepreneurial education covering many of the aspects included in the framework model.

2.3 Differences across Europe (EU15 vs. EU>15)

Prior to the study the consortium expected to find a difference in entrepreneurial education across different regions of Europe – particularly it was expected that institutions in Eastern Europe would have a less elaborate model of entrepreneurial education compared to Western Europe. The expectation was substantiated with respect to the scope of entrepreneurship in HEIs. More institutions in Western Europe (EU15) offer entrepreneurial education compared to Eastern Europe (EU>15). However, the specific survey does not support the expectation that entrepreneurial education in EU>15 is less elaborate than in EU15.

Table 2-3: Results for institutions according to geographical location on key aspects of the six dimensions

| | EU15 | EU>15 |
|--|---|---|
| Strategy | | |
| Entrepreneurship part of overall strategy | In two thirds of institutions (71 %) | In majority of institutions (74 %) |
| Strategic responsibility for entrepreneurship | President: 16 % Rest of top-mgmt : 41 % | President: 33 % Rest of top-mgmt : 36 % |
| Institution-wide entrepreneurial action plans for how to achieve E-goals | In half of institutions (53 %) | In half of institutions (50 %) |
| Institutional Infrastructures | | |
| Entrepreneurial professors (avg.) | 1.5 | 3.6 |
| Presence of entrepreneurial centre | In half of institutions (54 %) | In half of institutions (41 %) |
| Research on entrepreneurial education | In half of institutions (50 %) | In two thirds of institutions (75 %) |
| Teaching & Learning | | |
| Avg. number of entrepreneurial courses | Bachelor: 14 Masters: 10 Ph.D.: 4 | Bachelor: 8 Masters: 7 Ph.D.: 3 |
| Entrepreneurial degree available | In half of institutions (52 %) | In majority of institutions (80 %) |
| Three most used teaching method in entrepreneurial education | 1: Lecturing 2: Case studies 3: Project teams | 1: Lecturing 2: Project teams 3: Case studies |
| Outreach | | |
| Involve alumni in entrepreneurial education | In majority of institutions (75 %) | In half of institutions (59 %) |
| Stakeholders contributing to entrepreneurial education | Company: 61% Entrepreneur: 50% Investors: 36% | Company: 65% Entrepreneur: 60% Investors: 44% |
| Support entrepreneurship in local schools | Half of institutions (58 %) | Two thirds of institutions (63 %) |
| Development | | |
| Avg. share of academic staff involved in entrepreneurial education | 6 % | 10 % |
| Provide recognition for achievements in entrepreneurial education | Half of institutions (45 %) | In two thirds of institutions (67 %) |
| Formalised procedures of evaluating entrepreneurial strategy | In a third of institutions (37 %) | In half of institutions (40 %) |
| Resources | | |
| Income-generating activities related to entrepreneurial education | Majority of institutions (75 %) | Majority of institutions (79 %) |

| | | |
|--|-----------------------------------|-----------------------------|
| Allocate dedicated funding to entrepreneurial education | Two thirds of institutions (66 %) | Half of institutions (42 %) |
| Average size of entrepreneurial education budget per student | €350 | €283 |

As can be seen from table 2-3 there is not a great difference between the two regions on key aspects of the six dimensions of entrepreneurial education applied in the specific survey. In fact, in some of the dimensions it seems that more institutions in EU>15 have a broader model of entrepreneurial education with more institutions having entrepreneurial professors and degrees, placing the strategic responsibility at the top-management, and providing recognition for achievements in entrepreneurial education. However, more resources seem to be allocated to entrepreneurial education in institutions in EU15 compared to institutions in EU>15.

2.4 Recommendations

The conclusions show that Europe still has a long way to go before entrepreneurial education is available in all educational institutions. Consequently there is a long way to go, but our analysis highlights several recommendations on how to accelerate the way forward for the EU Commission, for national governments and for individual institutions.

The recommendations at the institutional level are based on the benchmark analysis and the case studies, whereas the conclusions regarding the national and the EU levels are based on our visits to leading educational institutions in Europe, as well as on discussions with the EU Commissions Expert group on Entrepreneurial Education and with leading policy makers in selected member states.

A key recommendation that cuts across all levels is related to the definition of entrepreneurial education. All levels (EU, national governments and higher educational institutions) need to embrace a broad definition of entrepreneurship. Much of the resistance from academics to pursue the entrepreneurial agenda is, in our understanding, a misconception of what entrepreneurship is. Entrepreneurship has previously been closely linked to starting up businesses for profit. The courses have focused on business plan writing and product development. Therefore, many have felt that entrepreneurship is at odds with the values prevalent in academia. In academia, the objective is to create and disseminate knowledge as a common good – not to create knowledge for one’s own personal gain/profit. Consequently, it has been difficult to get the academics (outside the business schools) to support and engage in the entrepreneurial agenda.

The leading institutions have left this narrow focus and now embrace a much broader definition of entrepreneurship as value creation or sustainable change. The leading institutions are beginning to focus more on mindset and attitudes and less on particular business skills. The emergence of, for example, social entrepreneurship signals that entrepreneurship is much more than a commercial activity – it is a state of mind that can be applied to all settings and aspects of life. For example, providing shelters

for the homeless in a new and efficient way is entrepreneurship, just as creating and marketing a new search engine as a competitor to Google is entrepreneurship. Both examples are about creating value. In the first example, the homeless benefit from the created value, whereas the value created by the new search engine falls into the hands of the entrepreneur.

The entrepreneurial agenda will only find its way into all fields of the HEIs if this broad definition is applied. The HEIs are advised to make the academics understand that the decision to engage in entrepreneurship does not equal business venturing (although it can be a part of the strategy), but it is a decision to expand the entrepreneurial spirit across the institution. For the academics this means that they should apply an entrepreneurial attitude in their working lives. There are many ways an academic can be entrepreneurial, for example by seeking unconventional sources of finance for research projects, using experimental teaching methods in the class room, taking a multidisciplinary approach, collaborating with private companies, initiating and running research projects, extra-curricular projects, teaching projects etc.

The broad definition must not only gain acceptance in the HEIs. We believe that this broader definition is also necessary for the competitiveness of Europe. Several EU countries have large public sectors and comprehensive transfer schemes that need to be financed and that function under increasing demand for quality and quantity. This requires an entrepreneurial approach to, for example, elderly and health care. Doctors and nurses need to think and act entrepreneurially and to create new value, and a multidisciplinary approach, as applied for instance by Stockholm School of Entrepreneurship, is one way of attaining this.

However, the study has revealed an evolutionary tendency in the institutions' way of engaging in entrepreneurial education. Often, the institutions' initial involvement in entrepreneurship education is linked to the understanding of entrepreneurship as mainly business creation e.g. the majority of the entrepreneurial courses offered focus on business venturing skills rather than mindsets (e.g. how to write a business plan). The institution establishes an incubator or technology transfer office, etc. Although these are important aspects of entrepreneurship, the institutions also need to embrace the broad definition of entrepreneurship in course content and in entrepreneurial education in general.

This slow evolutionary process can be shortened dramatically and lead to much more sustainable impact if the broad definition is introduced at the top level of management and then fed down through the system. We hope that this survey will help inspire the process.

However, we would like to emphasise that the cost of implementing the recommendations and making entrepreneurial education available across all institutions in Europe will be high. Our analysis shows that leading institutions spend around €180 per student on entrepreneurial education. Today, 11 million students do not have access to entrepreneurial education, suggesting a need for additional funding of €9,000 million.

2.4.1 *EU level*

The following recommendations are related to the role of the EU Commission in promoting entrepreneurial education:

Facilitate and allow for the use of EU structural funds for financing of entrepreneurial education initiatives in HEIs. The EU Social Fund can be used to finance entrepreneurial education. The Commission can provide countries and project managers with ideas on how to do this. This recommendation will allow for a large pool of funding possibilities. Structural funds can be used for educational purposes today, but a detailed description of the possibilities can help member countries to use this stream of EU funding to finance entrepreneurial education.

Include measurements and targets for the spread of entrepreneurial education in the Lisbon V2.0 and as part of the Commission's reviews of member states' National Reform Programmes. This requires that comparable data for the area are constructed and updated regularly. An old saying is: you get what you measure. Simply measuring the performance of various institutions and countries and publishing the numbers can have an impact on performance. One of the best examples of the power of this approach is the effect of the EU publishing the implementation rates of Single Market directives. Nobody wants to be behind. Two possible ways of tracking entrepreneurial education seem possible. The Lisbon agenda will be updated and new targets will be set. These targets could include entrepreneurship. The development over time can then be tracked in the yearly National Reform Programme reviews.

Initiate an EU-programme that facilitates the exchange of entrepreneurial teachers across Europe (scholarships).

Many of the people we spoke to, who were responsible for entrepreneurial education, mentioned a lack of co-operation across institutions, even within the same countries. The EU could give a yearly award to the best entrepreneurial institution. DG Enterprise already encourages regional and local authorities to create a favourable environment for business, in particular small and medium-sized enterprises, with the European Enterprise Awards that recognise excellence in promoting regional entrepreneurship and reward outstanding initiatives. An additional award for entrepreneurial education could be included in this event.

2.4.2 *National level*

Four recommendations are related to the role of the national level in promoting entrepreneurial education.

Firstly, develop a policy programme on how to mainstream entrepreneurship into higher education and set aside resources. The programme would be voluntary for the institutions, but the institutions would gain access to additional government funding if they fulfil a number of requirements.

Funding of the activities is a critical part of introducing entrepreneurial education. The resources for entrepreneurial education should be no different from other types of

education, but two differences do exist. First, entrepreneurial education requires more activities than most other forms of education. Student incubators, business plan competitions and advice services, to mention a few, are all activities that are costly. Second, by providing an incentive, government can increase the speed of adaptation. In the long run no incentives should be needed.

An additional reason could be that competition among HEIs might not be as intense as it is in the US. This reduces the external pressure for integrating entrepreneurial education. Several methods for constructing these incentives exist. The Netherlands has, for example, made universities compete for funding for entrepreneurial education. Another possibility is to allocate earmarked resources to universities or have a system where all institutions which can produce a strategy for implementing entrepreneurial education will receive resources.

The funding needs to be supplemented by a deliberate action to help institutions to formulate their strategies and initiatives. Many institutions have a willingness to engage in entrepreneurial education but lack the know-how. A national taskforce consisting of entrepreneurial education experts could help these institutions. The taskforce could collect and disseminate examples of good practice in entrepreneurial education at the institutional level (preferably for different types of institution) and at teacher level (examples of the entrepreneurial education teacher); host seminars on good practice in entrepreneurship; make a video presentation of entrepreneurial education, that institutions wishing to engage in entrepreneurial education can acquire.

Secondly, ensure that HEIs are not restricted in their pursuit of the entrepreneurial agenda. Rules and regulations imposed by the funders (often national government) can have a limiting effect on the institutions' possibilities – for example in integrating entrepreneurship in the curriculum or promoting professors of entrepreneurship.

HEIs in Europe are financed by either central or regional government. The institutions are therefore often restricted in their ability to act independently. Regulations exist, for example, on tenure track and the number and discipline of professors. These regulations ensure equality across institutions within a region or country, but they may hamper entrepreneurial management teams in implementing entrepreneurial education. National governments should closely examine their governance regulations and ensure that HEIs have the freedom to implement entrepreneurial education. The recommendations at the institutional level highlight several of the areas where the institutions need more freedom.

Thirdly, track and evaluate the effects of entrepreneurship. The costs of entrepreneurial education are high and very little is known about the effects of this type of education. National government should construct a system to evaluate the effects and set targets and goals for their entrepreneurial education. No governments are currently doing this at a systematic level, so new approaches have to be developed.

Finally, the focus must be on the entire educational system, as one study level feeds into the other. The formation of an entrepreneurial mindset is a joint effort from primary education to tertiary education.

The efforts at the university level need to build on the efforts in the rest of the educational system. Primary and secondary educational institutions also need to address entrepreneurship. This issue was discussed at the EU Commission's conference in Oslo in 2006. The outcome of the conference the "Oslo Agenda for Entrepreneurial Education" is a rich menu of proposals aimed at creating this link between the levels of education.

2.4.3 *Institutional level*

The recommendations at the institutional level follow the structure of the six dimensions of the framework model:

Strategy

The highest level of the institution needs to support the entrepreneurial agenda in order for the institution to become entrepreneurial. The entrepreneurial vision, the goals and aspirations need to be very explicit and known throughout the institution. Furthermore, promoters of the entrepreneurial agenda need to be in place at all levels in the institution.

The vision should reflect a broad definition of entrepreneurship. Entrepreneurship is much more than "just" starting businesses: it is a mindset for creating sustainable change.

HEIs need to recruit top management on the basis of their managerial skills and not, as in many countries, on the basis of their academic merit and scientific achievement. This way the institutions can put together top management teams with different competencies and experience.

HEIs need to focus both on the supply and the demand side in their efforts to promote entrepreneurship – the demand side being the students' interest in participating in the courses and activities, the supply side being the courses and the activities themselves.

Outreach

HEIs should track the alumni and actively involve them in their efforts to promote entrepreneurial education. Having stakeholders who make a contribution to entrepreneurial education is, for example, a way of ensuring that the teaching does not exist only in a theoretical setting, but gives the students an experience and insight into the real world.

HEI should also build strong networks in the regional community. These networks can also support the goal of being an entrepreneurial institution. These networks are time consuming to build and maintain. Therefore institutions should explicitly devote time and resources to undertake this never-ending task.

Institutional Infrastructure

HEIs should set up an infrastructure that supports entrepreneurial education, entrepreneurial students and staff. The different elements of the infrastructure are not as important as taking the first step. However, TTOs, incubators and chairs in entrepre-

neurship are all a part of signalling to the outside world, and internally, that entrepreneurship education is seen as important.

Teaching & Learning

HEIs need to develop entrepreneurial courses that support and are aligned with the overall entrepreneurial goals and strategies. This makes it important that the overall institutional goals/strategy are explicit and known throughout the institution, so that the member of staff developing his or her own entrepreneurial course is aware of what overall objectives the institution is trying to achieve.

HEIs need to ensure that some parts of entrepreneurial education are credit bearing. The credit system needs to be such that ECTS points can be assigned in a flexible way to fit the various activities. This recommendation is especially important for institutions that are new to the field of entrepreneurial education.

Development

HEIs need to develop ways of evaluating the quality and relevance of their entrepreneurial teaching. For example, HEIs can construct ways of tracking changes e.g. in mindsets, the institutions can do ex-ante/ex-post evaluations of the students before and after they have attended entrepreneurial courses. In addition, the institutions could do the same evaluations on a control group. Another way to continuously improve is to conduct studies of alumni where 1) students express what skills they are missing having graduated, 2) as a tracking device providing knowledge about the alumni's entrepreneurial endeavours after graduation.

HEIs need to be aware that entrepreneurial teaching staff act as role models for the students. Institutions should consider how they can spur the entrepreneurial mindsets of their academic staff – this can, for example, be done through the reward system where academics will be rewarded for entrepreneurial behaviour, e.g. taking risks in the use of new experiential teaching methods, research methods, new sources of funding etc., collaborating with the corporate world, taking “industrial professorships”, generating spin-off activities.

HEIs need to adopt more flexible reward and salary systems. Most European HEIs have more or less standard wage levels for professors. Differences between various types of professors are needed. This will enable the institutions to attract entrepreneurs (from the business world), who can have a very positive influence on entrepreneurial education, as well as on the overall entrepreneurial spirit in the institutions.

Resources

HEIs need to allocate funds to promote the entrepreneurial agenda. The leading HEIs in Europe spend around €180 per student. This can provide a benchmark for other institutions wishing to promote the entrepreneurial agenda. The funding needs to be a long-term commitment.



3. METHODOLOGY OF THE SURVEY

This chapter outlines the methodology of the survey and explains the choices the consortium has made in order to get as comprehensive a picture of the state of play in entrepreneurship education in European higher-education institutions as possible.

To be able to understand and illuminate the relevant perspectives of entrepreneurship education in European higher education, the consortium has based this study on both quantitative and qualitative data-collection methods.

The methodology designed for the study has been built around a framework model, developed to help structure the rather complex field of entrepreneurship education and higher-education institutions. This framework model has been the backbone around which the data for the survey has been collected and analysed, and therefore this chapter starts by describing the framework model.

Secondly, the methodology of the quantitative survey is outlined together with how the two parts of the survey – the general survey and the specific survey – have been designed to provide the answers that the survey set out to give.

Thirdly, the chapter outlines the methodology of the qualitative part of the survey and explains how the qualitative part links in with the quantitative part. Finally, the methodology of the benchmark carried out on the basis of the specific survey is presented.

At the end of the chapter the limitations of the chosen methodology will be discussed to give a picture of what the survey can be said to conclude and where there is a need for more in-depth information to draw conclusions.

3.1 The framework model

In order to fulfil the purpose of the survey, i.e. to map the entrepreneurship education in Europe, the consortium started out by developing a framework model to help structure, analyse and present the results of the survey in a clear and coherent way.

This framework model will be introduced in the following sections.

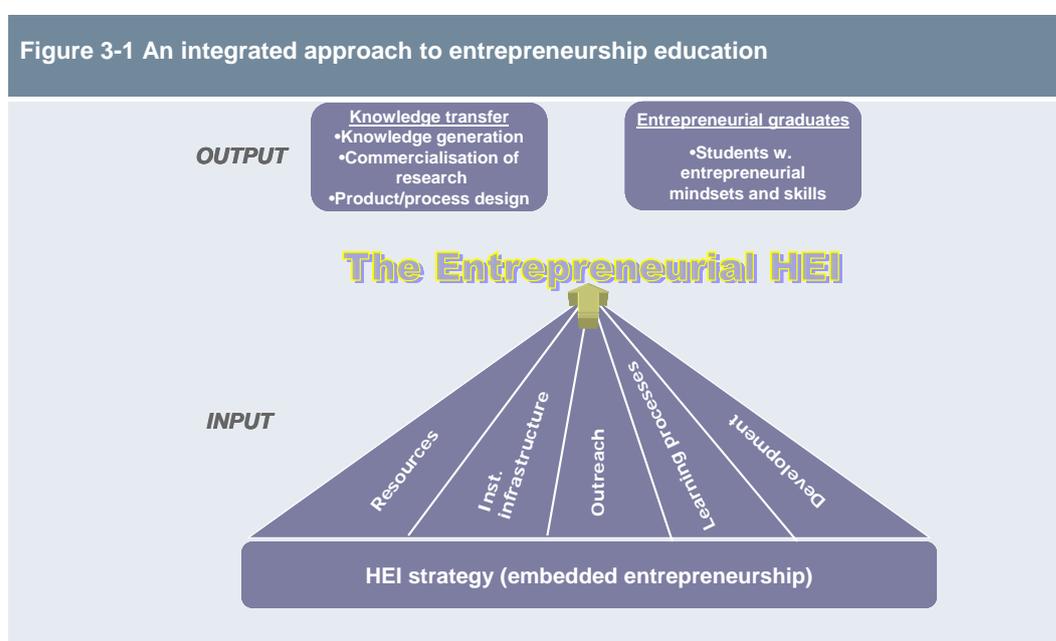
3.1.1 *An integrated approach to entrepreneurship education*

The underlying assumption in the survey and in how the consortium understands entrepreneurship education is that it has the potential to encourage entrepreneur-

ship, fostering the right mindset among students as well as providing them with relevant entrepreneurial skills. This will in time have a positive impact on future economic growth, job creation, innovation and wealth generation. Moreover, entrepreneurial skills and attitudes also provide benefits to society beyond their application to business activity.

Although this has been an underlying assumption and one that the consortium nevertheless believes in strongly, it has not been within the scope of this study to validate this. But based on this assumption, the survey has worked towards getting an understanding and a measure of:

- The direct output of entrepreneurship education
- The input in the entrepreneurship education



The figure shows how the consortium understands the interplay and the distinctions between the two aspects: *output* being the performance of an entrepreneurial institution, and *input* being the different approaches and activities that an HEI can adapt and implement on their road to becoming an entrepreneurial HEI. The output measures will be discussed in more details when describing the performance index applied in the benchmark analysis later in this chapter.

The six dimensions will be presented in more detail below.

3.1.2 The input – six dimensions of entrepreneurship education

Figure 3.1 illustrates the assumption that becoming an entrepreneurial HEI is not achieved by focusing solely on one or a few of the dimensions of entrepreneurship education. It will not be enough to exclusively supply students with courses in or

about entrepreneurship or engage in other isolated efforts such as making use of placement programmes in start-ups, establishing incubator facilities or appointing professors of entrepreneurship. Becoming an entrepreneurial HEI entails a complex process requiring parallel actions in a number of areas.

This is indeed evident in Gibb (2005), where, based on American, Asian, and European experiences, he argues that an HEI is entrepreneurial when, among other things, it:

- Engages actively with the wider stakeholder community
- Internally organises to provide a stronger central steer to entrepreneurial endeavour
- Promotes the creation of science parks, incubators, technology-transfer offices etc.
- Accepts wider responsibility for the personal development of students and staff
- Recruits entrepreneurial staff and appoints change agents
- Builds rewards systems beyond those relating to research, publication and teaching criteria
- Ensures that the concept of entrepreneurship is embedded in all faculties/disciplines and integrated in the curriculum
- Encourages a wide range of inter-disciplinary activity.

Though a complex concept, the underlying notion behind the framework is that the entrepreneurial HEI can be analysed in a structured and comprehensive way by focusing on six main dimensions:

Strategy – how and if the institutions embed entrepreneurship in the overall strategy

Institutional infrastructures – the structures that the institutions establish to support entrepreneurship education

Teaching and learning – the entrepreneurial learning opportunities offered by the institutions

Outreach – the involvement of the institutions in the wider community

Development – how the institutions ensure a sufficient quality in their entrepreneurship education through evaluation and the development of the human resources engaged in the entrepreneurship education

Resources – how the institutions ensure the scalability and sustainability of their entrepreneurship education through the dedication of resources

These dimensions constitute the input side (the framework conditions) with which the HEIs can work to become entrepreneurial HEIs⁵.

3.1.3 Making the framework operational

In order to use the framework model as a guiding instrument throughout the study the six dimensions have been unfolded in a number of sub-categories, cf. figure 3.2.

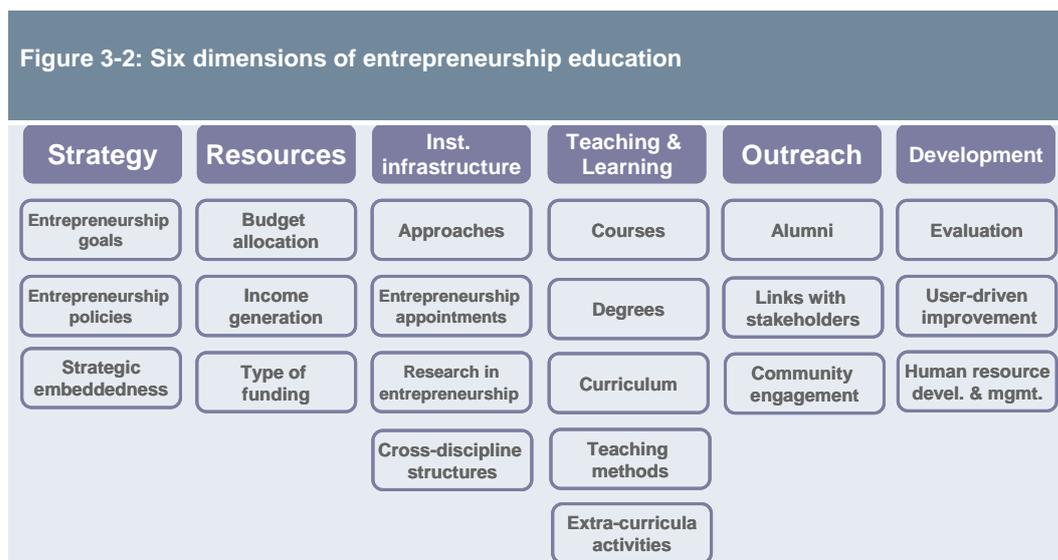


Figure 3.2 presents an overview of the six dimensions and the elements included in the individual dimensions. The idea is that the six dimensions constitute a general framework that can be applied when conducting benchmark studies of entrepreneurship education at HEIs ensuring comparable data across countries and institutions.

However, it should be noted that the list of elements in each dimension in figure 3.2 is by no means seen as exhaustive, but is assumed to represent the most fundamental elements needed to be addressed in this particular survey.

3.2 The quantitative survey

In order to achieve the objectives set out in this study, the consortium has conducted a quantitative survey among all – or close to all – HEI institutions in Europe. The quantitative part of the survey, the methodology and the choices taken in connection herewith, will be described below.

3.2.1 A survey in two parts

Initially, the consortium designed the quantitative survey as a two-step process: first, a general survey to include all HEIs in Europe, followed by a more specific, in-depth survey among those who answered that they offer entrepreneurship education.

⁵ In this survey we are primarily focusing on entrepreneurship education while other aspects of the entrepreneurial university (as for example defined in relation to the idea of the triple helix) are not considered.

However, when the consortium started working on the survey, it became evident that the two surveys could and should be carried out in one working process. A joint process would allow those who do not offer entrepreneurship education to answer only a few questions, and those involved more actively in the field to answer a more extensive questionnaire about their efforts.

In the following the two parts of the survey are referred to as:

The general survey, which covers questions answered by all institutions regardless of their involvement in entrepreneurship education; and

The specific survey, which is the part of the survey that has only been completed by HEIs who, in the general survey, indicated that they had courses where entrepreneurship accounted for at least 25% of the content.

The purpose of the general survey was to contribute to the mapping **of the scope of entrepreneurship education** in the European higher-education institutions. This is based on answers from a share of all the higher-education institutions in Europe – institutions involved in entrepreneurship education as well as institutions that are not. The results of the general survey are presented in chapter 4.

The purpose of the specific survey on the other hand was to map **the nature of the entrepreneurship education**. This survey was targeted towards institutions that stated that they had entrepreneurship education above the threshold set by the consortium. The reason for this choice of focus was that the nature of entrepreneurship education can only be investigated through institutions that in fact engage in entrepreneurship education. With this survey the consortium wanted to illustrate what those who have entrepreneurship education actually do, to provide good-practice examples and inspiration to other institutions, and be able to draw conclusions and make recommendations. The results of the specific survey provide the background data for chapters 6 to 10. The two survey parts are described in more detail below⁶.

3.2.2 Data collection

Since one of the objectives of the survey was to do a mapping of entrepreneurship education in higher-education institutions in Europe, the first step in the data collection was to build up a database of higher-education institutions and contact persons.

The consortium worked with a definition of an HEI as *an institution that offers education at bachelor level or higher* to be able to identify and select institutions and secure a relatively high level of comparability across the rather different education systems in Europe. At the same time the definition ensures that the survey included not only universities and business schools but all types of institutions with at least bachelor level.

⁶ Based on: De Vaus, David (2002): *Surveys in social research*. Routledge, 5th edition; Bryman, Alan (2001): *Social Research Methods*, Oxford; Agresti, Alan & Barbara Finlay (1997): *Statistical Methods for the Social Sciences*, Prentice Hall, 3rd edition.

Lists or databases of higher-education institutions that could be used for this purpose did not exist prior to this work, neither on a European level, nor for most European countries. Consequently, the first task for the consortium was to generate lists of institutions, including name and contact details of the president/rector for the institution for all the 31 countries in the survey.

The lists were generated using a number of central sources:

First, the consortium went over the ERASMUS lists of institutions eligible for EU-ERASMUS 1996-2007.

Then, to ensure that the lists were updated and incorporated all HEIs, the lists underwent a thorough validation process. In this process the lists (one for each country) were sent to the members of the EU Expert Group on Entrepreneurship Education appointed by the DG Enterprise and Industry⁷.

The Expert Group members helped validate the lists in different ways: Some of them submitted completed list with contact details etc. or up-to-date links to where this information could be found. For other countries the consortium was obliged to conduct a more comprehensive internet search to complete the lists. In this effort the consortium members have used their network contacts: national agencies, ministries and other relevant resources.

In completing the task, the consortium identified **2,899 higher-education institutions in total** to be included in the database covering 31 countries. All of these institutions were invited to participate in the general survey. The distribution of HEIs on country can be found in table 1 in appendix A.

The consortium cannot guarantee that every single higher-education institution has been identified. However, to the best of our knowledge this list is a fairly comprehensive list of HEIs in the 31 European countries (i.e. the entire population of HEIs). The consortium has tried to remedy any missing institutions by also informing about the survey through channels such as the European University Association (EUA), the European Foundation for Management Development (EFMD) and other international networks.

3.2.3 *The questionnaire*

The questionnaire was developed on the basis of the framework model described above. It has two sections; one for the general survey, and one for the specific survey.

⁷ Parallel to this survey the EU Expert Group on Entrepreneurship Education has worked on the same theme but seen from a national government and expert perspective. The report from this work has been published in the spring of 2008 and can be downloaded from

http://ec.europa.eu/enterprise/entrepreneurship/support_measures/training_education/entr_highed.pdf

The EU Expert Group has acted as a reference group for the survey, and individual members of the group have been very helpful in different ways during the data collection phase.

In the general part the questions were designed to establish the type of institution, the number of students and other output-related areas that could be answered by all institutions.

The general part of the questionnaire ended with the screening questions where the institutions were also asked to answer whether they had entrepreneurship education, and, if they did, whether they were under or over the threshold mentioned earlier.

The specific survey was designed on the basis of the framework model described above. For each dimension and each sub-dimension in the framework model a number of questions were formulated to capture these dimensions.

To ensure the relevance and the validity of the questionnaire and the questions asked, the questionnaire and the framework were discussed in a workshop with the participation of Ms. Karen Wilson and Professor Paul Hannon, who have acted as internal experts to the consortium, as well as Mr. Simone Baldassari from the DG Enterprise and Industry. In the process the consortium also drew on the knowledge and expertise from representatives of the Kauffmann Foundation, but they were not able to participate in the workshop. This process ensured that the questionnaire was in line with some of the work carried out by Prof. Paul Hannon and Karen Wilson, who are renowned experts in the field.

The results of the workshop were used to adjust the questionnaire which was then adjusted accordingly and finally pilot-tested. The pilot test was designed to ensure the quality of the answers by testing reliability and validity (for instance, if the questions were understood the way they were intended and the same way by the respondents, the length of the questionnaire etc.). The pilot test included six persons; four potential respondents who were interviewed at length after filling out the questionnaire and two other who gave more general comments. The pilot testing was designed to cover different European regions, different types of organisations etc.

The pilot testing resulted in yet another fine tuning of the questionnaire and a reduction in length. Subsequently, the questionnaire, the introduction text and the cover letter were translated into German and French, and checked again by educational specialists in Germany and France to ensure the quality of the translation.

3.2.4 Conducting the survey

The survey has been undertaken as an internet-based survey using a software system developed and run by NIRAS Consultants. The potential respondents, i.e. the contact persons identified in the above process, all being the top managers of the institution (the rector, the president or the like) have all received an e-mail with an invitation to participate in the survey, a short introduction to the background of the survey and links to the survey homepage, with more information.

The survey was conducted following the schedule below:

Table 3-1: Timing of the survey

| Countries | Launch date | Number of invitations sent |
|---|---------------------------|----------------------------|
| All but the Netherlands, Italy and the UK | 19 March- 2 April 2008 | 2,484 |
| The Netherlands | 3 April 2008 | 83 |
| Italy | 17 April 2008 | 180 |
| The UK | 13 June 2008 | 152 |
| SUM | | 2,899 |

The delays in the launch dates for the Netherlands and Italy were due to problems completing the lists of institutions, and for the United Kingdom the reason was that cooperation with the National Council for Graduate Entrepreneurship (NCGE) made it necessary to make some adjustments in the timing.

From the outset, the consortium was aware that getting responses to the questionnaire would be one of the biggest challenges. Therefore, a number of follow-up procedures were undertaken:

Table 3-2: The follow-up procedures

| Activity | Schedule |
|---|-----------------------------------|
| 1 st launch | Deadline 14 April 2008 |
| 1 st reminder | 15 April – deadline 21 April 2008 |
| 2 nd reminder | 22 April – deadline 28 April 2008 |
| 3 rd reminder | 28 April 2008 |
| Letter to members of Expert Group asking them to point to the largest institutions/ HEIs with many students | 22 April 2008 |
| Reminder to the members of the Expert Group | 5 May 2008 |
| Telephone reminders to selected HEIs | 6-20 May 2008 |
| 1 st reminder | 27 June 2008 |
| Telephone follow-up | 29-30 June 2008 |
| The survey is closed | 4 July 2008 |

Up until 6 May 2008 the follow-ups were in the form of e-mails to the identified contact person in the institution, i.e. the president/rector, who then were in charge of finding the right person to answer the questions. After this date, the follow-up procedure changed from e-mail to telephone. The Netherlands, the United Kingdom and Italy were exposed to the same follow-up procedure, only delayed a few weeks because of the postponed launch.

Since it was not within the scope of the study to contact all institutions on the phone, the consortium decided to apply a targeted telephone follow-up in order to get as many respondents through to the specific survey as possible.

In order to be able to do so, the consortium asked the EU Expert Group to help by giving their input to which HEIs it would be relevant to contact. For those countries, where the EU Expert Group gave their input (13 countries out of 31), the consortium used the prioritised list of HEIs to target the follow-up procedure, while the consortium for the rest of the countries relied on a representative approach.

A total of 816 institutions were contacted via telephone, and the follow-up procedure resulted in a higher number of responses. The number of institutions contacted in each country was decided on the basis of the total number of institutions in the country and the response rate at the time of generating the follow-up lists. It was attempted to ensure that in all countries a minimum of 50 percent of all institutions had either answered, or started to answer the questionnaire unprompted, or been contacted in the follow-up procedure.

The consortium subsequently analysed whether this follow-up procedure gave a distorted response. The risk of focusing the follow-up procedures on institutions more likely to have entrepreneurship education was to distort the results of the general survey, i.e. the scope of entrepreneurship education across Europe. However, analyses of the data before and after this follow-up procedure showed that this procedure did not bias the responses, i.e. there was no significant difference in the distribution of the answers before and after the extended follow-up procedure.

Further analysis of the data shows that following the follow-up procedure there has been an increase in the rate of respondents in the specific survey versus respondents in the general survey in those countries where the qualified follow-up-procedure has been used. However, the increase corresponds to four percentage points (from 33 percent to 37 percent), whereas the increase for the countries where the random follow-up-procedure has been applied was two percentage points (from 45 percent to 47 percent), cf. table 2 in appendix A.

This difference is not seen as having any significant impact on the representativity of the general survey.

3.2.5 Reliability and validity of the survey

In this section the actual sample is evaluated in relation to reliability and validity. Thus, the response rate and potential selection biases are addressed.

Of the 2,899 HEIs invited, 664 institutions have responded to the invitation. Thus, the response rate is 24.5 percent, which the consortium consider as satisfying, taking into consideration that 1) the invitation was sent to a very broad spectrum of institutions; 2) there are many evaluation and monitoring activities going on around Europe, meaning the institutions get a lot of questionnaires; 3) that the point of entry was the president/rector; and 4) that the questionnaire was rather long, and not easily filled in, if it was to be completed fully.

During the descriptive analysis process it appeared that a considerable amount of institutions have only answered a few questions in the questionnaire. To ensure the reliability of the responses, it has been necessary to exclude several respondents. The

criterion used has been that if a single HEI had less than three answers in the general questionnaire (consisting of eight questions in total), the HEI has been excluded.⁸ In the further analyses the net sample is used.

The statistics of the survey are presented in more detail in the below table.

| Table 3-3: Facts about the population and the sample | |
|---|-------|
| Gross population (invitations send out) | 2,899 |
| Returned e-mails – incorrect e-mail addresses that could not be corrected | 190 |
| Net population | 2,709 |
| Responses = gross sample | 664 |
| Gross response rate | 24.5% |
| Responses fully completed | 397 |
| Responses partly completed (i.e. more than three questions in the questionnaire are answered) * | 51 |
| Responses insufficiently completed (i.e. less than three questions in the questionnaire were answered) | 206 |
| Net sample** | 448 |
| Net response rate | 16.5% |
| Number of institutions who completed the specific questionnaire, i.e. having entrepreneurship education above the threshold | 198 |

Note: For detailed information about country distribution of the numbers above, please refer to table 1 in the appendix

* For a few questions it has been necessary to supplement or qualify answers with further information available via the institution homepages, which has made it possible to include more of the answers. This is the case for question two (number of academic staff) and question three (number of students: undergraduates / graduates / postgraduates).

** Please note that in this sample not all respondents have answered all the questions. Thus, the number of respondents, n, varies in each question.

3.2.5.1 Selection bias

Another important part of assessing the quality of the data is by analysing the representativity of the sample. First of all, it is important to stress that all institutions have had an equal opportunity to answer the questionnaire, since all have had an invitation and several reminders. However, it must be kept in mind that the data is self-reported. This means that there might be variations in interpretations of the questions (particularly because the survey was conducted in 31 different countries), and as

⁸ It has been tested whether there is a bias in the answers excluded compared with those not excluded. Analyses show no significant difference according to geographical region and to language barriers. However, a selection bias is expected according to experience with entrepreneurship education, which is examined below.

a result there can be different types of answers to the individual questions in the questionnaire.

To examine potential selection biases, the sample (i.e. the answers) has been compared with the population (i.e. all the invited institutions) in relation to geography, language, type of institution and entrepreneurship activities.

First, a potential **geographical bias** has been analysed.

| Country | Population | | Net sample | |
|-----------------|------------|--------------------------------|---------------------|----------------------------|
| | Population | Regions % of entire population | Number of responses | Regions % of all responses |
| Northern Europe | 228 | 8.4% | 71 | 15.5% |
| Central Europe | 862 | 31.8% | 164 | 35.7% |
| Southern Europe | 831 | 30.7% | 123 | 26.8% |
| Eastern Europe | 788 | 29.1% | 101 | 22.0% |
| Total sample | 2,709 | 100.0% | 459 | 100.0% |

Please refer to table 3 in appendix A for further details. A measurement of the relationship between regions and response rate has had the following result: Cramer's V: 0,132 (p=0,000)

This table shows that there are geographical differences in the response rate, and as table 1, 1A and 3 in appendix A indicates these differences are even higher at country level⁹. The measurement indicating a relationship between response rate and geographical region proves a significant, but fairly weak, relationship. This indicates that there is a selection bias with especially Northern and Central Europe slightly overrepresented and Southern and Eastern Europe slightly underrepresented.

However, as table 4 in appendix A shows, this slight bias has a negligible effect on the distribution of answers and hence is not seen as problematic.

In numbers this means, that 86.5 percent of the institutions if weighted (instead of 86.9 percent of the institutions non-weighted) have in curricular or extracurricular activities been focusing on the development of entrepreneurial behaviour, skills, knowledge, mindsets and experiences.

In conjunction with the geographical selection bias, a **bias according to language** has been examined. Nine out of 31 countries (or 32.5 percent of the institutions) have

⁹ To ensure the validity of the test and its interpretations, it is chosen only to perform analyses on a regional level instead of a country level. The reason is that several countries only have few cases, which makes the analyses very vulnerable to unsystematic changes (for instance one or two institutions not answering or being excluded from the analyses). Therefore, no cross-country comparisons are made.

been offered the questionnaire in their native language¹⁰ (cf. table 5 in appendix A). An analysis of this shows, that there appears to be a weak, but significant relationship between response rate and whether the questionnaire has been offered in the native language. Among native speakers the response rate is 22.4 percent, while among non-native speakers it is 16.6 percent

Thirdly, a *selection bias according to type of institutions* has been examined. Analysis of selection bias requires information about the entire population as well as the sample. However, in this study we do not have information about which types the institutions are for the total population. Hence, two countries have been selected as cases to evaluate this bias. These two countries – Denmark and Bulgaria – are selected as they are very different countries from different regions. The analysis shows that there is no significant selection bias according to type of institution (cf. table 6 in appendix A).

Finally, it is relevant to evaluate how representative the sample is according to *the institutions' experience and work with entrepreneurship*. It can be argued that institutions working with entrepreneurship already will be more likely to answer a questionnaire about entrepreneurship education than institutions that do not work with entrepreneurship. To assess this, it is relevant to note that 86 percent of the 664 institutions answer that they have entrepreneurship education and that 198 out of the 664 institutions in the gross sample answer that they have entrepreneurship education over the survey threshold of 25 percent which equals a rate of 29.8 percent

Of the institutions being excluded from the gross sample only a few started on the detailed questionnaire. This means, that if we use the net sample as baseline, 43.1 percent of HEIs in the survey are working with entrepreneurship. This indicates that institutions not involved in entrepreneurship education to a larger extent have **not** answered the questionnaire sufficiently and have thus been excluded from the analysis. Hence, there appears to be a selection bias related to prior experience with entrepreneurship education in the survey.

