

The State of University-Business Cooperation in Sweden

Part of the DG Education and Culture
Study on the Cooperation Between
Higher Education Institutions and
Public and Private Organisations in Europe

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Abbreviations

EC	European Commission
HEI	Higher Education Institution
LLL	Lifelong Learning
R&D	Research and development
SME	Small- and medium-sized company
S2BMRC	Science-to-Business Marketing Research Centre
TTO	Technology Transfer Office
UB	University-Business
UBC	University-Business Cooperation
UPB	University professional working with business

UBC Country Reports: logic and characteristics

The UBC country reports compare the continental results of the major *State of European UBC* study (Davey et al., 2011), with the results obtained in a specific country. The reports are designed to be complementary to the major study and highlight the diversity amongst European countries. Additionally, by offering more concrete results at national level, it is believed, the country specific report provides more appropriate decision-making material for most stakeholders, whose jurisdiction is restricted to the regional or country level.

The reports present mostly descriptive data and are not intended to be a comprehensive or detailed study of each of the countries or a ranking among EU countries. Instead, the reports are provided to all stakeholders simultaneously (academics, HEI managers, policy makers at different levels, business, etc.) and unlike the European report, are expected to provide some opportunity for individual stakeholder interpretation and resulting actions, according to their local understanding and different roles within the UBC ecosystem.

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Executive summary

University-business cooperation in Sweden is well developed however needs greater management commitment for further development

The university-business cooperation (UBC) results show there is a focus on more commercial forms of cooperation in Sweden. An explanation for this could be found in the fact that Sweden is one of the few countries that still has the 'teachers exception' whereby research results belongs to the academic and not to the university. In terms of *barriers* to UBC, they are perceived to be at an average level however when it comes to *drivers* of UBC, it is unusually the HEI managers that effectively see less reasons than academics for UBC, as it is often the academics who see less *drivers*. This contributes to a slightly negative environment for UBC in Sweden when comparing *drivers* and *barriers*. Furthermore, in contrast to Swedish academics, it is the higher education institution (HEI) managers who perceive a lower *benefit* for the HEI from UBC, and also low incentives for academics to undertake UBC. The perception of lesser *benefits* for the HEI might be influencing HEI managers' commitment to UBC in respect to the development of *supporting mechanisms*, with a lower commitment to '*implementation strategies*', which include 'having a UBC strategy', 'the dedication of resources' for UBC and 'providing incentives for academics to encourage UBC'. In fact, UBC *activities*, the most short-term and economical of the *supporting mechanisms*, are the most developed *supporting mechanisms* in Sweden. Overall, whilst Sweden still has a prosperous level of UBC development, the results show some longer term commitment and the development of '*implementation strategies*' could indeed lift Sweden to higher level of cooperation. This high perception academics have of UBC could be as a result of having spent a deal of time in business as shown in their comparatively high level of academic mobility (rating themselves the highest in Europe).

About the study

The results presented in this report were from a study commissioned by the European Commission (EC). Surveys were sent out to all registered European HEIs in 33 countries in 2011. In total, 6,280 responses were received from European academics and HEI management (HEI managers and HEI professionals working with industry) whilst from Sweden, 60 responses from academics (19) and HEI management (41) were received. The study measured the perceptions of these two groups in respect to their

own cooperation efforts and those of their university respectively.

Collaboration and commercialisation of R&D are the most developed forms of UBC

Like many of the northern European countries, the most developed types of UBC in Sweden are the more commercially-oriented types of collaboration: (1) *Collaboration in research and development (R&D)*, (2) *Commercialisation of R&D results*, and (3) *Entrepreneurship* with the least developed type being: *Mobility of academics*. In comparison with Europe, Sweden performs above the European average in the three above-named types, however is behind the European average in the development of the other types. An exception however, is that HEI managers perceived *student mobility* to be one of the least developed in Europe. The high development of 'collaboration in R&D' can be partly explained by the fact the Sweden is allocates one of the most resources per capita for R&D in the world (Frykfors and Klofsten 2011) indicating a high respect to R&D in company success.

Perceived barriers to UBC are lower in Sweden

The primary *barriers* to UBC in Sweden are '*usability of results*' rated slightly higher than '*relational*' and '*funding*' *barriers*, although a difference in the culture was noted as a potential *barrier* to Swedish UBC. In particular, 'the need for business to have to have confidentiality of research results' was noted as a major *barrier*. In comparison to the rest of Europe, Swedish HEI managers and academics perceive *barriers* to UBC to be approximately on par with the European average.

Relationships drive cooperation in Sweden

Like many other European nations, Swedish HEI management and academics alike name '*relationship drivers*' as the *drivers* of UBC. As in Europe generally, '*relationships drivers*' such as (1) 'existence of mutual trust', and (2) 'existence of mutual commitment' were nominated as the biggest *drivers* of UBC. This suggests that greater effort to bring academics together with business could be a focus for further improvement of cooperation. Distinctively, Swedish academics perceive higher UBC *drivers* than the EU average, whilst HEI managers perceive UBC *drivers* lower than the EU average.

The results for the *barriers* and *drivers* contribute to a slightly negative environment for UBC in Sweden, whereby *barriers* are perceived to be higher than *drivers*.

HEI managers perceive lower benefits from UBC for the HEI

Swedish academics perceive the primary winners from UBC to be: (i) students, (ii) HEIs (well above the EU average), (iii) business, (iii), and lastly (iv) personal *benefits* (though, like their Finnish colleagues, well above the EU average). Moreover, a comparatively high amount of academics state that UBC activities increase their changes of promotion. This is despite HEI managers believing that incentives for academics for UBC to be developed at a low (3.9) level. HEI management state that (i) students (significantly higher than the EU average), (ii) society, (iii) business are the biggest winners from UBC whilst (iii) the HEI gets the least amount of *benefits* ('it is vital to the mission of the HEI'), significantly lower than the EU average. Despite this, all UBC benefits are assessed to be at least moderately-high.

Swedish UBC supporting mechanisms are well developed though greater 'implementation strategies' are require for further growth

UBC *strategies* are moderately developed in Sweden, though HEI managers rated the development of all *strategies* lower than the EU average. '*Documented strategies*', such as 'having a documented vision/mission embracing UBC', are substantially more developed than '*implementation strategies*' such as 'providing incentives to academics for UBC' and 'including UBC in the assessment of academics work performance'. '*Implementation strategies*' are important to ensure that UBC strategic intentions are imbedded within the HEI culture.

'*Role-based approaches*' to UBC are assessed to be more developed than '*internal/external agencies dedicated to UBC*' and are more developed in Swedish HEIs than in Europe. The 'presence of industry people on the university board', 'incubators for the development of new business' and 'board member responsible for UBC' were the highest developed *structures and approaches*, and all were well above the European average.

In terms of UBC *activities*, Sweden is slightly more developed than the European average particularly in UBC involving students including 'entrepreneurship education offered to students' and 'collaboration activities involving student interaction with business'.