The consortium has tried to counteract this selection bias in the formulation of the introduction letter and in the follow-up e-mails; however, it is not possible to eradicate it totally. However, it should be noted that the issue of representativity is primarily relevant when interpreting the results of the general survey, since this activity encompasses the whole sample of HEIs in Europe, and the objective of it is to map the scope of entrepreneurship education across Europe.

It should be kept in mind that by definition the specific survey is not representative since the respondents have been selected according to a criterion of entrepreneurship education, i.e. the threshold. Consequently, the bias is only relevant for the analysis

¹⁰ The questionnaire has been presented in three languages, which is: German (107 respondents or 16.1 percent of the sample have been fulfilled in German), English (474 respondents or 71,4 percent of the sample have been fulfilled in English) and French (86 respondents or 13 percent of the sample have been fulfilled in French). The following countries are seen as native speakers in German, English or French: Austria, Belgium, France, Germany, Ireland, Liechtenstein, Luxembourg, Malta, United Kingdom.

of some of the questions in the general questionnaire, and in these analyses, compensation for the bias has been applied, as explained in chapter 5.

Consequently, the identified selection bias makes us believe that the share of institutions in the general survey indicating that they have entrepreneurship education can thus be seen as the maximum proportion of institutions in Europe involved in entrepreneurship education. Furthermore, the differences between the frontrunner institutions and the institutions lagging behind will probably be greater than what the benchmark analysis will show.

There are two major reasons for these assumptions:

1. Eastern European countries are underrepresented in the study. Based on the a priori assumption that entrepreneurship education is not as widely spread across institutions in Eastern Europe as in the remain countries, the Eastern European countries will therefore more likely be home to some of the lesser performing institutions in terms of entrepreneurship education, relatively speaking. And a smaller share of the institutions in these countries will probably be engaged in entrepreneurship education.
2. Institutions that already are engaged in entrepreneurship education have been more prone to answer the questionnaire.

Due to the lack of comparable studies on entrepreneurship education we are not able to identify the size and scope of the latter bias; we just have to acknowledge its existence.

3.3 Qualitative data collection

To get a grasp of the nature of entrepreneurship education, barriers and incentives to introduce entrepreneurship education in higher education as well as good practice within this field, the consortium has conducted a total of 46 in-depth case studies based on personal individual or group interviews with relevant people in European higher-education institutions of particular interest.

In addition to interviews in HEIs, the consortium has also interviewed a pan-European association (EUA) and two students' organisations (AIESEC and JADE), and three interviews have been conducted with government representatives in countries that have put particular emphasis on promoting entrepreneurship education through national policies.

3.3.1 Selection criteria for the in-depth interviews

Overall, the following principles were applied in the selection of HEIs for the in-depth interviews:

First, the selected HEI should of course have some good practice examples of entrepreneurship education to talk about. In researching this, the consortium used the framework model to make sure that the interviews would cover and illustrate good practice in all of the six dimensions.

Secondly, the consortium attempted to get a distribution on country, type of institution, technical / non-technical and business school / non-business school.

And finally, the availability of people to participate in the interview was also a factor, especially since the interviews had to be carried out in the period May to July 2008, a traditionally busy period for higher-education institutions due to examinations etc.

The HEIs for the in-depth interviews were identified through a number of different channels:

The answers to the specific questionnaire were among the main sources.

Furthermore, the consortium's internal experts Paul Hannon and Karen Wilson were consulted and asked to pinpoint interesting institutions on the basis of their vast experience in the field.

The EU Expert Group members were also asked to put forward relevant cases, and the consortium furthermore included some of the cases mentioned in the report published by the Expert Group.

"Snowballing" has been used where during their interviews institutions were asked to single out additional relevant cases in their country in instances where no other information could be found. And finally, existing analyses, data collections and literature on entrepreneurship education were consulted for information on where to locate relevant institutions.

A total of 78 potential case institutions were approached of which 46 accepted to participate in the survey.

The table below shows the distribution of case interviews on types of higher-education institutions.

| Type of HEI | Number of cases |
|---|-----------------|
| Art and design | 2 |
| Economy and business | 6 |
| Entrepreneurship academies | 4 |
| Information technology | 1 |
| Multi-disciplinary | 19 |
| Technology/science | 8 |
| Policy, student organisations and other pan-European associations | 6 |
| Total | 46 |

The framework model was, as mentioned, used as an underlying grid for the study and it was ensured that five of the six dimensions in the framework were covered in the interviews. All HEIs were asked to elaborate on the topics of the *Strategy* dimension as it was the underlying assumption of the consortium that embedding entrepreneurship at the strategic level was of particular importance and a prerequisite for successful entrepreneurship education.

Similarly, all HEIs were interviewed on teaching methods as one of the objectives of the study was to investigate the pedagogy applied in entrepreneurship education across European institutions.

| Primary theme | Number of HEIs |
|--|----------------|
| Development | 6 |
| Institutional infrastructure | 13 |
| Outreach | 2 |
| Resources | 2 |
| Teaching and learning | 11 |
| Across themes | 6 |
| Policy, student organisations and teachers' associations | 6 |
| Total | 46 |

3.3.2 Recruitment

Case institutions were primarily contacted through e-mail and asked for a face-to-face interview¹¹. If they agreed, they were asked on the basis of their expertise to include relevant colleagues in the interview to ensure a broad picture from for instance both the academic and administrative point of view.

Upon the agreement to participate in an interview, the respondent received a letter of confirmation.

3.3.3 Development of the interview guides

The interview guides were developed according to the framework model.

A general interview guide covered aspects that all the institutions were asked: background questions, strategy and obstacles/recommendations, and five specific interview guides each cover one of the remaining five dimensions of the framework model.

¹¹ All but three interviews were carried out face-to-face at the institution.

The interview guides were tested with members of the consortium's internal experts, Paul Hannon and Karen Wilson. The relevant interview guides were sent to the respondent in advance.

3.3.4 National distribution of in-depth case interviews

The in-depth case studies cover 24 countries; policymakers in three countries, two pan-European student organisations and one pan-European association for universities. Effort was made to reach representatives from all 31 countries in the survey but this was not completely possible. In some cases the reason was that the most promising candidates felt that they really had too little to offer in terms of good practice and in other cases language barriers seemed to be the problem as several e-mails remained unanswered.

One major obstacle has no doubt been the period during which the in-depth interviews were conducted. May, June and July are notoriously busy months in the higher education schedule. If the professors are not busy with exams, they are attending conferences abroad. The national distribution of in-depth interviews is shown in the below table.

Table 3-7: National distribution of in-depth interviews

| Country | Case studies |
|--|--------------|
| Austria | 2 |
| Belgium | 1 |
| Cyprus | 1 |
| Denmark | 3 |
| Estonia | 1 |
| Finland | 2 |
| France | 3 |
| Germany | 2 |
| Hungary | 1 |
| Ireland | 1 |
| Italy | 1 |
| Latvia | 1 |
| Lithuania | 1 |
| Malta | 1 |
| Norway | 1 |
| Poland | 2 |
| Portugal | 2 |
| Romania | 1 |
| Slovakia | 1 |
| Slovenia | 1 |
| Spain | 1 |
| Sweden | 2 |
| The Netherlands | 3 |
| The United Kingdom, including Northern Ireland | 4 |
| Policy level (the UK, Norway, the Netherlands) | 3 |
| Student organisations | 1 |
| Pan-European associations | 2 |
| Total | 46 |

3.3.5 Data processing

The interviews were carried out by a team of seven consultants from all three companies in the consortium. They reported the cases following a template to ensure a high level of consistency. All the cases have subsequently been sent to the interview person/persons for quality assurance and to avoid misunderstandings and factual errors.

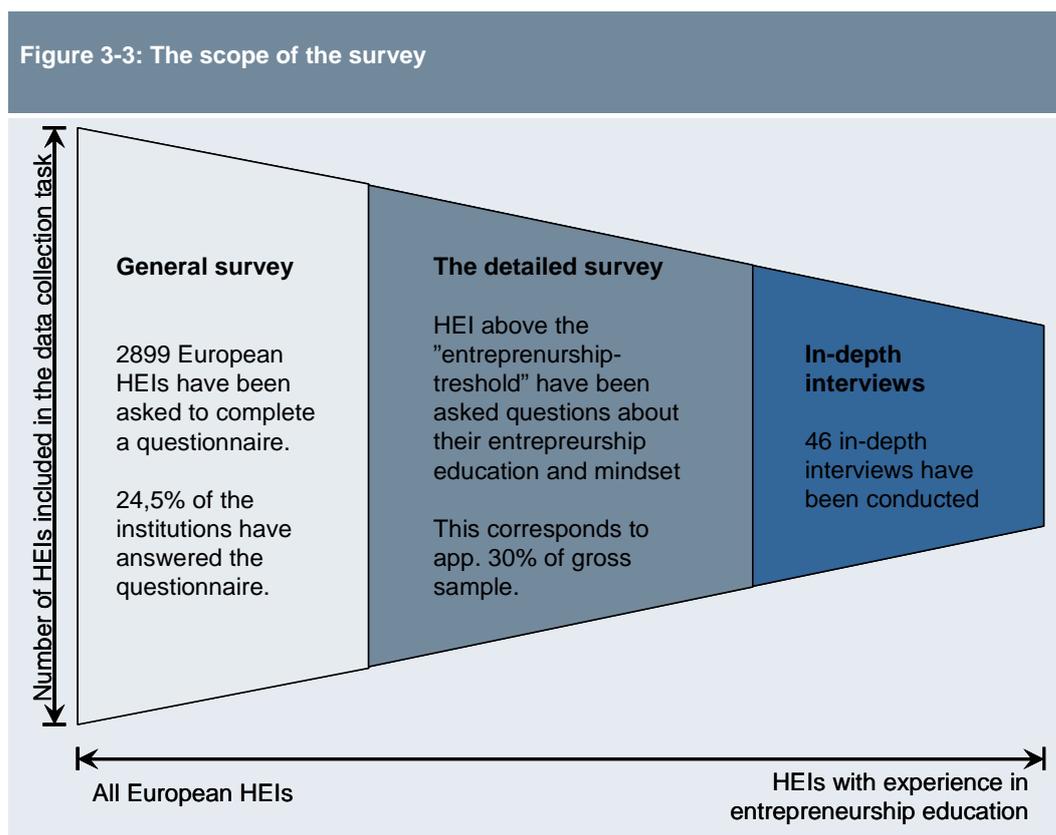
Each case was attributed to one primary and one or more secondary dimensions from the framework model, as described above, and it has been used in the report to illustrate and expand upon the conclusions in the chapter dealing with this particular theme of the framework model.

In order to make the cases more directly usable as inspiration for institutions interested in developing their entrepreneurship education, the cases have all been indexed using a list of 50 keywords developed by the consortium.

The plan is to make a database of the cases where the keywords can be used to search and find relevant experience. If possible the whole report will be online and searchable with hyperlinks.

The list of keywords can be found in the reading instructions in Appendix B – Good Practice in Entrepreneurship Education in Europe.

Summing up, the survey can be illustrated as in the figure below:



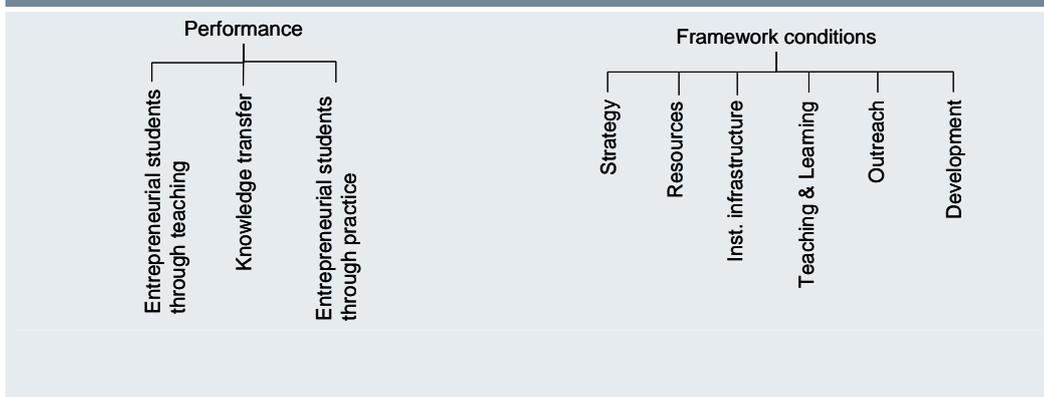
3.4 The benchmark of performance and framework conditions

In order to identify good-practice institutions, the survey has included a benchmark analysis. The fundamental principle behind benchmarking is that it investigates the link between performance and framework conditions (the factors that determine performance). Here, the performance index as well as the framework index are based on the model presented earlier that identified the most important elements fostering and supporting entrepreneurship education (input) and the output of the institutions' entrepreneurial efforts (entrepreneurial students and knowledge transfer).

Figure 3.4 illustrates that the composite indices for performance and framework conditions are made up of a number of composite indicators (which are made up of a number of individual questions). These indicators are weighed into a single index to

determine which countries have the best overall performance and which countries have the best framework conditions.

Figure 3-4: Performance and framework condition indices



The benchmark method does not attempt to identify causal relationships, but it provides valuable insight into the workings of good-practice initiatives and institutions.

3.4.1 Weighing the sub-indices

The ranking of the institutions in the benchmark analysis will depend on how the underlying indicators are weighed. In this analysis all the indicators are given equal weight. As stated earlier the survey is made under the assumption that there is not one golden path to becoming an entrepreneurial institution but that this goal can be reached in many different ways.

This assumption has strengthened during the project. Especially when visiting the good-practice institutions it became apparent that institutions are pursuing the entrepreneurial mission in many different ways. Furthermore, it is difficult to estimate the importance of the single variables and indicator in an objective manner.

Such estimation must be based on substantial and empirical knowledge about the workings of entrepreneurship education. However, due to the relative novelty of the field of entrepreneurship education and the lack of evaluation of initiatives in the field, a common understanding of what an entrepreneurial institution entails is still in its embryonic state.

3.5 Limitations

As described above, a few limitations in the data must be highlighted.

Concerning the quantitative data the response rate is one of the issues that should be mentioned. 24.5 percent of all HEIs in Europe have responded to the survey, and 16.5 pct of all institutions have provided sufficient answers to be included. There is no doubt that the analyses would be stronger if the response rate was higher, but the

statistical analyses of the data show that regardless the response rate the survey has accomplished the objective of mapping entrepreneurship education in Europe:

- Practically all HEIs in the 31 European countries have been invited to participate in the survey, and there are answers from all countries.
- All of the countries have been contacted at least twice; most of them three times on e-mail, and in the case of Italy and Turkey, where the response rate was very low, the consortium tried sending a cover letter translated into Italian and Turkish.
- Analyses show that there is an under representation of institutions from Eastern Europe.
- The responses are representative according to type of institution, but have a slight overrepresentation of institutions already engaged in entrepreneurship education in the general survey.

As a result the share of institutions in the general survey indicating that they have entrepreneurship education will most likely be overrated. However, as mentioned above the size of this overrepresentation cannot be assessed which again influences the weight with which the consortium can conclude on the overall scope of entrepreneurship education in Europe. Furthermore, the differences between the frontrunner institutions and the institutions lagging behind will probably be greater than what the benchmark analysis shows.

Regarding the in depth-interviews a limitation is that the selection has to some extent been made on the basis of prior knowledge of good examples, through Karen Wilson, Paul Hannon etc. but the consortium has furthermore supplemented this by including institutions that stood out in the answers to the questionnaire in the specific survey.

The consortium has also attempted to choose examples from as many European countries as possible, with a variation in the type of institution as well, and a variation in how far the development towards the entrepreneurial HEI had come. Doubtless, there could be other examples included, and the consortium does not consider these examples as representing an exhaustive list of good practice in any way.



4. THE SCOPE OF ENTREPRENEURSHIP EDUCATION IN EUROPE

One of the objectives of this study was to get factual information about *the scope of entrepreneurship* across the higher-education institutions in Europe. Based on this mapping, the study should go further into detail with the entrepreneurship education activities detected to get an overview of *the nature of the entrepreneurship education* in quantitative terms (e.g. prevalence of entrepreneurship centres, extracurricular activities, number of courses, use of external stakeholders etc.).

The present chapter focuses on the scope of entrepreneurship education in a European perspective, while the remaining part of the report focuses on the nature of entrepreneurship education in European institutions.

This means that this chapter on the scope of entrepreneurship education is based on the entire sample collected from the web-survey. However, analysing the nature of the entrepreneurship education must be done among institutions that actually have entrepreneurship education. The following chapters in the report will therefore be based on a smaller sample consisting of the higher-education institutions that have entrepreneurship education, i.e. those institutions that in the screening question state that they have entrepreneurship courses where entrepreneurship counts for more than 25 percent of the curriculum.¹² This is what is referred to as *the specific survey*.

The answers in the following chapters are analysed on a European level, and in some cases on a regional level. Analysis on a country level was not the purpose of the report, and it has not been attempted. However, for information about the number of responses from each country, please see Tables 1, 1A and 3 in Appendix A.

4.1 Main conclusions

The study shows that a maximum of 48 percent higher-education institutions in Europe have entrepreneurship education.¹³ Based on this result, it is estimated that approx. 10 million of the 21 million students in higher education in Europe have the opportunity to engage in entrepreneurship during their studies, while the remaining

¹² Please see the chapter on methodology for more information about the screening process.

¹³ The term *maximum 48 percent of institutions* is used as we are not able to control for the possible selection bias due to lack of data. We assume that institutions with entrepreneurship education are more prone to answer the questionnaire, while institutions without entrepreneurship education are more likely to refrain from taking part in the survey. For more information, please turn to the methodology chapter.

11 million students do not have access to entrepreneurship education.¹⁴ In addition it seems that in many institutions entrepreneurship is still just a part of other courses, for example general economic or business courses, as more than a third of the institutions state that they have entrepreneurship courses. However, the subject of entrepreneurship accounts for less than 25 percent of the course curriculum.

At the more micro-level, the study finds that some types of institutions are more likely to offer entrepreneurship education than others. As expected the close connection between entrepreneurship and business studies has an effect as the vast majority of business schools offer entrepreneurship education. Also multidisciplinary institutions with a business school department are more likely to have entrepreneurship education than specialised institutions (except specialised technical institutions) and multidisciplinary institutions without a business school department.

When looking at the scope of entrepreneurship education across regions in Europe it becomes apparent that entrepreneurship education is more prevalent among institutions in the old EU15 countries compared with the relatively new members in the EU (EU>15). Approx. 20 percent of the institutions from EU>15 do not have entrepreneurship education – in EU15 the number is 10 percent.

Taking a closer look at the institutions in this study that offer entrepreneurship education the findings show that:

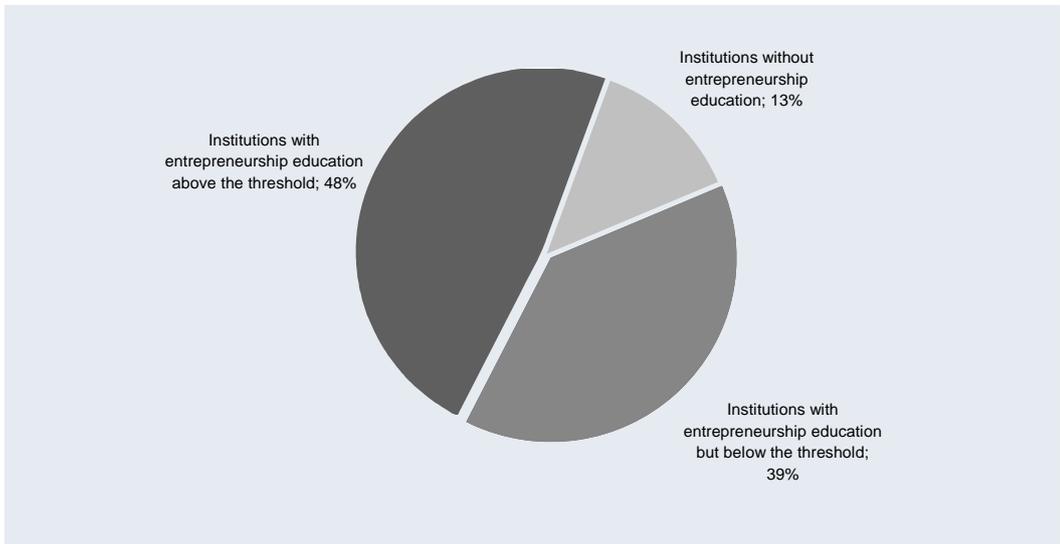
- They are most likely to be multidisciplinary institutions with a business school department.
- Their highest study level is PhD
- They offer one or more technical subjects.
- They tend to be larger in size in term of both students and academic staff.

4.2 The prevalence of entrepreneurship education

When screening the institutions in the web-survey the institutions were asked whether they had courses in entrepreneurship. 86 percent of the institutions answered confirmatory, cf. figure 4-1. Following this, the institutions were asked whether the subject of entrepreneurship accounted for more than 25 percent in these courses. Here, only half of the 86 percent could confirm this. An interpretation could be that more than a third of the institutions in the survey only offer entrepreneurship as a part of another course, e.g. general economic or business courses.

¹⁴ The total number of students in the 31 European countries is based on numbers from Eurostat and the statistical office in Iceland. The total number of students in higher education (21 million) is divided by the approx. number of higher education institutions (2,700) to get an average number of students at the institutions (approx. 7,800). 47 percent have entrepreneurship education, equally approx. 1,300 institutions with a total of approx. 10 million students (1,300 institutions x 7,800 students).

Figure 4-1: The prevalence of entrepreneurship education across higher-education institutions in Europe



Secondly, figure 4-1 shows that a little less than half of the institutions in the study actually offer entrepreneurship education where the subject is a significant part of the curriculum. It is noteworthy that only 13 percent of the institutions state that they do not offer any kind of entrepreneurship education.¹⁵

4.2.1 *Entrepreneurship education across different types of institutions*

There is a strong link between business studies and entrepreneurship – in its infancy entrepreneurship was often seen as an element in small business management. For example at the University of Malta, where they have been teaching entrepreneurship for a long time, the entrepreneurship courses they teach today have sprung out of the courses in small business management that the university started teaching some 20 years ago. Therefore, we would expect to see that more business schools and multidisciplinary institutions with a business school department would offer entrepreneurship education than institutions not having a business subject.

¹⁵ Again, not being able to control for the selection bias means that the 13 percent is a minimum estimate.

Figure 4-2: The prevalence of entrepreneurship education across types of higher-education institutions in Europe

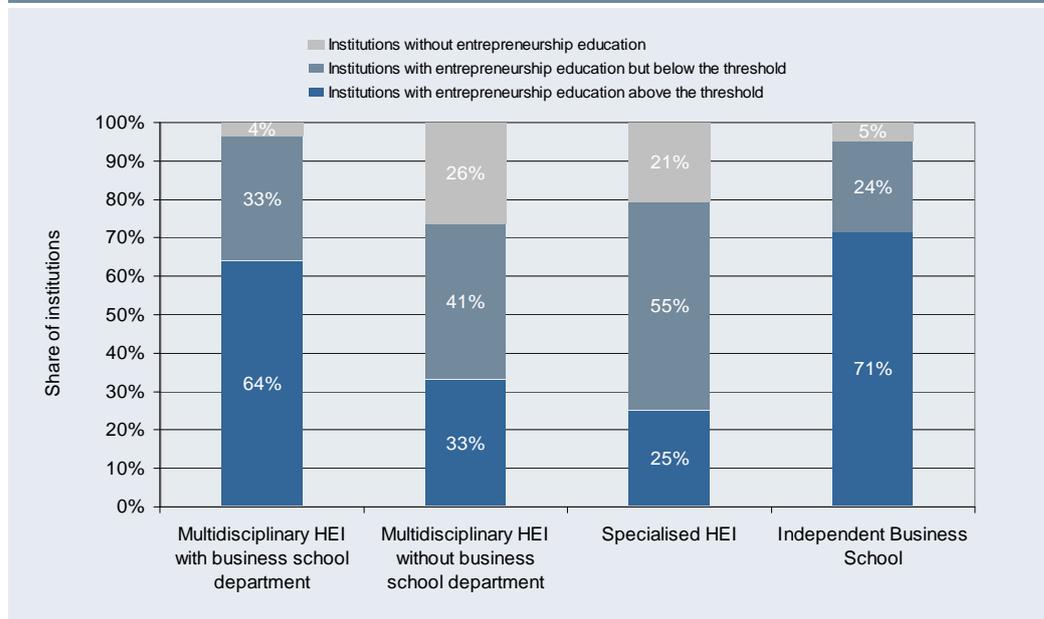


Figure 4-2 clearly shows that this expectation is validated by the data. The vast majority of business schools in the study offer entrepreneurship education. The same goes for the multidisciplinary institutions that have a business school department. Comparing this with the considerably lower share of multidisciplinary institutions without a business school department offering entrepreneurship education, the results indicate that at the first-mentioned type of multidisciplinary institutions the catalyst for engaging in entrepreneurship education is likely to be the business school department.

Focusing on the specialised higher-education institutions, figure 4-2 shows that a considerable amount of the specialised institutions state that they have entrepreneurship courses, but that the subject accounts for less than 25 percent of the curriculum. This indicates that specialised institutions (which cover institutions such as art & design schools, technical institutions, teacher's colleges etc.) are more likely to incorporate entrepreneurship in existing courses but at a fairly basic and introductory level due to its limited share of the curriculum. The same effect is clear also when isolating the technical specialised institutions, but at the same time the findings show that only very few of the technical specialised institutions state that they do not have entrepreneurship education at all.

4.2.2 *Entrepreneurship education across different regions*

The consortium's a priori assumption was that entrepreneurship education would be more in its infancy in the Eastern European countries and more widespread in Western and Northern European countries. Due to the small sample sizes it has not been possible to make a cross-country analysis to investigate this assumption, but instead

two regions in Europe are compared – the “old” EU15¹⁶ countries and the EU>15 (where the majority are Eastern European countries). Figure 4-3 presents the results of this analysis.

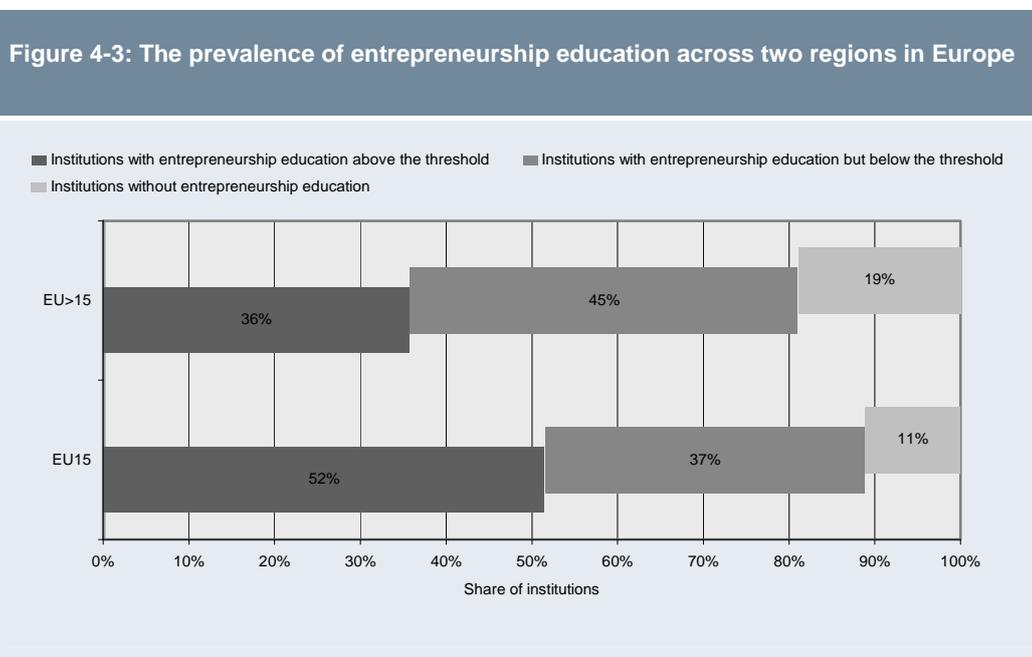


Figure 4-3 shows that while approximately half the institutions in EU15 have entrepreneurship education, the number is 36 percent in EU>15. Moreover, the issue of integrating an introduction to entrepreneurship into existing courses (i.e. the subject accounts for less than 25 percent of the curriculum) is also more prevalent in EU>15 than in the EU15. And similarly, there is a greater share of institutions in the EU>15 countries that do not offer any entrepreneurship education compared with the EU15 countries.

4.3 A comparison of the three groups of institutions

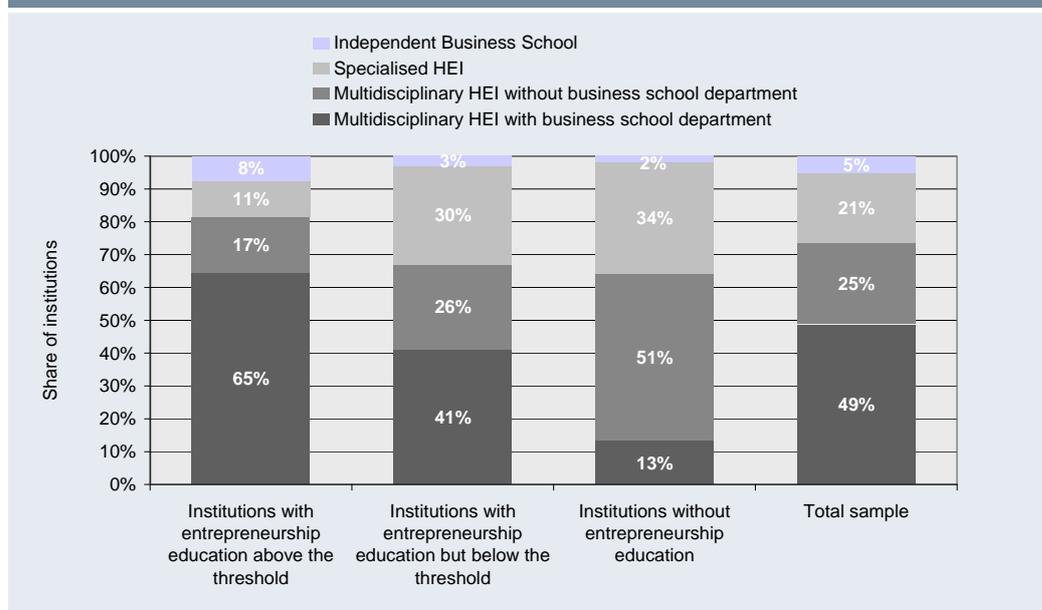
It is possible to give a short characteristic of the institutions offering entrepreneurship education compared with those that do not have such offer or where the share of the curriculum is below the threshold. These findings act as descriptive background information about the group of institutions on which the remaining report will concentrate.

Figure 4-4 shows that two thirds of institutions offering entrepreneurship education are multidisciplinary institutions with a business school department, while the remaining third is divided between specialised institutions, multidisciplinary institutions without a business school department and independent business schools. In comparison, the group that does not offer entrepreneurship education mostly consists of

¹⁶ Turkey, Iceland, Lichtenstein and Norway have been included in the EU15 group.

specialised HEIs and multidisciplinary institutions without a business school department.

Figure 4-4: Comparison of three groups of institutions according to type of institution

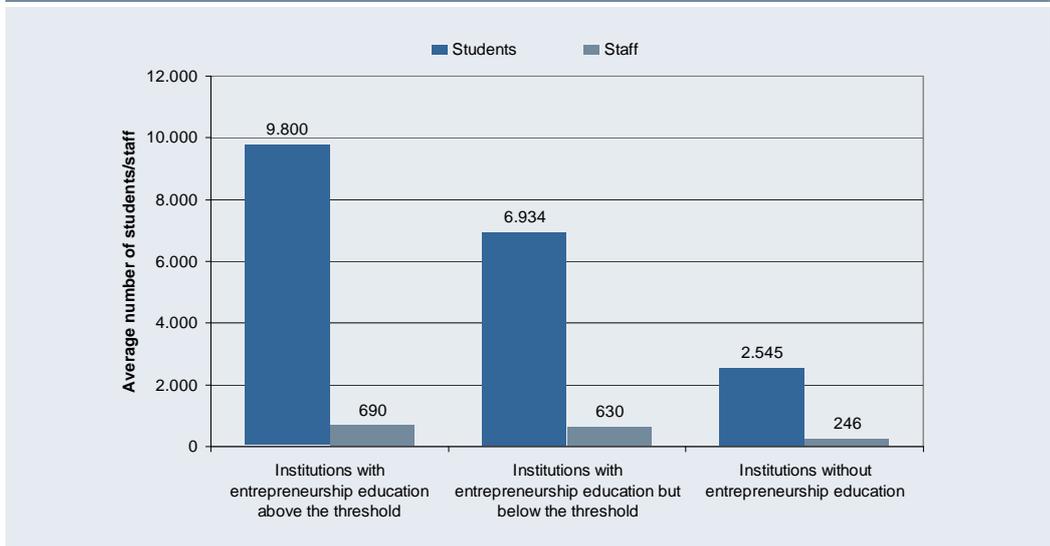


The findings also show that two thirds of the first group (institutions with entrepreneurship education) are multidisciplinary institutions offering one or more technical subjects. In contrast, 70 percent of the institutions without entrepreneurship education are non-technical institutions.

As the majority of the institutions having entrepreneurship education are multidisciplinary institutions (which to a large degree can be equated with universities), it is no surprise that the highest study level in the majority of this group is the PhD level (65 percent), while ten percent have bachelor as the highest level. For institutions with no entrepreneurship education the shares are 41 percent and 29 percent, respectively.

Figure 4-5 compares the three groups on their average size in terms of both students and staff.

Figure 4-5: Comparison of three groups of institutions according to size of institution



As with study level, the average size of the institutions with entrepreneurship education will to some degree also be influenced by the fact that most of the institutions in the group are universities, assuming that universities will be of a certain size compared with types of institutions. However, there is a considerable difference in the size of the institutions when comparing institutions with entrepreneurship education (above threshold) and institutions without any entrepreneurship education.



5. BENCHMARKING ENTREPRENEURSHIP EDUCATION – LEARNING FROM GOOD-PRACTICE INSTITUTIONS

The underlying assumption in this report is that institutions can learn from each other when it comes to entrepreneurship education. This survey brings about a number of learning opportunities for the individual institutions and for policymakers at national and EU levels, and in order to structure this, the data from the survey has been used to make a benchmark analysis of the institutions that participated in the specific survey. In this chapter the methodology and the background of this benchmark will be presented.

Traditionally, a benchmark analysis compares the included units on their performance – e.g. benchmarking the performance of countries with respect to usage of ICT in terms of how great a share of the population uses ICT. However, here we will take the benchmark one step further and not only measure the performance of the institutions¹⁷ (the output of entrepreneurship education, e.g. measured in number of entrepreneurial students) but also the underlying framework conditions (the factors that create performance, e.g. number of entrepreneurship courses, extracurricular activities, number of entrepreneurship chairs etc.).

The overall goal guiding the many activities within entrepreneurship education at EU, national, and institutional level is to increase the scope of entrepreneurship education and thereby assumingly the related entrepreneurial performance of the institutions (among other things more entrepreneurial students, increased knowledge transfer and in the long run increased prosperity in the surrounding communities).

By measuring performance as well as framework conditions we are able not only to identify the best-performing institutions but to map how these institutions work with entrepreneurship education (i.e. their framework conditions). Hence, the good-practice institutions can serve as inspiration for other institutions when they design policies and initiatives that will help them improve their entrepreneurial performance. If they compare themselves with the best-performing institutions it will be revealed

¹⁷ The institutions included in the benchmark analysis are the institutions that passed the screening process in the survey, i.e. the institutions that state that they have entrepreneurship education.

what framework conditions to strengthen if they want to advance as entrepreneurial institutions.¹⁸

5.1 Main conclusions

The benchmark analysis shows that there is a solid correlation between institutions with good framework conditions for entrepreneurship education and institutions with excellent performance measured in terms of numbers of students taking part in in-curricular and extracurricular entrepreneurship activities as well as knowledge-transfer activities. When correlating country accomplishments on performance with their accomplishments with regard to framework conditions (where country accomplishment is measured based on the performance of the top-3 institutions in the individual countries), approximately 65 percent of the variation in country performance can be explained by the framework conditions applied in this study.

With regard to the ranking of countries, the benchmark analysis reveals that France, Germany and the United Kingdom are home to some of the best performing institutions within entrepreneurship education measured in terms of numbers of students taking part in in-curricular and extracurricular entrepreneurship activities as well as knowledge-transfer activities followed by Hungary and Finland. In contrast, the benchmark also shows that Greece, Poland and Turkey are the lowest-ranked countries measured on the above performance indicators, meaning that their national top-3 institutions have the lowest average rank compared with the remaining institutions in the study.

As the correlation between performance and framework condition indicates, countries with frontrunner institutions measured on performance are also home to front-runner institutions measured on framework conditions. Again, we find the United Kingdom and France in the top, while Germany is ranked 10th measured on accomplishments on framework conditions (where accomplishment is measured based on the performance of the top-3 institutions in the individual countries). Hungary and Finland are also among the top 5, as they were in the performance ranking.

When it comes to the countries that on average are home to the lowest ranking institutions measured on their framework conditions, compared with the other institutions in the study, the benchmark study points to Poland, Iceland and Luxembourg.

To reveal good-practice institutions, the benchmark analysis identifies the top-10 institutions in the study and compares their accomplishments with regards to the dimensions included in the framework model to the accomplishments of the bottom-10 institutions in the study.

Here, the analysis shows that there is considerable difference between the top-10 institutions and the bottom-10 institutions. The institutions in the benchmark study are all engaged in entrepreneurship education, and this means that the efforts of institutions with regards to entrepreneurship education cover a wide spectrum rang-

¹⁸ The report is aware that that difference in the cultural and institutional framework can influence the ability to directly copy good-practice initiatives. Good-practice needs to be adapted to the special structures, culture and traditions of a specific higher education institution

ing from the institutions where the entrepreneurship education is limited to a few entrepreneurship courses to the institutions that have engaged in a multitude of activities – appoint vice-chancellors with the strategic responsibility of entrepreneurship, establish an entrepreneurship centre, offer extracurricular entrepreneurship activities, involve their alumni in the entrepreneurship education.

The benchmark reveals that the difference between the top-10 institutions and the bottom-10 institutions is particularly prevalent in the strategy dimension. Such a result signifies the importance of embedding entrepreneurship in the overall strategy and getting the top management to commit to and foster the entrepreneurial vision. Another important aspect that separates top from bottom is the resources allocated to entrepreneurship education. Top-performing institutions dedicate more resources to the entrepreneurship education and have a greater range of income-generating entrepreneurship activities.

5.2 Benchmark of performance

As mentioned above, a benchmark analysis requires the measurement of performance. Therefore, it must be clarified how to measure the performance of the higher-education institutions in this study.

How do you actually measure the entrepreneurial performance of a higher-education institution? Possible performance measures are:

- Number of students thinking about starting a business
- Number of actual graduate start-ups
- Number of students graduating with entrepreneurial experience
- The changes in the students' mindsets toward the entrepreneurial mindset
- Growth in the region
- Etc.

To align the measure of performance with the broad definition of entrepreneurship education that we apply in this study, we would ideally use performance measures focusing on the entrepreneurial mindset, for example by measuring the changes in students' mindset following their involvement in entrepreneurship.

Moreover, it is hypothesised that entrepreneurial institutions will have a positive effect on the surrounding society due to their role as knowledge hubs and facilitators as well as by producing graduates with entrepreneurial mindsets. This urges us to look at the economic performance of regions as long-term performance measures.

However, the causal relationship between entrepreneurial institutions and the growth of regions is not straightforward and data not easily obtainable. The measurement of

entrepreneurial mindsets calls for data collection among students, but this study collects its data from institutions (and far from all institutions track their alumni).