Introduction

Background

With the creation of the Europe 2020 programme, the European Union's (EU) growth strategy for the coming decade, and the higher education modernisation agenda, Europe is embracing the need to create a more connected and functional relationship between government, business and HEI in order to increase employment, productivity and social cohesion¹. If fostering UBC is understood as 'interactions' between HEIs and businesses for mutual benefit, then fostering UBC and extracting its value can help society face a number of issues. UBC helps universities to face the problem of decreasing public funds², helps businesses to gain and maintain their competitive advantage in today's dynamic international markets, contributes to the economic development on regional and national level³ as well as meet the demands of the labour market to provide more relevant knowledge and skills and greater job prospects of students⁴. Additionally, there are substantial indirect outcomes of UBC including support in the creation of a knowledge economy⁵, support for local business⁶, creation of jobs⁷, stimulation of economic growth and increased living standards whilst reducing hindrances to good living⁸. In this context, UBC creates mutual benefit for all parties involved, and wider, to society.

Over the last few decades there has been a dramatic shift in the focus of HEIs and policy makers towards the HEI's so-called 'third mission'. Through this, HEIs have had their roles focussed to a greater extent on the need to contribute to society in a more meaningful way through knowledge and technology creation, transfer and exchange⁹. In recent years, the focus has been extended to recognise all the ways in which HEIs can contribute to society including *Lifelong learning* (LLL), *Entrepreneurship* or exchanges of workers with businesses as means to reach the third mission. Owing to this, the holistic extraction of value via UBC has become more important for the viability and relevance of HEIs as the *benefits* of closer and better cooperation between HEIs and businesses and the *benefits* for the students have been increasingly recognised

¹ European Commission 2011

² Carayol, 2003

³ OECD, 2002

⁴ Bozeman and Boardman 2013

⁵ Etzkowitz & Leydesdorff 2000

⁶ Davey et al. 2011

⁷ *ibid*

⁸ Etzkowitz & Leydesdorff, 2000

⁹ *ibid*

Objective

The objective of this report is to evaluate the current status of UBC in Sweden and benchmark these outcomes against European HEIs. As a result of this analysis, the reader will have a clearer understanding of the extent of cooperation with business. Furthermore, the report aims to highlight the *barriers* and *drivers* preventing or motivating cooperation as well as the extent of development of mechanisms supporting UBC, in comparison with the European average.

Methodology

The survey

The survey was created during a project completed with the EC in a fifteen and a half month study on the cooperation between HEIs and public and private organisations in Europe. The main components of the project were in-depth qualitative interviews with 10 recognised industry experts as well as a major quantitative survey. The survey was translated into 22 languages and sent to all registered European HEIs (numbering over 3,000) in 33 countries during March 2011. Through this, a final sample of 6,280 academics and HEI management was achieved making the study the largest study into cooperation between HEIs and business yet completed in Europe.

Questions were posed to two groups within HEIs. These groups were asked about their perception of UBC:

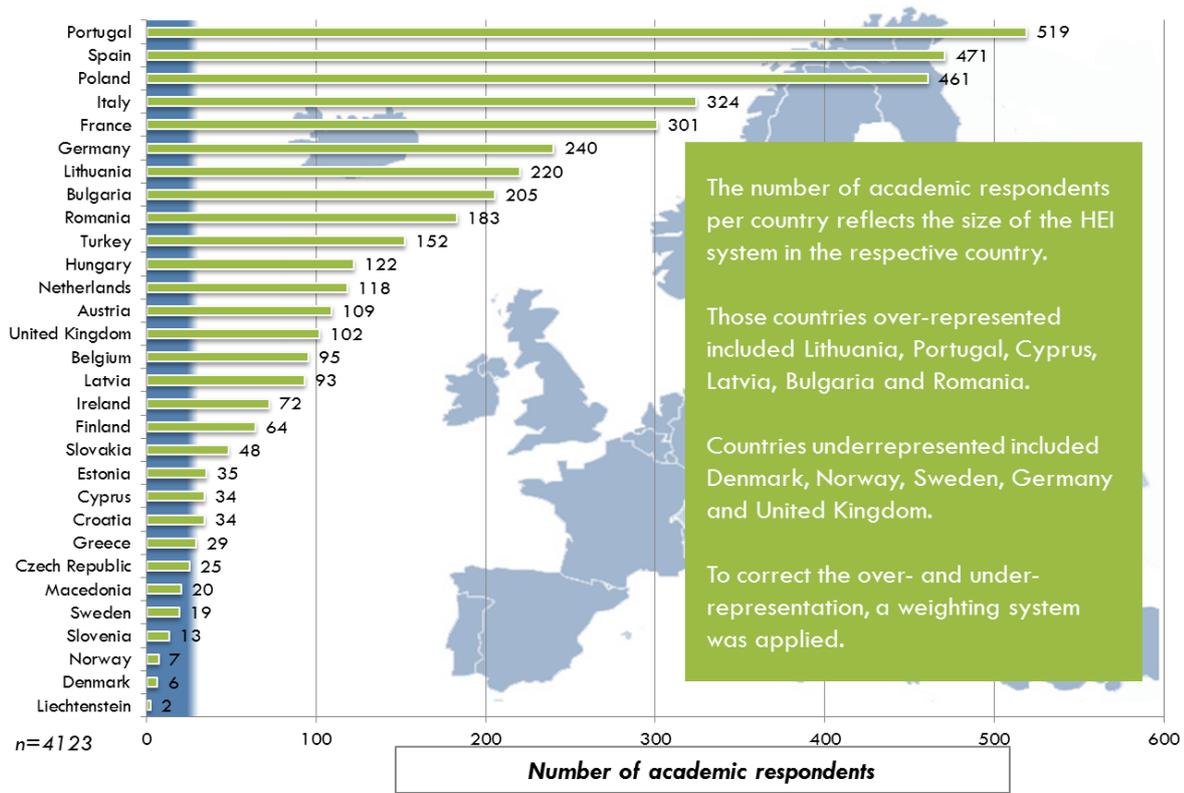
1. **Individual academics** were asked to respond on behalf of themselves.
2. **HEI management** (HEI managers and university professionals working with industry) were asked to respond on behalf of their HEI.

	Focus	Responded on behalf of	Colour code for results
1	Academics	Indv. academics	Green
2	HEIs	HEI management and university professionals working with industry	Orange

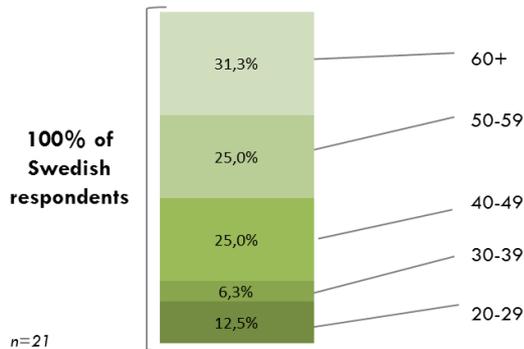
Colour codes have been used throughout the report to identify those results received from the academic (green) and those results received from the HEI (orange).

Respondents (academic)

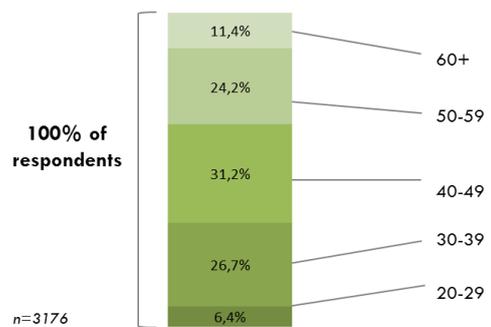
Country



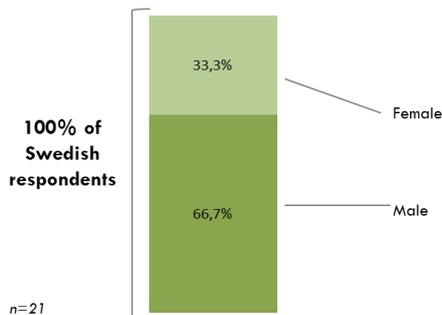
Age of respondents in Sweden



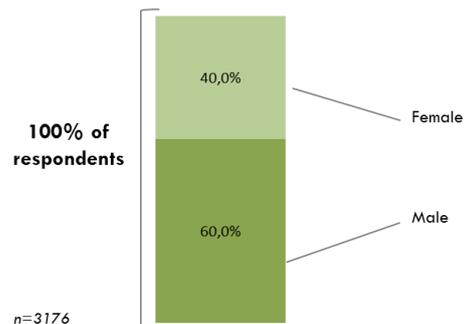
Age of respondents in Europe



Gender of respondents in Sweden

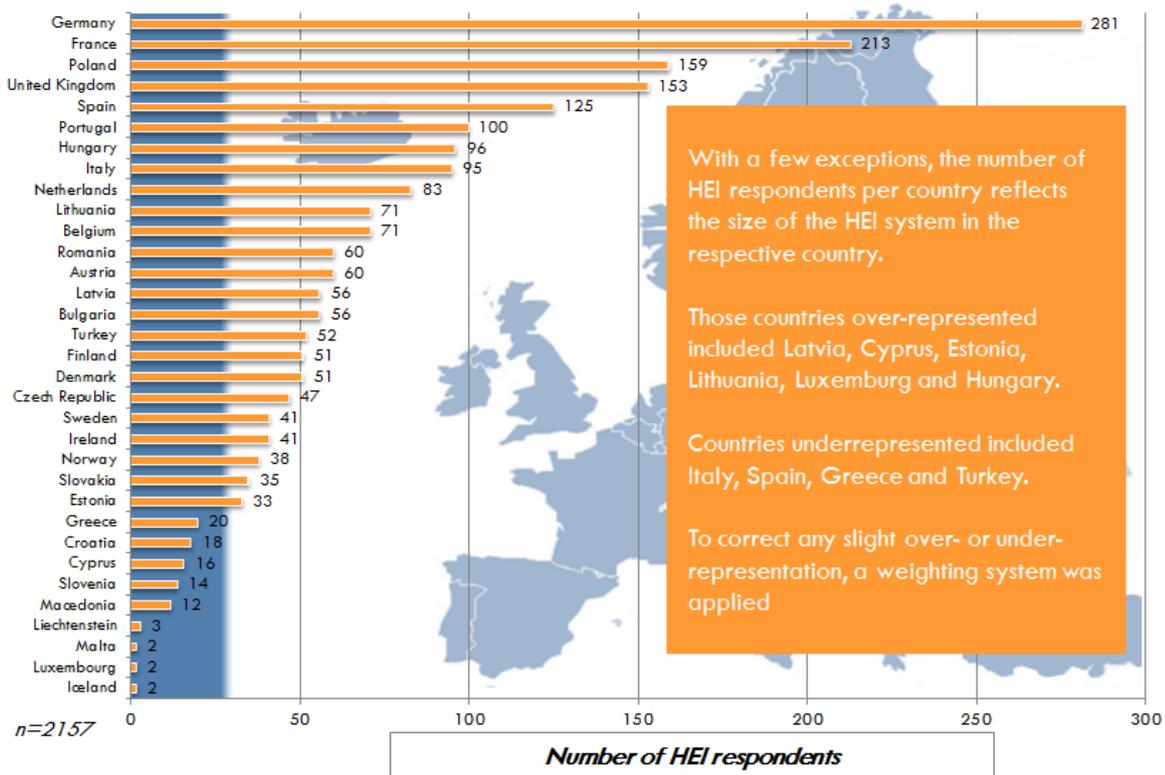


Gender of respondents in Europe

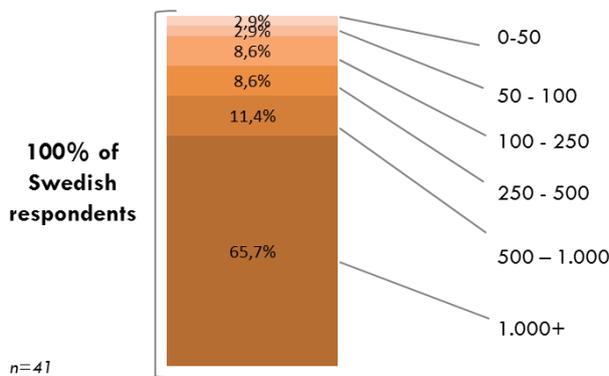


Respondents (HEIs)