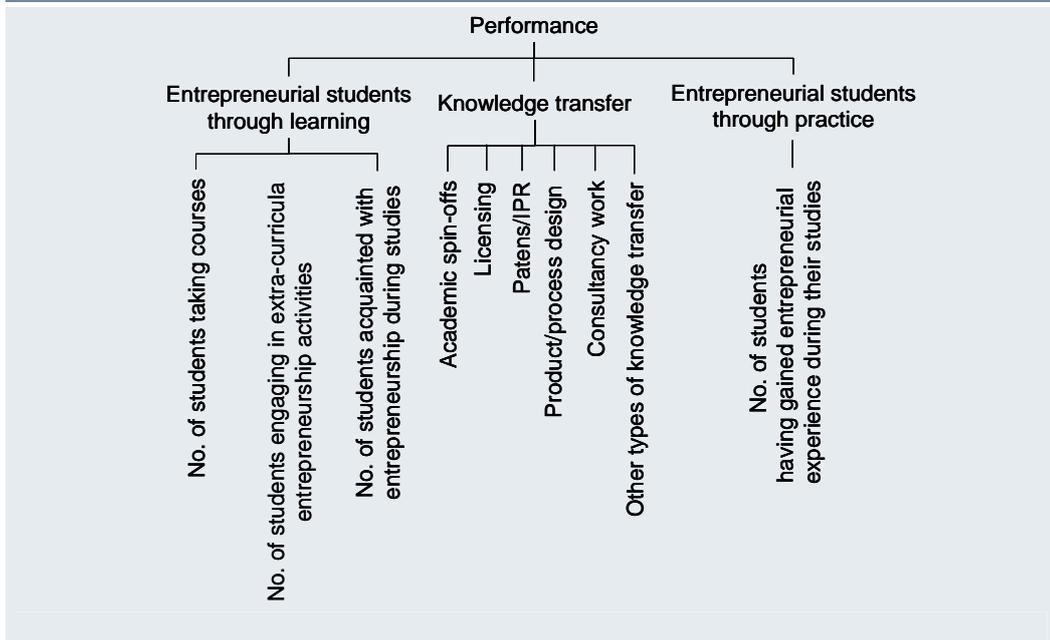
Given the scope and limitations of our analysis, it was decided to take a more direct approach in measuring the performance of the institutions focusing on the students taking part in the entrepreneurship education as well as the knowledge-transfer activities of the institutions. This decision is based on the assumption that there is a link between the chosen measures and the measures that we ideally should have used: that taking entrepreneurship courses and engaging in extracurricular entrepreneurship activities will have a positive correlation with expanding the entrepreneurial mindset, that knowledge transfer activities will increase the performance of companies in the community and that they in turn will help boost the economy.

5.2.1 *The make of the performance index*

The performance index is made up of three indicators – entrepreneurial students through learning, entrepreneurial students through practical experience, and knowledge transfer. The *entrepreneurial-students-through-learning* indicator consists of three variables, 1) share of students taking entrepreneurship courses, 2) share of students engaged in extracurricular entrepreneurship activities, and 3) share of students that get acquainted with entrepreneurship during their studies, cf. figure 5.1. The second indicator, *entrepreneurial students through practical experience*, measures the share of students having obtained actual entrepreneurial experience through activities etc. provided/facilitated by the higher-education institution.

The *knowledge-transfer* indicator measures the number of different knowledge-transfer activities in which the institutions engage, 1) academic spin-offs, 2) licensing agreements, 3) patents/IPR, 4) product/process design, 5) consultancy work and 6) other types of knowledge transfer, cf. figure 5.1.

Figure 5-1: The make of the performance index



As figure 5.1 indicates, focus in the survey has primarily been on the number of students graduating with entrepreneurial experience from either teaching or practical experience facilitated by the institution (business plan competitions, internships etc.). However, the aspect of higher-education institutions as knowledge facilitators and knowledge hubs are still an important part of being an entrepreneurial institution. How important it is compared with the “entrepreneurial-students” indicators cannot be determined, and the three indicators have therefore been given equal weight in the performance index.

5.2.2 Benchmark of countries based on the ranking of the top-3 institutions in each country

The unit of research in this study is the higher-education institutions that have entrepreneurship education. Some information about country policies has been collected through a few good-practice interviews with government representatives. Also, the interviews with good-practice institutions have revealed information about entrepreneurship education policies at national level. Still, the sporadic nature of the interview data collected cannot be used to make a fair ranking of the countries as to their performance in promoting and fostering entrepreneurship education.

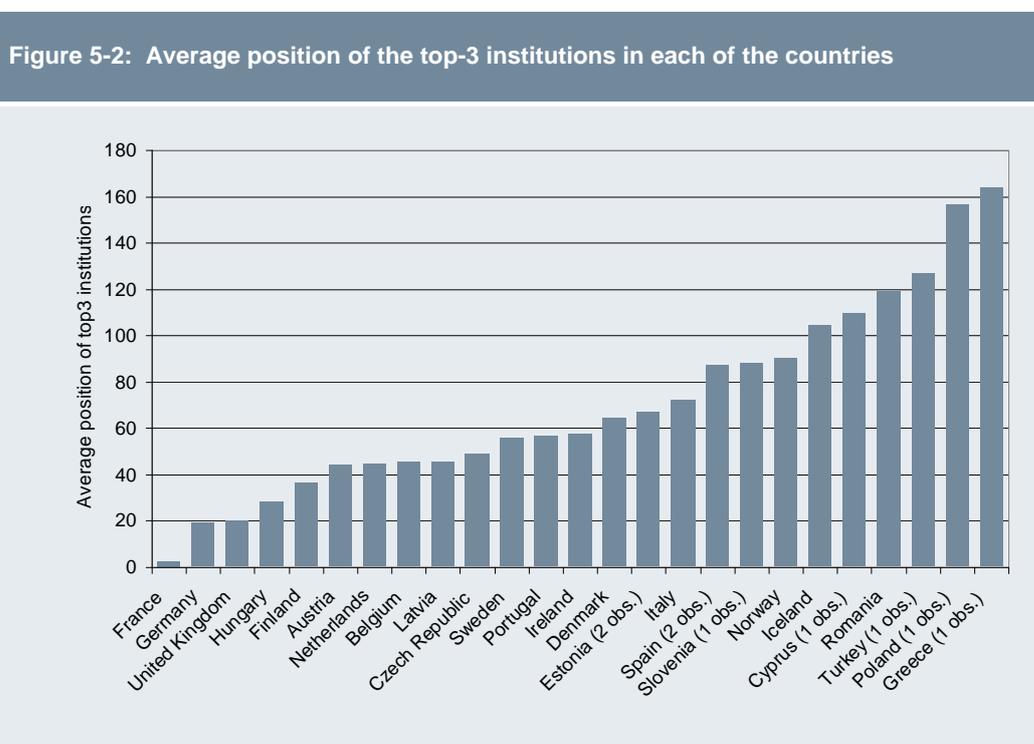
5.2.2.1 Benchmark based on overall ranking of top-3 institutions in each country

Our interest is the best-performing countries. Therefore, we focus on the frontrunner institutions because all countries have a great deal of within-country variation of the institutions as well as very diverse response rates (which would result in too random average country performance).

The cross-country comparison will therefore be based on the overall average ranking of the three best-performing institutions in each country. This way the country benchmark presented will answer the question, “Which countries have the best-performing institutions?” and is in effect not a direct benchmark of the countries’ performance when it comes to fostering entrepreneurship education in all institutions from national level.

The ranking of the countries has been made by taking the overall position of the top-3 institutions in each country in the ranking of institutions. For example, the three best performing institutions in Germany are ranked as no. 7, 24 and 27, respectively, in the overall European ranking of the institutions that have participated in the survey. This gives an average position of 19 for the three institutions which translates into a second place for Germany in the country ranking.

The average rankings of the countries are presented in figure 5.2.¹⁹



Of the institutions that have participated in the survey, France is on average home to the best-performing institutions with an average score of 3 in the overall ranking for the three best-performing national institutions. In fact, the best-performing institution in the survey is located in France. France is followed by Germany and the United Kingdom which make up the top 3. As mentioned above, the average ranking of the countries’ best-performing institutions is translated into a country rank, cf. table 5.1.

¹⁹ In some of the countries there are less than three respondents. Here, the average ranking is based on the position of either one or two institutions. This is highlighted in the figure behind the country name. Malta, Bulgaria, Liechtenstein, Luxembourg, Poland and Slovakia have been omitted from the analysis due to lack of data.

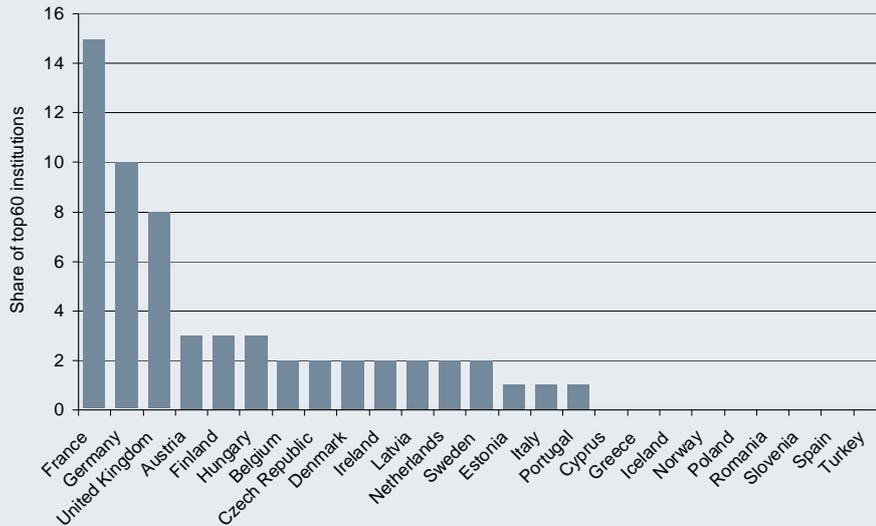
Table 5-1: Ranking of countries based on overall ranking of top-3 institutions (performance)

| Country | Rank | Country | Rank |
|----------------|------|----------|------|
| France | 1 | Denmark | 14 |
| Germany | 2 | Estonia | 15 |
| United Kingdom | 3 | Italy | 16 |
| Hungary | 4 | Spain | 17 |
| Finland | 5 | Slovenia | 18 |
| Austria | 6 | Norway | 19 |
| Netherlands | 7 | Iceland | 20 |
| Belgium | 8 | Cyprus | 21 |
| Latvia | 9 | Romania | 22 |
| Czech Republic | 10 | Turkey | 23 |
| Sweden | 11 | Poland | 24 |
| Portugal | 12 | Greece | 25 |
| Ireland | 13 | | |

Box 5-1 below represents a sensitivity analysis of the country ranking and thereby investigates whether the same ranking of countries will emerge if another method of ranking is applied.

Box 5-1: Sensitivity analysis of the country ranking

In the figure below the countries are ranked according to their share of the top-60 European institutions participating in the study (when equal amount or the countries have none of the institutions, the countries are arranged alphabetically).



Again, the top-3 countries are France, Germany and the United Kingdom that have a significantly greater share of the top-60 institutions compared with the remaining countries thereby supporting the ranking based on the average position of the top-3 institutions in each country.

Comparing the findings of the benchmark of countries with the country overview presented in the final report of the expert group appointed by the European Commission's Directorate-General for Enterprise and Industry²⁰ it is clear that the country-performance ranking in this study is driven by individual institutions. For some of the countries there is a lack of consistency between the ranking of the country in this study and the reporting from the expert group.

This is for example true for Latvia. Here, the expert group reports the situation in Latvia to be fairly weak from a national point of view. But Latvia is ranked in ninth place in this country benchmark. However, even though a country may not have taken a lot of initiatives to promote entrepreneurship in higher education, individual institutions in that country can take their own entrepreneurial initiatives to attract students, to improve their competitive profile, generate income through spin-off etc. The opposite goes for Greece, which is ranked last in this study. However, according to the expert

²⁰ The final report "Entrepreneurship in higher education, especially within non-business studies" from the expert group can be downloaded here: http://ec.europa.eu/enterprise/entrepreneurship/support_measures/training_education/index.htm

group Greece has taken more initiatives to incorporate entrepreneurship in the higher-education institutions compared with some of the other countries mentioned. Therefore, it is important to remember that ranking of countries in this study is based on the performance at institution-level.

However, there seems to be consistency between this study and the report from the expert group for the best-performing countries in this study. The top-5 countries are all reported to have taken a fair amount of initiative to promote entrepreneurship in higher education from national level, increasing the likelihood that students in these countries at one point during their studies get acquainted with entrepreneurship.

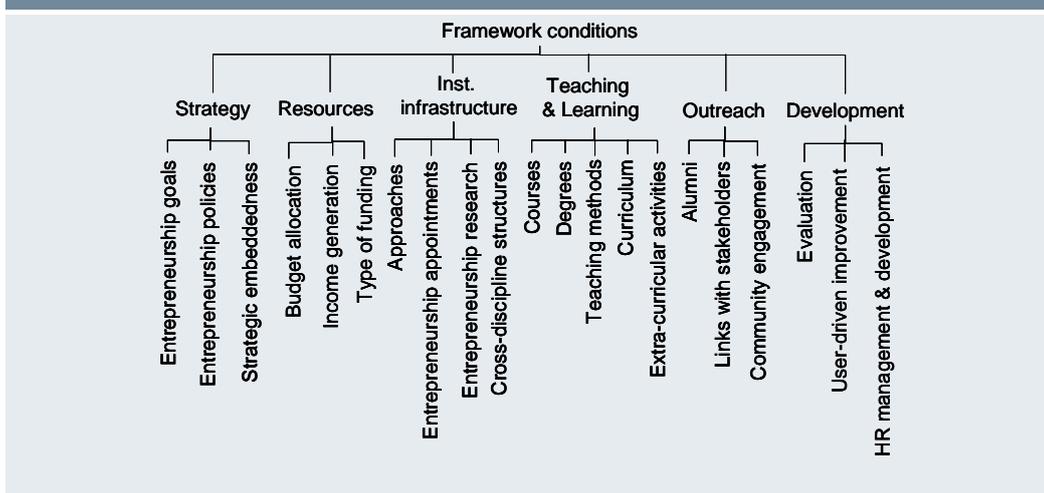
5.3 Benchmark of framework conditions

To be able to compare the institutions' performance against their entrepreneurship education efforts, it is necessary to put forward a single aggregate indicator for the institutions' framework conditions. This aggregate indicator is calculated based on the six dimensions of entrepreneurship education presented in the model in section 3.

5.3.1 The make of the framework conditions index

The benchmark of framework conditions is naturally based on the framework model presented in section 3. Each of the six dimensions (*strategy, institutional infrastructure, teaching & learning, outreach, development and resources*) in the model are included in the index as composite indicators made up of a number of items. The index is presented in figure 5.3. The individual indicators and items have already been elaborated on in the methodology chapter.

Figure 5-3: The framework conditions index

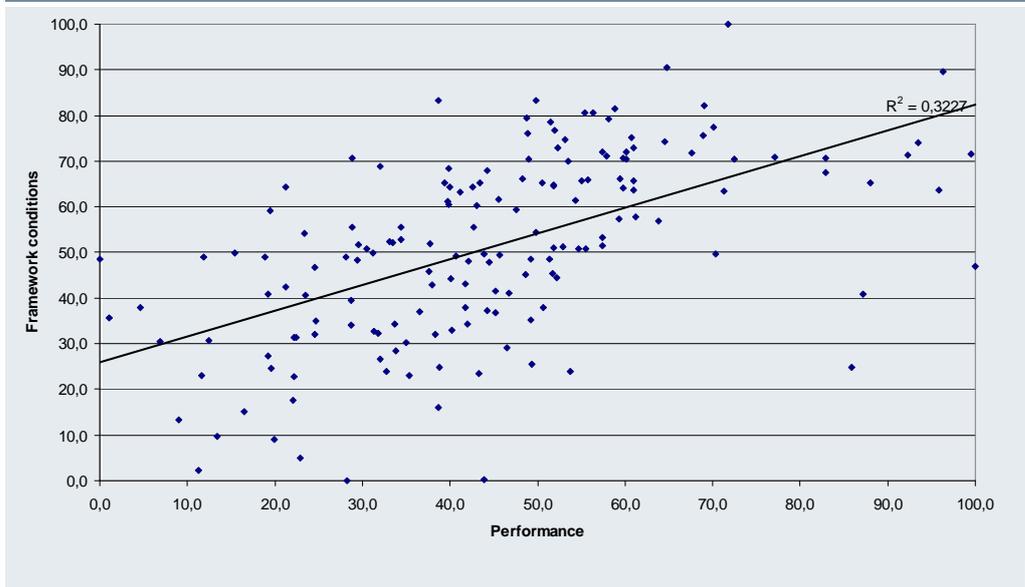


5.3.2 The correlation between performance and framework conditions

Looking at both performance and framework conditions is central to the benchmark method as it is the link between these that makes it possible to identify the framework conditions that seem central for driving the performance.

The analysis shows a solid correlation between performance and the framework conditions with an estimated correlation of 0.6, cf. figure 5.5.

Figure 5-4: The correlation between performance and framework conditions

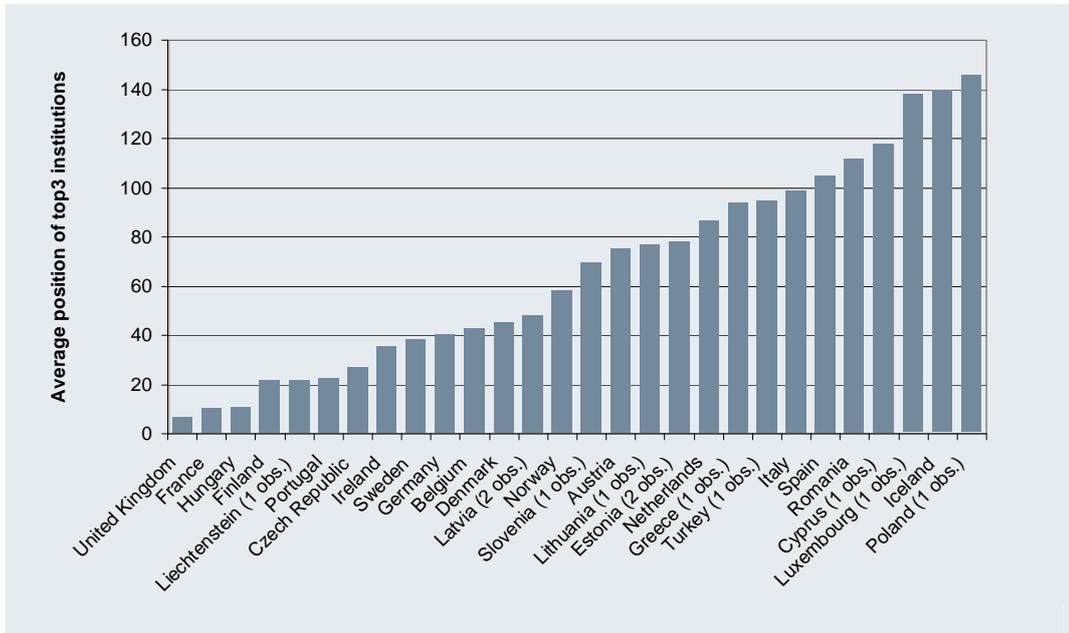


This means that about 32 percent of the variation between the performance of institutions can be explained by the framework applied in this study. As discussed earlier it has been difficult to obtain performance measures that truly capture the performance of entrepreneurial higher-education institutions as this goes beyond graduates starting businesses, academics taking out patents etc. It would be interesting to see whether the use of more ideal performance measures (as described above) would result in a strong correlation between performance and framework conditions.

5.3.3 Benchmarking of framework conditions at country level

Similar to the benchmark of performance at country level, the cross-country benchmark of framework condition will also use the overall position of the three best-performing institutions in each country as ranking method. Again, this means that the benchmark investigates in which countries the best performing institutions (when it comes to framework conditions) are located. Figure 5.5 presents the average position of the top-3 institutions in each of the countries.

Figure 5-5: Ranking of countries based on top-3 institutions in each country – framework conditions



Four of the top-5 countries found in the performance benchmark are also found in the top 5 in the benchmark of framework conditions. The exception is Germany that is ranked tenth on framework conditions, but second in the performance benchmark. Instead, Lichtenstein moves into the top 5. However, the ranking of Lichtenstein is based on a single observation and must therefore be taken with caution.

Table 5.2 shows that inconsistency is also found in relation to the ranking of Austria and the Netherlands. Both countries are ranked considerably higher in the performance benchmark, 6 and 7 respectively, than in the benchmark of framework conditions.

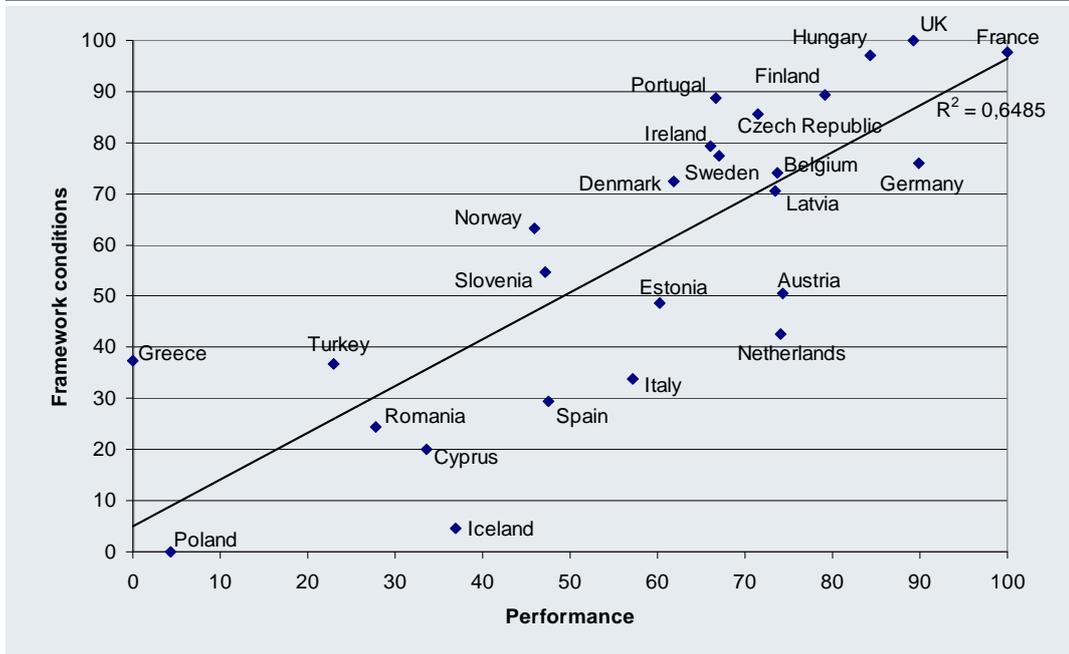
Table 5-2: Ranking of countries based on overall ranking of top-3 institutions (framework conditions)

| Country | Rank | Country | Rank |
|----------------|------|-------------|------|
| United Kingdom | 1 | Slovenia | 15 |
| France | 2 | Austria | 16 |
| Hungary | 3 | Lithuania | 17 |
| Finland | 4 | Estonia | 18 |
| Liechtenstein | 5 | Netherlands | 19 |
| Portugal | 6 | Greece | 20 |
| Czech Republic | 7 | Turkey | 21 |
| Ireland | 8 | Italy | 22 |
| Sweden | 9 | Spain | 23 |
| Germany | 10 | Romania | 24 |
| Belgium | 11 | Cyprus | 25 |
| Denmark | 12 | Luxembourg | 26 |
| Latvia | 13 | Iceland | 27 |
| Norway | 14 | Poland | 28 |

Comparing the findings of the cross-country benchmark of framework conditions with the report made by the Expert Group we find that in general there is consistency between the results – especially when it comes to the top-ranked countries. Yet, there are some obvious mismatches. An example is Poland. According to the expert report, there is a great interest in entrepreneurship in higher education in Poland. National initiatives have been taken both within business- and non-business studies. However, the benchmark analysis places Poland last. The discrepancy is probable due to the fact that Poland is only represented by one observation in this survey.

However, figure 5.6 shows that there is a strong positive correlation between the performance and framework conditions at country level. This result indicates that countries that are home to high-performing institutions in terms of number of students graduating with theoretical and/or practical knowledge of entrepreneurship and engagement in knowledge transfer are also more likely to be home to institutions that have strong framework conditions.

Figure 5-6: Correlation between the countries' top-3 institutions on performance vis-à-vis framework conditions



5.4 Identifying good-practice institutions in entrepreneurship education

Going from country level to institution level, the next section will identify top-10 good-practice institutions (of the institutions participating in the survey) and take a closer look at their framework conditions compared with the lowest performing institutions relatively speaking.

Box 5-2: Identifying the top-10 institutions based on the overall score in the framework conditions index instead of the overall score in the performance index

Following the benchmark method, the identification process of important areas for performance in entrepreneurship education will be based on a comparison between top-performing and lagging higher-education institutions. However, the correlation between performance in top-3 institutions and their framework conditions were much higher than the correlation between the individual institutions (see figures 5.6 and 5.4). This suggests that some noise exists in the performance measures.

The top-10 performance institutions are therefore very dependent on the applied weights. The framework conditions are more stable and based on a much larger number of questions. The following benchmark of institutions will therefore be based on comparisons between top-10 framework institutions and bottom-10 framework institutions.

Analyses have been made examining the framework conditions of the top-10 institutions that have the highest score on the performance index. The analyses confirm the findings based on framework conditions although some areas appear to be of less importance in these analyses (e.g. evaluation, type of funding and research in entrepreneurship).

Figure 5.7 compares the top-10 institutions with bottom 10 and the average score on the six framework dimensions of entrepreneurship education.

Figure 5-7: Comparing the overall score on the six dimensions of framework conditions for the top 10 against bottom 10 and average

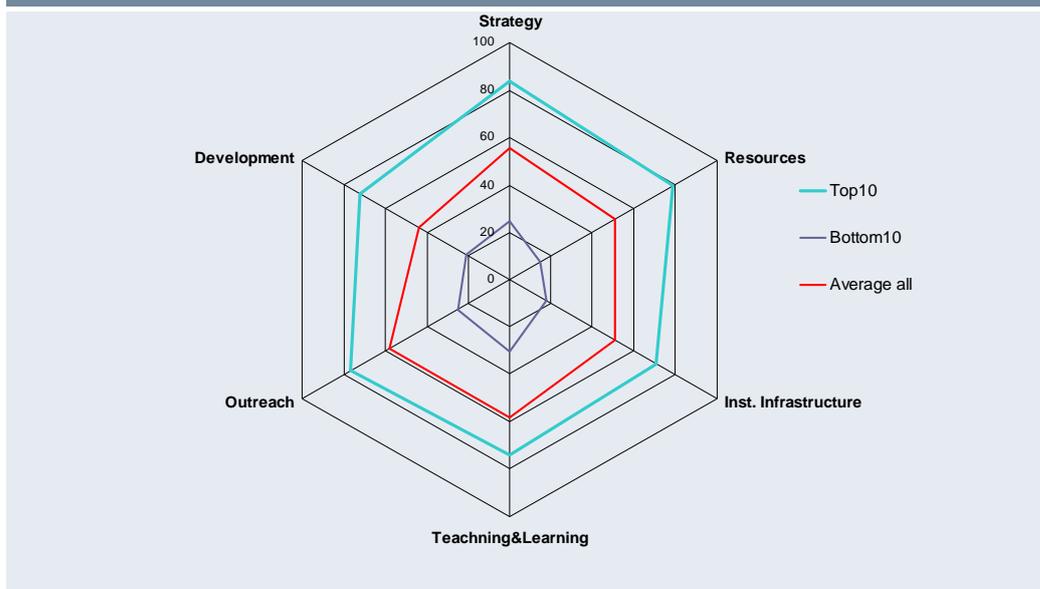


Figure 5-7 shows that the distance between the institutions with the best framework conditions and the lowest ranked institutions is greatest when it comes to *resources* and *strategy*.

In relation to *strategy*, the considerable difference between the top 10 and bottom 10 supports our a priori assumption that embedding entrepreneurship in the overall strategy and ensuring commitment from the top-management are crucial. This aspect will be elaborated on in the following chapter focusing on the strategy dimension.

Furthermore, the result in figure 5-7 related to resources validates the recommendation put forward by many of the good-practice institutions: “send more money”. It is essential that enough resources are devoted to entrepreneurship education – both in relation to scalability and sustainability. The large difference between the top-10 and bottom-10 institutions indicates that aspects such as the size of the budget and type of funding sought and in particular ensuring that activities related to entrepreneurship education can generate income to the institution are of great importance. The resource dimension will be investigated in more detail in chapter 11.

With regard to *institutional infrastructures*, figure 5-7 shows that there also here is a large difference between top and bottom institutions. This indicates that institutions aiming to be more entrepreneurial can make a lot of headway by establishing some institutional infrastructures that support entrepreneurship education. Chapter 7 will show that especially cross-discipline structures can have a significant impact on the entrepreneurial agenda.

An outward perspective is an important part of being an entrepreneurial higher-education institution. This is also illustrated in figure 5-7, where the top-10 institutions have a considerably higher score on the outreach dimension than the bottom-10 institutions. This indicates that the prevalence of networks and the extent of cooperation with external stakeholders are sources of valuable input in terms of e.g. knowledge and resources that the institution can use to promote and support the entrepreneurship education. This will be elaborated on in chapter 10.

Many of the good-practice institutions that participated in the in-depth interviews pointed out that a major challenge is the skills of the staff teaching entrepreneurship. Teaching entrepreneurship often requires the use of new and experimental teaching methods which many of the academic staff perhaps are not used to applying in their courses. Also the entrepreneurial approach requires certain attitudes and competencies that the academic staff must improve/develop. However, figure 5-7 shows that – compared with the performance on the other dimensions – the performance on the *development* dimension is somewhat lagging behind. And as chapter 10 will show, this is particularly obvious in the institutions’ management and training of their human resources.

The smallest distance between the high- and low-performing institutions is found in relation to *teaching & learning*. Later results (in chapter 8) will show that it is not the number of entrepreneurship courses that counts as there is no difference in the number of courses offered by top-10 institutions and bottom-10 institutions. This implies that entrepreneurship education may often start with offering some courses in entre-

preneurship, but it is the additional activities (curriculum development, extracurricular activities etc.) that really have an impact on the performance as an entrepreneurial higher-education institution.

In the next chapters (6 – 11) all results referred relates to the specific survey, i.e. those HEIs that have entrepreneurship education over the threshold.



6. STRATEGY

6.1 Introduction

Becoming an entrepreneurial HEI is achieved by focusing on various dimensions of entrepreneurship education. It seems like it is not enough to exclusively supply students with courses in or about entrepreneurship or engage in other isolated efforts such as making use of placement programmes in start-ups, establishing incubator facilities or appointing professors of entrepreneurship. Becoming an entrepreneurial HEI entails a complex process that requires parallel actions in a number of areas.

Having said this, the strategic dimension must be considered of crucial importance if HEIs want to fulfil the ambition to become entrepreneurial. A central element of facilitating sustainable and effective entrepreneurship education is to embed entrepreneurship in the overall strategy of the institution. Defining overarching and measurable entrepreneurship goals can help stimulate development and lay the grounds for an assessment of the actual impact of the entrepreneurship education activities, especially if the goals are included in the overall mission strategy of the institution which secure a high degree of attention.

Traditionally, entrepreneurship education has been linked to the fields of management and business, but the growing recognition of entrepreneurship education as a broader concept has initiated a focus on the need for entrepreneurship policies to embed entrepreneurship throughout all levels of the HEI and throughout all faculties in multidisciplinary HEIs. This can be fostered by having an institutional action plan for how to achieve the goals set out in the overall entrepreneurship strategy. And for the multidisciplinary institutions each of the faculties should have their own policies for undertaking multidisciplinary entrepreneurship education.

Furthermore, support from the top management at the HEI will often be a prerequisite if the entrepreneurship education is to succeed and be an integral part of the HEI. Hence, this dimension includes aspects such as entrepreneurship strategy and goals, explicit entrepreneurship policies, entrepreneurship advisory boards etc. (the underlying questions are placed in box 6.1):

- Entrepreneurship goals
- Entrepreneurship policies
- Degree of strategic embeddedness

Box 6-1: Overview of the questions in the Strategy dimension

Entrepreneurship goals

1. Is entrepreneurship embedded in your institution's written mission statement?
2. What are the overarching entrepreneurship goal(s) for your institution?

Entrepreneurship policy

1. Does your organisation have institutional policies/action plans (in writing) for undertaking entrepreneurship education?
2. What percentage of the different faculties/disciplines at your institution has their own entrepreneurship policies/action plans (in writing)?
3. Which specific faculties/disciplines have their own entrepreneurship policies/action plans (in writing)?

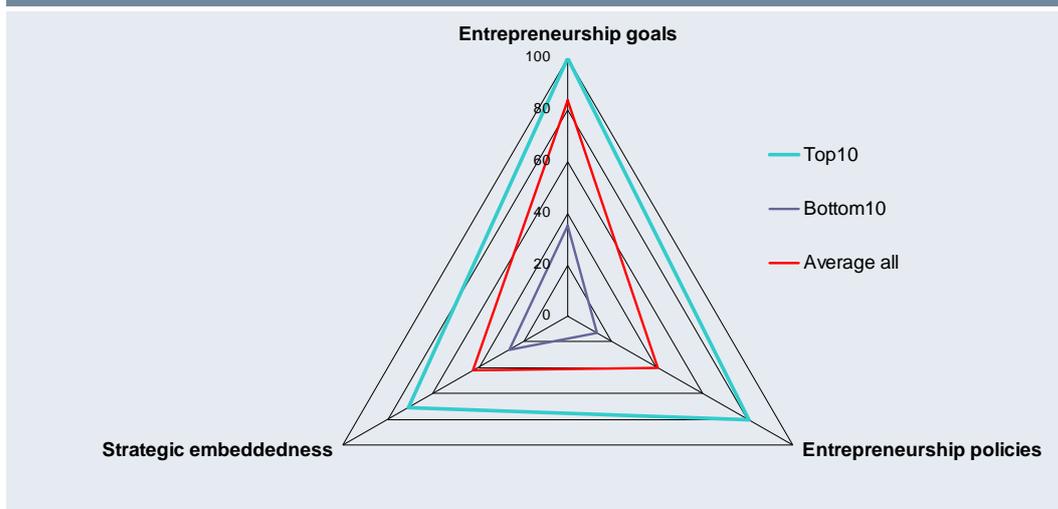
Degree of strategic embeddedness

1. Who has the primary responsibility for the entrepreneurship education at the strategic level at your institution?
2. Does your institution have entrepreneurship champions that act as spokesmen/advocates at management level and/or senior personnel to support the entrepreneurship education activities?

6.2 Main conclusions

Figure 6.1 illustrates the difference between the reported strategy framework conditions for the top-10 institutions identified in the benchmark analysis compared with the bottom 10 and the average.

Figure 6-1: Strategy



The greatest difference is found in relation to *entrepreneurship policies*. This indicates that the top-10 institutions (which are all multidisciplinary except one) to a higher degree make sure to have entrepreneurship policies for the individual faculties to ensure that the entrepreneurship agenda is spread across the entire institutions and not only to the typical departments as the business department and engineering/technical subjects. This is in contrast with the bottom-10 institutions where none have faculty level entrepreneurship policies, even though they are all multidisciplinary institutions.

In relation to *entrepreneurship goals*, all of the top-10 institutions have embedded entrepreneurship in their mission statement – all but one of the bottom-10 institutions do not. In relation to *strategic embeddedness*, all of the top-10 institutions have either granted the president/rector or the pro-vice chancellor the strategic responsibility for entrepreneurship – in the bottom-10 institutions this only holds for three of the bottom-10 institutions – in the remaining institutions either a professor or a lecturer has the strategic responsibility, if any. These findings strongly support the notion that the strategy dimension is crucial in entrepreneurship education.

6.2.1 *Strategic embeddedness*

Two types of approaches have been identified within the European HEIs to secure the embeddedness of entrepreneurship in the overall strategy of the institution:

- Bottom-up approach
- Top-down approach

The **bottom-up** is an approach where the entrepreneurship education activities are initialised and carried out by a dedicated individual who is committed to implement entrepreneurship activities at the HEI. This personal drive can create some quite convincing results which many of the case studies included in this study bear witness to. We have seen many examples of these individuals having been able to actually make the top management aware of the entrepreneurship activities and implement them in the overall strategy of the institution.

However, the dependency on the individual commitment of a single or a few persons is very fragile and if these people were to leave the institution, the entrepreneurship education activities are in high risk of getting a much lower priority. This can even be the case where the dedicated people have had the impact on the top management of the institution to actually implement entrepreneurship education in the overall strategy. In the bottom-up approach the danger is that the top management offers its support at an overall strategic level, but implementing entrepreneurship education also has a practical aspect which requires the involvement and dedication from the staff.

The **top-down** approach is based on the commitment of the top management of the institution. In this case the top management is not satisfied with having entrepreneurship education as a couple of sentences in the overall mission statement but they prioritise the proper amount of resources in order to succeed in making a full-scale

implementation of entrepreneurship education throughout the entire institution. The top management has the means to create ownership across the institution and one example could be to appoint entrepreneurship champions or change agents. It is also in the hands of the top management to take initiative to include entrepreneurship throughout all curricula provision.

In the benchmark analysis the importance of the support from the top-management is evident as can be seen in figure 6-1. But many of the case studies show that dedicated staff also plays a key role in implementing and developing entrepreneurship education. The study underlines that entrepreneurship education is a joint effort that requires the help and commitment from people from all layers in the institutions to truly be embedded across the institutions.

6.2.2 *Entrepreneurship policy*

Another general conclusion within the area of strategy is that traditionally, entrepreneurship education has been coupled to the business and technical disciplines and this is pretty much still the case. However, there is a development towards a growing recognition of entrepreneurship education as a broader concept throughout other HEIs than business and technical institutions.

In order to ensure an institution-wide recognition of entrepreneurship education as a broader concept, there is a need for entrepreneurship policies that focus on how to achieve the entrepreneurship goals set out in the strategy both at the institutional level and for the individual disciplines in multidisciplinary institutions. The results show that 53 percent of the respondents have institution-wide entrepreneurship action plans. However, there is a clear difference between technical and business institutions and other institutions, and there is a much higher rate among the technical and business institutions that have institution-wide action plans to ensure the implementation of entrepreneurship education.

6.2.3 *Entrepreneurship goals*

Many European HEIs have defined a range of overarching entrepreneurship goals for their overall entrepreneurship strategy. When it comes to the institutions overarching entrepreneurship goal(s) defined, 82 percent of the institutions in the specific survey have defined the entrepreneurial goal "to foster entrepreneurial behaviours, skills and mindsets". Another aspect of entrepreneurship education which many HEIs are focusing on in their strategies is the idea "to inspire students toward seeking an entrepreneurial career of life". 67 percent of the HEIs state that this aspect of entrepreneurial education is defined as an overarching goal in their strategy.

One interesting finding is that 48 percent of the HEIs in the specific survey have the goal "to embed awareness of entrepreneurship throughout *all* curricula provision". Many institutions wish to integrate entrepreneurship in all courses and not just to have entrepreneurship as optional subjects. One point of doing this is the ambition to build up the entrepreneurial attitudes of *all* students of which they can take advantage in their future careers – not only as entrepreneurs, but also in salaried jobs both in the private and public sector.

The survey also shows that most of the institutions (71 percent) that offer entrepreneurship education above the threshold have embedded entrepreneurship in their written overall mission statement.

6.2.4 Type of institution

The survey points to some differences regarding strategy between the different types of institutions. For instance, most of the Independent Business Schools have institution-wide policy plans for undertaking entrepreneurship education (86 percent). This number is only 42 percent for multidisciplinary HEI without business schools and 53 percent for multidisciplinary HEI including business schools.

There are also great differences between different types of institutions in relation to the degree of strategic embeddedness of entrepreneurship throughout all curricula provision. Among Independent Business Schools, 71 percent of the institutions in the specific survey wish to embed awareness of entrepreneurship throughout all curricula provision, and on the other hand among specialised technical institutions the number is only 25 percent.

6.2.5 Regional differences

In the survey, there are no major differences between the EU15 and the EU>15 countries on the strategic dimension. Regarding the embeddedness of entrepreneurship in the mission statement, 74 percent of the EU>15 countries gives a positive answer compared with 71 percent of the EU15 countries. Likewise, in both EU15 and EU>15 countries most of the HEIs with entrepreneurship education name the fostering of entrepreneurial behaviours, skills and mindset as the overarching entrepreneurship goal. Also on institution-wide policies the EU15 and EU>15 countries score virtually identically (53 percent in the old countries compared with 50 percent in the new countries).

6.2.6 Development over time

There is a clear relation between the number of years with experience of entrepreneurship education and the extent to which the institutions have embedded entrepreneurship in their written mission statement. The more years of experience with entrepreneurship education the institutions have, the more likely it is that they have entrepreneurship embedded in the institution's written mission statement. Among institutions with less than four years of experience of entrepreneurship education only 56 percent have entrepreneurship embedded in their written mission statement. Among institutions with more than 12 years of experience with entrepreneurship education the number is much higher, and 85 percent of these institutions have entrepreneurship embedded in their overall strategy.

6.3 The importance of the strategy dimension

The consortium had a priori an assumption that embedding entrepreneurship in the institution's overall strategy would be a prerequisite when striving to become an entrepreneurial institution. However, testing in the benchmark analysis where the strategy dimension was given a higher weight than the other five dimensions did not support this assumption, as the link between performance and framework conditions

was not strengthened in these tests. Two immediate explanations can be put forward:

1. How the strategy dimension is measured through the questionnaire does not capture the true nature of the dimension.
2. The strategy dimension is in fact not a prerequisite in becoming an entrepreneurial institution.

In the survey, it was necessary to use very precise questions to measure the dimensions in order to get sufficient variation across institutions. For example in the strategy dimension it was initially felt that using questions such as “Does your institution embed entrepreneurship in the overall strategy?” or “Is it (part of) your mission to become more entrepreneurial?” would not result in sufficient variation across institutions as it would be too “easy” for the institutions to answer confirmatory. Therefore, more precise and demanding questions were used – e.g. “Is entrepreneurship embedded in your institution’s written overall mission statement?”

However, during the visits to the good-practice institutions it came apparent that institutions can embed entrepreneurship as part of the overall strategy without explicitly including entrepreneurship in the written mission statements, institution-wide policies and faculty action plans.

Therefore, the consortium is prone to maintain the a priori assumption of strategy as integral to the process of becoming an entrepreneurial institution holding the shortcomings of the quantitative measurement accountable for the lack of data support.

Table 6-1: Share of institutions that have embedded entrepreneurship in their overall written mission statement

| | Total | Years of experience with entrepreneurship education | | | |
|-----|-------|---|-------------------------------------|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Yes | 71% | 56% | 57% | 79% | 85% |
| No | 29% | 44% | 43% | 12% | 15% |

(n = 207)

Most of the HEIs in the specific survey state that they have entrepreneurship education embedded in their overall strategy. An interesting point is that the more years of experience with entrepreneurship education the institutions have, the more likely it seems that they have entrepreneurship embedded in the institution’s written mission

statement. Among institutions with less than four years of experience with entrepreneurship education only 56 percent have entrepreneurship embedded in their written mission statement. Among institutions with more than 12 years of experience with entrepreneurship education the number is much higher, and 85 percent of these institutions have entrepreneurship embedded in their overall strategy.

The table indicates that many HEIs have realised that, if entrepreneurship education is to be part of the HEI, entrepreneurship must be part of the HEI's core strategy or vision. Having entrepreneurship education as a part of the core strategy and vision is also a way of ensuring support from the top management at the HEI which is crucial if the entrepreneurship education is to succeed and be an integral part of the HEI.

| Table 6-2: Share of institutions with entrepreneurship goals | | | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total | Type of institution | | | |
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| To foster entrepreneurial behaviours, skills and mind-sets | 82% | 88% | 80% | 95% | 93% |
| To inspire students toward seeking an entrepreneurial career or life | 67% | 71% | 66% | 63% | 86% |
| To provide access to entrepreneurship opportunities for ALL students at my institution | 54% | 65% | 50% | 58% | 64% |
| To increase the number of graduate start-up businesses | 53% | 56% | 53% | 47% | 71% |
| To embed awareness of entrepreneurship throughout ALL curricula provision | 48% | 44% | 46% | 42% | 71% |
| To seek opportunities for commercially exploiting knowledge present at my institution | 48% | 53% | 51% | 21% | 43% |
| To maximise technology-transfer revenues | 35% | 38% | 37% | 26% | 21% |
| To conduct state-of-the-art research on entrepreneurship | 31% | 24% | 33% | 16% | 50% |
| That the entrepreneurship education as a whole should generate income for the institution | 20% | 12% | 21% | 11% | 29% |
| My institution doesn't have entrepreneurship goals | 6% | 6% | 7% | 0% | 14% |
| Other | 6% | 9% | 5% | 11% | 0% |

Many European HEIs have defined a range of overarching entrepreneurship goals for their overall entrepreneurship strategy. When it comes to the institutions' overarching entrepreneurship goal(s) defined, we see that 82 percent of the institutions have defined the entrepreneurial goal "to foster entrepreneurial behaviours, skills and mindsets". Another aspect of entrepreneurship education which many HEIs are focusing on in their strategies is the idea "to inspire students toward seeking an entrepreneurial career of life". 67 percent of the HEIs state that this aspect of entrepreneurial education is defined as an overarching goal in their strategy.

One interesting finding is that 48 percent of the HEIs have the goal "to embed awareness of entrepreneurship throughout *all* curricula provision". Many institutions wish to implement entrepreneurship in all courses and not just to have entrepreneurship as optional subjects. One point of doing this is the ambition to build up the entrepreneurial attitudes of *all* students to foster entrepreneurial mindsets of which the students can take advantage in their future careers – not only as entrepreneurs, but also in salaried jobs both in the private and the public sector.

There are great differences between different types of institutions in relation to the degree of strategic embeddedness of entrepreneurship throughout all curricula provision. Among Independent Business Schools 71 percent of the institutions wish to embed awareness of entrepreneurship throughout all curricula provision, and on the other hand among specialised technical institutions the number is only 25 percent..

One case of future inspiration within the area of entrepreneurship goals is found at the *Utrecht School of the Arts* in the Netherlands. As one of few HEIs in Europe this institution has been willing to actually define a couple of concrete entrepreneurship goals. In order to succeed in embedding entrepreneurship across the Utrecht School of the Arts the top management has defined a couple of entrepreneurship goals within the overall strategy statement of the institution. It is the goal that every student attending the Utrecht School of the Arts shall be given the chance to evolve into a professional entrepreneur – and in relation to this, the Utrecht School of the Arts has three ambitions:

- 100 percent of the students must develop an entrepreneurial attitude/mindset
- 100 percent of the students must be confronted with professional entrepreneurship during their studies to build an entrepreneurial awareness and make a choice of whether they want to engage in professional entrepreneurship during their studies
- 100 percent of the students that choose to engage in professional entrepreneurship during their studies or one and a half years after their studies must be given the opportunity to do so either as part of their study programme or extracurricular. These students must be guided and helped in every way possible and must not be turned away when they ask for help while developing their own professional entrepreneurial venture.

Another good example is the *Finnish FINPIN network of Universities of Applied Science (UAS)* where all the rectors have committed to implementing the Entrepreneur-

ship Policy Programme put forward by the Finish Government in 2004. The goals in the overall national strategy are very ambitious and help create a clear focus for the UAS':

- One out of every seven graduates should have started a company ten years after graduation from a UAS
- The UAS will produce business successors for the Finnish businesses
- Companies established by UAS graduates will be strongly based on innovation and knowledge
- In 2015, 40 percent of all new businesses will be started by graduates from the UAS

However, most of the around 40 institutions visited in this project are examples that demonstrate the point that entrepreneurship education is still in its infancy at many European institutions. In many cases the top management is aware of the entrepreneurship activities and fully support them, but entrepreneurship is only included in rather general terms in the overall mission statement of the HEIs.

There are some institutions that have deliberately chosen not to define concrete entrepreneurship goals in the overall strategy statement. One example is found at *the ISM University of Management and Economics* in Lithuania.

In the "Strategic aim of ISM till 2010" the ISM has a general operating principle to promote entrepreneurship. The University has listed ten main values (see below) that are regarded as core values, and entrepreneurship is one of them. It is important to integrate these values in all activities at the University and to have teachers with entrepreneurial mindsets to also stimulate the entrepreneurial mindsets of the students. The ISM wants to mainstream the entrepreneurship education which means that its strategy is to integrate entrepreneurship into all activities at the institution. However, it is possible to have specific entrepreneurship courses that primarily focus on basic competences in order to start up a company, see figure 6.2.

Figure 6-2: The value system of the ISM University of Management and Economics



The different institutions at the ISM are **not** met with specific goals concerning the number of start-ups or other entrepreneurial and innovative activities among their graduate students. The institutions are met with the overall goal to stimulate the students' entrepreneurial and innovative mindsets and are told to organise the courses in a way that are in line with the ten main values of the ISM. The philosophy behind the concept of not defining any specific goals is that to formulate concrete goals about a specific number of start-ups among the graduate students will narrow the individual institutions' way of manoeuvring and move away focus on the overall ten main values of the university. Whether this approach is suitable or not can be discussed but the ISM has some convincing figures to prove their way of thinking. One example is that 60 percent of a total number of about 69 graduates have started their own company among the first year of graduates at ISM in 2002.

Another example of an institution that has not defined concrete entrepreneurship goals in the overall strategy statement is found at *Strathclyde University, Scotland*. Here it is viewed as having positive aspects that they have not defined entrepreneurship goals in their overall mission statement.

The university calls itself "an entrepreneurial university". However, there is no clear strategy or vision for this activity. All development so far has been opportunistic and made the entrepreneurial way. With this in mind, maybe the lack of a strategic plan can be seen as an advantage. When you stick to goals written down in a document, you may miss opportunities.

Instead of defining concrete measurable goals the Strathclyde University has defined the overall goal to break down the cultural barriers of entrepreneurship. The institution wants to contribute to a change of culture, to make Scotland more entrepreneur-

rial. The aim is to pass the message to all students that they do not have to work for someone else. At any point of their career, they can create their own business. The institution wants to contribute in breaking down the barrier, showing that entrepreneurs are just like you and me. They can be your neighbour or your classmate.

In most of the courses they teach the skills necessary to start a business, but the success is not measured in the number of students actually starting their own businesses. Even if the students have no intentions of starting a business, entrepreneurship classes will anyway make them more employable. Attending an entrepreneurship class can be what differentiates an engineering diploma from a regular one.

6.4 Entrepreneurship policies

Around half of the European HEIs have taken the initiative to build up institution-wide policies to implement entrepreneurship education, where 53 percent of the institutions have institution-wide policies or action plans (in writing) for undertaking entrepreneurship education. This is a positive result and proves the point that many institutions have realised that institution-wide policies or action plans are an important element if the entrepreneurship education is to succeed and be an integral part of the whole HEI.

When turning from institution-level to faculty-level table 6-3 shows that a third of the multidisciplinary institutions have not developed policies for the individual faculties. In contrast, 13 percent of the multidisciplinary institutions have entrepreneurship for all of their faculties.

| Table 6-3: The share of faculties that have their own entrepreneurship policies | |
|---|-----|
| My institution does not have entrepreneurship policies/action plans at faculty-level/for the individual disciplines | 30% |
| Less than 33% of the faculties/disciplines | 37% |
| Between 34 and 66% of the faculties/disciplines | 15% |
| Between 67 and 99% of the faculties/disciplines | 4% |
| All of the faculties/disciplines have their own entrepreneurship policies/action plan | 13% |

(n = 158)

As is the case in many other aspects of integrating entrepreneurship activities at HEIs there is a clear division between technical/business faculties and other faculties. When you take a closer look at which specific overall subjects have their own entrepreneurship policy or action plan it shows that entrepreneurship is mostly integrated at the technical and business faculties.

Table 6-4: The prevalence of entrepreneurship policies in different subjects.

| | % of institutions that have the subject available at the institution |
|---|--|
| Business studies | 20% |
| Technical | 12% |
| Social science (except business studies) | 7% |
| Natural science | 6% |
| Pedagogy/education | 5% |
| The humanities and theology | 4% |
| Health care | 4% |
| The arts | 3% |
| Food industry and home economics | 3% |
| Agriculture | 2% |
| Public security/defence | 2% |
| Other faculties/disciplines that have their own entrepreneurship policy | 4% |

(n = 133)

In 20 percent of the institutions that have a business subject, that subject has its own entrepreneurship policy, cf. table 6-4. For the technical subject, the number is 12 percent. Among subjects such as the humanities and theology, the arts, and agriculture only few have their own entrepreneurship policy or action plan.

An important message is that there is a challenge at most HEIs in Europe to integrate entrepreneurship education at other faculties than the technical and business faculties.

At *the University of Salford* in the UK there is a very convincing case of future inspiration to other institutions that wish to implement an entrepreneurial mindset and entrepreneurship education across faculties.

As a result of committing to integrating entrepreneurship as a third strand at the university, the vice-chancellor James Powell established a unique institutional infrastructure to support the efforts. The infrastructure entails the pro-vice chancellor with the specific responsibility for enterprise. In addition, each faculty has an associated dean for enterprise alongside an associated dean for teaching & learning and an associate dean for research. Also, every school has an associated head for enterprise, again alongside an associated head for teaching & learning and for research.

"This infrastructure provides an immediate first point of contact at every level within the institution for enterprise. So when you try to drive change, expand enterprise provision and increase awareness for new enterprise initiatives, penetrate with entrepreneurship learning, you have an immediate infrastructure that you can work

through from right at the top down through all of the schools.” Claire Maclean, the University's Learning, Enterprise and Development Manager

6.5 Strategic embeddedness

Strategic embeddedness is all about to what extent entrepreneurship is embedded at the institution. Is it integrated across the entire institution, or is it placed in a single department or faculty?

| | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Principal/rector/provost | 19 % | 15% | 19% | 16% | 36% |
| Pro-vice chancellor | 24 % | 18% | 31% | 11% | 0% |
| Dean | 16 % | 18% | 15% | 11% | 21% |
| Professor | 21 % | 27% | 16% | 32% | 36% |
| Lecturer | 5 % | 9% | 3% | 16% | 0% |
| Other, please specify: | 7 % | 9% | 5% | 11% | 7% |
| No person has been appointed to take on the responsibility of the entrepreneurship education at the strategic level at my institution | 8 % | 3% | 11% | 5% | 0% |

One way of pushing entrepreneurship forward is to place the responsibility of the activities at the top management level of the institution. The table shows that among 59 percent of the respondents the primary responsibility for the entrepreneurship education is carried out by the principal, pro-vice chancellor or dean. This is quite positive and proves the fact that many HEIs in Europe have realised that if the entrepreneurship education is to succeed and be an integral part across the entire institution, a representative from the top management has got to have the strategic responsibility. However, there are great differences between different types of institutions. Among independent business schools we see a much higher number of institutions where the primary responsibility for the entrepreneurship education is located at the top management level than all other institutions.

At the *Technical University of Munich* in Germany there is a convincing example of good practice within the area of strategic embeddedness. The importance of the commitment from the top management as well as the significant influence this com-

mitment has on the strategic embeddedness of entrepreneurship in the institution is very clear at the Technical University of Munich.

As said by Prof. Dr. Dr. Achleitner:

“Our university is led by a very strong leader – Wolfgang Hermann. In this competition we have among German Universities of who would be the leading ones, our slogan was “the entrepreneurial university”. And this is incredibly important. Wolfgang Hermann would never present the university forgetting the entrepreneurial side. He is totally committed. This is the way he thinks – he is an entrepreneur in flesh and blood... There is no doubt that our top management commitment from him and some of the vice presidents who spend a lot of time supporting the “Unternehmer” TUM and the work of the KfW chair is absolutely essential.”



7. INSTITUTIONAL INFRASTRUCTURE

7.1 Introduction

Institutional infrastructure covers the approach to the facilities supporting entrepreneurship education at the HEIs such as an entrepreneurship centre or an incubator as well as the people appointed to run such facilities, for instance entrepreneurship professors. The elements also cover research and cross-discipline structures that further support and develop entrepreneurship education at the institution.

Effective and sustainable entrepreneurship education can be facilitated by supportive institutional infrastructures at the institution. Physical structures include an entrepreneurship centre or department, incubator facilities and technology-transfer offices. This is referred to as Approach in the model.

On top of this, entrepreneurship appointments such as entrepreneurship professorships/chairs can act as support measures ensuring a higher degree of embeddedness of the entrepreneurship education.

Dedicated research activities in the entrepreneurship field can also contribute to a high degree of embeddedness of the entrepreneurship education.

Another issue within institutional infrastructure is the cross-discipline structures at the HEI. Traditionally, entrepreneurship education has been coupled to the management/engineering fields, but the growing recognition of entrepreneurship education as a broader concept has initiated a focus on the need for cross-discipline actions and structures both in delivering and developing entrepreneurship education.

Hence, the following four elements constitute the dimension *institutional infrastructure* in the framework model applied in the survey (the underlying questions can be seen in box 7.1):

- Approaches
- Entrepreneurship appointments
- Entrepreneurship research
- Cross-discipline structures

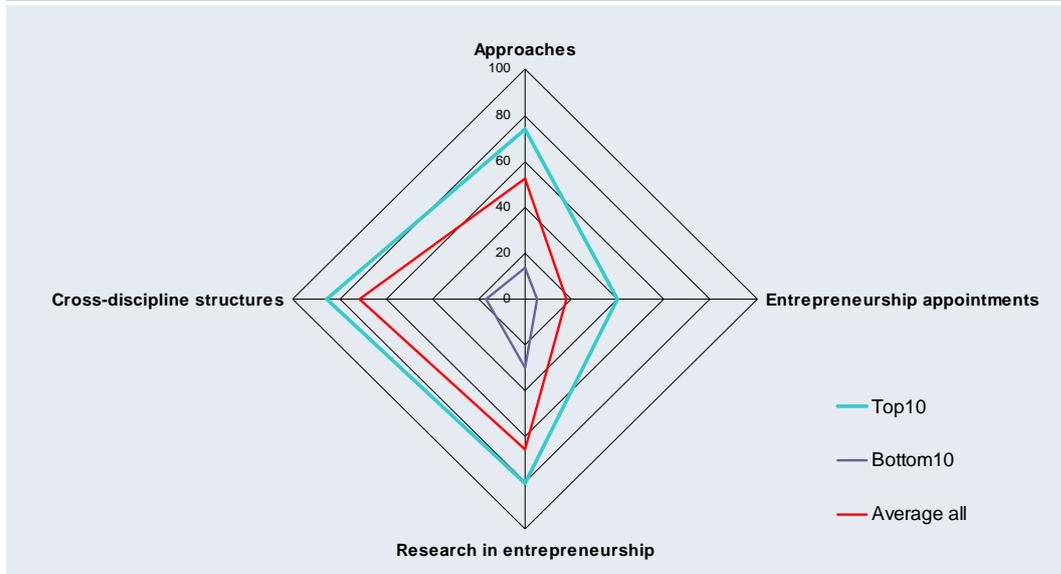
Box 7-1: Overview of the questions in the Institutional Infrastructure dimension

- Entrepreneurship appointments**
1. How many entrepreneurship chairs/professorships did your institution have in the previous academic year?
- Entrepreneurship research**
1. Does your institution conduct entrepreneurship-related research?
 2. What is the objective of your institution's research on entrepreneurship education?
- Cross-discipline structures**
1. Can all students at your institution take entrepreneurship courses and have them credited to their degrees no matter which faculty/discipline they are connected to?
 2. Did your institution offer cross-faculty/multidisciplinary entrepreneurship activities (both incurricular and extracurricular) in the previous academic year?
 3. Does your institution provide opportunities for entrepreneurship students from different faculties/disciplines to mix in the classroom?
- Approaches**
1. Does your institution have an entrepreneurship department?
 2. Does your institution have a dedicated entrepreneurship centre or similar formalised entity?
 3. Does your institution provide incubator facilities?
 4. Does your institution have a technology-transfer office (TTO)?

7.2 Main conclusions

Figure 7.1 illustrates the difference between the reported framework conditions related to institutional infrastructures for top-10 institutions identified in the benchmark study compared with the bottom 10 and the average.

Figure 7-1: Institutional infrastructure



7.2.1 Approaches

Figure 7.1 shows a major difference between top and bottom detected in relation to the *approaches* the institutions take to support the entrepreneurship education. The findings show that while all of the top-10 institutions have an entrepreneurship centre, none of the bottom-10 institutions do. Similar results can be seen for the other approaches such as entrepreneurship department, incubator facilities and technology-transfer offices (TTO). Of these approaches, the bottom-10 institutions are mostly engaged in tech transfer, while the majority of the top-10 institutions are engaged in all of the approaches.

The institutional infrastructures seem to be on their way at the European HEIs engaged in entrepreneurship education. Around half of the institutions have physical structures in place in order to support the entrepreneurship education. 52 percent have an entrepreneurship department, 58 percent have a dedicated entrepreneurship centre, and 61 percent have an incubator. 60 percent also have a technology-transfer office. 36 percent of the HEIs with entrepreneurship education have all four kinds of physical facilities.

The cases show that especially *entrepreneurship centres* can play a crucial role for coordinating and rooting entrepreneurship education at a university. In several of the interviews the importance of an entrepreneurship centre for developing entrepreneurship education has been underlined. All of the top-10 HEIs in the survey have an entrepreneurship centre. The centres engage in a wide range of different activities such as summer schools, competitions, trips to Silicon Valley and mentor arrangement with industry.

7.2.2 Entrepreneurship research

In relation to *entrepreneurship research* it is noteworthy that almost all of the top-10 institutions conduct research on entrepreneurship education. During the interviews it became apparent that many of the good-practice institutions conduct research in entrepreneurship education in order to improve their own activities. They would actively use their findings to come up with new teaching methods, develop new curricula etc. Only two of the bottom-10 institutions conduct research on entrepreneurship education.

7.2.3 Entrepreneurship appointments

Most HEIs with entrepreneurship education have a *chair in entrepreneurship*. The average number of tenured chairs is 2.6 and the average non-tenured chairs are 3.1. Cases show that these chairs might act as entrepreneurship champions in the different faculties supporting cultural change.

It is a very positive finding in the survey that almost 75 percent of the HEIs with entrepreneurship education in Europe conduct research on entrepreneurship, and 55 percent conduct research on entrepreneurship education. The cases show that the research findings are often used to develop new entrepreneurship pedagogy, curriculum etc.

7.2.4 *Cross-discipline structures*

Figure 7.1 shows that a significant difference between top and bottom institutions is the focus on *cross-discipline structures*. In the top-10 institutions almost all institutions have made structures to ensure a cross-discipline approach not making entrepreneurship a sort of add-on to the institution placing the activities in the business department. The top-10 institutions make sure that students from all disciplines can take the credit-bearing entrepreneurship courses, make sure that the entrepreneurship activities are offered as joint efforts between different faculties etc. Only one or two of the bottom-10 institutions take such measures to increase the multidisciplinary aspect of entrepreneurship education, which is also significantly worse than the average score.

Furthermore, 78 percent of the HEIs offered cross-faculty or *multidisciplinary entrepreneurship activities* in the previous academic year. These both include incurricular and extracurricular activities. Most of the HEIs also provide opportunities for entrepreneurship students from different faculties or disciplines to mix in the classroom (76 percent). This strong focus on cross- and inter-discipline activities indicates that entrepreneurship education really has emerged as a broad concept at the HEIs with entrepreneurship education throughout Europe.

7.2.5 *Types of institutions*

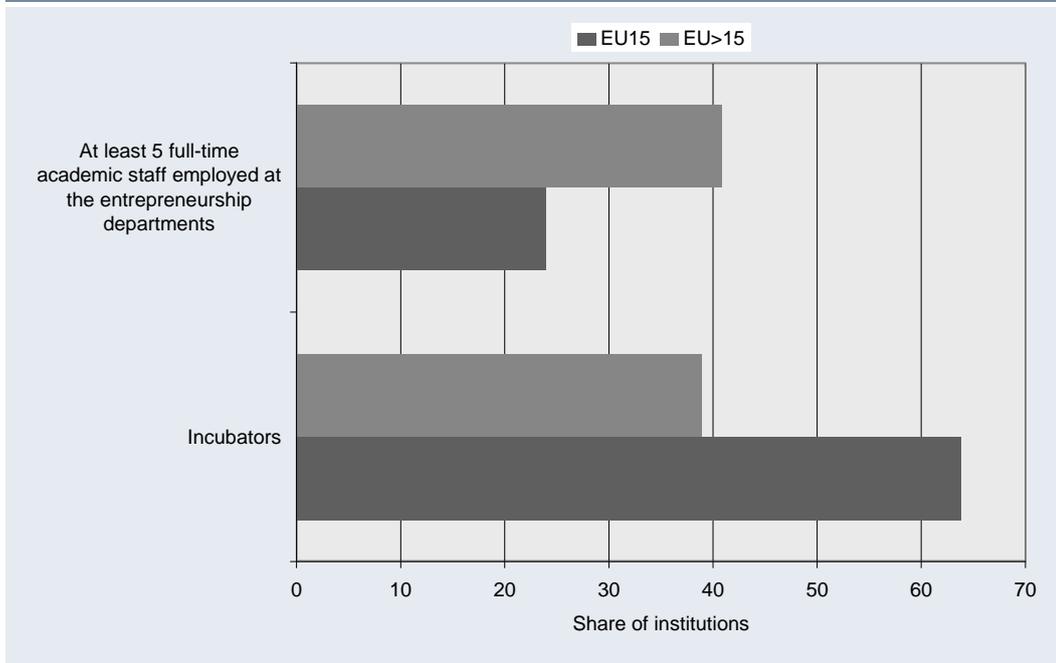
The different aspects of entrepreneurship institutional infrastructure such as an entrepreneurship department or a technology-transfer office might not be equally important for different types of institutions. Regarding entrepreneurship departments this is shown in the distribution of departments across the different types of HEIs, where fewer non-technical HEIs – e.g. architect or music schools – have an entrepreneurship department than for instance specialised technical HEIs. Also, 75 percent of the technical HEIs with entrepreneurship education that are part of a larger multidisciplinary HEI have a technology-transfer office compared with 57 percent of the specialised technical HEIs and 32 percent of the non-technical specialised HEIs. None of the independent business schools have a technology-transfer office.

In respect of entrepreneurship chairs, multidisciplinary HEIs with and without business schools have an average of 2.3 and 2.7 chairs respectively, specialised HEIs have an average of 3.5 chairs, and independent business schools have an average of 3.7 chairs. Of the specialised HEIs, technical HEIs have an average of 5.3 chairs whereas non-technical have an average of 2.5 chairs.

7.2.6 *Regional differences*

The survey shows some differences between the EU15 and the EU>15 countries, see figure 7-2.

Figure 7-2: Regional differences



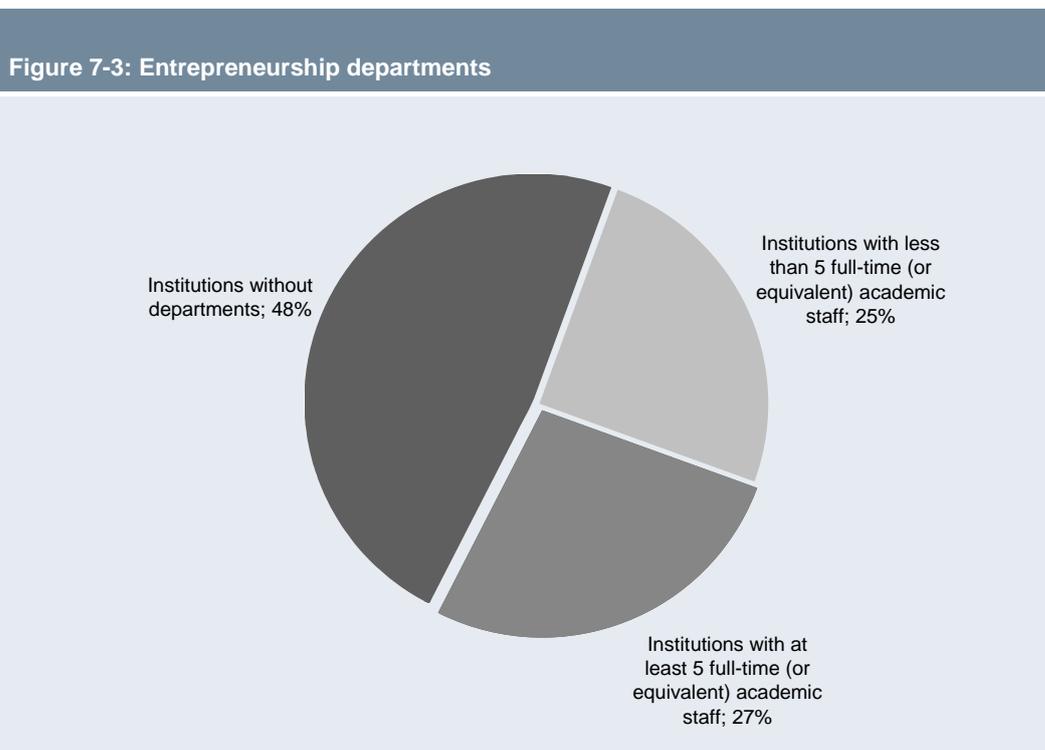
For instance, figure 7-2 shows that the EU15 countries have more incubators (64 per cent) than the EU>15 countries (39 per cent). On the other hand the EU>15 countries tend to have more entrepreneurship chairs than the EU15 countries. Furthermore, the EU>15 countries tend to have more and larger departments than the EU15 countries. In the new countries, 44 per cent of the HEIs with entrepreneur education do have a department compared with 50 per cent in the EU15 countries. And 41 per cent of the departments in the new countries have at least five full-times academic staff compared with 24 per cent in the EU15 countries.

7.2.7 Development over time

There seems to be a clear connection between the numbers of years that an HEI has been engaged in entrepreneurship education and the development of the institutional infrastructure. For instance, 47 per cent of the HEIs who have less than four years of experience in entrepreneurship education have an incubator compared with 73 per cent of the HEIs with more than 12 years of experience. Likewise, 64 per cent of the HEIs with more than 12 years of experience with entrepreneurship education have an entrepreneurship centre with more than one full-time staff compared with 41 per cent of the HEIs with less than four years of experience. This connection between experience and development is found in most of the aspects of institutional infrastructure.

7.3 Approaches

In Europe, half of the HEIs with entrepreneurship education have an entrepreneurship department, cf. figure 7-3. Departments can enhance entrepreneurship education at the institution by boosting academic credibility and thereby the quality and attractiveness of entrepreneurship research and teaching.



7.3.1 Entrepreneurship departments

The survey points to the number of years with entrepreneurship education as an explanatory factor for establishing an entrepreneurship department. In the survey, 59 percent of the institutions with less than four years of experience with entrepreneurship education do not have an entrepreneurship department. In contrast, the number is 43 percent for institutions who have more than 12 years of experience with entrepreneurship education.

Whereas entrepreneurship departments will often conduct research in entrepreneurship, entrepreneurship centres will often have a more coordinating and awareness-enhancing role. One might expect that the higher-education institutions will go through a process where departments over time stress the need of a dedicated entrepreneurship centre with a more coordinating and awareness-enhancing role at the HEI. The survey shows that 61 percent of the HEIs with entrepreneurship education both have an entrepreneurship department and an entrepreneurship centre. This only gives limited support for the hypothesis.

Having an entrepreneurship department will therefore probably not be equally relevant for all kinds of HEIs. This is reflected in the distribution of departments across the different types of technical HEIs, where fewer non-technical HEIs – e.g. architect or music schools – do have an entrepreneurship department (56 percent) than for instance specialised technical HEIs (43 percent).

Furthermore, the EU>15 countries have more and larger departments than the EU15 countries. In the EU>15 countries, 44 percent of the HEIs with entrepreneur education do have a department compared with 50 percent in the EU15 countries. And 41 percent of the departments in the EU>15 countries have at least five full-times academic staff compared with 24 percent in the EU15 countries.

7.3.2 Entrepreneurship centre

In several of the institutions which have been interviewed in the survey the importance of the entrepreneurship centre for developing entrepreneurship education seems to be underlined. In the following, the findings from the most interesting case studies are outline in respect of their different approaches to entrepreneurship education and the role the entrepreneurship centre plays in coordinating and rooting entrepreneurship education at the universities.

However, there are more entrepreneurship centres today than entrepreneurship departments, as 58 percent of HEIs with entrepreneurship education have an entrepreneurship centre. Some are very small, as 6 percent of the HEIs with entrepreneurship education have a centre that employs less than one full-time employee. 52 percent of the HEIs with entrepreneurship education have a centre that employs at least one full-time employee.

Again, there seems to be a process where the longer time the HEIs have engaged in entrepreneurship education, the more they have established an entrepreneurship centre. 64 percent of the HEIs with more than 12 years of experience with entrepreneurship education have an entrepreneurship centre with more than one full-time staff compared with 41 percent of the HEIs with less than four years of experience, see table 7-1.

| | Years of experience with entrepreneurship education | | | | |
|--|---|---------------------------------|---|--------------------------------------|----------------------------------|
| | Total | Less than 4 years of experience | Between 4 and less than 8 years of exp. | Between 8 and 12 years of experience | More than 12 years of experience |
| Yes, and the centre employs at least one full-time employee (or equivalent) | 52% | 41% | 44% | 55% | 64% |
| Yes, and the centre employs less than one full-time employee (or equivalent) | 6% | 12% | 7% | 3% | 7% |
| No, my institution does not have an entrepreneurship centre | 42% | 47% | 49% | 42% | 29% |

Regarding the different types of HEIs, 71 percent of independent business schools with entrepreneurship education have an entrepreneurship centre compared with 39 percent of the specialised HEIs and 54 percent of the multidisciplinary HEIs.

In most of the cases the entrepreneurship centre plays a key coordinating role. For instance, the Centre for Entrepreneurship at INSEAD in France, one of Europe’s leading business schools, plays a key role in ensuring support for new entrepreneurship initiatives from the school’s management. The centre also liaises with other areas of the school and alumni organisations to ensure that entrepreneurship strategy is well understood and co-ordinated with other initiatives and priorities.

Furthermore, the centre’s management develops and proposes the strategy for entrepreneurship at INSEAD to the faculty and the school’s management and works on building strong relationships with relevant external stakeholders. This point to an entrepreneurship centre might help anchor the entrepreneurship strategy and secure continuity as well as collect experience gained. In addition, the solid strategic embeddedness of entrepreneurship within INSEAD and the academic excellence of the entrepreneurship faculty seems to ensure a sustainable development of the area. *The Centre for Entrepreneurial Learning (CfEL) at the British University of Cambridge* also has nine full-time staff that are all focused on planning and implementing entrepreneurship courses.

It is worth pointing out that all of the top-10 HEIs with entrepreneurship education in the survey have an entrepreneurship centre – and that none of the bottom-10 HEIs with entrepreneurship education have one.

Most of the centres engage in a wide range of activities with the aim of raising the awareness of students and staff in respect to entrepreneurship education. Activities

include summer schools, lectures by entrepreneurs, organising of courses, inviting alumni entrepreneurs to come back and tell about their experiences and act as role models, planning business seminars where the students are teamed up in interdisciplinary groups to develop their own business ideas and business models, etc.

Some institutions go even further. At the *Technical University in Munich (TUM)*, which has one of the largest entrepreneurship centres in the survey, activities are often carried out in close cooperation with large firms, and bring the students very close to the real entrepreneurship experience through the Manage&More programme. Manage&More is an interdisciplinary entrepreneurship programme at the TUM launched in 2004. Each semester, 20 students and post-graduates are selected from all faculties to participate in the 18-month programme. These students are selected based on number of criteria such as ambition and commitment to their studies. During the programme the students can, alongside their studies, participate in seminars, workshops and lectures. Moreover, the students get their own personal mentor provided by the corporate partners of the TUM. Also in cooperation with the corporate partners – many of these major worldwide companies such as Lufthansa, BASF, Microsoft and Intel – the students – in interdisciplinary groups – undertake innovation projects where they develop and market within a short space of time new products and services.²¹ On average, three companies are started per year due to the Manage&More programme.

Furthermore, the TUM Business School and UnternehmerTUM together with the Leipzig Graduate School of Management have recently launched an MBA programme on Innovation and Business Creation. The programme consists of 60 days of classroom teaching and training as well as a study trip to Silicon Valley and offers to experienced innovation managers and corporate founders the opportunity to further develop their business models in an entrepreneurial network.

A good example of how to establish an entrepreneurship centre is found at the *Technical University in Munich (TUM)* which took a very proactive approach to the centre's establishment. The president of TUM, Dr. Wolfgang Hermann, asked Dr. Schönenberger to investigate the possibility of setting up an entrepreneurship centre by analysing good-practice examples of entrepreneurship centres around the world. On this background, Dr. Schönenberger together with Dr. Jopen (a serial entrepreneur) wrote a business plan for setting up an entrepreneurship centre and presented it to the president. In the course of 12 months they had raised enough money to start the entrepreneurship centre called UnternehmerTUM in January 2002.

The company was set up as an independent, non-profit private limited company and an associated institute of the university. The centre has about 40 employees whereof approx. 20 professionals come from the corporate world with entrepreneurial experience of their own. The independence from the university probably has a positive effect on the possibilities of attracting professionals from the corporate world without academia requirement. And these professionals with hands-on experience are likely to assure a practical orientation and a high level in the entrepreneurship education.

²¹ To learn more about the programme please visit: <http://www.unternehmertum.de/mm/manage.html> (in German, but with an English summary)

In the Netherlands the government has played a proactive role through an Action Program for Entrepreneurship and Education. In 2004, the Ministry of Economic Affairs, in close cooperation with the Ministry of Education, presented the Action Program, which was to focus more on the education task of higher-education institutions. Through this renewed focus the aim of the programme was to promote an entrepreneurial attitude and to strengthen the entrepreneurial knowledge and skill among young people and thereby increase the pool of entrepreneurial talent. As the Dutch government has a strong focus on evidence-based policies, the Ministry of Economic Affairs and the Ministry of Education mapped what entrepreneurship activities were going on in the Dutch higher-education institutions to spot good practices that could be mainstreamed.

In 2007, the partnership decided to create roadmaps on both national and institutional level for integrating entrepreneurship at the different levels in the Dutch educational system. One of the objectives of the roadmaps was to have a strategic plan that the ministries could use to guide the entrepreneurship education policies in the years to come.

7.3.3 Incubators and technology-transfer office

An incubator can be an effective way to raise awareness about the possibility of start-up and spin-out among students and staff. A majority of the HEIs with entrepreneurship education in Europe have an incubator (61 percent). 42 percent of the HEIs with entrepreneurship education provide incubator facilities that can host at least ten graduate start-up or academic spin-offs. 19 percent of incubators can host less than ten start-ups or spin-outs.

Again there seems to be a connection with the number of years the HEIs have been involved in entrepreneurship education. 47 percent of the HEIs which have less than four years of experience in entrepreneurship education have an incubator compared with 73 percent of the HEIs with more than 12 years of experience. In contrast with entrepreneurship departments, the EU15 countries have more incubators (64 percent) than the EU>15 countries (39 percent).

Most of the HEIs with entrepreneurship education have a technology-transfer office (TTO). 55 percent have a TTO with at least one full-time employee, 5 percent have one with less than one employee. That means that 40 percent of the HEIs with entrepreneurship education do not have a TTO. A TTO is probably more relevant for technical HEIs. 75 percent of the technical HEIs with entrepreneurship education that are part of a larger multidisciplinary HEI have a TTO compared with 57 percent of the specialised technical HEIs and 32 percent of the non-technical specialised HEIs. On the other hand none of the independent business schools have a TTO, see table 7-2 below.

Table 7-2 Technology-transfer offices

| | Type of institution | | | | |
|---|---------------------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes, and the TTO employs at least one full-time employee (or equivalent) | 55% | 64% | 62% | 44% | 0% |
| Yes, and the TTO employs less than one full-time employee (or equivalent) | 5% | 3% | 5% | 0% | 0% |
| No, my institution does not have a TTO | 40% | 33% | 33% | 56% | 100% |

Incubators can be started as a public initiative as shown by the Delft Technical University in the Netherlands. Here it was the city of Delft that started the incubator which was placed at the University campus. The incubator has a strong track record, as 51 incubatees have been selected in the past three years out of whom 46 are still running a business with 172 employees.

There are also differences between the incubators included in the survey. ESPCI–ParisTech in France does not run its own incubator, but the companies established within ESPCI–ParisTech have the possibility of being incubated at a public incubator run by the city of Paris. Furthermore, since the professors and students file patents under their own name, and not under the name of the university, they do not see the need for a technology-transfer office. This seems to differ somewhat from the rest of the HEIs with entrepreneurship education in the survey, where most have a technology-transfer office.

Some of the interviewers have also pointed out that there might be an advantage in separating the entrepreneurship centre and the technology-transfer office, as they have different rolls and employ different kinds of staff (entrepreneurs versus lawyers). This has for instance been the case at the Cambridge University in the UK.

In sum, a majority of the HEIs in the specific survey have an entrepreneurship department (52 percent), a dedicated entrepreneurship centre (58 percent), an incubator (62 percent), and a technology-transfer office (60 percent). 36 percent of the HEIs with entrepreneurship education have all the different kinds of facilities and therefore have an entrepreneurship department as well as an entrepreneurship centre, an incubator and a TTO. 61 percent both have an entrepreneurship department and an entrepreneurship centre. Especially the importance of entrepreneurship centres has been underlined in this section, which is also seen by the fact that all of the top-10 HEIs in the survey have an entrepreneurship centre. Finally, one can point out that entrepreneurship departments seem to play a minor role compared with entrepreneurship centres in the case studies, or at least they have not been touched upon in the same degree by the respondents.

7.4 Entrepreneurship appointments

Entrepreneurship appointments such as entrepreneurship professorships/chairs can ensure a higher degree of embeddedness of the entrepreneurship education. A large number of entrepreneurship professors would also indicate that entrepreneurship is high on the agenda in Europe among the institutions. 33 percent of HEIs with entrepreneurship education have less than one tenured chair in entrepreneurship (and 55 percent have less than one non-tenured chair). Table 7-3 shows the number of entrepreneurship professorships/chairs at the European HEIs with entrepreneurship education. It should be noted, that there was a number of outlines in this question.