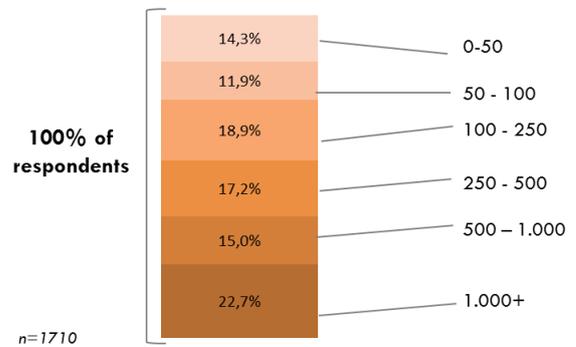
Country



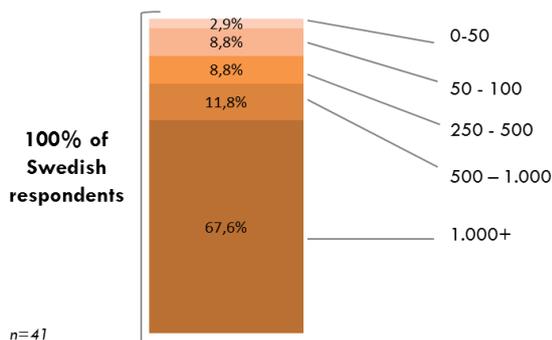
Number of academics per HEI in Sweden



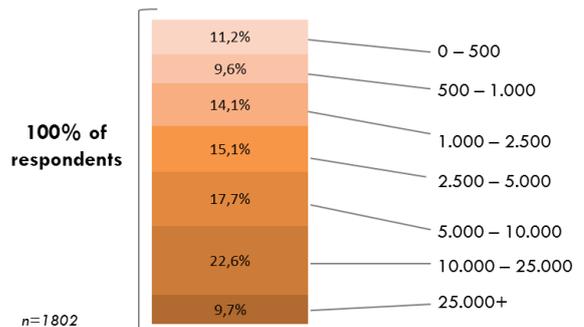
Number of academics per HEI in Europe



Number of students per HEI in Sweden



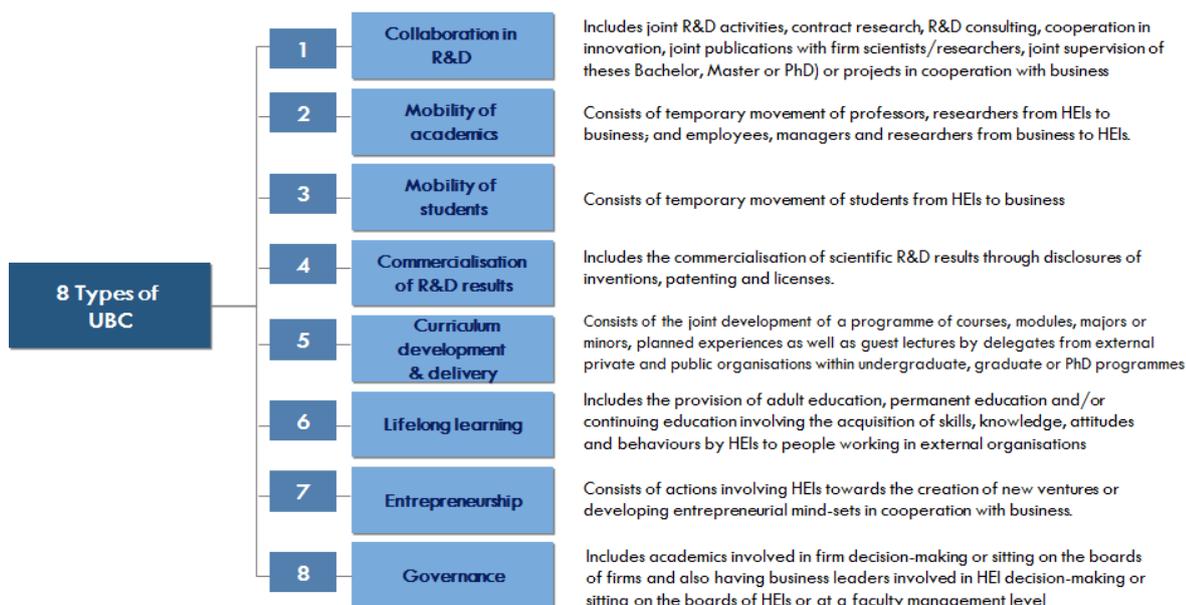
Number of students per HEI in Europe



Results

Extent of UBC

Building on the work by Klofsten & Jones Evans (2000), there have been eight types of cooperation recognised between university and business as found in the *State of European UBC Report* with the following descriptions:



3 clusters of HEI cooperation

In respect to cooperation with business it was found that HEIs could also be categorised into 3 clusters:

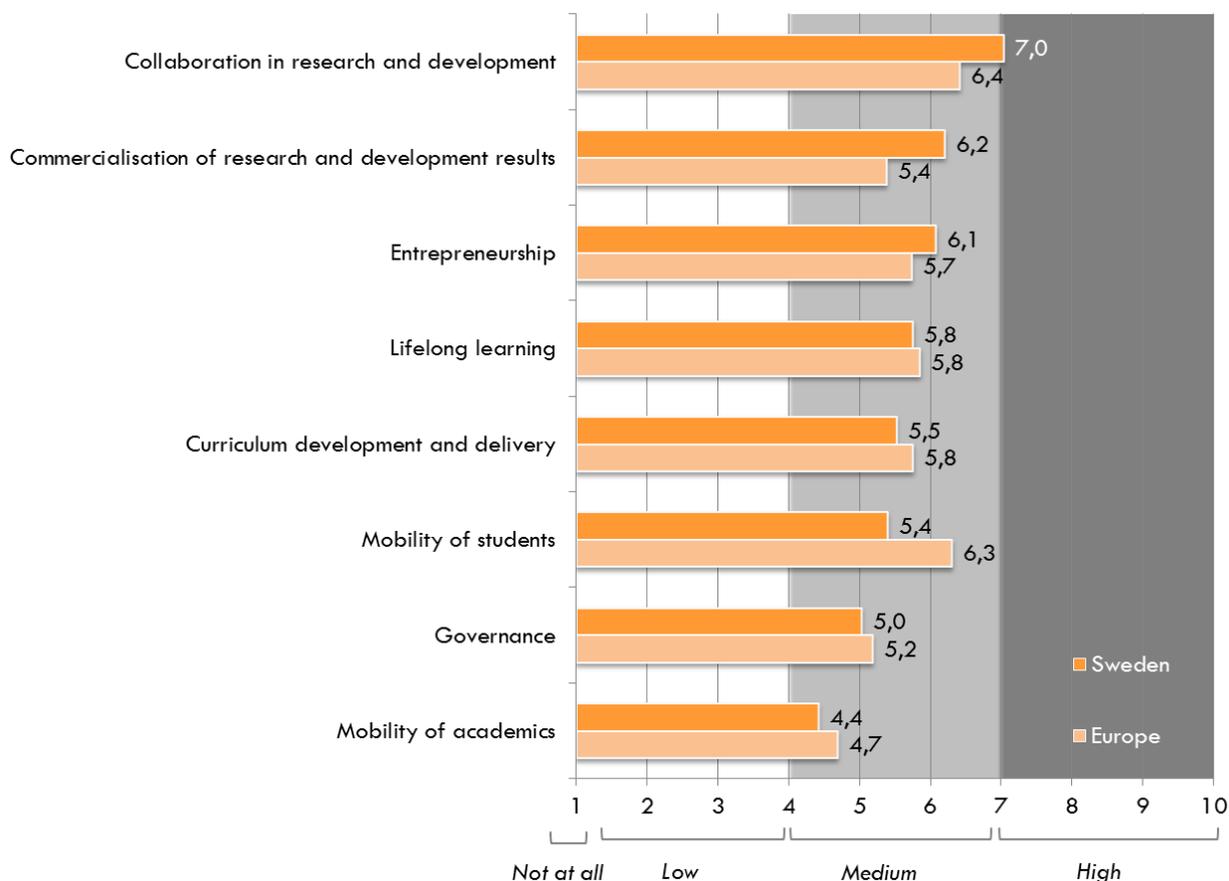
1. the 'innovators' undertaking a higher level for all types of UBC,
2. the 'majority' undertaking a medium level for all types of UBC,
3. the 'laggards' executing generally a low level (or not at all) for all types of UBC.

Relationship among cooperation types

The study identified that HEIs tend to cooperate at a similar level in all UBC types e.g. if they cooperate to a high extent with business in *Collaboration in R&D*, they cooperated to a similar extent for all the types of UBC.

Extent of UBC in Sweden

As answered by HEI management



Extent of cooperation in Sweden

Sweden shows a medium degree of development on the different types of UBC. With *Collaboration in R&D* (7.0), *Commercialisation of R&D results* (6.2) and *Entrepreneurship* (6.1) as the most developed types.