Table 7-3: Number of entrepreneurship chairs/professorships tenured and non-tenured in the previous academic year

| | Tenured | Non-tenured |
|------------------------------------|----------|-------------|
| More than 0, but less than 1 chair | 1 (1%) | 0 (0%) |
| 1-2 chairs | 66 (65%) | 33 (64%) |
| 2,01-5 chairs | 24 (24%) | 8 (15%) |
| 5,01-10 chairs | 10 (10%) | 11 (21%) |
| Average | 2,6 | 3,1 |

(n =101/52)

Table 7-3 shows that the majority of HEIs in the specific survey have one or two chairs, either tenured or non-tenured. The average number of chairs are 2.6 for tenured and 3.1 for non-tenured chairs. This positive result seems to indicate that the HEIs with entrepreneurship education do in fact put significant manpower and resources into the field.

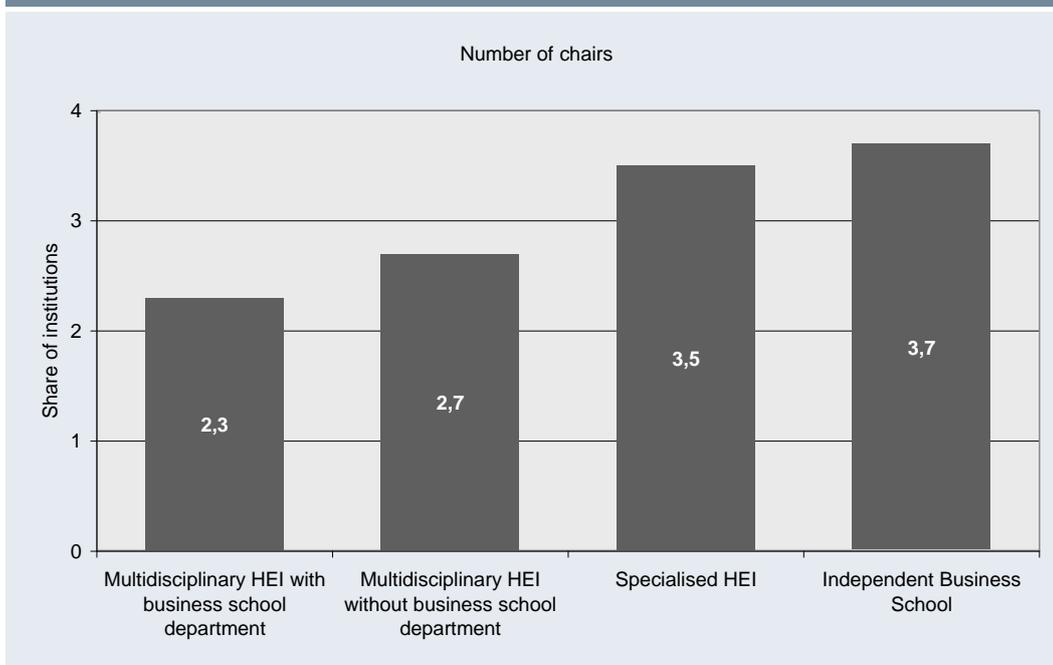
Out of all the HEIs in Europe 60.3 percent do not have entrepreneurship chairs. This result is the same as that in a study²² on entrepreneurship chairs in German-speaking Europe from 2007. This study showed that 65 percent of the HEIs in German-speaking Europe did not have a chair in entrepreneurship. In the present survey 25.5 percent of the HEIs in the study have a tenured chair and 14.2 percent have a non-tenured chair.

The different types of HEIs in the survey differentiate on the number of tenured chairs, see figure 7-4 below. Multidisciplinary HEIs with and without business schools have an average of 2.3 and 2.7, chairs respectively, specialised HEIs have an average of 3.5 chairs, and independent business schools have an average of 3.7 chairs. Of the

²² EFER and Technical University of Munich (TUM) Mapping Study on German-speaking Universities: <http://www.efer.nl/res/res02.htm>

specialised HEIs, technical HEIs have an average of 5.3 chairs whereas non-technical have an average of 2.5 chairs.

Figure 7-4: Tenured chairs at different kinds of institutions



Not surprisingly, HEIs that have worked longer with entrepreneurship education tend to have more tenured chairs than HEIs where entrepreneurship education is a relatively new discipline. On average, HEIs with less than four years of experience of entrepreneurship education have 2.8 tenured chairs and 3.5 non-tenured, whereas HEIs with more than 12 years of experience have an average of 3.3 tenured chairs and 3.1 non-tenured chairs.

The survey also shows that the EU>15 countries tend to have more entrepreneurship chairs than the EU15 countries. On average, the EU>15 countries have an average of 4.5 tenured and 4.2 non-tenured chairs. The EU15 countries have an average of only 2.3 tenured and 2.6 non-tenured chairs. However, this finding has to be interpreted carefully, as the EU sample of new EU countries is rather small and the standard deviation rather large.

Entrepreneurship staff might act as champions, driving change at the HEIs. On example of this is found at the Utrecht School of the Arts (HKU) in the Netherlands. Taking on entrepreneurship education and trying to embed the concept of entrepreneurship throughout the entire institution at HKU has called for a cultural change. To support and promote this cultural change the HKU has appointed entrepreneurship champions in the different faculties and act as internal change agents.

On top of that, the HKU has appointed an entrepreneurship champion from the outside, Ton Lamers, an academic who has high standings in the different faculties and is respected for his academic merits. A number of the faculties were already in contact with this person in the attempt to increase focus on professional business skills in the arts courses. Therefore, it was decided to make him a part of the COCI-team to take advantage of the goodwill and respect from the faculties as well as his experience with entrepreneurship education in pushing the entrepreneurship agenda.

7.5 Research in entrepreneurship

Research activities in the entrepreneurship field can help ensure a higher degree of embeddedness of the entrepreneurship education across the HEI. Furthermore, research helps establish entrepreneurship as a traditional academic discipline in line with other research fields and improve the academic credibility of the entrepreneurship field.

Therefore it is a very positive finding in the survey that almost 75 percent of the HEIs with entrepreneurship education in Europe conduct research on entrepreneurship, and 55 percent conduct research on entrepreneurship education.

For a majority of the HEIs (65 percent) the objective of the research on entrepreneurship education is to further advance the field and conduct cutting-edge research, cf. table 7-4. At the same time, understanding market trends and needs within the area is stated as an objective by 55 percent of the HEIs. Internal evaluation and benchmarking are also among the purposes for conduction research, as stated by 49 percent and 36 percent of the HEIs, respectively. This seems to indicate that most of the times research on entrepreneurship education is conducted as any other academic research, and not for instance solemnly for evaluation purposes. This is for instant the case at the *Helsinki School of Economics* in Finland where research findings are applied at the entrepreneurship education in order to improve the education.

Table 7-4: Objective of the HEIs research on entrepreneurship education

| | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| To further advance the field/conduct cutting edge research within the field of entrepreneurship education | 65% | 73% | 69% | 57% | 63% |
| To understand market trends and needs within the area of entrepreneurship education | 55% | 53% | 60% | 29% | 50% |
| For internal evaluation purposes | 49% | 67% | 46% | 57% | 50% |
| For benchmarking purposes | 36% | 20% | 43% | 43% | 25% |
| Other objectives | 6% | 0% | 8% | 0% | 13% |

Most of the HEIs with a long history of entrepreneurship education conduct research on entrepreneurship (85 percent with more than 12 years of experience with entrepreneurship education) compared with HEIs with less than four years of experience (50 percent). In the survey, specialised technical HEIs have the lowest level of research activities, as only 14 percent conduct research on entrepreneurship, probably because they have smaller academic departments.

One example of dedicated entrepreneurship research is found at the *Kemmy Business School* in Ireland. Here, the Department of Management & Marketing is comprised of five main groups namely, marketing, management, entrepreneurship, information management and project management.

Research within the department is diverse and encompasses many aspects of marketing and management. The department has three dedicated research centres, namely, the UL/IMI Centre for Marketing Studies, the Centre for Information and Knowledge Management and the Centre for Entrepreneurial Studies. Research degrees at Master’s and PhD level are available to students interested in any of the broad areas within marketing and management.

The Centre for Entrepreneurship Studies is a “house”, which formalises all the entrepreneurship activities including for instance PhD. It is a recognised centre which highlights the strategic importance of entrepreneurship activities at the university. The teachers in Entrepreneurship at the Kemmy Business School are all part of the centre. Established in 1992, it has a clear goal to undertake long-term, cutting-edge research on entrepreneurship and the SME sector. The centre seeks to enhance the development of entrepreneurship both in the Shannon region and the Irish economy in general. The research agenda focuses on a range of issues, including understanding the

entrepreneurial process, the significance of SMEs, the impact of the intervention agencies, entrepreneurship theory and graduate entrepreneurship. This focused approach to integration and long-term research probably has a positive effect on the level of research being conducted. However, there has been no ranking of the quality of the research in entrepreneurship, so this remains an open question.

Another example of entrepreneurship research is found at the *Utrecht School of the Arts* in the Netherlands. Here, the Research Group Art and Economics is a part of the Faculty of Art and Economics at the HKU. The research group conducts research on different aspects of cultural entrepreneurship. The results are used for (improvement of) entrepreneurship education and practice – for example research results are used when developing new entrepreneurship courses, investigating which teaching methods will be most appropriate to use, etc.

The link between research and academic credibility is highlighted in those of the cases that touched the subject. At the *Delft University of Technology* in the Netherlands the connection with research is deemed important to get the academic credibility for the programmes they offer at the entrepreneurship centre. Therefore, the centre is applying for five PhD students to expand the research in entrepreneurship. The research will also be used by staff in the education.

7.6 Cross-discipline structures

Traditionally, entrepreneurship education has been embedded in the management/engineering fields, but the growing recognition of entrepreneurship education as a much broader concept has initiated a focus on the need for cross-discipline actions both in delivering and developing entrepreneurship education.

This is reflected in the fact that a majority of the multidisciplinary higher-education institutions allow all their students to take entrepreneurship courses and have them credited to their degree, regardless of which faculty or discipline they are connected to. Only 40 percent of the multidisciplinary HEIs with entrepreneurship education do not facilitate this.

Furthermore, 78 percent of the HEIs offered cross-faculty or multidisciplinary entrepreneurship activities in the previous academic year. These both include incurricular and extracurricular activities. Most of the HEIs also provide opportunities for entrepreneurship students from different faculties or disciplines to mix in the classroom (76 percent).

As pointed out in the introduction of the chapter there is a significant difference between top and bottom institutions in the focus on *cross-discipline structures*. In the top-10 institutions almost all institutions have made structures to ensure a cross-discipline approach, not making entrepreneurship a sort of add-on to the institution placing the activities in the business department. The top-10 institutions make sure that students from all disciplines can take the credit-bearing entrepreneurship courses, make sure that the entrepreneurship activities are offered as joint efforts between different faculties etc. Only one or two of the bottom-10 institutions take

such measures to increase the multidisciplinary aspect of entrepreneurship education, which is also significantly worse than the average score.

This finding is in line with an interesting finding in the cases where the cross-discipline structures are often underlined as important for the development of entrepreneurship education. This is stated clearly in the following remark from the case of the University of Salford in the UK:

“It is the cross-disciplinary structures that are really helpful and is something we try to capture through the Innovation Cells, with staff in groups in Communities of Practice, because it is where things clash that the interesting things happen.” Claire Maclean, the University's Learning, Enterprise and Development Manager

Based on this belief, the university has established the Innovation Cells, where a small group of creative people (students as well as staff) are pooled together to work on one particular innovation, product, service or idea. The Innovation Cells deliberately create environments to further stimulate cross-fertilisation of ideas across disciplines and schools. Students and staff from all the faculties can come to the Enterprise and Development division with an idea, and if the idea has potential, the division establishes an Innovation Cell.

The *Helsinki School of Creative Entrepreneurship* (HSCE) in Finland offers a range of interesting findings regarding *cross-disciplinary structures*. The school is a multidisciplinary expertise-based and enterprise-oriented education-programme project between the Helsinki School of Economics, the University of Art and Design Helsinki and the Helsinki University of Technology. The school was initiated in late 2005 and welcomed its first students in January 2007.

Students accepted into the HSCE will enrol in a year-long series of seminars, workshops and lectures delivered by experts covering a broad range of topics including: creative teamwork, design, project planning and data discovery, due diligence, entrepreneurship training, sales training, legal issues, new venture strategy, raising finance, writing business plans, and presentation skills. This work forms part of the Creative Entrepreneurship Module (20-24 ECTS) that can be credited at the student's home university as part of their Master's studies.

The HSCE bridges the gap for transforming world-class research into high-growth-potential commercialisation platforms by combining design, business and technology disciplines. In practice this is done by inviting researchers from the three universities to submit research projects with commercial potential. HSCE students will then have the opportunity to “apply” the knowledge and skills acquired to develop a plan to transform the submitted projects into a start-up with “growth potential”. Each team will be supervised by, and will report to, a Project Board assembled especially for their project. The Board is chaired by an experienced business person who is joined by a representative from the HSCE and the idea provider.



8. TEACHING AND LEARNING

8.1 Introduction

Teaching and learning covers the actual activities taking place in the entrepreneurship education. This includes the entrepreneurship courses and degrees offered and the range of extracurricular entrepreneurship activities provided. Furthermore, the quality of the entrepreneurship taught also depends on the actual teaching material and teaching methods used. The curriculum part of the dimension investigates how the HEIs develop their entrepreneurship curriculum focusing on collaborations across disciplines and also institutions and borders in the development of entrepreneurship curriculum.

The scope and focus of entrepreneurship education vary among HEIs, depending on the types of institutions and years of experience with entrepreneurship education and whether the focus is teaching about entrepreneurship or for/in entrepreneurship. Teaching about entrepreneurship can be compared with more traditional academic disciplines like economy or social science, whereas teaching for/in entrepreneurship involves subjects that traditionally lie outside the university sphere.

One main task of this chapter is to investigate the most common teaching methods currently in use. Also, it is a goal to explore the most innovative ones. Further, we aim to identify good practice in delivering entrepreneurship at the higher-education level. This chapter will provide input on how HEIs and other institutions can work with entrepreneurship in their day-to-day routines.

The following four elements constitute the dimension *teaching and learning* in the framework model applied in the survey (the underlying questions can be seen in box 8.1):

- Courses
- Degrees
- Curriculum
- Extracurricular activities
- Teaching methods

Box 8-1: Overview of the questions in the Teaching and Learning dimension

Courses (questions 1-5 are repeated for graduate and postgraduate levels – if present at HEI)

1. Approximately, how many incurricular entrepreneurship courses did your entire institution offer to undergraduate students in the previous academic year?
2. Please estimate the number of UNDERGRADUATE students that in the previous academic year passed these incurricular entrepreneurship courses quantified in the previous question?
3. Please estimate what percentage of these undergraduate students, were male versus female.
4. Please estimate what percentage of your total entrepreneurship courses for undergraduate students were courses ABOUT entrepreneurship versus FOR entrepreneurship.
5. Is entrepreneurship primarily integrated across curriculum or taught only in specialised courses at your institution?
6. How are your institution's entrepreneurship courses divided according to the above phases?

Degrees

1. Did your institution offer one or more degree programmes in entrepreneurship in the previous academic year?
2. Please estimate the number of students at each study level enrolled in these degree programmes in the previous academic year?
3. Which faculties/disciplines at your institution did offer incurricular entrepreneurship courses and/or entrepreneurship degree(s) (no matter study level) in the previous academic year?

Curriculum

1. Does your institution...
 - Have in-house development of entrepreneurship teaching curriculum and/or teaching methods?
 - Import entrepreneurship teaching curricula and/or teaching methods from other HEIs?
 - Have formalised national exchange of good practice in entrepreneurship education?
 - Have formalised international exchange of good practice in entrepreneurship education?
 - Include entrepreneurs/practitioners in the development of entrepreneurship teaching materials?
 - Have a Curricula Development Fund dedicated to entrepreneurship curriculum
2. Does your institution at present time have cross-faculty/interdisciplinary formalised collaborations in developing new entrepreneurship education?

Teaching methods

1. How often does your institution make use of the following main teaching methods in the entrepreneurship education?

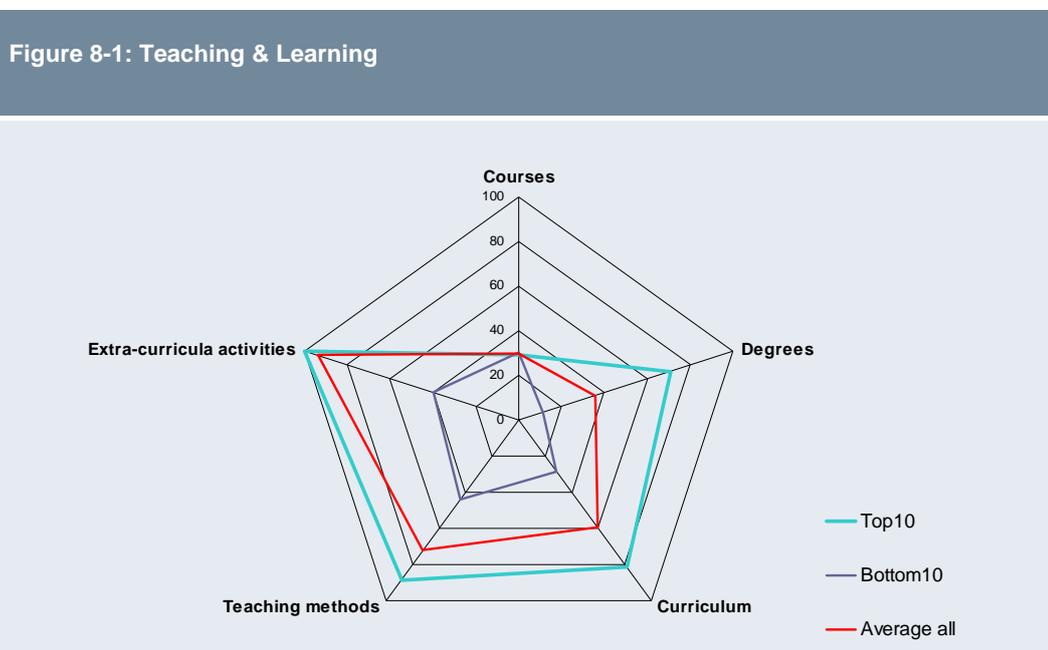
Extracurricular activities

1. Did your institution offer extracurricular activities focusing on entrepreneurship in the previous academic year?
2. Please estimate the total number of students (at any level, both full- and part-time) who participated in extracurricular entrepreneurship activities in the previous academic year?

8.2 Main conclusions

Comparing institution performance with respect of the number of courses, the distance between the highest- and lowest performing institutions is relatively small. The main reason is that institutions with entrepreneurship education offer almost the same number of entrepreneurship *courses*. This implies that entrepreneurship education may often start with offering some courses in entrepreneurship, but it is the additional activities (curriculum development, extracurricular activities etc.) that really have an impact on the entrepreneurship performance in institutions from our survey.

Figure 8-1 illustrates the difference between the reported teaching & learning framework conditions for top-10 institutions compared with the bottom 10 and the average.



8.2.1 Courses

The lack of distance for the variable *courses* can partly be explained by the fact that all the institutions included in the long survey have passed the screening criteria – that they have entrepreneurship courses. However, the screening criteria do not stipulate the number of courses. Again, this indicates that the number of courses might not be a strong determinant of performance as an entrepreneurial institution.

Even though most institutions offer a relatively similar amount of courses, it is still worth noticing that there are fewer courses at postgraduate level than at undergraduate/graduate level. At postgraduate level, focus will rather be on teaching about entrepreneurship than in/for entrepreneurship, which may lead to a smaller number of courses.

8.2.2 Degrees

It is interesting to see the difference between top 10 and bottom 10 when it comes to *entrepreneurship degrees*. The presence of entrepreneurship degrees may bear witness to the institution's engagement in entrepreneurship education, but during the interviews with good-practice institutions it was voiced that having degrees in entrepreneurship was not necessarily better than having no degrees. The argument was that it is more important to embed the entrepreneurial vision in all courses in order to get in touch with all students instead of just students that probably already have a positive notion of entrepreneurship because they have actively chosen an entrepreneurship degree. Different emphasis among institutions in education for/in or

about entrepreneurship may influence the opinion on the importance of degrees. Nevertheless, the results indicate that entrepreneurship degrees constitute an effective tool for the entrepreneurial institution.

8.2.3 Curriculum

The difference in *curriculum* between top-10 and bottom-10 institutions is also significant. Experiences within the field of entrepreneurship education are in their infancy in many European countries. Much of the curriculum is based on experience from the United States and cannot be directly transferred to the European context. In the development of European curricula you would expect great room for improvement by learning for others. Most of the institutions in the survey import entrepreneurship from others, but few have formalised the exchange of good practice. There seems to be a potential for more exchange of experience of this field.

8.2.4 Extracurricular activities

Figure 8-1 also indicates that *extracurricular activities* are an important aspect of entrepreneurship education that can supplement the in-curricular activities. Many HEIs have certain structures and regulations that they have to adhere to when it comes to curricula. There are often demands from the national governments on the curriculum content for the individual disciplines, and this can mean that there is little room for incorporating all the entrepreneurship activities which the institutions want, especially education in/for entrepreneurship. In such cases the institutions can make use of extracurricular entrepreneurship activities and thereby make sure that all students have the opportunity to engage in entrepreneurship if they want to.

The experiences from the interviews indicate that extracurricular activities are important in order to succeed in entrepreneurship education. Networking and contacts with business life is crucial in order to learn from experienced entrepreneurs and successful business people.

8.2.5 Teaching methods

Because *teaching methods* (along with entrepreneurship courses) in reality are fundamental to entrepreneurship education one might assume that the relatively low-performing institutions will have made some progress in this field and will not lack too far behind the better-performing institutions. The relatively short distance from top to bottom institutions – compared with the other variables – found for the variable teaching methods supports this assumption. However, both the survey and the in-depth interviews conducted in this study show that teaching methods in use vary greatly among HEIs. Therefore, there should still be plenty of room for more cooperation and exchange of experience and methodology between HEIs to make the teaching methods better.

The interviews indicate that the teaching methods have innovative elements through testing new teaching methods. By presenting cases for the students, making use of guest lecturers who have experience from the field and by making the students simulate or create own businesses, the entrepreneurship lecturers want to provide inspiration and give the necessary tools for starting a new business. Teaching entrepreneur-

ship includes an element of practical learning, which may open up for the use of creative teaching methods.

The most common teaching method in entrepreneurship is lecturing, but most of the HEIs also use case studies very often. The in-depth interviews show a clear need for the development of national and local case studies. Most countries need their own role models, also when it comes to good entrepreneurial practice. Other widespread teaching methods are project work and use of guest lecturers. Many HEIs also include various kinds of business simulations in the education.

The in-depth interviews point out that the non-lecturing methods in use are both time- and resource-consuming, which limits the institutions' ability to expand entrepreneurship education.

8.2.6 *Types of institutions*

When looking at how teaching and learning vary among *institutions*, the survey indicates that independent business schools and specialised technical institutions have more courses for/in entrepreneurship than other institutions. When it comes to whether the institutions offer degree programmes in entrepreneurship, business schools are the type of HEIs that most frequently offer this. Business schools are also more likely to have extracurricular activities such as matchmaking events and personal coaching for entrepreneurial students.

8.2.7 *Regional differences*

The survey shows that there is a *regional difference* when it comes to offering degree programmes in entrepreneurship. 80 percent of the HEIs in the countries that more recently entered the EU offer degrees in entrepreneurship, while 52 percent of the HEIs in the EU15 countries did the same.

Also when it comes to extracurricular activities, there are regional differences. HEIs in EU15 countries are more active in offering business plans or venture capital competitions than the new EU countries. On the other hand, the new EU countries practice more company visits than the old ones.

8.2.8 *Development over time*

Along several dimensions we see that HEIs with longer *experience in entrepreneurial education* differ from those with shorter experience. There is a clear tendency that the more experienced the institution is, the more courses it will offer. Further, the more experienced the institution is, the more likely it is to propose a degree programme in this subject. HEIs which have long experience in entrepreneurship education seem also to integrate the education more into existing courses. Also, exchange of experience seems to be more formalised among the HEIs with longest history of education of entrepreneurship.

When it comes to extracurricular activities, almost all of the participating HEIs offer some kind of extra activities, but the institutions with short experience in entrepreneurship seem to have fewer extracurricular activities than the others. Further, it is

interesting to see that both the institutions with little experience in the field and those having 12 years or more of experience have a high degree of cross-faculty/discipline collaboration on developing entrepreneurship education. The HEIs who are just starting to teach entrepreneurship probably need to cooperate across faculties in order to establish it, while those who have done work in the field for a long time may see the advantage in developing the programmes further by taking in other points of view.

8.3 Courses

Entrepreneurship is being taught in various scales across the higher-education institutions in Europe. It can be offered at all levels of study. It can be integrated in the curriculum or taught in specialised courses. The education can focus on teaching about or for entrepreneurship, and it can focus on the start-up phase or the pre or post start-up phase. All of these factors may say something about the skills and attitudes that the students obtain, and whether they have been equipped with an entrepreneurial mindset that can help them if they want to start up a business after graduation or act as intrapreneurs or just be entrepreneurial in their everyday life.

8.3.1 Levels

Among institutions with entrepreneurship education, courses in entrepreneurship are most commonly offered to undergraduate or graduate students, as shown in the table below. This pattern is clear also when we adjust for the fact that large institutions offer more courses than small institutions.

Table 8-1: Number of in-curricular entrepreneurship courses/modules institutions offered to undergraduate/graduate/postgraduate students (year previous to the survey)

| | Undergraduate Percent | Graduate Percent | Postgraduate Percent |
|----------------------|-----------------------|------------------|----------------------|
| 0 courses | 6% | 7% | 35% |
| 1-5 courses | 38% | 44% | 46% |
| 6-10 courses | 21% | 26% | 10% |
| More than 10 courses | 34% | 23% | 8% |
| Average | 9,3 | 7,3 | 3,0 |

(n = 194)

The table shows that at undergraduate level, a third of the institutions offer more than ten courses. Among the institutions with the largest number of students (highest quartile among the institutions in the survey) almost half of the institutions offer more than ten courses. However, 6 percent of the respondents do not offer any courses, which is also the case for the largest institutions.

When it comes to postgraduate courses, 35 percent of the institutions which offer entrepreneurship education do not have courses. The share is almost the same for institutions with a large number of students (highest quartile among the institutions in the survey).

On average, the higher-education institutions offer approximately nine courses at undergraduate level, just above seven courses at graduate level and three courses at postgraduate level.

The difference between undergraduate/graduate level and postgraduate level is interesting, but not too surprising. At postgraduate level, focus will rather be on teaching about entrepreneurship, than in/for entrepreneurship. This educational concentration probably implicates less courses.

The case studies underline several of the findings from the survey. First, many of the interviewed HEIs said that they offer courses for undergraduate/graduate level, while only a few have courses for PhD students. As many of the interviewed HEIs pointed out during the interviews, there is a limit to what one can learn about and for entrepreneurship before the student has to go out into real life to test his or her knowledge. This may be the reason why most of the institutions give more importance to courses on a lower level.

When it comes to whether the institutions offer courses *about* or *for/in* entrepreneurship, the survey indicates that independent business schools and specialised technical institutions have more courses *for/in* entrepreneurship than the others. The difference among different types of HEIs is small at undergraduate level, but is marked at both graduate and postgraduate level; cf. Table 8-2, which shows the average share of courses about and *for/in* entrepreneurship for graduates.

Table 8-2 Category of entrepreneurship education, average share of courses ABOUT and FOR/IN entrepreneurship for graduates. Distributed on the type of institutions

| | Total | Type of institution | | | | Technical | | |
|--|-------|--|-------------------------------------|-----------------|-----------------------------|--|-----------------------|---------------|
| | | Multidic. HEI with-out business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school | Technical as part of multidisciplinary HEI | Specialised technical | Non-technical |
| Courses ABOUT entrepreneurship – average % | 26% | 25% | 26% | 29% | 15% | 25% | 18% | 25% |
| Courses FOR/IN entrepreneurship – average % | 41% | 44% | 38% | 50% | 60% | 40% | 64% | 44% |
| Courses both ABOUT and FOR/IN entrepreneurship – average % | 32% | 31% | 35% | 21% | 25% | 35% | 18% | 28% |

(n = 158)

When the goal is to reach all students to create awareness of entrepreneurship, it is interesting to see whether the entrepreneurship courses are integrated in the existing courses or whether this subject is being taught in tailored courses. Integrating entrepreneurship in the curriculum may signify whether the goal is to provide the students with an entrepreneurial mindset or whether it is to give the students practical tools to start up new businesses.

The hypothesis is that by integrating the entrepreneurship teaching in the general curriculum, this will fertilise the ground and promote an entrepreneurial spirit. This attitude can be used by the students in starting new businesses, but can be just as useful in existing companies, official bodies and other organisations. By offering specialised courses, the students are provided with practical knowledge for starting new business (by their own or in existing companies). When it is mixed, the institutions try to achieve both goals.

In just over half of the institutions (52 percent) there is a mix of integration and specialised courses. One fourth has primarily specialised courses, whereas the last fourth have integrated the courses across their curriculum.

Table 8-3 Percent of courses integrated across curriculum or taught only in specialised courses/modules.

| | Total | Years of experience with entrepreneurship education | | | |
|---|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Primarily integrated in the existing curriculum | 23% | 18% | 15% | 30% | 24 |
| Primarily specialised courses | 25% | 47% | 37% | 23% | 9 |
| Mix of the above | 52% | 35% | 48% | 47% | 67 |

(n = 194)

There is little difference between the type of institutions in whether entrepreneurship is integrated or taught in specialised courses, but HEIs who have long experience in entrepreneurship education seem to integrate it more into existing courses.

One of the a priori assumptions in the survey was that the business and technical subjects in multidisciplinary institutions are more likely to offer entrepreneurship courses than for example the humanities and arts subjects. In the survey we therefore asked the multidisciplinary institutions to indicate which of their subjects offer entrepreneurship courses. The results are shown in table 8-4.

Table 8-4: Percentage of multidisciplinary institutions where the subject in question offers entrepreneurship courses

| Subject | Percentage |
|--|------------|
| Pedagogy/education | 29% |
| The humanities and theology | 27% |
| The arts | 26% |
| Natural science | 37% |
| Social science (except business studies) | 46% |
| Business studies | 82% |
| Technical | 68% |
| Food industry and home economics | 19% |
| Agriculture | 14% |
| Health care | 25% |
| Public security/defence | 6% |

As expected the table shows that the subjects most likely to offer entrepreneurship courses are business studies and technical studies. In 82 percent of the multidisciplinary institutions that have a business department, the business departments offer entrepreneurship courses. For the institutions with a technical department, the number is 68 percent. In comparison the table shows that in 26 percent of the multidisciplinary institutions that have an arts department, the arts department offers one or more entrepreneurship courses. The subjects least likely to offer entrepreneurship courses are public security, agriculture and food industry.

Also most of the interviewed HEIs seem to offer entrepreneurship courses only in certain disciplines. Others emphasise the benefits of having entrepreneurship courses integrated into existing courses. One example of this is the *ISM University of Management and Economics in Lithuania*. Here, the interesting and rather untraditional element is the implementation of entrepreneurship as one of the ten main values of the university in *all* courses and not having traditional entrepreneurship courses as an option for the students. In other words the ISM intends to stimulate the entrepreneurial mindsets of the students in every lesson of their education. Most lecturers in the ISM are Lithuanian and internationally renowned lecturers who are not only engaged in academic activities but are also highly experienced business consultants, and in this way they understand well the needs of modern businesses.

The *University of Wuppertal* is another example. Here students in all faculties can choose entrepreneurship courses as electives. At this university, there is a large share of teacher students who choose entrepreneurship electives. This may give hope that entrepreneurship will be more often taught in primary school in the years to come.

In some of the institutions entrepreneurship education is compulsory for students, regardless of discipline or faculty. This is the case at the *University of Nantes*. Créactiv Nantes offers different kinds of services to their students, from lecturing to different kinds of events and workshops. In the beginning, all entrepreneurship education was

elective, but available for all disciplines. The courses and student activities are both about and in entrepreneurship.

The above University of Wuppertal also plans to introduce entrepreneurship courses for alumni from the university. At the entrepreneurship department they consider it more likely that people having some years of work experience, and thus more knowledge on how an enterprise works and necessary contacts, can start up new businesses. They therefore wish to give them the necessary tools, for encouragement and inspiration.

The *focus* of the entrepreneurship courses can be divided into three: focus on the pre start-up phase, on the start-up phase or on the growth phase. Most of the HEIs that have participated in this survey (56 percent) have courses that focus evenly on the three phases. As for the rest of the institutions, 20 percent focus mainly on the start-up phase and 14 percent on the pre start-up phase, whereas only a few (3 percent) focus on the growth phase.

On average, 53 percent of the undergraduate students in entrepreneurship courses are male. If we look at the graduate and postgraduate students, the share of male students in entrepreneurship courses rises to 55 percent. This indicates that a larger share of the male students choose entrepreneurship courses. However, entrepreneurship is taught more frequently in business schools or technical HEIs than in other institutions. Traditionally, male students are dominant at these institutions, which may be the reason why there is a small predominance of male students in the entrepreneurship courses.

8.4 Degrees

Some of the higher-education institutions offer elective courses in different aspects of entrepreneurship. Others have entrepreneurship courses integrated in other degrees, for example in business or technical degrees. However, in order to secure the academic recognition of the subject, it is of importance that the institution also offers degree programmes in entrepreneurship. Degree programmes will also give stability to the subjects. By having degree programmes it is possible to recruit lecturers and researchers, and it helps to keep the interest for the subject within the institution. By offering degree programmes, one can offer an opportunity to those who are interested in continuing within research when they have specialised in the field. This again secures the quality of the teaching and gives it more depth. In addition, when entrepreneurship is taught by specialised academic staff, it is easier to juxtapose the subject to other academic subjects.

Just over half of the responding institutions offered one or more degree programmes in entrepreneurship in the previous academic year.

Table 8-5: Percent of institutions offering one or more degree programmes in entrepreneurship (irrespective of study level) in the previous academic year

| | Total | Type of institution | | | |
|-----|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes | 57% | 45% | 62% | 37% | 71% |
| No | 43% | 55% | 38% | 63% | 29% |

(n = 202)

Table 8-5 shows that business schools are the type of HEIs that most frequently offer degree programmes in entrepreneurship. Among the independent business schools, 71 percent have such programmes. However, we found degree programmes within all types of HEI.

If we look at our distinction between the EU15 and the EU>15 countries, 52 percent of the HEIs in the EU15 and 80 percent of the HEIs in the EU>15 countries offer degrees in entrepreneurship. Further, according to the survey, the more experienced the institution is, the more likely it is to propose a degree programme in this subject.

Table 8-6: Percent of institutions offering one or more degree programmes in entrepreneurship (irrespective of study level) in the previous academic year

| | Total | EU15 or EU>15 | |
|-----|-------|---------------|-------|
| | | EU15 | EU>15 |
| Yes | 57% | 52% | 80% |
| No | 43% | 48% | 20% |

(n = 202)

Among the institutions with entrepreneurship education, about one third had programme(s) at bachelor level, just under half on graduate/MA level and one fourth offered programme(s) on PhD/DBA level.

Table 8-7: Percent of institutions offering different levels of degree programmes in the previous academic year

| | Total |
|--------------------|-------|
| Bachelor level | 50% |
| Graduate/MBA level | 63% |
| PhD/DBA level | 23% |

(n = 135)

The institutions seem to start taking small steps and then expand their range of courses. It seems to be an exception for the EU>15 countries though, which seem to develop faster than the EU15 countries.

The in-depth interviews revealed several innovative Master's programmes.

One example is *the Norwegian University of Science and Technology (NTNU)* which offers a Master's programme in entrepreneurship for engineering students. Half of the courses in the Master's study are still directed towards engineering, but the other half focuses on entrepreneurship-related subjects and project work. In the entrepreneurship part of the Master's study, students take appropriate courses, but a substantial part of the time they are working with a business development project. This starts in the first semester. The students begin by searching for interesting technology-based business ideas which currently lack an entrepreneurial team. They look for business ideas among the faculty staff at the NTNU and other HEIs, or in research institutions or businesses all over the country. Recently, the NTNU has entered into an agreement with the Technology Transfer Centre at CERN²³ related to the search for interesting business ideas. The students will be at CERN for a week. When the students have collected 20-30 ideas, they do the first screening in terms of technology, market and favourable relation to the inventors/owners of the idea. Together with a panel of experienced business people they end up with three to five selected ideas. Two to four students are teamed up around each idea. In the second semester the students develop their first business plan.

In the summer semester all the students go to Boston University (BU), where they attend courses in entrepreneurship and under the guidance of faculty staff at BU do further work on developing their business ideas in a USA business environment. The focus is on technology, market and financing, including identifying further possible cooperating partners.

The Instituto Superior Técnico (IST) in Portugal is another example. The IST is one of the few institutions offering a PhD programme in entrepreneurship. The interdisciplinary PhD in technological change and entrepreneurship at the IST is realised in collaboration with Carnegie Mellon University. Aspects of the PhD are information and communication technology, technology change and entrepreneurship. The programme was launched in September 2007 with six students. At the IST it is financed

²³ European Organization for Nuclear Research.

by the national government. The research-based programme fills an important gap as there are not many educators at this point who are experienced in this area and thus can teach it.

The *HEC-ULg in Liège*, Belgium, offers an interesting Master's programme which is run by a small number of people, and only a limited number of the staff at the HEC-ULg is involved in entrepreneurship. Most are professionals, external teachers and mentors, and there is one per team. The programme is unique because the pedagogy is different. The students get eight real missions in companies, and they are sent out in companies from the beginning of the programme. The programme is open to all faculties, and the participants are selected on the basis of an interview and tests, not on the basis of their academic grades. This is to ensure that they have entrepreneurial abilities, in particular motivation, desire to achieve, capability in teams and generosity but also availability to engage in this programme. They use a professional recruiting company to help choose the right people. The originality of this programme is that it links students, teaching staff and business people in a particularly efficient way, and allows both teaching staff and business people to teach and mentor the students. That way of doing it is unique in Belgium.

8.5 Curriculum

Experience within the field of entrepreneurship education is in its infancy in many European countries and by many institutions. In addition, much of the curriculum is based on experience from the United States and cannot be directly transferred to a European context. There should therefore be good opportunities for institutions to learn from each other, both in developing curriculum and teaching methods.

8.5.1 *Exchange of curriculum/methods exist, but the potential is still large*

Most of the institutions (55 percent) import entrepreneurship curricula and/or teaching methods from other HEIs, but fewer have formalised exchange of good practice. Of those who have some sort of formalised exchange, the majority import good practice on a national level. About one third get inspiration from abroad in a formalised way. It seems to be a clear tendency that the longer experience with entrepreneurial education the more formalised is the exchange of experience.

Entrepreneurship teaching is often based on cases, and many of the respondents in the in-depth interviews pointed out the importance of recognition and identification with the cases. This may be one reason why exchange is more widespread at a national level. It is also possible that there are too few international networks to promote this kind of exchange.

Almost all of the HEIs in the survey include entrepreneurs/practitioners in the development of the teaching material on entrepreneurship. This reflects the importance of including real-life stories to the entrepreneurship teaching. The subject is to a large extent a "learning-by-doing" subject, meaning that the practical aspect of learning from what others have done before is crucial.

The table below also shows that almost all the respondents in the survey have in-house development of entrepreneurship curriculum and/or teaching methods. In ad-

dition, many of the interviews showed that the HEIs are interested in exchanging methods and curriculum, meaning that the potential for exchange is large.

Table 8-8: Percent of institutions internal development and exchange of curriculum and teaching methods

| | Total | Years of experience with entrepreneurship education | | | |
|--|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Have in-house development of entrepreneurship teaching curriculum and/or teaching methods? | 94% | 100% | 91% | 92% | 95% |
| Import entrepreneurship teaching curricula and/or teaching methods from other HEIs? | 55% | 53% | 58% | 55% | 55% |
| Have a formalised national exchange of good practice in entrepreneurship education? | 46% | 6% | 48% | 48% | 58% |
| Have a formalised international exchange of good practice in entrepreneurship education? | 34% | 31% | 30% | 35% | 40% |
| Include entrepreneurs/practitioners in the development of entrepreneurship teaching materials? | 87% | 94% | 83% | 84% | 91% |
| Have a Curricula Development Fund dedicated to entrepreneurship curriculum? | 24% | 20% | 23% | 22% | 30% |

(n = 186)

Many of the respondents from the in-depth interviews use a large amount of resources in developing own case studies. For example, the *Polish Leon Kozminski Academy* argues that even if American scholars were the inspiration as they started teaching entrepreneurship, it is difficult to use case studies from the USA in the lectures. The historical context of Poland, with the change of both the political and economic systems after the fall of communism, means that the country differs from both the western part of Europe and the USA. The lecturers and professors in Warsaw also note that it is much easier to inspire students when referring to entrepreneurs who could have been their neighbours. The Leon Kozminski Academy therefore develops new case studies every year which they include in the entrepreneurship teaching. The Academy also participates at conferences where exchange of teaching methods is one of the objectives.

Some of the other in-depth interviews modify the picture from the survey slightly at the exchange point. Many of the respondents point out that entrepreneurship teaching is time-demanding and that there are few resources left for exchanging experi-

ence with other HEIs. However, most of the respondents find it important and interesting to see how other institutions work and wish for more exchange both across disciplines and boundaries. One suggestion from the interviews is to create a textbook with European cases, illustrating the differences between the countries but also the similarities in European cases as opposed to American cases. Another suggestion from the in-depth interviews is that there should be a European network for academics teaching entrepreneurship. As part of the network, there should both be internet forums for discussion and inspiration and possibilities for exchange of lecturers between countries/institutions.

A majority of the multidisciplinary HEIs have formalised collaboration between faculties/disciplines in developing new entrepreneurship education. Entrepreneurship education can take special advantage in combining thinking and methods from various disciplines, meaning that this is a positive finding. If we look to the type of institution²⁴, it is interesting to see that both the institutions with little experience in the field and those having 12 years or more of experience have a large degree of cross-faculty/discipline collaboration on developing entrepreneurship education. The HEIs who are just starting to teach entrepreneurship probably need to cooperate across faculties in order to establish it, while those who have done work in the field for a long time may see the advantage in developing the programmes further by taking in other points of view.

At the *University of Strathclyde in Scotland* we find an interesting cross-disciplinary cooperation for developing new entrepreneurship education. Some years ago, the Hunter Centre for Entrepreneurship started cooperating with the Department for Applied Music. The department recognised that it needed a stronger component of how to start one's own business in its degree. For the musicians, even those aiming at becoming music teachers, self-employment and short-term contracts are likely to become large parts of their career paths. The entrepreneurship centre and the music department together developed a course which took this into account. *The Entrepreneurship-in-creative-industries course* teaches students how to "produce" music, both as performers, composers and producers. It also teaches how to make a career in the music industry based on these skills. Also, for an artist, it is important to know how to sell him- or herself. An artist has to be able to think of himself as a product. These are also aspects taught in the *Entrepreneurship-in-creative-industries course*. The course is targeted at the approximately 20 students of the music department, but is open for every student at the university.

8.6 Extracurricular activities

In order to inspire students to start up new ventures and to give them new ideas and an overview of what happens in real life, extracurricular activities are important. Company visits and matchmaking events give students the opportunity to meet real entrepreneurs. Competitions, mentoring programmes and summer-school programmes may develop their personal skills and prepare them better to meet the professional life.

²⁴ See appendix for this cross table.

8.6.1 Extracurricular activities are widespread

Almost all of the participating HEIs offer some kind of extracurricular activities. The most common activities is seminars and workshops, but about half of the institutions also have different kinds of competitions, company visits, matchmaking events or offer mentoring/personal coaching.

| | Total | Years of experience with entrepreneurship education | | | |
|--|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| No extracurricular entrepreneurship activities | 6% | 18% | 7% | 4% | 7 |
| Offer seminars/workshops | 72% | 59% | 69% | 75% | 86% |
| Offer business plan/venture capital competitions | 51% | 24% | 56% | 55% | 59 |
| Offer company visits | 47% | 41% | 40% | 48% | 61% |
| Offer matchmaking events between students and external stakeholders/springboards | 41% | 41% | 42% | 39% | 46% |
| Offer summer school | 20% | 24% | 16% | 21% | 23% |
| Offer mentoring schemes/personal coaching for entrepreneurial students | 54% | 29% | 53% | 66% | 57% |

(n = 199)

The institutions having short experience in entrepreneurship seem to have fewer extracurricular activities than the others. Setting up these kinds of activities is both relatively resource-consuming and requires a broad network. Both of these factors may be lacking in the beginning.

Business schools are more likely to have matchmaking events and personal coaching for entrepreneurial students. Another feature that can be noted is that the new EU countries more often do company visits than the old ones.

When we compare old and new EU countries, we see that the old ones are more active in offering business plans or venture capital competitions. On the other hand, the new EU countries practice more company visits than the old ones.

Table 8-10: Extracurricular activities in different types of institutions

| | Total | Type of institution | | | | EU15 or EU>15 | |
|--|-------|--|-------------------------------------|-----------------|-----------------------------|---------------|-------|
| | | Multidic. HEI with-out business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school | EU15 | EU>15 |
| No extracurricular entrepreneurship activities | 6% | 9% | 5% | 1% | 0% | 7% | 3% |
| Offer seminars/workshops | 72% | 73% | 78% | 6% | 71% | 72% | 74% |
| Offer business plan/venture capital competitions | 51% | 55% | 56% | 3% | 57% | 55% | 34% |
| Offer company visits | 47% | 48% | 48% | 4% | 50% | 43% | 64% |
| Offer matchmaking events between students and external stakeholders/springboards | 41% | 39% | 42% | 32% | 64% | 41% | 40% |
| Offer summer school | 20% | 15% | 24% | 11% | 7% | 19% | 23% |
| Offer mentoring schemes/personal coaching for entrepreneurial students | 54% | 48% | 59% | 37% | 79% | 57% | 40% |

(n = 199)

8.6.2 Networking and business-accelerating activities

The experiences from the interviews are that extracurricular activities are important in order to succeed. Networking and contacts with business life are crucial in order to learn from experienced entrepreneurs, but also in order to give students opportunities that the institution itself cannot provide them with. Many of the extracurricular activities are aimed at making students meet business people from the community. In addition, many institutions arrange competitions and crash courses for students' enterprises.

The Johannes Kepler University Linz in Austria is an example of an institution that is engaged in a lot of extracurricular activities, for instance the "pond race", which was organised in cooperation with the student organisations and was a huge success. Many people, including the rector, participated in this charity-race around the pond on campus, where each round equalled one Euro for charity. More than EUR 3,000 were raised at this event. Another example is the nationwide business plan competition ideas2business (i2b), which is subsidised by the chamber of commerce and a bank. There are also continual discussions with entrepreneurs ("founders' dialogue") which are open to all students as well as to the public.

Also the *Norwegian University of Science and Technology* has several extracurricular activities. One example is Take-Off, a new business-venture accelerator programme

consisting of the following five steps: recruiting, an introduction to a half-day full-time course, a preparation period, one week full-time business-development seminar and a one-day follow-up seminar. The ideas and entrepreneurs might come from universities, research organisations, business firms or other sources. Each business idea is developed by a team consisting of four students and two persons who have service and support to entrepreneurs as their daily work. Each team is facilitated and led by an experienced coach. There are six parallel teams in each programme. The business development seminar is the core activity in the programme. The seminar ends with a presentation of the completed business plan to a panel of experienced personnel from venture capital firms. The panel gives each plan a very prepared feedback.

Evaluations made by outside institutions show that Take-Off is extremely effective in developing new businesses and giving students hands-on experience and skills in entrepreneurial activity. More than 200 technology-based firms have been established and many have grown substantially on the international market.

8.7 Teaching methods

The nature of entrepreneurship teaching makes it both possible and necessary to develop new teaching methods. Lecturing is still a commonly used method (and practical when the course includes many students). However, it is worth noticing that entrepreneurship courses use methods such as project work, case studies and classroom teaching more than other academic subjects. It is necessary to have a closer look at what the institutions actually do, to get inspiration as well as to learn from good practice cases.

8.7.1 Creative teaching methods – common in entrepreneurship

Three quarters of the institutions in the survey often use lecturing as a teaching method. But a large share also base the teaching on case studies, guest lectures (entrepreneurs in the classroom) and project work.

Table 8-11: Use of teaching methods in entrepreneurship education. Percent answering often (1), sometimes (2), rarely (3) or never (4)

| | Average (interval 1-4) | Often | Sometimes | Rarely | Never |
|--|---------------------------|-------|-----------|--------|-------|
| Lecturing | 1.38 | 75% | 17% | 8% | 0% |
| Case studies | 1.45 | 61% | 36% | 3% | 1% |
| Entrepreneurs/practitioners in the classroom | 1.62 | 45% | 49% | 4% | 2% |
| Project teams | 1.54 | 58% | 35% | 5% | 1% |
| Company visits | 2.16 | 17% | 51% | 28% | 3% |
| Venture simulation/mini companies | 2.13 | 31% | 39% | 19% | 11% |
| Others | 2.68 | 27% | 16% | 14% | 43% |

(n = 186)

About three quarters of the respondents say that they use venture simulation/mini companies as a teaching method. This is a bit surprising, because it is a teaching method that demands both technical equipment and a considerable amount of time. Business simulation is probably regarded as important to prepare the students for the real business life.

The in-depth interviews confirm several of the impressions from the survey. Many of the institutions use lecturing as the basic method, especially for subjects focusing on aspects *about* entrepreneurship. This is also the case for courses with many students. It is difficult to visit a company or do venture simulations with large groups of students. However, also when ordinary lecturing is being used as teaching method, it seems to be more adjusted to entrepreneurship teaching, for instance by setting up specially designed rooms, inviting entrepreneurs to have lectures et al. The Johannes Kepler University Linz in Austria makes use of the latter very consciously. At every course, which is given to 200-300 students, there is always one renowned entrepreneur or business consultant present. This is very important for the students – and makes the courses especially attractive as the students will meet with a lot of persons from the business community and other relevant stakeholders. This allows them to build up networks which can be of great importance in case of a later start-up.

The interviewees also confirmed that they are experimenting with new methods. An example of creative teaching methods can be found at the above Johannes Kepler University Linz. The institute has an *Innovation Lab(oratory)* – which consists of three modules (one-semester courses). It is a very practice-oriented interdisciplinary seminar for around 30 business and engineering students. There are three steps: 1) development of product ideas; 2) feasibility studies made by teams; and 3) optional: product development. The participants work independently and intensely in groups of four or five persons. They work on their own idea, make presentations and get coaching. Both technical students and entrepreneurship students can get credits here. Entrepreneurs from outside the university can also participate. *Bizkick* is another example of the practice-oriented approached of the institute. First of all, the students have to

develop their own start-up ideas. Then, they have six weeks and a start-up capital of EUR10 to implement these ideas, to find partners and customers and to make some revenues. Finally, a jury of experts from business and science choose the best teams among all the mini-start-ups.

At the Strathclyde University in Scotland the cooperation between the Hunter Centre for Entrepreneurship and the Applied Music Department has resulted in the creation of a radio channel. Celtic Music Radio is a terrestrial and web-based radio station, which is dedicated to the support and promotion of the Celtic tradition. The radio station is based in studios at the Hunter Centre for Entrepreneurship at Strathclyde broadcasting to a local audience surrounding Glasgow and by internet enabling it to reach out to the Scottish Diaspora and Celtic communities across the world. The radio station is financed by sponsorships and advertising. The station was set up “the entrepreneurial way”, and all the technical equipment was given by another radio station in Glasgow which switched to more modern equipment. The radio station provides a practical example of entrepreneurship in the creative industries and a channel to the market for Celtic musicians who want to get their music out to a wider audience. It has an educational and economic mission. In educational terms, it plays an important role in a number of undergraduate and postgraduate degree courses at Strathclyde. It provides a live example of what a creative enterprise actually looks like and the issues involved in its establishment and operation. It allows students to broaden their degree experience through the type of experiential learning which lies at the heart of the Hunter Centre’s approach to teaching. The students obtain hands-on experience from real broadcasting, journalism and technologies of digital communications, computing and e-commerce. Also students who are not students at the Applied Music department are welcome to work at the radio station to get work experience and see the enterprise from the inside.

Several of the institutions from the in-depth interviews also try to combine students from different disciplines in project work or small-business simulations. This is to make them discover the strengths and values of the different disciplines. But more importantly, the aim is to make professionals from various fields communicate and learn how to explain discipline-specific matters to others.

Also at the *Helsinki School of Economics (HSE) (the Aalto University)*, much attention is given to pedagogical principles. Having a chair in entrepreneurship education means that attention is given to investigating what pedagogical principles will be relevant and efficient to use in entrepreneurship education. The research in entrepreneurship education at the HSE has resulted in a change of focus from teaching methods to pedagogy in entrepreneurship education. At the HSE the key is not whether you use lectures or case studies in the entrepreneurship education. It is rather a question of whether the chosen teaching method adheres to essential pedagogical principles. Hence, based on research on entrepreneurship pedagogy conducted at the HSE and partner institutions the goal is that the guiding pedagogical principle at the Aalto University will be that students must be critically searching for knowledge instead of receiving knowledge. Also, the education must be arranged in such a manner that students learn to apply and adapt knowledge in a real-life situation. So when planning, conducting and evaluating learning at the new Aalto University, the aim is to take into consideration these pedagogical principles.



9. OUTREACH

9.1 Introduction

The dimension *outreach* takes into account that developing entrepreneurial mindsets among students is not entirely a theoretical exercise. In most educational settings students are isolated from the business world and in order to develop the entrepreneurial mindset and business skills among students, the HEI can offer students the opportunities to gain practical experience, through various outreach activities.

This dimension focuses on the links which the HEI may have with external stakeholders as these links illustrate the entrepreneurship related opportunities offered to students by the HEI. An important stakeholder is former students – higher-education institutions in the US are good examples of how alumni can play a vital role in an institution's entrepreneurial activities. Therefore, the dimension investigates if and in what way the HEI tracks the individual alumni, and subsequently finds out whether they have embarked on an entrepreneurial path or not, and whether the HEIs involve their alumni in their entrepreneurship activities.

Links to external stakeholders can also encompass links to government agencies, foundations, science parks etc. – places that may provide input to the entrepreneurial education of the students, and provide a broader, more practice-related picture.

Finally, the community engagement part of the outreach dimension is based on the notion that relationships with the surrounding community (e.g. entrepreneurs) can strengthen the entrepreneurship education by making it more dynamic and ensuring that is up-to-date. This relationship can go both ways. Firstly, by securing links to the community that enables the students to get a feel for the outside world through internships etc., and secondly by opening the doors to the institution allowing the outside world to enter the institution e.g. by offering advisory service to local companies and entrepreneurs.

The dimension *outreach* includes the following elements:

- Alumni
- Links with external stakeholders
- Community engagement

The questions asked under each of the elements can be seen in the box below:

Box 9-1: Overview of the questions in the Outreach dimension

Alumni

1. Does your institution track the individual alumni?
2. Does your institution involve the alumni in its entrepreneurship activities?

Links with external stakeholders

1. Does your institution at present time have links with one or more of the following stakeholders as a result of/to improve your institutions entrepreneurship activities?

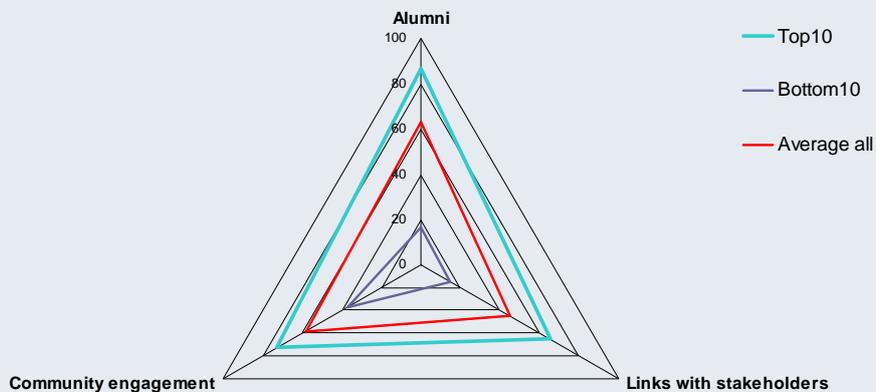
Community engagement

1. Is it possible for entrepreneurship students at your institution to participate in regional entrepreneurship events, take internships outside the institution to develop entrepreneurial mindset and skills, do student projects outside the institution to develop entrepreneurial mindset and skills and participate in national/international business plan/venture capital competitions?
2. Please estimate what approximate percentage of all students graduated with actual practical entrepreneurial experience from activities offered by your institution in the previous academic year?
3. Did your institution in the previous academic year transfer knowledge to the society?
4. Does your institution...
 - i. Support entrepreneurship in local schools?
 - ii. Host entrepreneurial events open to the community?
 - iii. Have a specific centre that provides advisory services or training to entrepreneurs in the community?

9.2 Main conclusions

Figure x illustrates the difference between the reported framework conditions related to outreach for top-10 institutions compared with the bottom-10 and the average.

Figure 9-1: Outreach



9.2.1 *Alumni*

It appears from figure 9.1 that there is a considerable difference between the top and bottom institutions when it comes to their focus on *alumni*. Almost half of the bottom-10 institutions track their alumni, but the top-10 institutions take it a step further and also track the start-up activities among graduates. And moreover, all of the top-10 institutions take advantage of their alumni by involving them in the entrepreneurship education. Only one of the bottom-10 institutions does so.

When looking at the data from the specific survey it is evident that a majority of the HEIs attempt to keep contact with their alumni. The majority keeps track of the career development of the individual alumni, and 29% say that they keep track of the number and growth of ventures started by the graduates.

The alumni is used as good examples and brought into the teaching environment by over two thirds of the HEIs in the specific survey and in general, the use of “success stories” or good examples seem to be a recurring tendency in the cases.

9.2.2 *Links with stakeholders*

Another field where the top-10 institutions are much more active is in the *links to stakeholders*. The vast majority of top-10 institutions have a number of external stakeholders that make an actual contribution to the entrepreneurship education. Only two of the bottom-10 institutions have such links.

It seems that there is a widespread understanding that entrepreneurship is not only taught in an academic setting, and that entrepreneurship students need to have access to and be engaged in practice-oriented activities.

To this end the institutions build a network of stakeholders: regional or national government, agencies, private companies, consultancy service providers etc. There are slight differences in the extent to which they are used – some have links, but a small group has these links developed into the stakeholders making actual contributions to the entrepreneurial activities of the institution.

It is evident that among this group of HEIs that entrepreneurship education is regarded as an activity that takes place in interaction between the academic input and practice-related supplements. Very few do not offer their students external opportunities as business plan competitions, doing internships or being involved in entrepreneurial projects outside the HEI.

9.2.3 *Community engagement*

When it comes to *community engagement* – especially in relation to the community’s engagement in the institutions – the difference between top and bottom is not that great, relatively speaking. The majority of bottom-10 institutions provide the students with opportunities to take internships and project work outside the organisation to enhance their entrepreneurial mindset. The difference between top and bottom is more apparent looking at the institutions’ engagement in the community. Here, the top-10 institutions are much more active – hosting entrepreneurship events open to

the community, offering advisory service to local entrepreneurs and companies and supporting entrepreneurship activities in local schools.

The specific survey underlines that there seems to be a relatively strong focus on engaging with the community among the HEIs, this is done for instance by transferring knowledge to companies through consultancy services and by inviting the outside world to entrepreneurship events, and the cases show other interesting ways in which the HEI engage in an ongoing dialogue with community stakeholders.

A majority of the HEIs in the specific survey answer that they transfer knowledge to society by performing consultancy work, and also to a great extent through academic spin-offs. In the case of consultancy, there is no big variation across types of institutions, but when it comes to patents and licensing it is evident that this is not the focus of business schools at all.

The institutions also seem to open their doors to the surrounding society by supporting initiatives bringing entrepreneurship on the agenda in the community. Over 80% of the HEIs in the specific survey answer that they host entrepreneurial events open to the community, and over two thirds have a specific centre providing advisory services or training to entrepreneurs.

In the case interviews the consortium has seen many good examples of outreach but also seen that it is considered a time-consuming and a challenging task for the institutions, and that this has to be taken into consideration when designing and developing the outreach of an institution.

9.2.4 *Types of institutions*

When looking at the Outreach dimension it is evident that the business schools are more developed when it comes to thinking and acting upon this.

The business schools are more and more deeply linked to their alumni, not only do they keep track of them but they also to a higher degree keep track of start-up and growth of business ventures. Furthermore, there seems to be less focus on involving the alumni in the specialised technical HEIs than in the multidisciplinary or non-technical institutions

Almost all of the institutions in the survey seem to be involved in transferring knowledge to society. However, whereas all types of institutions have a high degree of involvement in consultancy work, the business schools are less likely to transfer knowledge to society through licensing or patents than the other types of HEIs.

9.2.5 *Regional differences*

Involvement of alumni in teaching is more widespread in the EU15 countries than in the countries that more recently entered the EU. And although there is no difference in the levels of transferring knowledge to society through consultancy, more institutions in the EU15 countries seem to be involved in knowledge transfer through spin-offs, licensing, patents etc.

It seems as if the EU15 countries are more likely to have centres that provide services to entrepreneurs than the EU>15 group.

9.2.6 Development over time

Furthermore, it seems that the longer an HEI has been involved in entrepreneurship education, the more predominant is the involvement of its alumni, its links to the external stakeholders and its community engagement. Especially when it comes to supporting other actors in their entrepreneurship activities; schools or other educational institutions the engagement grows over time.

9.3 Alumni

The quantitative survey shows that for most HEIs it seems a natural thing to keep in contact with the alumni. As can be seen below, 68 percent keep track of the alumni, and 29 percent keep links to the alumni to be able to keep track of the number and growth of ventures started by the graduates. 13 percent of the respondents answer that they do not keep track of their alumni.

The independent business schools seem more inclined to track the alumni, as the table below shows, which might be due to a stronger tradition for this in business schools. The business schools also focus more on tracking the business ventures among alumni.

Table 9-1: Tracking the alumni

| | Total | Type of institution | | | |
|--|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business School |
| Yes, to keep in contact with the alumni | 68% | 67% | 76% | 78% | 93% |
| Yes, to keep track of the number and growth of ventures started by graduates | 29% | 48% | 30% | 33% | 64% |
| Yes, for other reasons: | 10% | 9% | 13% | 11% | 14% |
| No | 13% | 23% | 14% | 22% | 0% |

(n = 197)

A large number of HEIs (72 percent) put an effort into involving its former students in entrepreneurial activities, as illustrated in the table below.

Table 9-2: Involving the alumni in entrepreneurship activities

| | Total | EU15 or EU>15 | | Technical | | |
|-----|-------|---------------|-------|--|------------------------------------|----------------------------|
| | | EU15 | EU>15 | Technical as part of multidisciplinary HEI | Specialised technical institutions | Non-technical institutions |
| | | | | | | |
| Yes | 72% | 75% | 59% | 74% | 57% | 70% |
| No | 28% | 25% | 41% | 26% | 43% | 30% |

(n = 189)

Again, business schools seem more interested in or more accustomed to involving the alumni, 93 percent of the independent business schools answer that they involve their alumni, whereas the percentage for the multidisciplinary universities without business schools is a little less than average (67 percent).

The data also show that the involvement of alumni in teaching is more widespread in the EU15 countries than in the countries entered the EU more recently. The cross tabs also show that there seems to be a little less focus on involving the alumni in the specialised technical HEIs than in the multidisciplinary or non-technical institutions

Furthermore, it seems that the longer an HEI has been involved in entrepreneurship education, the more dominant is their involvement of alumni. In HEIs with more than 12 years of experience in entrepreneurship education 80 percent of the institution answer that they involve the alumni, whereas it is only 65 percent of the institutions having less than 4 years of experience.

In the interviews there are several examples of how the HEIs link with their alumni. One example being alumni clubs like the INSEAD or the University of Ljubljana. In the latter, the Faculty of Economics (FELU) runs the Alumni Club which establishes and facilitates links between the FELU and its graduates, and offers its members various activities and advantages. The Alumni Club is connected to the Centre for Student and Career Services creating a good connection between present and past students.

In INSEAD the connection with alumni is a core activity, to both keep the school in touch with and understanding what is going on in the market. At the same time the contact to the alumni is also an important gate to potential jobs for students, the development of new ideas and ventures etc. INSEAD run both a newsletter for alumni, an alumni club and the INSEAD Private Equity Club.

The alumni club at the University of Wuppertal has an additional agenda, it has been established not only to keep track of the alumni and create a network between the individual alumni but the goal is to offer courses to them to stimulate their entrepreneurial urge. The reason for this is that the entrepreneurship department considers it much more likely that their alumni will start ventures after some years of work experience, and they want to support this by giving them the necessary tools and encourage and inspire. The university has managed to secure external funding for the alumni club, especially after the local business community can see that the university is dedicated to close cooperation.

An example of a more intensive involvement of alumni directly in the development of the entrepreneurship activities can be found at the Utrecht school of Arts where the alumni is used to streamline the entrepreneurship curriculum. This is done by conducting surveys where the alumni are asked what entrepreneurial skills or business skills that they felt they missed after graduating, and on the basis of this the entrepreneurial activities are strengthened to involve the “missing aspects”.

9.4 Links with external stakeholders

The table shows that the HEIs in the survey focus on developing links with stakeholders.

| Table 9-3 Links to stakeholders as a result of or to improve entrepreneurship activities | | | |
|--|--------------|--|-----------------|
| | Has links to | Makes an actual contribution to your institution's entrepreneurship activities | Has no links to |
| Government (national/regional/local) | 37% | 52% | 11% |
| Foundations | 34% | 30% | 37% |
| Private companies | 29% | 65% | 6% |
| Investors (venture capitalists, banks etc.) | 34% | 44% | 22% |
| Entrepreneurs | 39% | 59% | 3% |
| Science parks/incubators | 35% | 52% | 13% |
| Professional service providers | 36% | 45% | 20% |
| Specialised bodies supporting entrepreneurs | 31% | 52% | 18% |
| Other stakeholders: | 14% | 18% | 68% |

(n = 180)

National, regional/local governments are seen as important stakeholders for the HEI, having an important interface with and impact on the institution activities: setting legislation standards, funding research, establishing scientific cases etc. And 89 per-

cent of the HEIs in the survey say that they have links to government level, either links – or links that mean that the stakeholder makes an actual contribution.

Investors seem to be another important stakeholder group, and the institutions in the survey have links to these; 76 percent of the HEIs indicate that they have links to investors, venture capitalists, banks etc.

Not surprisingly, the group with which most HEI have links, is entrepreneurs. Only 3 percent of the institutions state that they do not have links with entrepreneurs.

The links can be of a different nature. Some are links that mean that the HEI have access to people, whereas links can also be closer, to the extent where the stakeholder contributes financially or another type of contribution to the HEI. The table below does not say anything about the nature of the contribution, financially or other types or, in the case of financial funding, whether it is a small sponsorship for an event or long-term funding of an entrepreneurship centre.

However, looking at this parameter, private companies (64 percent), entrepreneurs (59 percent), science parks (52 percent) and specialised bodies and national/regional/local governments (52 percent) are the primary stakeholders making contributions to the entrepreneurial activities.

Table 9-4: Institutions where the following stakeholders makes an actual contribution to the institution's entrepreneurship activities

| | Total | Years of experience with entrepreneurship education | | | |
|---|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of exp. | Between 8 and 12 years of experience | More than 12 years of experience |
| Government (national/regional/local) | 52% | 24% | 59% | 48% | 62% |
| Foundations | 30% | 29% | 34% | 24% | 35% |
| Private companies | 65% | 63% | 57% | 59% | 81% |
| Investors (venture capitalists, banks etc.) | 44% | 47% | 46% | 35% | 52% |
| Entrepreneurs | 59% | 73% | 49% | 57% | 56% |
| Science parks/incubators | 52% | 40% | 52% | 48% | 61% |
| Professional service providers | 45% | 43% | 46% | 42% | 48% |
| Specialised bodies supporting entrepreneurs | 52% | 29% | 59% | 49% | 56% |
| Other stakeholders: | 18% | 17% | 11% | 20% | 24% |

(n = 173)

Table 9-4 below shows that the links with stakeholders making an actual contribution seem to grow over time.

The type of contributions is not explained in more detail in the quantitative part of the study, but below, some examples from the interviews illustrate the types of contribution made.

| Table 9-5: – Institutions where the following stakeholders make an actual contribution to the institution’s entrepreneurship activities | | | | | |
|---|---------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total % | Type of institution | | | |
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Government (national/regional/local) | 51% | 36% | 60% | 20% | 50% |
| Foundations | 30% | 30% | 31% | 29% | 23% |
| Private companies | 65% | 60% | 65% | 59% | 79% |
| Investors (venture capitalists, banks etc.) | 44% | 35% | 47% | 27% | 62% |
| Entrepreneurs | 58% | 48% | 61% | 50% | 62% |
| Science parks/incubators | 53% | 44% | 60% | 40% | 36% |
| Professional service providers | 45% | 36% | 52% | 33% | 31% |

Table 9-5 shows that independent business schools is the group with strongest links to private companies and to investors. As far as links to entrepreneurs are concerned, there is no big difference between the types of institutions.

When looking at the good-practice examples interviewed for the survey, *Stockholm School of Entrepreneurship (SSES)* is a very interesting example. A large foundation has funded the development of the school that coordinates the entrepreneurship activities of four different HEIs – a technical university, a business school, an arts and design school, and a medical school. The funding has made it possible to set long-term goals in the development of the entrepreneurship activities, and the SSES has people from the foundation on the board.

At the Small Business Development Centre at the Corvinus University in Budapest, Hungary one of the ways they build links with external stakeholders is to arrange conferences for other academics and organisations outside the university for instance with the European Academy of Science and Arts. Furthermore they arrange round

table discussions and workshop with spin offs and mentors, to maintain their connections and develop them further, and they even involve some of their external stakeholders in the development of teaching material.

The conferences and other activities are generally open to students and bring them into contact with the external stakeholders, and this dedication to bringing the students out into the surrounding world also seems to be well integrated among the HEIs in the specific survey, as the table below shows.

Table 9-6: Opportunities for external entrepreneurship activities for entrepreneurship students

| Is it possible for entrepreneurship students at your institution to... | Yes, compulsory | Yes, optional | No | Total |
|--|-----------------|---------------|-----|-------|
| Take internships outside the institution to develop entrepreneurial mindsets and skills? | 33% | 56% | 11% | 100% |
| Work on student projects outside the institution to develop entrepreneurial mindsets and skills? | 22% | 74% | 4% | 100% |
| Participate in national/international business plans/venture capital competitions? | 7% | 86% | 8% | 100% |

(n = 185)

In most of the HEIs in the specific survey students have the opportunity to obtain knowledge and skills about entrepreneurship outside of the HEI. Some institutions make the exposure through internships or student projects outside the institution a compulsory part of the entrepreneurship education (33 percent and 22 percent), whereas a larger group offer these activities as an option to their students (56 percent and 74 percent). Participation in national/international business plan or venture capital competitions is only compulsory with 7 percent of the respondents in the specific survey, whereas 86 percent offer this as an optional part of the entrepreneurship activities.

The high involvement of institutions in these kinds of activities support the underlying notion that entrepreneurship is not taught exclusively in classrooms, as it is being put forward below:

“You want to go outside the classroom and give the students the real entrepreneurial environment, you want to get them to learn actively instead of passively with group work, assignments instead of tests, guest lectures with people from business or start up, actually drawing up their own business plan with the assistance of external coaches. Students have to get outside of the classroom in order to obtain authentic

entrepreneurial experiences.” Director Martijn Kuit, director Delft University of Technology.

The cases show many interesting examples of how entrepreneurship students are exposed to the real work by working on projects or taking internships. One of the most far-reaching activities is the Master’s Programme at HEC-ULg where the students in teams carry out a number of “missions” in companies to bring them in close real life contact with the processes of starting and running a company.

However, the HEIs are not alone in supporting students to gain real experience with entrepreneurship. The two student organisations surveyed in the qualitative part of the survey, in different ways, provide opportunities for interested student to develop and try out their entrepreneurial skills and mindsets. Their activities take place alongside the academic programme and they are optional, but they provide a good exposure to the real world or as the president of JADE put it:

In a Junior Enterprise (JE) students set up and run their own company and offer professional consulting, market research and management to small- to medium-sized enterprises, among also other areas such as IT and Engineering. By doing so the students add practical experience to their theoretical skills, develop entrepreneurship at an early stage, broaden their skills as well as horizons and prepare themselves for challenging careers throughout Europe. JADE has as its central idea that “learning by doing” is not good enough – it should be “learning by having the responsibility”
Tanya Muller-Borges, President of JADE.

As mentioned Junior Enterprise gives the students the opportunity to form a real enterprise and run it, and AIESEC provides a framework for students who have an entrepreneurial or intrapreneurial spirit to test their abilities by developing and running projects inside the organisation. The organisations mentioned are independent from a university, but the local Junior Enterprise group often collaborates closely with “their” university, to bring about the above-mentioned options for entrepreneurship-oriented students. And in AIESEC many activities are held jointly with HEIs, and the organisation has local groups connected to certain institutions, and here the connection is also strong.

The table below suggests that graduates actually take advantage of the possibilities. 14 percent of the HEI estimate that more than 50 percent of their graduates have been involved in entrepreneurial activities (for example business plans competitions, internships in start-ups etc.).

Table 9-7: Percentage of all students graduating with actual practical entrepreneurship experience from activities offered by the HEI e.g

| | Total | Type of institution | | | |
|-------------------------------|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| None of the students | 2% | 0% | 3% | 0% | 0% |
| 1 – 2% of the students | 12% | 15% | 15% | 0% | 0% |
| 3 – 4% of the students | 16% | 24% | 15% | 11% | 7% |
| 5 – 10% of the students | 12% | 6% | 14% | 6% | 0% |
| 10 – 15% of the students | 10% | 6% | 11% | 17% | 14% |
| 15 – 20% of the students | 10% | 12% | 9% | 11% | 14% |
| 20 – 50% of the students | 14% | 9% | 12% | 17% | 36% |
| More than 50% of the students | 14% | 18% | 11% | 17% | 29% |
| Cannot make such estimation | 11% | 9% | 11% | 22% | 0% |

(n = 188)

When looking at this information divided on the types of institutions it is clear to see that the independent business schools are slightly overrepresented in the group stating that over 50 percent of their students have practical entrepreneurship experience, e.g. from internships, student projects in companies and business plan competitions. This seems to be a more integrated part of the culture of the business schools, which also goes for the cases mentioned above.

9.5 Community Engagement

The community engagement is seen as a key factor in strengthening entrepreneurship education by adding the real life element that theoretically oriented subjects might lack. By engaging in and with the community the entrepreneurship education becomes more dynamic, and through cooperation with business, local schools and the local political level, the entrepreneurship education and educators can keep up-to-date, and at the same time help develop the community.

Community engagement can take many forms and below the answers will be divided into a. transfer of knowledge to the society, and b. inviting the community in to the HEI.

Below 79 percent of the institutions state that they transfer knowledge to society by doing consultancy work, and 76 percent of them say that they transfer knowledge to society through academic spin-offs. In the case of consultancy there are no big variations across types of institutions. As far as patents and licensing is concerned, it is evident that this is not the focus of business schools at all.

Table 9-8: HEI knowledge transfer to society

| Did your institution in the previous academic year transfer knowledge to society? | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes, through consultancy | 79% | 79% | 84% | 72% | 79% |
| Yes, through academic spin-offs | 62% | 76% | 67% | 44% | 29% |
| Yes, through product/process design | 49% | 58% | 54% | 44% | 14% |
| Yes, through patents/IPRs | 44% | 55% | 49% | 33% | 7% |
| Yes, through licensing agreements | 37% | 45% | 41% | 28% | 7% |
| Yes, my institution transferred knowledge in other ways. Please specify: | 24% | 24% | 25% | 28% | 21% |
| No, my institution did not transfer knowledge | 3% | 3% | 1% | 17% | 7% |

(n = 196)

The knowledge transfer in the form of licensing, patents, and process design is a little less developed, and the activities in this area are carried out in many different ways depending on the country, the legislation etc.

Only 3 percent answer that they did not transfer knowledge at all.

The institutions also seem to open their doors to the surrounding society by supporting initiatives bringing entrepreneurship on the agenda. Most institutions answer positively to the question of whether their institution host entrepreneurial events open to the community (84 percent), whereas 39 percent have a specific centre which provides advisory services or training to entrepreneurs.

| Does your institution... | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Host entrepreneurial events open to the community? | 81% | 82% | 83% | 61% | 93% |
| Have a specific centre that provides advisory services or training to entrepreneurs in the community? | 41% | 42% | 41% | 24% | 50% |

(n = 187)

The table above shows that the independent business schools seem to be a little more active in involving the community, hosting events, and supporting entrepreneurship in local schools or other education institutions. Also when it comes to having a specific centre that provides advisory services to entrepreneurs the business schools seem to be a little more active than average.

The community involvement seems to grow over time, 76 percent of the HEIs with more than 12 years of experience with entrepreneurship education state that they support entrepreneurship in schools or other educational institutions, whereas the share of the HEIs with less than 4 years experience is 59 percent. The same tendency can be seen when looking at HEIs with a special centre providing advisory services or training to entrepreneurs in the community. Here only 24 percent of the HEIs with less than 4 years of experience would have such a centre whereas 49 percent of the HEIs with more than 12 years of experience would have the same.

Especially, this last area is one that several of the interview-persons mention as one of the big areas for future development. Howard Davies, European University Association, points to the fact that the HEIs could play a more active role in the lifelong learning of entrepreneurs:

“The lifelong learning perspective should be more than rhetoric. It opens some possibilities and it is a mistake to think that entrepreneurs are only in a limited age group. The HEIs should think about making sure that they have offers for those in their 40s and 50s who want to embark on entrepreneurship, and this could be an opportunity for the universities, because this group need somewhere to get the skills and the insights that they need”. Howard Davies, independent consultant to the EUA.

Another type of links to stakeholders and involvement in the surrounding world is constituted by the widespread links that many HEIs have with other international education institutions. The international relations are mentioned in several of the cases as for example: ISM which is actively involved in many international activities, including close collaboration and participation with a number of international associations. These links enable the institution to have an international profile, which is important in the growing competition among HEIs nationally and internationally.

“The ISM believes that active international collaboration enhances university awareness and attracts more international students and researchers to ISM.” Virginijus Kundrotas, Headmaster of ISM University of Management and Economics, Lithuania.

Besides the good arguments for internationalisation the ISM also believes that a strong international environment is another important element in stimulating the entrepreneurial and innovative mindset of the students.

Yet another way of engaging the community is seen at the Wageningen University in The Netherlands, which is a multidisciplinary university with special education within agriculture. At Wageningen they have developed the STOCK, a student-led special centre where students are trained in entrepreneurship and are supported in developing new ideas. Among other things, the centre organises business cafés for students, teachers, and entrepreneurs. This is an informal gathering taking place on a regular basis, and it has developed into a meeting place for both external and internal key persons interested in concrete, actual entrepreneurship.



10. DEVELOPMENT

10.1 Introduction

The dimension *Development* focuses on whether the HEIs strive to continuously improve their entrepreneurship activities.

For one, the dimension measures whether the HEIs (1) evaluate their entrepreneurship educational activities. This is necessary in order to make sure that the activities have the educational impact aimed at, i.e. further entrepreneurial behaviour, skills, knowledge, mindsets and experiences to obtain the long-term effects such as venture creation, intrapreneurship etc.

The dimension also investigates whether the HEIs take into account (2) the needs and wishes of the present and past direct users (the students and alumni) and the indirect “end users” (the potential employers, venture capitalists etc.) when developing/improving their entrepreneurship education.

Moreover, the quality of the entrepreneurship education is very much depended on (3) the skills and competencies of the staff teaching entrepreneurship. Therefore, the dimension also comprises the aspect of the human resources utilised in the entrepreneurship education – for example focusing on whether entrepreneurs are used as guest lectures or whether the academic staff teaching entrepreneurship have their own entrepreneurial experiences. Finally *Development* outlines (4) how the *human resources efforts* within the HEI support and develop in their entrepreneurship teaching endeavours for academic staff.

Hence, the dimension *Development* includes the following aspects (questions can be seen in box 10-1):

- Evaluation.
- User-driven improvement
- Human resources development and management

Box 10-1: Overview of the questions in the Development dimension

Human resources development and management

1. Please estimate the number of academic staff involved in your institution's entrepreneurship activities?
2. Please estimate the percentage of the academic staff involved in providing your institution's entrepreneurship activities that have their own experiences as entrepreneurs.
3. Are guest lecturers/practitioners with practical experience as entrepreneurs used in the entrepreneurship education?
4. Does your institution provide recognition for achievements of academic staff in entrepreneurship education?
5. At your institution, is it compulsory for academic staff members who (want to) teach entrepreneurship to engage in training/coaching aimed at developing/improving their entrepreneurship teaching skills?
6. Does your institution require that academic staff members have actual entrepreneurial experience before they are allowed to teach entrepreneurship?