Benchmarking Sweden

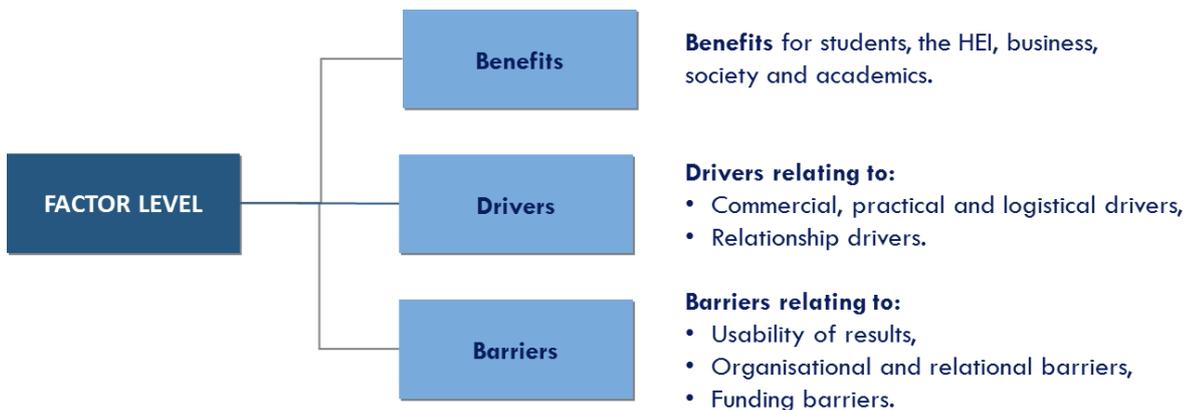
According to the results, Swedish HEI management report the extent of UBC being approximately at the same level as the European average, with a slightly better performance in *Collaboration in R&D*, *Commercialisation of R&D results* and *Entrepreneurship*. However, *Mobility of students*, *Governance* and *Mobility of academics* are perceived to be developed slightly lower than the European average.

In comparison with the European average, the extent of development of UBC types is as follows:

	Sweden	Europe
Highly developed	1. Collaboration in R&D	-
Moderately developed	2. Commercialisation of R&D results 3. Entrepreneurship 4. Lifelong Learning 5. Curriculum development and delivery 6. Mobility of Students 7. Governance 8. Mobility of Academics	1. Collaboration in R&D 2. Mobility of Students 3. Lifelong Learning 4. Curriculum development and delivery 5. Entrepreneurship 6. Commercialisation of R&D results 7. Governance 8. Mobility of Academics

Factors influencing the extent of UBC

The coming section will outline the extent to which a number of factors affect cooperation within business in Sweden. These factors have been found to significantly influence cooperation within the European context.



Relationship between *barriers* and *drivers*

A barrier provides a hindrance or obstacle to do something, while a driver provides the motivation to do that thing. More specifically, removing a barrier does not create UBC, rather it makes UBC possible. Instead it is the driver that means that an academic cooperate with business. As an example, even when the lack of funds is nominated as the highest barrier (obstacle), owing to the impossibility of cooperating without funds, the presence of funds may not be enough to cooperate if the '*relationship drivers*' or perceived *benefits* (motivators) are not developed.

Benefits explained

Benefits are the perceived positive outcome (financial and non-financial) from undertaking UBC for the different stakeholders groups that can potentially participate in UBC. This perception can be a reason to increase or decrease their participation or the involvement of other groups. For example, if academics perceive their own *benefits* to be low, that might cause a low participation in UBC and if they perceive that *benefits* for students are high, they might undertake actions that contribute to students' involvement in UBC.

Barriers hindering UBC

Barriers are those obstacles that restrict or inhibit the ability of academics or HEIs to engage in UBC.

The following table explains the extent of relevance of *barriers* to UBC by academics (green) and HEIs (orange) in Sweden compared to the EU average. The *barriers* have been factored into 'meta-groups' in order to provide a more strategic understanding.

Barriers (grouped) to cooperation – Sweden vs. Europe

As answered by academics and HEI management

Three groups of UBC barriers

Resulting from a factor analysis of the results, *barriers* can be categorised in the following groups:

1. *usability of results,*
2. *funding barriers and*
3. *relational barriers.*

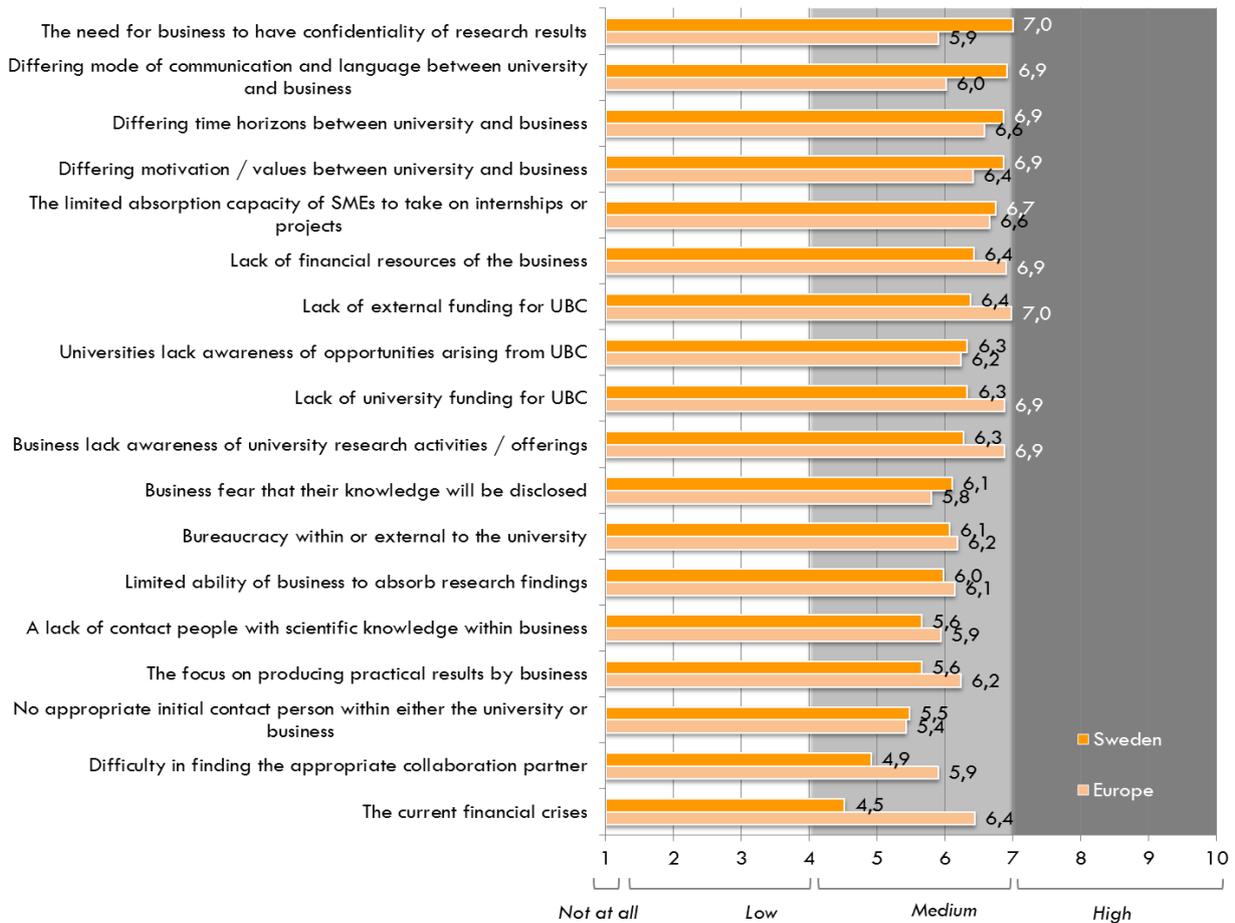
Usability of results	Extent of relevance (1-10)		Extent of relevance (1-10)	
	Sweden		Europe	
	ACAD	6.2	ACAD	6.1
HEI	6.2	HEI	6.0	