Evaluation of goals and strategies

1. Does your institution have a formalised evaluation procedure for following up on its entrepreneurship goals and strategies?

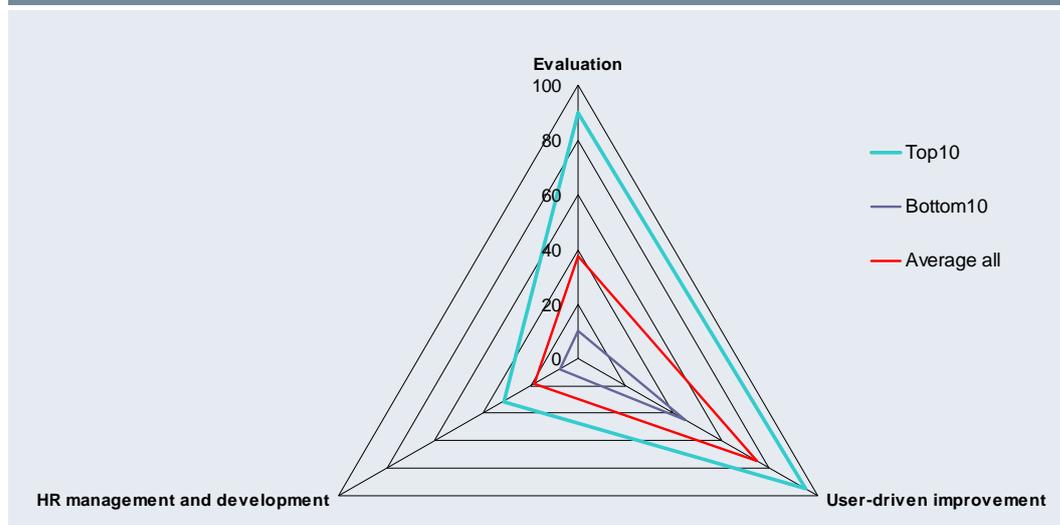
User-driven improvement

1. Did students at your institution evaluate the entrepreneurship courses in the previous academic year?
2. Does your institution have procedures for evaluating whether the entrepreneurship courses have the anticipated medium/long term effect?

10.2 Main Conclusions

Figure 10-1 illustrates the difference between the reported framework conditions related to the development dimension for top-10 institutions compared with the bottom-10 and the average.

Figure 10-1: Development



10.2.1 *Human-resource management and development*

With regards to HR management and development, the bench mark study shows that this is an area with which both top and bottom institutions struggle. One of the major differences is related to the experience of entrepreneurship teachers. In half of the top-10 institutions it is required that the teachers possess entrepreneurial experience if they want to teach entrepreneurship. The findings also show that the entrepreneurship teachers in the top-10 institutions have in fact more entrepreneurial experience on average than the teachers in the bottom-10 institutions.

Entrepreneurship education is still immature in the sense that it is often person driven and depending upon the effort of individuals rather than a collective, strategic effort on the part of the HEI or national government. A majority of HEIs still have less than 20 academics involved in entrepreneurship education, which makes the effort within each department of the HEI very vulnerable to changes in staff.

It has often been stated that successful and interesting entrepreneurship education is closely connected with educators' personal experience as entrepreneurs. If this is the case, entrepreneurship education in higher-education institutions in Europe is strongly challenged. On an average less than one third of all academic staff teaching entrepreneurship in the institutions in the specific survey has had personal, practical experience with entrepreneurship outside academia. In only 20 percent of the HEIs the teaching staff must undergo training in order to teach entrepreneurship.

As this cannot (and possibly should not) immediately be remedied by laying off existing staff and employing new ones, professional development within entrepreneurship education is crucial. However, professional development to teach entrepreneurship is compulsory in only 20 percent of HEIs.

10.2.2 *Evaluation of entrepreneurship goals and strategies*

Figure 10-1 shows that all of the top-10 institutions have formalised procedures for conducting evaluations of their entrepreneurship strategies – only one of the bottom-10 institutions has such procedures.

The survey also shows that the funding and motivational structures of HEIs need to change to make entrepreneurship more important within the HEI and to the strategic management level of the HEI. Although only 6 percent of HEIs state that they do not have entrepreneurship goals and 71 percent of HEIs have entrepreneurship mentioned in the mission statement, there seems to be a risk or a tendency that the mission statements are only showcases and that the continuous evaluation and follow-up on the results of these goals and strategies lack somewhat behind. 38 percent of HEIs report that they have procedures to follow up on entrepreneurship goals and strategies, which is in strong contrast to the 94 percent of HEIs which have entrepreneurship goals

10.2.3 *User-driven improvement*

Figure 10-1 shows that the bottom-10 institutions are engaged in user-driven improvement. The findings show that these institutions are focusing on students evalua-

tions. But in comparison, the results show that the top-10 institutions obtain evaluations from students as well as from end-users such as employers, investors etc.

The overall tendency among HEIs is to evaluate the individual course and the individual activity, whereas monitoring and evaluation on an overall level seems to be less frequent. The survey also reveals that where as many as 87 percent of HEIs in the specific survey claim to keep track of alumni, entrepreneurship is not at the forefront of the contact with alumni, as only 50 percent of these HEIs use alumni contact to measure medium-term and long-term effect of entrepreneurship courses among former students.

10.2.4 Types of institutions

Technical HEIs and multidisciplinary HEIs with a business school are above average in terms of number of staff involved in entrepreneurship education where as specialised HEIs, multidisciplinary HEIs without business schools and non-technical HEIs are well below the average number of persons involved in entrepreneurship education.

Regarding the entrepreneurial background of the staff, specialised HEIs and independent business schools are more likely to require that staff members who are teaching entrepreneurship have previous entrepreneurship experience, whereas technical departments in multidisciplinary HEIs are less likely to do so.

The user-driven development covers aspects such as how the HEI evaluate their activities with the students and end-users, and here the specific survey shows that specialised HEIs and the independent business schools are a little more likely to measure the effect with the end-user, whereas the multidisciplinary institutions are more likely to measure the effect among the students themselves.

Specialised technical HEIs put most focus on measuring medium/long-term experience. Only 25 percent of special technical HEIs have no formalised medium/long-term monitoring.

10.2.5 Regional differences

In the EU15 countries it seems as if more institutions require their entrepreneurship teaching staff to have specific entrepreneurship experience, although this is the case in only a fourth of the respondents in total.

However, the EU>15 countries are more likely to offer recognition for achievements of their academic staff in entrepreneurship education than is the case for the EU15 countries.

10.2.6 Development over time

Entrepreneurship education seems to be contagious as the number of staff involved is relatively higher in HEIs with more than 12 years experience in entrepreneurship education.

Moreover, follow-up on entrepreneurship strategies seems to grow with experience, as there is a notable difference in the data. The number of HEIs stating that they do follow up on the strategies doubles, from 24 percent in the HEIs with less than 4 years of experience and between 4 and 8 years of experience, to 48 percent in the institutions with more than 12 years of experience.

The same tendency can be seen when looking at the way of monitoring the medium/long term effect of the entrepreneurship activities. Thus 53 percent of HEIs with less than 4 years' experience in entrepreneurship education monitor medium/long-term effect, whereas 69 percent of HEIs with more than 12 years' experience monitor medium/long-term effect.

10.3 Human resource development and management

As can be seen from the figure below, an average of 37 persons from the academic staff is involved in entrepreneurship activities. However, there are large differences. In 64 percent of the HEIs, less than 20 persons from the academic staff are involved and only in 6 percent of the cases more than 100 educators have been involved in entrepreneurship activities. These figures underline the message that has been conveyed again and again in the qualitative in-depth interviews, that entrepreneurship education is still very much an individual matter and very much driven by personal interest on the part of a group of professors.

| Table 10-1: Academic staff members involved in entrepreneurship activities | |
|--|---------|
| Number of academic staff involved in entrepreneurship activities | Percent |
| 1-5 staff | 21 % |
| 6-10 staff | 21 % |
| 11-20 staff | 22 % |
| 21-50 staff | 26 % |
| 51-100 staff | 6 % |
| More than 100 staff | 6 % |
| Total | 100 % |
| Average | 37 |

(n = 179)

When distinguishing between various characteristics of the HEIs a - perhaps obvious - connection can be seen between the length of experience with entrepreneurship education and the number of staff involved. HEIs with less than 4 years of experience have an average of 16 persons involved in entrepreneurship education, whereas HEIs with more than 12 years of experience in entrepreneurship education has an average

of 58 persons involved. Thus it seems that initiatives to integrate entrepreneurship education is “contagious” and will grow and spread across the HEI over a period of time – although the numbers are not large.

Technical HEIs and multidisciplinary HEIs with a business school are above average in terms of number of staff involved in entrepreneurship education whereas specialised HEIs, multidisciplinary HEIs without business schools and non-technical HEIs are well below the average number of persons involved in entrepreneurship education.

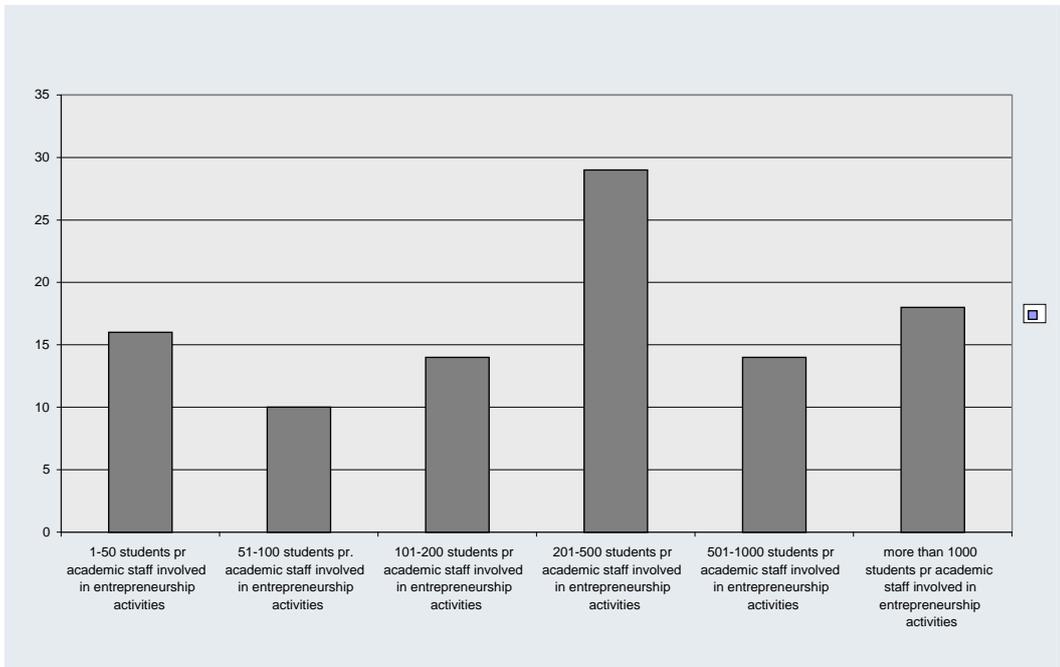
Case examples almost all underline the fact that working with entrepreneurship has started as a personal effort – by one or more professors who have been exposed to entrepreneurship thinking abroad, at a conference or similar. Many in-depth interviews highlight that many educators among the academic staff still perceive entrepreneurship as “something” extra, which is difficult to find room for in the curriculum and thus only support it to a limited extent.

Students at the University of Lund, Sweden, which is an old, traditional university of 40,000 students, report that only 10-12 staff members are committed to entrepreneurship education and research, which makes the student/staff ratio in entrepreneurship activities very low.

Below, the student/academic staff ratio in entrepreneurship activities is illustrated. As can be seen 32 percent of all HEIs in the survey have more than 500 students per academic staff involved in entrepreneurship activities. Only in 16 percent of all cases the student/academic staff is below 50.

The table also shows, however, that the distribution is quite wide. 16 percent of HEIs with entrepreneurship education have 1-50 students per academic staff involved in entrepreneurship activities and 18 percent have more than 1,000 students per academic staff involved in entrepreneurship activities.

Figure 10-2: Number of students per academic staff involved in entrepreneurship activities



10.3.1 Personal experience in entrepreneurship outside academia

It has often been stated - and in some HEIs even required - that academic staff should have personal entrepreneurship experience to fully appreciate and fully communicate the benefits and obstacles of entrepreneurial activities. To understand to which extent academic staff in HEIs in Europe fulfils this demand the survey has mapped the percentage of staff in each HEI with entrepreneurial experience outside the educational world.

As can be seen below, academic staff is required to have actual entrepreneurial experience prior to teaching entrepreneurship in every fourth HEI in the survey.

Table 10-2: Academic staff members required to have actual entrepreneurship experience

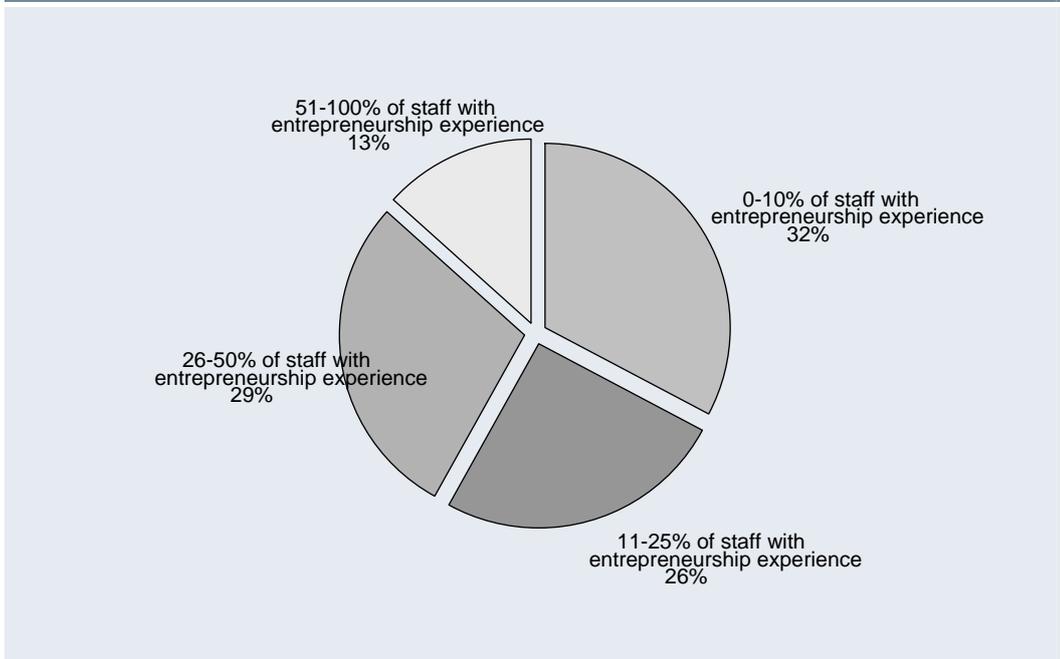
| | Total | Type of institution | | | |
|-----|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes | 25 % | 22% | 22% | 39% | 36% |
| No | 75 % | 78% | 78% | 61% | 64% |

(n = 186)

Specialised HEIs and independent business schools are more likely to require previous entrepreneurship experience (39 and 36 percent), whereas technical departments in multidisciplinary HEIs are less likely to do so (19 percent). Again, a large difference can be seen between EU15 and EU>15, where HEIs in the EU>15 countries are less likely to demand prior entrepreneurship experience (13 percent) than HEIs in EU15 (27 percent).

The figure below, however, gives a less promising outlook for those who claim that real entrepreneurial experience is the key to successful entrepreneurship education. It shows that in only 13 percent of the HEIs in the specific survey more than 50 percent of the academics have entrepreneurial experience, whereas 32 percent of the institutions answer that between 0 -10 percent of their academic staff involved in entrepreneurship education have entrepreneurship experience. On average, less than one third of all academic staff teaching entrepreneurship has had a personal, practical experience with entrepreneurship activities outside academia.

Figure 10-3: Academic staff with entrepreneurship experience



(n =179)

Thus it is fair to conclude that most of the entrepreneurship education in higher-education institutions is still based on theory and only in few cases enriched with personal, practical experience.

However the Technical University of Munich, Germany, is one of the institutions where all teaching staff is required to have entrepreneurship experience. In other HEIs this challenge is met by involving a large number of practitioners and entrepreneurs in teaching programmes as guest lecturers.

One example of this approach is found at the Centre for Entrepreneurial Learning (CfEL), Cambridge University, the UK. The Centre has nine full time staff that all are focused on planning and implementing entrepreneurship courses, while entrepreneurs and practitioners generally deliver the entrepreneurship courses. This model is chosen because the people at the centre believe that entrepreneurs and practitioners are best equipped to teach and at the same time they act as role models and inspire students to take a positive attitude to entrepreneurship.

Table 10-3: The use of guest lecturers / practitioners with practical experience as entrepreneurs in entrepreneurship education

| | Total | Type of institution | | | |
|---------------------|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| To a great extent | 35% | 38% | 29% | 56% | 57% |
| To some extent | 53% | 56% | 57% | 33% | 36% |
| To a limited extent | 11% | 6% | 13% | 11% | 7% |
| Not at all | 1% | 0% | 1% | 0% | 0% |

(n = 186)

Judging from the figures above the use of external guest lecturers and practitioners in entrepreneurship education is widespread. In 35 percent of all cases the HEI answers that they use guest lecturers/practitioners to a large extent, and additional 53 percent answer “to some extent”. Only 12 percent state that their use of guest lectures/practitioners is limited or non-existent.

Whether the table above illustrates a conscious effort to compensate for the lack of personal entrepreneurship experience in academic staff through the employment and invitation of guest lecturers and practitioners, or it illustrates a general lack of academic staff that will/can teach entrepreneurship cannot be concluded. The fact is, though, that entrepreneurship education is often conducted with the assistance of external resource persons.

Specialised HEIs and independent business schools seem to be the institutions that use guest lectures with practical experience the most (56-57 percent to a great extent) whereas the equivalent figure for all HEIs in EU>15 countries is only 13 percent.

Tallin Mainor Business School, Estonia is however an example of a HEI in a EU>15 country which has an academic staff with strong traditions in business and entrepreneurship outside academia. The school was founded by business men and one of the main owners of the school is still teaching entrepreneurship at the school. Approximately half of the academic staff has a background as business people, which means that the school generally attempts to bring cases and reality into the school. In addition, the new curriculum is developed in collaboration with the private business community through the curriculum board where 50 percent of the members come from private business. Despite this strong association with private business and entrepreneurship activities, the school still complains that there is a lack of qualified staff who can write good cases. Consequently, professional development is still very much needed. At the Tallin Mainor Business School they look at the European Commission programmes for support for training programmes and for networking pro-

grammes that may strengthen Estonian links to other universities and business schools.

10.3.2 Academic recognition

A point being raised repeatedly in conferences, in papers, in literature and also in the in-depth interviews carried out in the context of this survey is that an important obstacle and barrier that prevents widespread involvement in entrepreneurship education is the lack of formal recognition of academic staff for their involvement in entrepreneurship education.

This theme was also investigated in the specific survey to establish whether the HEI provide any recognition for achievements in entrepreneurship education. The results appear from the table below.

| | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes, awards | 16% | 9% | 21% | 0% | 29% |
| Yes, Professorial Status | 19% | 12% | 21% | 17% | 29% |
| Yes, monetary awards (e.g. salary increase, grants) | 18% | 15% | 19% | 28% | 21% |
| Yes, fellowships | 7% | 6% | 9% | 0% | 0% |
| Yes, other recognition, please specify: | 8% | 6% | 9% | 6% | 7% |
| No | 52% | 57% | 56% | 58% | 21% |

The table shows that in 52 percent of all HEIs in the survey, academic staff obtains no recognition for achievements in the area of entrepreneurship education.

Where recognition is provided, it comes as awards (16 percent), professional status (19 percent), monetary recognition (18 percent) and actual fellowships in only 7 percent of all HEIs.

As respondents have been able to tick more than one answer above and the figures do not add up to 100 percent, some – although not many - HEIs use multiple types of recognition for achievements within entrepreneurship education.

Monetary awards are predominant in specialised technical HEIs, where 50 percent of institutions reward monetary recognition for achievements in entrepreneurship education, whereas awards and professional status score high in independent business schools (29 percent and 29 percent). In more than 56 percent of all cases traditional multidisciplinary HEIs with or without business schools state that they have no formal recognition for achievement in entrepreneurship education. The equivalent figures for independent business schools and for specialised technical HEIs are 21 percent and 25 percent respectively. There seems to be a difference between the EU>15 countries and EU15 when it comes to recognising achievements within entrepreneurship education. 55 percent of HEIs in EU15 countries do not use recognition as a motivational factor, whereas this is only the case for 33 percent of HEIs in the EU>15 countries.²⁵

From the in-depth interviews it is seen that a major barrier of entrepreneurship education is the fact that professors gain absolutely no credit for getting involved in entrepreneurship education. In addition, teaching and administrative duties are being awarded, which is the reason why many professors choose to put their energy and efforts in those fields.

“Most research units have one or two champions, who care about entrepreneurship and who see that entrepreneurship activities are of value. But many completely refuse to address matters outside research as commercialisation does not advance their careers” Associate professor Rui Baptista, Instituto Superior Técnico, Lisbon, Portugal.

At the University of Lund, Sweden, they have the same experience. They find it rather difficult to implement entrepreneurship activities in a successful way across an old, traditional multidisciplinary university. For them it is a challenge to promote entrepreneurship activities across faculties so that other faculties than the business and engineering faculties take an interest in the activities.

10.3.3 Professional development

If academic staff more often than not do not have a past, personal experience in entrepreneurial activities outside the world of higher education, professional development must be in high demand in order for the academic staff to meet the requirements. From the table below it is apparent, however, that in only 20 percent of the participating HEIs academic staff is required to participate in professional development before teaching entrepreneurship.

²⁵ See table in appendix A.

Table 10-5: Compulsory training / coaching for entrepreneurship teachers

| | Total | Years of experience with entrepreneurship education | | | |
|-----|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Yes | 20% | 6% | 20% | 18% | 20% |
| No | 80% | 94% | 80% | 8% | 80% |

(n = 184)

Looking at how long the institutions have been engaged in entrepreneurship education, HEIs with less than 4 years' experience in entrepreneurship education are less likely to demand that academic staff engage in training prior to teaching entrepreneurship. Only 6 percent of HEIs with less than 4 years' experience demand professional development. Again we also see a difference between the EU15 and the EU>15 countries. 16 percent of HEIs in EU15 countries demand professional development before staff can teach entrepreneurship whereas the equivalent figure is 37 percent in the EU>15.

The Northern Ireland Centre for Entrepreneurship in Queens University Belfast offers professional development programmes for staff in entrepreneurship education, idea development and business planning. Teaching awards support the efforts and give recognition to staff that venture into entrepreneurship teaching. Staff in engineering, natural science and health science is offered a special course in entrepreneurship awareness, whereas a course in the skills of entrepreneurship is offered both to administrative, academic and research staff.

In the School of Entrepreneurship in Aalborg University, Denmark (SEA) they supply continued professional development for university faculty members and for educators in other HEIs in the region. The course is a project course that combines creativity, innovation and entrepreneurship.

SEA reports that some faculty members are easily recruited and are interested in entrepreneurship education, whereas others are more difficult to reach. They feel, however, that interest among the general faculty members is growing and is slowly spreading across campus. Faculty members find the participation in entrepreneurship activities fun and report that they are interested in improving the number of different teaching methods that they can apply.

"Many faculty members have realised that entrepreneurship represents something that young people find interesting and something they would like to work with later,

and this is a motivation in itself for the faculty members. " Professor and study director Niels Mobjerg Olesen, SEA, University of Aalborg, Denmark.

A number of universities across Europe are currently offering international Master's degrees and PhD programmes in entrepreneurship education and training to meet the demands of HEIs for qualified teaching staff.

Two examples of this are the PhD programme in Lisbon, Portugal on Technological Change and Entrepreneurship and the IMEET (International Master in Entrepreneurship Education and Training) Master's programme in the International Danish Entrepreneurship Academy, Aarhus University Denmark. Both were developed in order to cater for a demand from existing educators to learn more about entrepreneurship and to cater for HEI needs for more qualified entrepreneurship teachers.

But also several other universities offer similar degrees in entrepreneurship teaching; many in international environments in collaboration with other HEIs outside as well as inside Europe.

At the new Aalto University in Finland, a new national flagship project established to support Finnish competitiveness in the future; they are painfully aware of the need for continued professional development in order to successfully teach entrepreneurship.

"International research findings indicate that the problem is that teachers do not believe that they are capable of teaching how to create and see opportunities and how to exploit them. So basically what is needed is to strengthen teacher education." Professor Paula Kyrö, Helsinki School of Economics, Finland.

The International Entrepreneurship Educators Programme (IEEP) was established by the UK network of Science Enterprise Centres, The Ewing Marion Kauffman Foundation, the UK Higher Education Academy, and the UK National Council for Graduate Entrepreneurship in order to supply high-quality professional development for teachers, a professional development that also includes enabling participants to take a leadership role in supporting the development of entrepreneurial capacities and mindsets via engagement right across the university curriculum. The aim of the programme is to create future leaders in the field of entrepreneurship education. See the in-depth case study of national policy in the United Kingdom.²⁶

10.4 Evaluation

The specific survey of HEIs with entrepreneurship education in Europe shows that only 38 percent have formalised procedures of following up on its entrepreneurship goals and strategies.

The reason for this may well be closely connected with the lack of external formal recognition and the lack of formal incentives for entrepreneurship education. When

²⁶ For additional information consult <http://www.ncge.com/communities/education/content/get/5>

there is no external push to follow up with formalised procedures, follow-up is often disregarded in a busy everyday schedule.

Table 10-6: : Formalised evaluation procedures for following up on entrepreneurship goals and strategies

| | Total | Years of experience with entrepreneurship education | | | |
|-----|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Yes | 38% | 24% | 24% | 40% | 48% |
| No | 62% | 76% | 76% | 60% | 52% |

(n=184)

Breaking the data down into years of experience with entrepreneurship education shows that the longer an HEI has been involved in entrepreneurship activities, the more likely it is to have formalised procedures for following up on entrepreneurship strategies and goals. Thus, of HEIs with less than 4 years' experience in entrepreneurship education, 76 percent have no formal evaluation procedures for following up on entrepreneurship goals and strategies, whereas 52 percent have no formal procedures among HEIs with more than 12 years' experience in entrepreneurship education.

10.5 User-driven improvement

Even though entrepreneurship goals and strategies are not closely evaluated and followed, the direct courses in entrepreneurship generally are. Thus 89 percent of the respondents in the e-survey state that their students evaluated their entrepreneurship courses in the previous academic year. Variation between types of HEIs is not remarkable, 91 percent and 93 percent of independent business schools and multidisciplinary HEIs with a business school respectively evaluate entrepreneurship courses, where as specialised HEIs and multidisciplinary HEIs without business schools evaluate entrepreneurship courses in 88 percent and 78 percent of the cases.

| Table 10-7: Evaluation of entrepreneurship courses | | | | | |
|--|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total | Type of institution | | | |
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes | 89% | 88% | 91% | 78% | 93% |
| No | 11% | 12% | 9% | 22% | 7% |

Years of experience with entrepreneurship education seems not to correlate with whether or not the HEI evaluates its entrepreneurship courses.

However, there is no doubt that the overall general awareness of the importance of documentation and evaluation of teaching and learning has put its mark on the entrepreneurship area, too.

| Table 10-8: Evaluation procedures for evaluating medium/ long term effect | | | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total | Type of institution | | | |
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes, by measuring the effect among the students themselves (i.e. have the students gained the expected entrepreneurial skills, mindsets etc.) | 50% | 58% | 53% | 39% | 43% |
| Yes, by measuring how the end-users (employers, investors etc.) evaluate the students with regards to their entrepreneurial skills and mindsets | 22% | 24% | 19% | 39% | 36% |
| No | 37% | 36% | 39% | 44% | 36% |

One thing is the standard evaluation procedures taking place immediately after a specific course, another entirely different matter is the measurement of medium and

long-term effect of entrepreneurship courses on students. As shown in the table, above 37 percent of the HEIs in the specific survey do not attempt to measure this at all, whereas 50 percent answer that they measure the effect among the students. 22 percent also measure how the end-users evaluate the students with regard to their entrepreneurial skills and mindsets as part of their evaluation procedure.

Looking at the division on types of institutions it seems that if a HEI evaluates the medium/long term effects, then the specialised HEIs and the independent business schools are a little more likely to measure the effect with the end-user, whereas the multidisciplinary institutions are more likely to measure the effect among the students themselves.

Specialised technical HEIs put most focus on measuring medium/long-term experience. Only 25 percent of special technical HEIs have no formalised medium/long-term monitoring. The number of years engaged in entrepreneurship education also seems to influence the degree of monitoring medium/long-term effect. Thus 53 percent of HEIs with less than 4 years' experience in entrepreneurship education monitor medium/long-term effect, whereas 69 percent of HEIs with more than 12 years' experience monitor medium/long-term effect.²⁷

The case interviews support the notion that evaluation is seen as an important element and most HEIs interviewed in the in-depth cases state that all courses are evaluated as part of the general evaluation procedures of the institution. Alumni feedback, however, seems rare but there are examples. At the Northern Ireland Centre for Entrepreneurship alumni feedback is applied in the general design of courses and there are informal feedback e-mail structures where students may offer their point of view on a weekly basis.

The University of Lund, Sweden uses not only a summative evaluation approach like most of the other HEI. They have supplemented the traditional ex-post evaluation with a formative evaluation procedure. They apply the logbook approach during all entrepreneurship courses, where students are requested to become very conscious about the process of starting up a company through continuous documentation and reflection in a logbook.

²⁷ See table in Appendix A.



11. RESOURCES

11.1 Introduction

To be able to establish entrepreneurship education as a part of a HEI, dedicated funding is necessary, if not crucial. Entrepreneurship educational activities - whether these are appointing professors, developing courses, establishing an entrepreneurship centre or arranging extracurricular activities for the students - require dedicated resources.

The dimension *resources* elaborates on how entrepreneurship education is supported in the HEI from a financial point of view. First of all, the assumption is that entrepreneurship education will most likely increase if dedicated funding is allocated and especially so if the funding is long-term as opposed to more short term or project-based funding. Secondly, the size of funding will of course determine the scope of the entrepreneurship education activities in the institutions. Furthermore, making entrepreneurship education a permanent element in the HEIs will be more likely to happen if either the entrepreneurship activities can generate an income of its own and/or attract external funding to the HEI.

The first focus within the dimension *resources* is *Income generation from entrepreneurship activities*. This is explored to find out whether the HEIs take the opportunity to use the knowledge-base on entrepreneurship to generate an additional income for the centre or for the HEI in general. The generated income could for instance come from supplying advisory services to local entrepreneurs or businesses or from admission fees for workshops.

The *type and source of funding* section for the entrepreneurship activities outlines whether entrepreneurship activities are mainly state-funded as part of the general funding for the HEI, or whether it also comes from other sources. Is dedicated funding available for the entrepreneurship education activities, and what type of funding is it?

Finally, the chapter also outlines the *budget allocation* of the entrepreneurship activities.

The dimension *resources* includes the following elements:

- Income generation from entrepreneurship activities
- Types and sources of funding
- Budget allocation

The questions asked for each of the elements can be seen in the box below:

Box 11-1: Overview of the questions in the Resources dimension

Income generation from entrepreneurship activities

1. What types of income generating activities related to entrepreneurship does your institution have?

Types and sources of funding

1. How was your institution's entrepreneurship activities primarily funded previous academic year?
2. What is the primary source of external funding for entrepreneurship activities at your institution?

Budget allocation

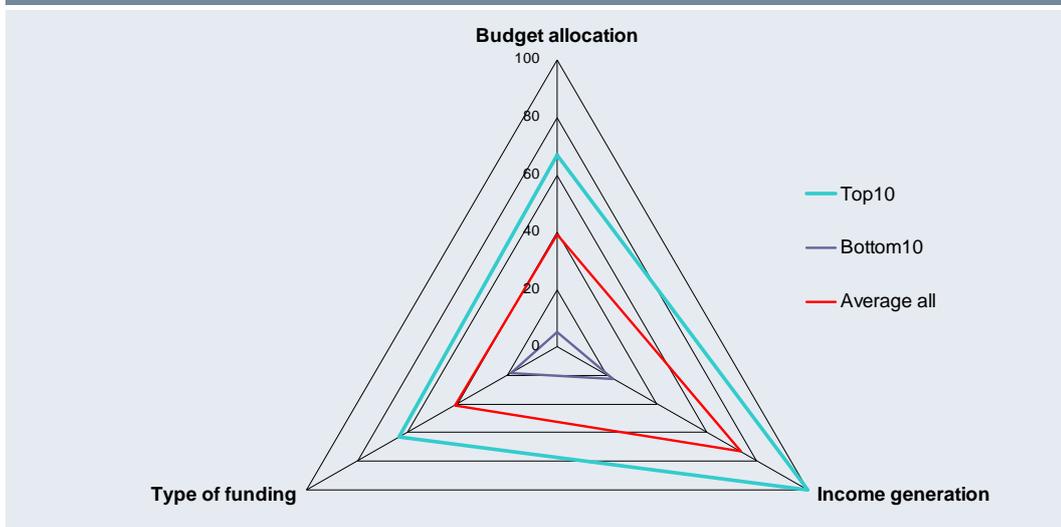
1. In the previous academic year, did your institution support its entrepreneurship goals with dedicated funding?
2. What was the (approximate) size of the overall budget at your entire institution reserved for entrepreneurship activities (in curricular and extracurricular) in the previous academic year?
3. What percentage of the total entrepreneurship budget was allocated from internal funds versus received through external funding in the previous academic year?

11.2 Main conclusions

In this chapter the funding supporting the entrepreneurship activities in the European HEIs has been examined.

In figure 11.1 the difference between the reported framework conditions related to resources for top-10 institutions is compared with the bottom-10 and the average is illustrated.

Figure 11-1: Resources



11.2.1 Income generating activities

Almost half of the institutions generate income from admission fees from seminars and workshops, and 40 percent offer advisory services. Almost 25 percent indicate that the institution does not have any extra income-generating activities. The most striking result is the difference between top and bottom in relation to income generating activities related to entrepreneurship. All of the top-10 institutions engage in income-generating activities, while only two of the bottom-10 institutions do.

Although several institutions have income-generating activities, not even the best performing institutions have entrepreneurship education that is completely self-sustained – internal resources are needed in most cases. Generally speaking the primary source of funding is internal, which on average constitutes 56 percent of the funding, while on average 44 percent of the funding comes from external sources.

11.2.2 Budget allocation

Turning to *budget allocation* it is very interesting to see the difference between the top and the bottom as indicated in figure 10-1. Seven of the top-10 institutions support their entrepreneurship goals with dedicated funding, while only one of the bottom-10 institutions does so. Generally speaking, two thirds of the institutions support their entrepreneurship goals with dedicated funding. The size of this funding varies, but most institutions have less than EUR 50 per student dedicated to entrepreneurship activities.

11.2.3 Type and sources of funding

The sustainability of entrepreneurship education is closely related to the *type and sources of funding* – the more long-term the funding, the more sustainable the entrepreneurship education. Generally, more than one third of the institutions base their entrepreneurship activities on short-term funding, while only one in every 10 is

able to rely on long-term funding (5+ years). Here it seems that even the best-performing institutions are struggling – the majority of the top-10 institutions rely on medium-term funding, while only one single institution has long-term funding. In comparison the results show that the majority of the bottom-10 institutions primarily rely on short-term funding.

Finally, the study shows that more than two thirds of the institutions indicate that government funding is the primary source of external funding.

11.2.4 Types of institutions

The analysis in this chapter shows that independent business schools and multidisciplinary HEIs with a business school generally tend to have income-generating activities.

11.2.5 Regional differences

On the dimension *resources* the difference between EU-15 and EU>15 is particularly evident. Entrepreneurship education activities in EU>15 countries are to a much larger extent than in EU-15 countries dependent upon short-term funding. This might of course indicate that they are better at securing financing from alumni or from business for example, but it might also make them more vulnerable to changes in donor interest.

Fewer institutions in the EU>15-countries support their entrepreneurship goals with dedicated funding than is the case of institutions in the EU15 countries.

And finally, generally speaking, less funding is available per student. Thus, the median is EUR16 per student in the EU>15 countries and EUR27 per student in the EU-15 countries.

However, it is interesting that there is no difference between EU-15 and EU>15-countries in the composition of the funding on internal and external ratio.

11.2.6 Development over time

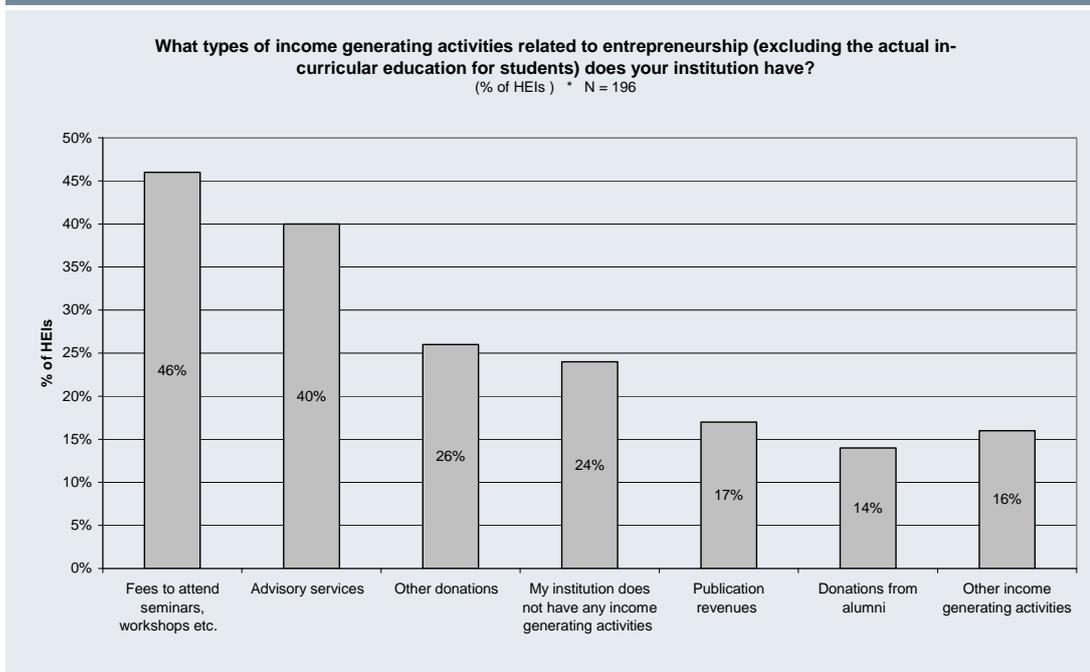
The analysis of the data shows that in the matter of funding, it is significant how long the HEI has been involved in entrepreneurship education. The more years of experience of institution, the more income-generating activities it has. This is interesting especially considering the influence which income-generation is assumed to have on the sustainability of entrepreneurship education. If the institution can generate an income from its entrepreneurial activities, it is more likely that the activities will be sustained than if the entrepreneurship activities need a continuous stream of resources to uphold them.

Furthermore, it seems that the longer experience with entrepreneurship activities within the institution, the more dedicated funding and internal funding.

11.3 Income-generating activities

Turning attention to the type and number of income-generating activities, the survey unveils a wide variation among the institutions. As figure 11-2 illustrates “fees to attend seminars, workshops etc.” and “advisory services” are the two categories that most institutions state as income-generating activities related to entrepreneurship. “Other donations”, “publication revenues” and “donations from alumni” are also important income-generating activities.

Figure 11-2: Income generating activities related to entrepreneurship



The other types of income-generating activities mentioned are mainly projects and research in corporation with for instance companies, research councils and public institutions as for instance the European Commission etc. Distinguishing between types of institutions it can be seen that it is mainly independent business schools and multidisciplinary HEIs including a business school department which have income-generating activities, whereas multidisciplinary HEIs without a business school and specialised HEIs tend to have less income-generating activities.

| | Total | Type of institution | | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Advisory services | 40% | 30% | 45% | 33% | 43% |
| Fees to attend seminars, workshops etc. | 46% | 27% | 53% | 39% | 57% |
| Donations from alumni | 14% | 15% | 14% | 17% | 21% |
| Other donations | 26% | 21% | 30% | 22% | 14% |
| Publication revenues | 17% | 9% | 23% | 0% | 21% |
| My institution does not have any income generating activities | 24% | 39% | 19% | 44% | 21% |
| Other income generating activities | 16% | 15% | 19% | 17% | 14% |

This might be attributed to the more commercial attitude towards running a HEI that can traditionally be found in business schools. Another relevant observation is that there is a significant difference in relation to the duration of the entrepreneurship education within the HEI. The longer experience an institution has with entrepreneurship education, the more kinds of different income-generating activities it has.

Furthermore it is interesting to note that relatively fewer institutions in the EU-15 countries have income-generating activities than in the EU>15 countries. The reason might be that HEIs in the new EU-countries try to compensate for the lack of resources available for entrepreneurship education by attempting to generate income.

11.4 Budget allocation

To explore how budgets for entrepreneurship education are allocated, it is first of all relevant to explore whether the entrepreneurship goals have been endorsed by dedicated funding.

| Table 11-2: Support of entrepreneurship goals with dedicated funding | | | | | |
|--|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|
| | Total | Type of institution | | | |
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school |
| Yes | 62% | 66% | 64% | 56% | 54% |
| No | 27% | 31% | 25% | 22% | 38% |
| My institution does not have entrepreneurship goals | 11% | 3% | 11% | 22% | 8% |

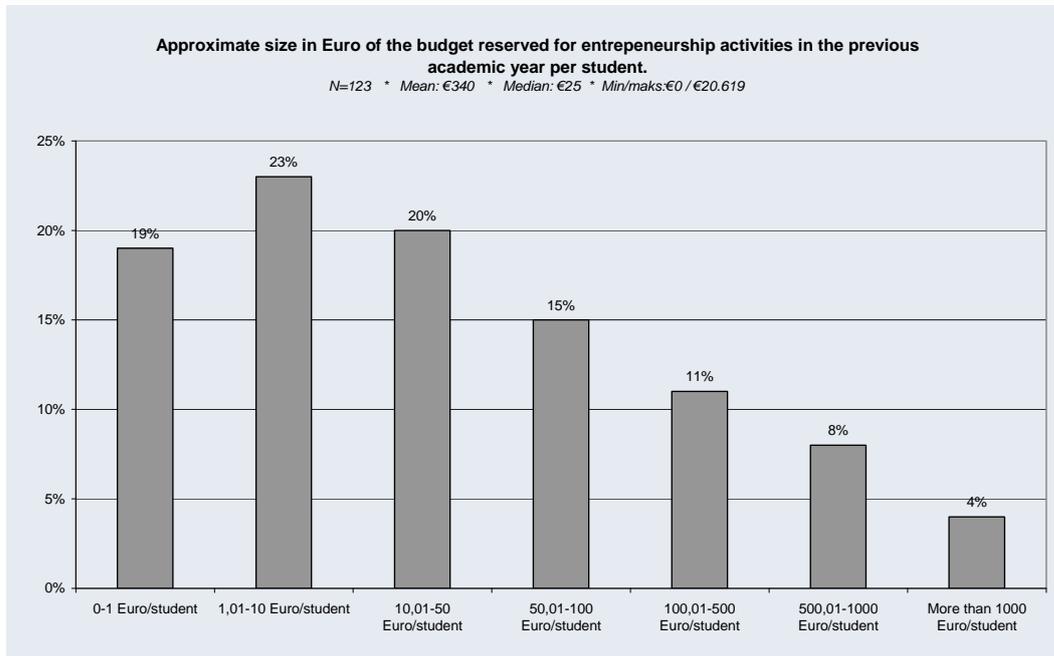
(n = 194)

From table 11-2 above it can be seen that 62 percent of the HEIs have dedicated funds. Furthermore, it shows that having funds dedicated to entrepreneurship goals seem to be more common in multidisciplinary institutions than in specialised institutions. Furthermore, supporting the entrepreneurship goals with dedicated funding seems to be more widespread in EU-15 countries than in the EU>15 countries.

Institutions have been asked to indicate the approximate size (in Euro) of the budget for entrepreneurship education in the previous academic year. As expected, the survey displays large variations. On average a HEI has reserved EUR 483.211 for entrepreneurship activities, but this figure ranges from EUR 0 to EUR 4.119.990²⁸. To compensate for the varying size of institutions, the budget size has been related to the total number of students, cf. figure below.

²⁸ Please note that two outliers were excluded having a budget of 12.000.000 and 30.000.000 euros respectively.

Figure 11-3: : Approximate size of budget reserved for entrepreneurship activities per student.



Almost two thirds of the institutions have less than EUR 50 per student available for entrepreneurship activities. In addition, the dispersion of the cases is quite high, since some intuitions – primarily smaller institutions of all types focused on entrepreneurship – have more than EUR 1000 per student.

Looking at the distribution among the different types of institutions, independent business schools and specialised HEI generally tend to have more dedicated funding per student than multidisciplinary institutions. In addition, there is a weak tendency that the amount of EUROS per students increases according to the number years of experience with entrepreneurship. This could indicate that after some years with entrepreneurship education, the course becomes more embedded in the institution, which increases dedicated funding for the activity. Furthermore, as in the question above, there are regional differences with institutions from the EU>15-countries having remarkably less funding per student than institutions in the EU-15 countries.

| | Total | Type of institution | | | | EU15 or EU>15 | | Years of experience with entrepreneurship education | | | | Technical | | |
|---|-------|---------------------------------------|-------------------------------------|-----------------|-----------------------------|---------------|-------|---|---|--------------------------------------|----------------------------------|--|------------------------------------|----------------------------|
| | | Multidic. HEI without business school | Multidic. HEI incl. business school | Specialised HEI | Independent business school | EU15 | EU>15 | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience | Technical as part of multidisciplinary HEI | Specialised technical institutions | Non-technical institutions |
| Size of budget (EUR) per student - median | 25 | 26 | 16 | 107 | 148 | 27 | 16 | 27 | 10 | 21 | 64 | 19 | 145 | 27 |

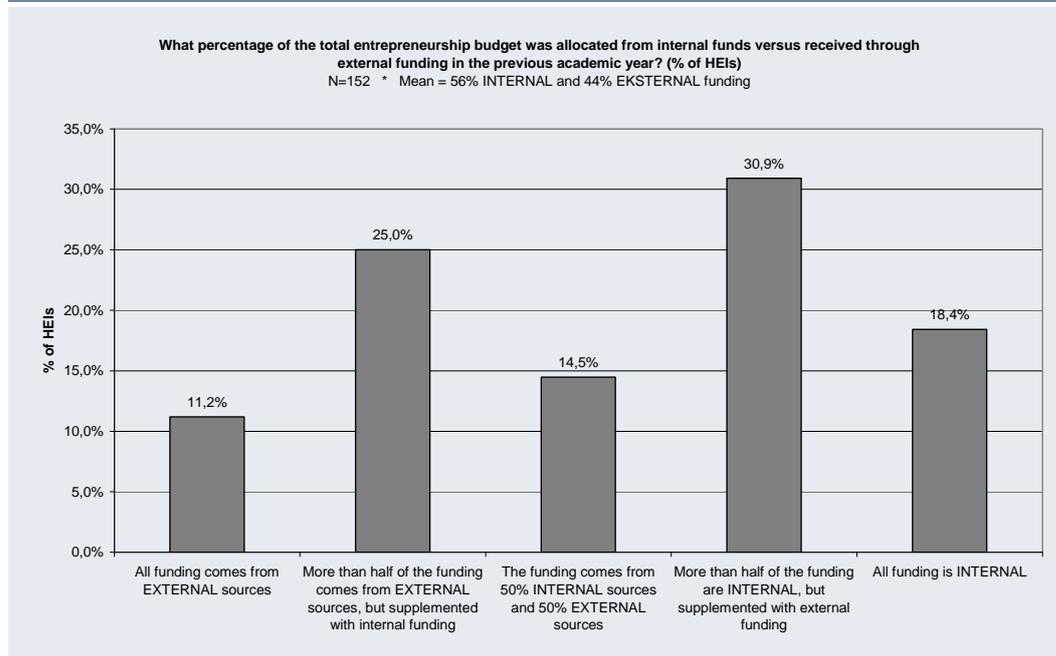
(N=130)

The in-depth case studies illustrate the importance of the size of funding. For instance, *the Bucharest Academy of Economic Studies, Romania* mentions lack of dedicated funding as the most important obstacle for further development of entrepreneurship education. The teaching methods are costly, and the faculty is not able to pay guest lecturers, which of course restricts the use of valuable external experts. For the same reason is it difficult to embed entrepreneurship education in other faculties of the university. Another example from the cases is *the School of Entrepreneurship in Aalborg University, Denmark*, which sees it as a major hindrance that central resources are administered by the universities in such a way that entrepreneurship education does not obtain additional resources. This makes it difficult to obtain funding for the extracurricular activities within the university budget.

Furthermore, lack of funding is mentioned as the most important obstacle to development, growth and continuation of entrepreneurship education by several of the interviewees in the in-depth cases. Thus *University of Cambridge, UK*, *the Johannes Kepler University Linz, Austria*, and *HEC Management School of the University of Liege, Belgium*, all mention lack of funding as one of the main obstacles to the growth and development of entrepreneurship education, although the last-mentioned institution states that “at a university level the budget for entrepreneurship education is peanuts”(HEC Management School of the University of Liege, Belgium).

One way to overcome the lack of resources needed to develop entrepreneurship education is to seek external funding. The institutions have been asked to indicate the ratio of internal to external funding in their entrepreneurship education budgets.

Table 11-4: The use of external versus internal sources of funding



The institutions were asked to estimate which share of their entrepreneurship budget comes from external funding versus internal funding. On average, the ratio is 56 percent internal funding and 44 percent external funding. It appears from figure 11-4 that in 18.4 percent of the institutions, all funding of entrepreneurship activities is internal, in 11.2 percent of the institutions all is external funding. 14.5 percent get half of their funding from internal sources and half of the funding from external sources. In section 11.5 the different sources of external funding are examined.

Interesting differences can be observed in relation to the years of experience with entrepreneurship education. There seems to be a weak tendency that the longer experience with entrepreneurship education, the larger percentage of the funding comes from internal funding. Furthermore, entrepreneurship education in non-technical institutions – as opposed to specialised technical institutions and especially technical institutions as a part of a multidisciplinary institution – tends to be based on internal funding. Another interesting finding is that there is no noticeable difference between institutions in new or old EU-countries when it comes to the ratio of internal versus external funding.

| | Total | EU15 or EU>15 | | Years of experience with entrepreneurship education | | | | Technical | | |
|--------------------------|-------|---------------|-------|---|---|--------------------------------------|----------------------------------|--|------------------------------------|----------------------------|
| | | EU15 | EU>15 | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience | Technical as part of multidisciplinary HEI | Specialised technical institutions | Non-technical institutions |
| Pct. of internal funding | 56% | 56% | 57% | 54% | 51% | 57% | 59% | 49% | 59% | 66% |

(N = 152)

The in-depth case studies are very good examples of the advantages and disadvantages of external funding. *Université de Nantes, France* is one example of how dedicated external support and funding made it possible to establish the Nantes House of Entrepreneurship. External partners such as the Chamber of Commerce and Industry (CCI) and the regional council supported the establishment and operation of the entrepreneurship centre. For instance, the CCI financed one halftime position for a specialist in venture capital to the newly established resource centre, which was an important step the process of realising the centre. Furthermore, the commitment by external partners made it easier to establish and anchor the project throughout the university and at the top management level.

The importance of external funding to realise the centre is illustrated in other institutions as well. Thus *the Technical University of Munich, Germany* has had a private entrepreneur ensure long-term funding to the university, which again made it possible to establish and run the entrepreneurship education. In Scotland, the country's most successful entrepreneur donated five million pounds as an endowment to establish the Hunter Centre of Entrepreneurship at the *Strathclyde University, Scotland*. Thus, external funding has played a very active role in the establishment of some of the entrepreneurship activities in Europe.

However, SEA (School of Entrepreneurship in Aalborg University, Denmark) illustrates how external funding can also be disadvantageous. As described above, SEA has limited possibilities of obtaining internal funding and thus to a large extent they relies on external funding. Consequently, SEA has to find resources on an ad-hoc basis from EU-projects, European Social Funds, national funds and from business contacts. The positive version of this is that SEA and other institutions relying on external funding, need to be very innovative and will in the process secure the collaboration of a broad selection of external partners. However, a counterproductive effect of this is that they are continuously forced to think of new activities to obtain new funding. In practice this means that it is almost impossible to continue a success, as very few donors will

offer funding for something that already exists. Thus established successes are continuously put on hold because of lack of funding.

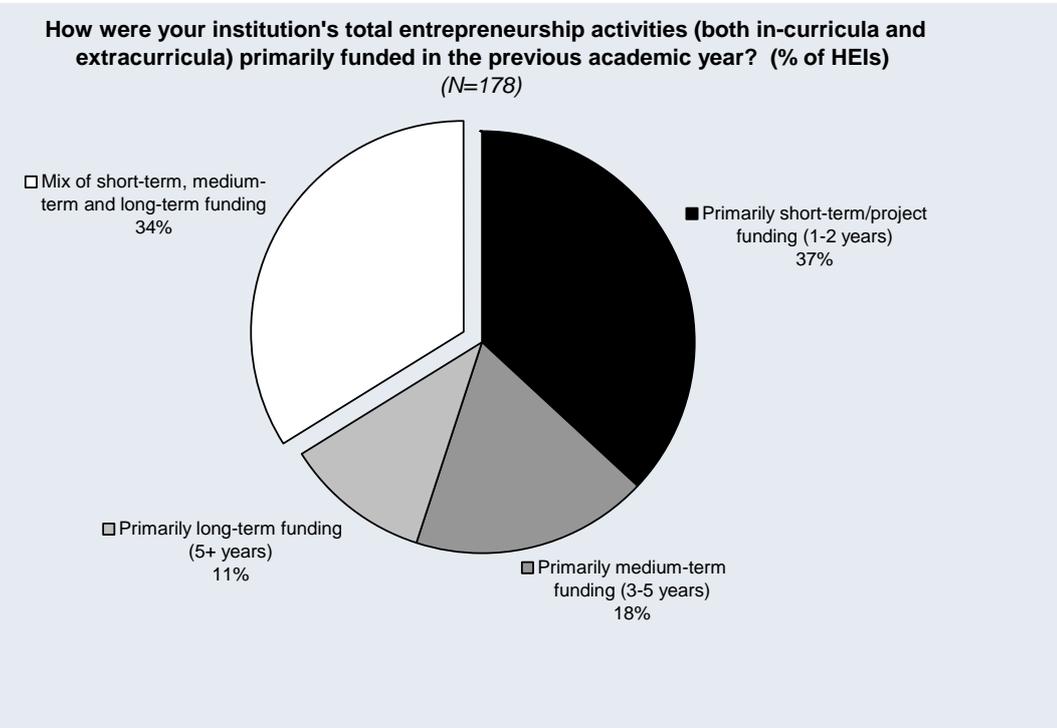
The in-depth case studies also provide examples of how funding generated from activities can be used to encourage innovation. *Danube University in Krems, Austria*, is a private institution. Around 80 percent of the entrepreneurship activities are funded by the institution's own earnings i.e. fees coming from the students participating in the programmes. According to the institution, this income profile primarily based on the students' demands and provides a strong incentive to act entrepreneurially and innovatively.

In summary, this section shows that most institutions support their entrepreneurship goals with dedicated funding. The size of this funding varies, but most institutions have less than EUR50 per student dedicated to entrepreneurship activities. The average ratio of internal versus external funding is 56/44 percent. However, the entrepreneurship education is in 10 percent of the institutions purely funded by external resources, while almost 20 percent of the institutions have their entrepreneurship education funded solely from internal resources.

11.5 Type and sources of funding

One of the dilemmas in planning and developing entrepreneurship education is the time perspective of the funding. Long-term funding gives – all other things being equal – a basis for a much more stable and planned development. This is very well illustrated by for instance The Stockholm School of Entrepreneurship, Sweden, where one private entrepreneur has ensured long-term funding to the university and made a stable development possible.

Figure 11-4: Types and source of funding



It appears from the above figure that more than one third of the institutions indicate that their entrepreneurship activities have primarily been funded by short term/project funding. This is even more pronounced if we compare the EU>15 countries with the EU-15 countries. Here 62 percent of institutions in the EU>15 countries state that their entrepreneurship education was primarily funded by short-term funding, whereas this was only the case in 32 percent of the institutions in the EU-15 countries.

Table 11-6: Time perspective in funding

| | Total | EU15 or EU>15 | |
|--|-------|---------------|-------|
| | | EU15 | EU>15 |
| Primarily short-term/project funding (1-2 years) | 37% | 32% | 62% |
| Primarily medium-term funding (3-5 years) | 18% | 18% | 17% |
| Primarily long-term funding (5+ years) | 11% | 13% | 0% |
| Mix of the above | 34% | 37% | 21% |

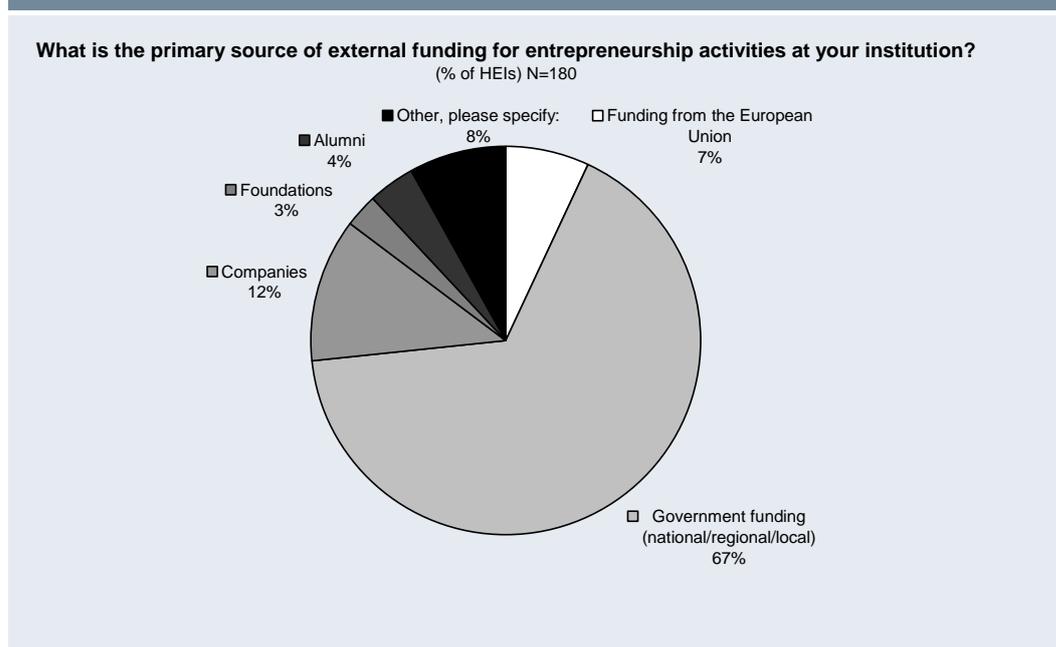
(n=178)

The dominance of short-term funding provides a relatively poor basis for long-term development of larger programmes etc. One of the consequences of this was illustrated by the SEA-case, cf. above. They argued that short-term or project based funding means that it is difficult to continue successful activities.

In the Hunter Centre of Entrepreneurship at the University of Strathclyde they face the same challenges as described in the SEA-case above. Although they have managed to implement many new initiatives and provided funding for them, they argued that the system of short-term project-based funding made the department vulnerable

At *Stockholm School of Entrepreneurship, Sweden*, they see the same challenge and find that many initiatives never reach maturity. Especially for entrepreneurship teaching the problem is that it does not really show any results until after some time, and with the short-term funding that becomes a problem. Thus, the institution assess that the basic funding for more than five years is the minimum to really get off the ground. They argue that the source of funding is not as important as the time-perspective.

Figure 11-5: The institutions' primary sources of external funding



Two thirds of the institutions state that government funding is the primary source of funding at their institution. This is primarily the case in the EU-15- countries, while in the EU>15-countries HEIs base their activities on funding from the European Commission to a large extent. However, in one of the cases a paradoxical consequence of the funding from the European Union has been illustrated. In today's global world where students are encouraged to travel and take part of their degree in another country, and where universities are encouraged to open up courses and diplomas to foreign students, SEA (School of Entrepreneurship in Aalborg University, Denmark) is

forced to turn away foreign student wishing to participate in entrepreneurship activities. The reason is that foreign students are in Denmark on Erasmus scholarships; and when they are supported by the European Commission, they are not allowed to participate in other activities supported by other European Commission funds, which many SEA activities are. Thus SEA end up saying “no” to entrepreneurial foreign students who could have the potential to develop their business idea – and perhaps create a business in Denmark, but this potential cannot be fostered due to the current regulations.

Another interesting finding is that HEIs, which have just started their entrepreneurship education activities, are more prone to extract their funding from private companies (35 percent) than HEIs with a longer experience with entrepreneurship education (8-13 percent).

Table 11-7: The institutions' primary sources of external funding

| | Total | Years of experience with entrepreneurship education | | | |
|--|-------|---|---|--------------------------------------|----------------------------------|
| | | Less than 4 years of experience | Between 4 and less than 8 years of experience | Between 8 and 12 years of experience | More than 12 years of experience |
| Funding from the European Union | 7% | 6% | 10% | 6% | 6% |
| Government funding (national/regional/local) | 67% | 53% | 62% | 76% | 62% |
| Companies | 12% | 35% | 10% | 8% | 13% |
| Foundations | 3% | 6% | 2% | 3% | 2% |
| Alumni | 4% | 0% | 2% | 2% | 8% |
| Other: | 8% | 0% | 14% | 5% | 10% |

(n=180)

This indicates, as was illustrated by the case of Université de Nantes, that private companies may have a decisive role in assisting institutions to start entrepreneurship activities – and, perhaps, that when the relevance of entrepreneurship education reveals itself inside the HEI, funds might also to a larger extent be provided internally. One interpretation is that the private companies show interest in supporting entrepreneurship education. This may for instance be due to government policies in this area such as the Regional University Enterprise Networks constituted by *The National Council for Graduate Entrepreneurship, Britain*. Another interpretation is that the “new” entrepreneurship institutions learn from the older ones that external funding may serve as a good supplement to government funding.



12. BARRIERS TO ENTREPRENEURSHIP EDUCATION

This survey has shown that the field of entrepreneurship education in Europe is developing. The findings indicate that a little less than half of the higher-education institutions in Europe are engaged in entrepreneurship education.

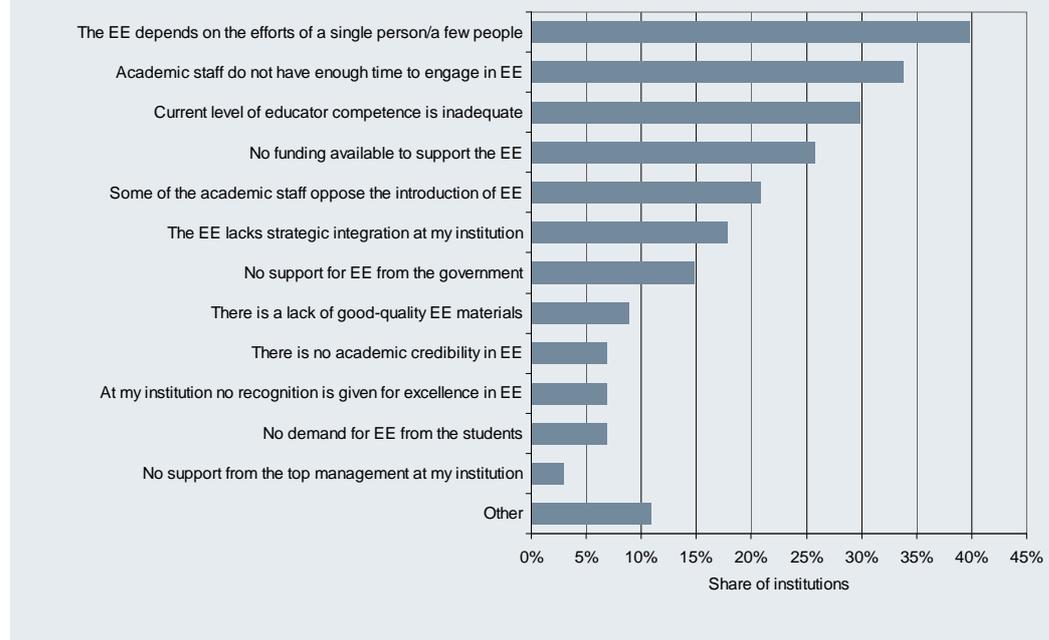
During the survey the consortium has visited a range of good-practice institutions and seen a wide range of innovative and experimental approaches to entrepreneurship education. These approaches, however, have not just evolved over night. In the majority of the interviews it was indicated that there have been and still are a lot of obstacles for entrepreneurship education that the institutions needed and still need to overcome.

This chapter will take a closer look at these obstacles.

12.1 The three main barriers to entrepreneurship education

In the specific survey we asked the higher-education institutions engaged in entrepreneurship education to point out what they see as the **three main** barriers to entrepreneurship education. Figure 12-1 presents the results from the specific survey.

Figure 12-1: Barriers to entrepreneurship education



As figure 12-1 illustrate the three main barriers to entrepreneurship education are:

That entrepreneurship education often depends on a single person or a few people; 40 percent of the institutions see this as one of three main barriers

- That the academic staff does not have enough time to engage in entrepreneurship education. 34 percent of the institutions point to this as one of three barriers
- That the current level of educator competence is inadequate to undertake entrepreneurship education. 30 percent of the institutions see this as one of their three main barriers.

It is encouraging to see that very few of the institutions engaged in entrepreneurship education feel that there is no support from the top management.

Closely related to these issues is the fact that few institutions recognize excellence in entrepreneurship education. However, it is important to keep in mind that the institutions were only asked to mention the three main obstacles. The low ranking of additional obstacles should be seen in comparison to the list of obstacles mentioned – they are not as important as some of the others, but we cannot conclude that they do not exist. Actually, a whole range of obstacles were mentioned in the interviews conducted with good-practice institutions.

12.2 Obstacles identified in the interviews with good-practice institutions

Three particular dimensions in the framework model stand out when it comes to identifying barriers for entrepreneurship education: Resources, Institutional Infrastructure and Development:

12.2.1 Resources

- The level and scope of entrepreneurship education is closely linked to the amount of resources available for entrepreneurship education. So there is a natural barrier related to the amount of resources that the university is able to direct to the undertaking of entrepreneurship education.
- How central resources from government are administered to higher-education institutions and how they are rewarded constitutes an obstacle. As long as entrepreneurship education does not require additional resources, it is very difficult to obtain funding for the incurricular as well as extracurricular activities within the institutions' budgets.
- The higher-education institutions often have to rely on external funding to support their entrepreneurship education. However, the nature of external funding sources such as government and EU-funding, results in one very counterproductive effect on entrepreneurship education. The institutions continuously have to think of new projects to undertake, initiatives to implement etc. to obtain new funding – you can never continue a success, as very few funds will offer funding to something that already exists. Thus established successes are continuously put on hold because of lack of funding.
- Entrepreneurship in general and especially action learning programmes based on real life business ventures are still considered a young fields of activity and not yet fully accepted everywhere as disciplines. This may hamper efforts to obtain funding.
- The project orientation often applied in entrepreneurship education means that many initiatives do not reach maturity, and it is important to move away from short-term project funding to a more dedicated, long- term funding. The problem is that entrepreneurship teaching does not really show any results before some time has elapsed, and with the short- term funding that becomes a problem.
- There is a need for higher salaries for professors and teachers to attract the best people to a field that does not constitute a traditional, academic career, and also to attract people from business, people with relevant experience. Again, this emphasises that developing entrepreneurship education requires a strategic dedication as well as resources backing it up.

12.2.2 Institutional infrastructure

- In multidisciplinary institutions that have a number of faculties with their own systems and procedures, barriers may emerge in relation to curriculum, credits etc. The risk is that the entrepreneurship champions have to contact all of the faculties

individually and, in some cases, also the professors, to get permission for the students to participate in entrepreneurship courses and also to get credit for the courses. Moreover, the differences in study programmes, infrastructures, study plans etc. renders spreading a generic entrepreneurship programme across an entire institution virtually impossible. The programme has to take the individual characteristics of the faculties, departments etc. into consideration.

- During the interviews, a number of the multidisciplinary institutions pointed to the fact that not all departments were convinced that it was a good idea to engage in entrepreneurship education as they were afraid that the institution would be too commercial and that it would lose academic values.

12.2.3 Development

- In entrepreneurship education it is important to get lecturers with entrepreneurship or business experience, but when having to choose between an applicant with academic merits and an applicant with business experience, the academic merits outweigh the business experience. This makes it difficult to attract the appropriate skills and competences into the entrepreneurship education.
- The pedagogic principles guiding the teaching of entrepreneurship where the students are urged to take responsibility of their own learning is different from the way teaching is traditionally done in academic institutions. Therefore, teachers both need new skills and confidence in entrepreneurship teaching. But many higher-education institutions have very few resources for professional development of faculties. Thus, they are not able to offer their staff the opportunity to develop their entrepreneurship skills and attitudes through training.
- Entrepreneurship education is often dependent on very dedicated faculty staff willing to do more than is expected. Especially many of the teaching methods used in entrepreneurship education as action learning activities do not give academic credits, which may form the basis for promotion. The traditional and well-established academic activities in the field of business administration still make life easier for academic staff in terms of promotion and recognition.

On a more overall, strategic level a number of obstacles were also mentioned during the interviews:

- The strategic barriers for entrepreneurship education are mainly that support is needed from top management and from outside stakeholders, and that it is a challenge to motivate management and make them understand the approach. The understanding might be easier to find for entrepreneurship education in the traditional sense whereas entrepreneurship education in technical or other specialised areas can be harder to get across.
- Furthermore, it seems that the definition and understanding of an entrepreneur in the traditional sense, i.e. as somebody who establishes a business venture and op-

erates it for a lifetime, is - although basic and simple - in many cases the most common understanding among many academics. This understanding might however in some cases result in a reluctance to engage in entrepreneurship education, because it is not considered as a part of what academics are supposed to do.

- Finally, entrepreneurship is a field that has to fight for its reputation. The lack of academic credibility surrounding entrepreneurship can also make it difficult for entrepreneurship education to be accepted in faculties and especially non-business faculties.

LIST OF BOXES, FIGURES and TABLES

Boxes

| | |
|--|-----|
| Box 5-1: Sensitivity analysis of the country ranking..... | 80 |
| Box 5-2: Identifying the top-10 institutions based on the overall score in the framework conditions index instead of the overall score in the performance index..... | 86 |
| Box 6-1: Overview of the questions in the Strategy dimension | 92 |
| Box 7-1: Overview of the questions in the Institutional Infrastructure dimension | 108 |
| Box 8-1: Overview of the questions in the Teaching and Learning dimension..... | 126 |
| Box 9-1: Overview of the questions in the Outreach dimension..... | 148 |
| Box 10-1: Overview of the questions in the Development dimension..... | 166 |
| Box 11-1: Overview of the questions in the Resources dimension..... | 184 |

Figures

| | |
|---|-----|
| Figure 3-1: An integrated approach to entrepreneurship education | 44 |
| Figure 3-2: Six dimensions of entrepreneurship education..... | 46 |
| Figure 3-3: The scope of the survey | 60 |
| Figure 3-4: Performance and framework condition indices..... | 61 |
| Figure 4-1: The prevalence of entrepreneurship education across higher-education institutions in Europe..... | 67 |
| Figure 4-2: The prevalence of entrepreneurship education across types of higher-education institutions in Europe | 68 |
| Figure 4-3: The prevalence of entrepreneurship education across two regions in Europe | 69 |
| Figure 4-4: Comparison of three groups of institutions according to type of institution..... | 70 |
| Figure 4-5: Comparison of three groups of institutions according to size of institution..... | 71 |
| Figure 5-1: The make of the performance index..... | 77 |
| Figure 5-2: Average position of the top-3 institutions in each of the countries..... | 78 |
| Figure 5-3: The framework conditions index..... | 81 |
| Figure 5-4: The correlation between performance and framework conditions | 82 |
| Figure 5-5: Ranking of countries based on top-3 institutions in each country – framework conditions..... | 83 |
| Figure 5-6: Correlation between the countries' top-3 institutions on performance vis-à-vis framework conditions..... | 85 |
| Figure 5-7: Comparing the overall score on the six dimensions of framework conditions for the top 10 against bottom 10 and average..... | 86 |
| Figure 6-1: Strategy | 92 |
| Figure 6-2: The value system of the ISM University of Management and Economics..... | 100 |
| Figure 7-1: Institutional infrastructure | 108 |

| | |
|---|-----|
| Figure 7-2: Regional differences..... | 111 |
| Figure 7-3: Entrepreneurship departments..... | 112 |
| Figure 7-4: Tenured chairs at different kinds of institutions..... | 119 |
| Figure 8-1: Teaching & Learning..... | 127 |
| Figure 9-1: Outreach..... | 148 |
| Figure 10-1: Development..... | 166 |
| Figure 10-2: Number of students per academic staff involved in entrepreneurship activities..... | 171 |
| Figure 10-3: Academic staff with entrepreneurship experience..... | 173 |
| Figure 11-1: Resources..... | 185 |
| Figure 11-2: Income generating activities related to entrepreneurship..... | 187 |
| Figure 11-3: Approximate size of budget reserved for entrepreneurship activities per student..... | 190 |
| Figure 11-4: Types and source of funding..... | 195 |
| Figure 11-5: The institutions' primary sources of external funding..... | 196 |
| Figure 12-1: Barriers to entrepreneurship education..... | 200 |

Tables

| | |
|--|-----|
| Table 2-1: Results for different types of institutions on key aspects of the six dimensions..... | 31 |
| Table 2-2: Results for institutions according to experience with entrepreneurial education on key aspects of the six dimensions..... | 33 |
| Table 2-3: Results for institutions according to geographical location on key aspects of the six dimensions..... | 35 |
| Table 3-1: Timing of the survey..... | 50 |
| Table 3-2: The follow-up procedures..... | 50 |
| Table 3-3: Facts about the population and the sample..... | 52 |
| Table 3-4: Geographical distribution of the survey..... | 53 |
| Table 3-5: Distribution across type of HEI..... | 56 |
| Table 3-6: Distribution across themes..... | 57 |
| Table 3-7: National distribution of in-depth interviews..... | 59 |
| Table 5-1: Ranking of countries based on overall ranking of top-3 institutions (performance)..... | 79 |
| Table 5-2: Ranking of countries based on overall ranking of top-3 institutions (framework conditions)..... | 84 |
| Table 6-1: Share of institutions that have embedded entrepreneurship in their overall written mission statement..... | 96 |
| Table 6-2: Share of institutions with entrepreneurship goals..... | 97 |
| Table 6-3: The share of faculties that have their own entrepreneurship policies..... | 101 |
| Table 6-4: The prevalence of entrepreneurship policies in different subjects..... | 102 |
| Table 6-5: Placement of the primary strategic responsibility for entrepreneurship education..... | 103 |

| | |
|--|-----|
| Table 7-1: Entrepreneurship centres..... | 114 |
| Table 7-2: Technology-transfer offices | 117 |
| Table 7-3: Number of entrepreneurship chairs/professorships tenured and non-tenured in the previous academic year | 118 |
| Table 7-4: Objective of the HEIs research on entrepreneurship education..... | 121 |
| Table 8-1: Number of in-curricular entrepreneurship courses/modules institutions offered to undergraduate/graduate/postgraduate students (year previous to the survey) | 130 |
| Table 8-2 Category of entrepreneurship education, average share of courses ABOUT and FOR/IN entrepreneurship for graduates. Distributed on the type of institutions..... | 131 |
| Table 8-3: Percent of courses integrated across curriculum or taught only in specialised courses/modules. | 132 |
| Table 8-4: Percentage of multidisciplinary institutions where the subject in question offers entrepreneurship courses..... | 133 |
| Table 8-5: Percent of institutions offering one or more degree programmes in entrepreneurship (irrespective of study level) in the previous academic year | 135 |
| Table 8-6: Percent of institutions offering one or more degree programmes in entrepreneurship (irrespective of study level) in the previous academic year | 135 |
| Table 8-7: Percent of institutions offering different levels of degree programmes in the previous academic year..... | 136 |
| Table 8-8: Percent of institutions internal development and exchange of curriculum and teaching methods..... | 138 |
| Table 8-9: Extracurricular activities..... | 140 |
| Table 8-10: Extracurricular activities in different types of institutions | 141 |
| Table 8-11: Use of teaching methods in entrepreneurship education. Percent answering often (1), sometimes (2), rarely (3) or never (4) | 143 |
| Table 9-1: Tracking the alumni..... | 151 |
| Table 9-2: Involving the alumni in entrepreneurship activities | 152 |
| Table 9-3: Links to stakeholders as a result of or to improve entrepreneurship activities..... | 153 |
| Table 9-4: Institutions where the following stakeholders makes an actual contribution to the institution's entrepreneurship activities | 155 |
| Table 9-5: Institutions where the following stakeholders make an actual contribution to the institution's entrepreneurship activities | 156 |
| Table 9-6: Opportunities for external entrepreneurship activities for entrepreneurship students..... | 157 |
| Table 9-7: Percentage of all students graduating with actual practical entrepreneurship experience from activities offered by the HEI e.g | 159 |
| Table 9-8: HEI knowledge transfer to society | 160 |
| Table 9-9: HEI involvement in the community..... | 161 |
| Table 10-1: Academic staff members involved in entrepreneurship activities..... | 169 |
| Table 10-2: Academic staff members required to have actual entrepreneurship experience | 172 |
| Table 10-3: The use of guest lecturers / practitioners with practical experience as entrepreneurs in entrepreneurship education | 174 |

| | |
|--|-----|
| Table 10-4: Recognition for achievements of academic staff in entrepreneurship education..... | 175 |
| Table 10-5: Compulsory training / coaching for entrepreneurship teachers | 177 |
| Table 10-6: Formalised evaluation procedures for following up on entrepreneurship goals and strategies | 179 |
| Table 10-7: Evaluation of entrepreneurship courses..... | 180 |
| Table 10-8: Evaluation procedures for evaluating medium/ long term effect | 180 |
| Table 11-1: Income-generating activities..... | 188 |
| Table 11-2: Support of entrepreneurship goals with dedicated funding | 189 |
| Table 11-3: Size of budget (EUR) per student..... | 191 |
| Table 11-4: The use of external versus internal sources of funding | 192 |
| Table 11-5: The use of external versus internal sources of funding | 193 |
| Table 11-6: Time perspective in funding | 195 |
| Table 11-7: The institutions' primary sources of external funding | 197 |

APPENDIX B – GOOD-PRACTICE EXAMPLES

1. Bocconi University, Italy
2. Bucharest Akademy of Economic Studies (ASE), Faculty of Business Administration, Romania
3. Centro de Iniciativas Emprendedoras (CIADE), Universidad Autonoma de Madrid, Spain
4. Corvinus University, Budapest, Hungary
5. Delft University of Technology, the Netherlands
6. Department of Engineering Management and Centre for Innovation, Technology and Policy Research, IN+ Instituto Superior Técnico, Technical University of Lisbon, Portugal
7. Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris – Founding member of ParisTech
8. European University of Cyprus
9. FINPIN – the Finnish Polytechnics Entrepreneur-ship Network
10. Gea College of Entrepreneurship, Slovenia
11. HEC-ULg Entrepreneurs programme, Liège University School of Management (HEC-ULg), Belgium
12. Helsinki School of Economics, Finland
13. International Master of Entrepreneurship Education and Training (IMEET), Aarhus School of Business, University of Aarhus with partners, Denmark
14. INSEAD, MAAG International Centre for Entrepreneurship, France
15. ISM University of Management and Economics, Lithuania
16. IT University of Copenhagen, Denmark
17. Johannes Kepler University Linz, Institute for Entrepreneurship and Organisation Development, Austria
18. Kemmy Business School, Ireland

19. Krems Business School, Austria
20. Leon Kozminski Academy of Entrepreneurship and Management/Warsaw Polytechnics, Poland
21. Mainor Business School, Estonia
22. NTNU Entrepreneurship Center, Norwegian University of Science and Technology, Norway
23. The MIETE programme, University of Porto, Portugal
24. NICENT - Queens University Belfast
25. Riga Business School, LATVIA
26. School of Entrepreneurship in Aalborg University, (SEA), Denmark
27. Stockholm School of Entrepreneurship, SWEDEN
28. Strathclyde University, Glasgow, Scotland
29. STU Institute of Management, Slovak University of Technology, Slovakia
30. The Technical University of Munich (TUM), Germany
31. Université de Nantes, France
32. University of Cambridge, The UK
33. University of Ljubjana, Slovenia
34. University of Lund, Sweden
35. University of Malta
36. University of Salford, Greater Manchester, THE uk
37. University of Wuppertal (Bergische Universität Wuppertal), Germany
38. Utrecht School of the Arts, The Netherlands
39. Wageningen University, THE Netherlands
40. AIESEC Denmark
41. European University Association (EUA)
42. JADE

43. Fostering entrepreneurship in higher education in Britain
44. Fostering entrepreneurship in higher education in Norway
45. Fostering entrepreneurship in higher education in The Netherlands