Funding barriers	Extent of relevance (1-10)		Extent of relevance (1-10)	
	Sweden		Europe	
	ACAD	6.0	ACAD	6.5
HEI	6.0	HEI	6.8	

Relational barriers	Extent of relevance (1-10)		Extent of relevance (1-10)	
	Sweden		Europe	
	ACAD	6.0	ACAD	6.4
HEI	6.2	HEI	6.2	

Main barriers to cooperation – Sweden vs. Europe

As answered by HEI management



Relation barriers and Usability of results are the biggest barriers to UBC in Sweden (see graph above)

The most prominent *barriers* named by the Swedish HEI management are those related to the 'relations' between the HEI and business and 'usability of results', including 'the need for business to have confidentiality of research results' (7.0), 'differing mode of communication and language between university and business' (6.9) and 'differing time horizons between university and business' (6.9). In addition, Swedish HEI management reported the 'lack of financial resources of business' and external funding (6.4) as a key issue.

Financing is less of an issue in Sweden compared to Europe (see graph above and previous page)

Swedish HEI management assess the *barriers* related to results and relations higher than the EU average, except for 'difficulty in finding the appropriate collaboration partner', 'the focus on producing practical results by business', and 'a lack of contact people with scientific knowledge within business'.

With respect to other UBC *barriers*, it can be stated that the '*funding barriers*' are of less importance to Swedish HEI managers, with 'the current financial crisis' (4.5 compared to 6.4), 'lack of university

funding for UBC' (6.3 compared to 6.9), 'lack of external funding for UBC' (6.4 compared to 7.0) and 'lack of financial resources of the business' (6.4 compared to 6.9) being all lower developed in Sweden compared to the EU.

Swedish academics perceive (see previous page) 'usability of results' to be the biggest *barriers* to UBC in Sweden, and the slightly more than the EU average (6.2 compared to 6.1). Furthermore, they perceive 'funding' and 'relational' barriers to be below the EU average.

Main barriers to UBC in Sweden

1. The need for business to have confidentiality of research results
2. Differing mode of communication and language between university and business
3. Differing time horizons between university and business
4. Differing motivation / values between university and business
5. The limited absorption capacity of SMEs to take on internships or projects

Drivers stimulating UBC

Drivers are those factors that encourage academics or HEIs to engage in UBC.

The following table explains the extent of relevance of drivers of UBC by academics (green) and HEIs (orange) in Sweden compared to the EU average. The drivers have been factored into 'meta-groups' in order to provide a more strategic understanding.

Two groups of UBC drivers

Resulting from a factor analysis of the results, drivers can be categorised in the following groups:

1. relationship drivers and
2. business drivers.

Drivers (grouped) of cooperation – Sweden vs. Europe

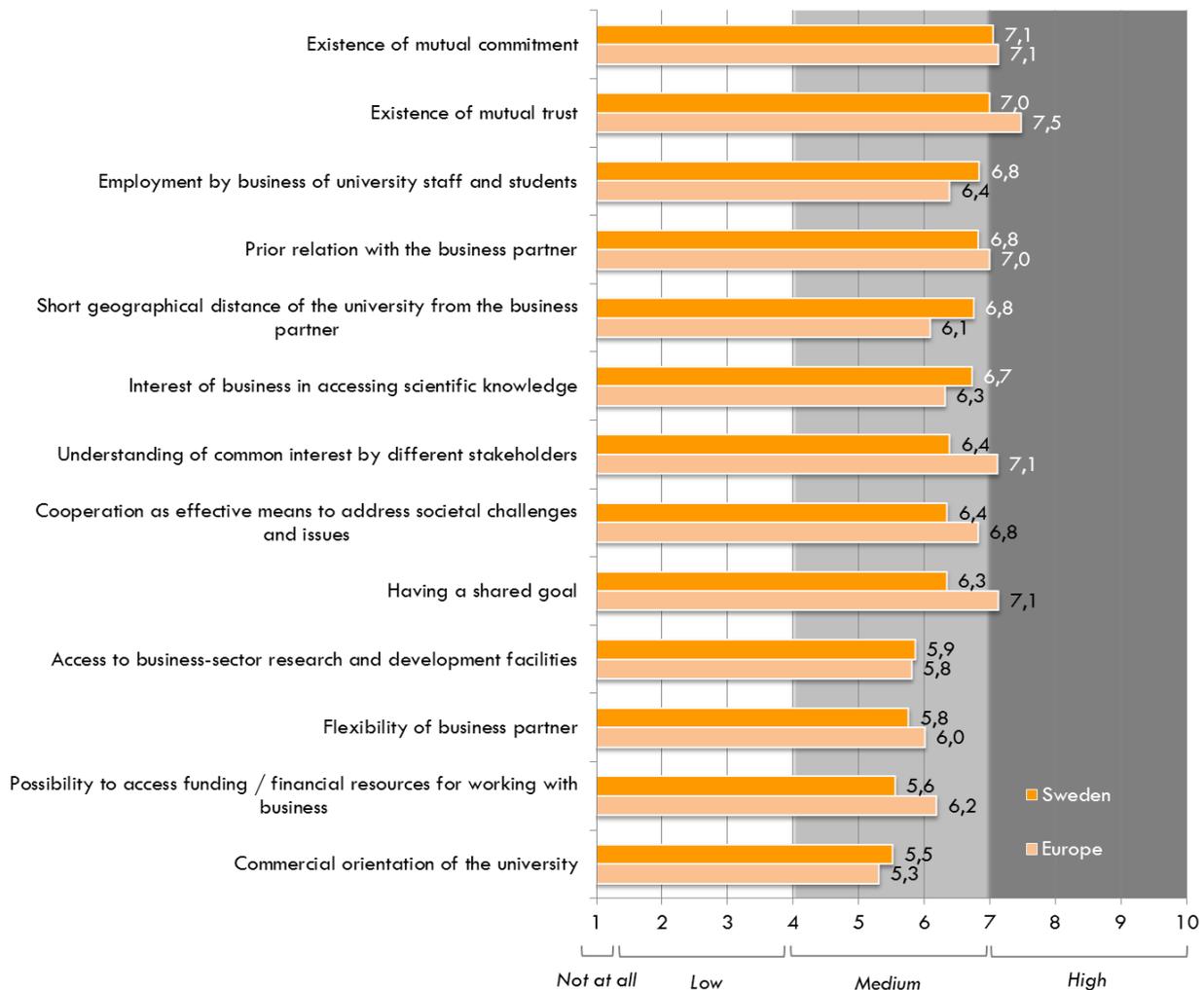
As answered by academics and HEI management

Relationship drivers	Extent of facilitation (1-10)		Extent of facilitation (1-10)	
	Sweden		Europe	
	ACAD	HEI	ACAD	HEI
<ul style="list-style-type: none"> • Existence of mutual trust, • Existence of mutual commitment, • Having a shared goal, • Understanding of common interest by different stakeholders (e.g. universities; business; individuals; students), • Prior relation with the business partner, • Cooperation as effective means to address societal challenges and issues. 	7.0	6.7	6.7	7.0

Business drivers	Extent of facilitation (1-10)		Extent of facilitation (1-10)	
	Sweden		Europe	
	ACAD	HEI	ACAD	HEI
<ul style="list-style-type: none"> • Employment by business of HEI staff and students, • Interest of business in accessing scientific knowledge, • Possibility to access funding / financial resources for working with business, • Short geographical distance of the HEI from the business partner • Flexibility of business partner, • Access to business-sector research and development facilities • Commercial orientation of the HEI. 	6.6	6.0	5.6	6.7

Main drivers of cooperation – Sweden vs. Europe

As answered by HEI management



Relationships drive UBC in Sweden (see graph above and table from previous page)

HEI managers in Sweden perceive the highest drivers of UBC to be 'relationship drivers' such as 'existence of mutual commitment' (7.1), 'existence of mutual trust' (7.0), 'prior relation with the business partner' (6.8) and 'understanding of common interest by different stakeholders' (6.4).

Compared to the 'relationship drivers', most 'business drivers' are seen as significantly less important including 'commercial orientation of the university' (5.5), 'possibility to access funding / financial resources for working with business' (5.6), 'flexibility of business partner' (5.8) and 'access to business-sector research and development facilities' (5.9), which are rated the lowest.

The results on the previous page show that both HEI management and academics in Sweden agree that 'relationship drivers' are greater facilitators for UBC than 'business drivers'. This reflects the people nature of cooperation.

Swedish HEIs and academic respondents see the drivers of UBC different to EU respondents (see table from previous page)

Drivers of UBC are assessed differently by the Swedish academics and the HEI management and their European counterparts. Swedish academics perceive the importance of all drivers higher than the Swedish HEI management. When comparing with Europe, the average European academic perceives the 'relational' and 'business' drivers to be lower than the HEI management do, this is the other way around in Sweden.

Main drivers of UBC in Sweden	
1.	Existence of mutual commitment
2.	Existence of mutual trust
3.	Employment by business of university staff and students
4.	Prior relation with the business partner
5.	Short geographical distance of the university from the business partner

Benefits of cooperation (academic perspective)

Benefits are the positive results that stakeholders perceive that they obtain from undertaking UBC.

The following table explains the extent of relevance of *benefits* of UBC by academics (green) in Sweden compared to the EU average. The *benefits* have been factored into 'meta-groups' in order to provide a more strategic understanding.

Four groups of UBC benefits for academics

Resulting from a factor analysis of the results, *benefits* for academics can be categorised in the following groups:

1. *benefits for students,*
2. *benefits for business,*
3. *benefits for HEIs and*
4. *personal benefits for academics.*

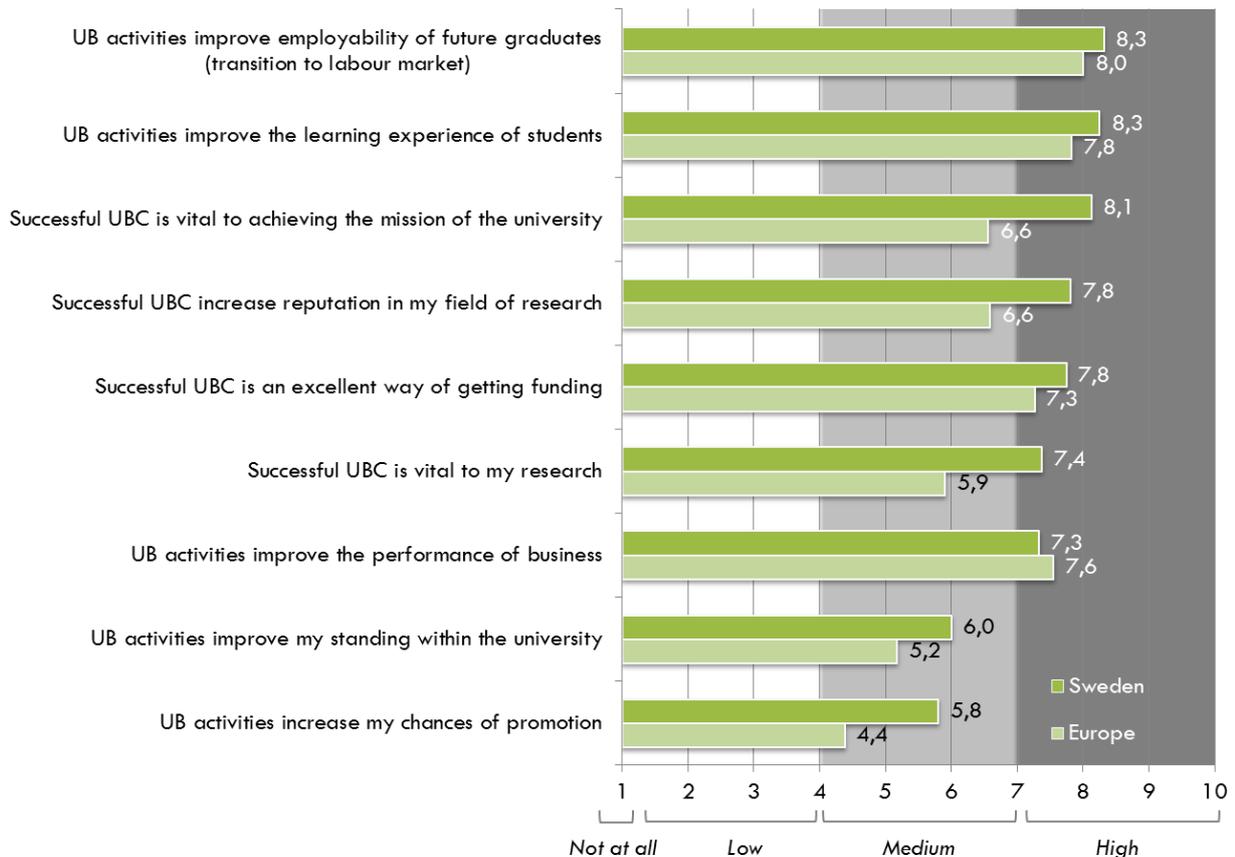
Benefits (grouped) from cooperation – Sweden vs. Europe

As answered by academics

Benefits for students <ul style="list-style-type: none"> • UB activities improve employability of future graduates • UB activities improve the learning experience of students 	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	ACAD	8.3	ACAD	7.9
Benefits for business <ul style="list-style-type: none"> • UB activities improve the performance of business 	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	ACAD	7.3	ACAD	7.6
Benefits for HEIs <ul style="list-style-type: none"> • Successful UBC is vital to achieving the mission of the HEI 	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	ACAD	8.1	ACAD	6.6
Benefits for academics <ul style="list-style-type: none"> • Successful UBC is an excellent way of getting funding • Successful UBC increases my reputation in my field of research • Successful UBC is vital to my research • UB activities improve my standing within the university • UBC activities increase my chances of promotion 	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	ACAD	7.0	ACAD	5.9

Benefits from cooperation – Sweden vs. Europe

As answered by academics



Students get the most benefit from UBC say academics

Academics in Sweden nominate that the greatest *benefits* from UBC go to students ('university-business activities improve employability of future graduates' and 'UB activities improve the learning experience of students'), followed by *benefits* for the university ('successful UB cooperation is vital to achieving the mission of the university') followed by business ('university-Business activities improve the performance of business') and finally rate self-benefit the lowest.

Swedish academics perceive lower self-benefit from UBC activities (see graph above)

Whilst academics report that UBC 'increases their reputation in their field of research' (7.8), 'is an excellent way of getting funding' (7.8) and is 'vital for their research' (7.4) they are much more negative in respect to UBC providing 'an improvement of their standing in the university' (6.0) and 'increasing chances of promotion' (5.8).

These results are in line with the grouped results (see previous page). Compared to these relatively high *benefits* for all other stakeholders (8.3, 8.1 and 7.3), academics perceive their own *benefits* from UBC quite a deal lower (7.0).

Swedish academics perceive slightly higher benefits from UBC than in Europe (see graph above)

In comparison with the EU average, Swedish academics see most *benefits* slightly more positively than their European counterparts, with one exception, 'UB activities improve the performance of business' (7.3 compared to 7.6). Swedish academics seem to see higher benefits for themselves, certainly when it comes to their reputation and promotion.

Overall, Swedish academics perceive the *benefits* from UBC to be of a bit higher extent throughout all categories.

Main benefits of UBC identified by Swedish academics	
1.	UB activities improve employability of future graduates
2.	UB activities improve the learning experience of students
3.	Successful UB cooperation is vital to achieving the mission of the university
4.	Successful UBC increases my reputation in my field of research
5.	Successful UB cooperation is an excellent way of getting funding

Benefits of cooperation (HEI perspective)

Benefits are the positive results that stakeholders perceive that they obtain from undertaking UBC

The following table explains the extent of relevance of perceived *benefits* of UBC by HEI management (orange) in Sweden compared to the EU average. The *benefits* have been factored into 'meta-groups' in order to provide a more strategic understanding.

Benefits (grouped) from cooperation – Sweden vs. Europe

As answered by HEI management

Benefits for the HEI	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	HEI	6.8	HEI	7.7
<ul style="list-style-type: none"> • UBC is vital to achieving the mission of the HEI. 				
Benefits for students	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	HEI	7.8	HEI	8.5
<ul style="list-style-type: none"> • UBC increases skills and graduate development 				
Benefits for business and society	Extent of importance (1-10)		Extent of importance (1-10)	
	Sweden		Europe	
	HEI	7.5	HEI	7.3
<ul style="list-style-type: none"> • UBC has beneficial effects on the local industry • UBC improves regional productivity • UBC creates local employment • UBC increases local GDP and disposable income • UBC creates a range of beneficial social and recreational benefits 				

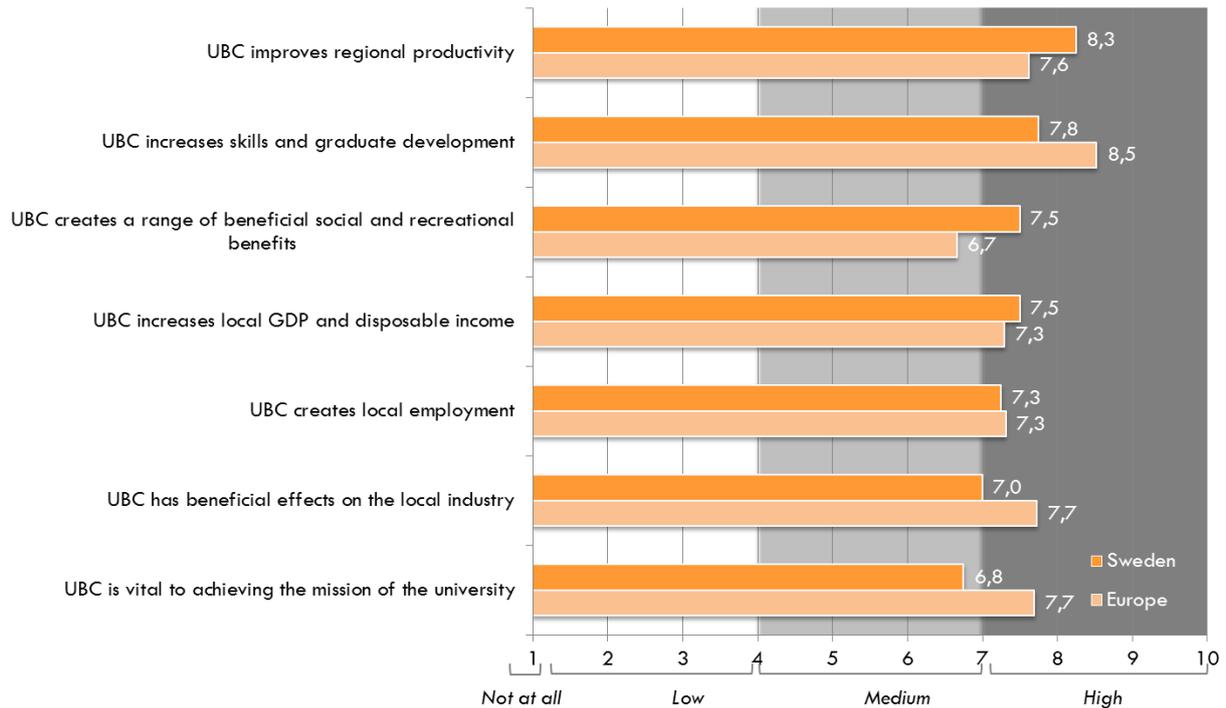
Three groups of UBC benefits for HEIs

Resulting from a factor analysis of the results, *benefits* for HEIs can be categorised in the following groups:

1. *benefits for students,*
2. *benefits for business and society, and*
3. *benefits for HEIs.*

Benefits from cooperation – Sweden vs. Europe

As answered by HEI management



The HEI has the least amount of benefits from UBC say HEIs (see table previous page and graph above)

HEI management in Sweden perceive most benefits from UBC to be of a high extent, with the benefits for the 'region' ('UBC improves regional productivity'), 'students' ('UBC increases skills and graduates development'), 'society' ('UBC creates local employment'), 'businesses' ('UBC has beneficial effects on the local industry'), and 'HEIs' ('UBC is vital to achieving the mission of the HEI'), being perceived to receive a high benefit from UBC.

Higher benefit perceived from UBC by Swedish HEI management than in Europe (see table previous page and graph above)

Comparing the results to the European average it can be stated that Swedish HEI management see considerably higher benefits for the region and

business than in Europe, especially for 'UBC improves regional productivity' (8.3 compared to 7.6) and 'UBC creates a range of beneficial social and recreational benefits' (7.5 compared to 6.7).

Main benefits of UBC identified by Swedish HEI management

1. UBC improves regional productivity
2. UBC increases skills and graduate development
3. UBC creates a range of beneficial social and recreational benefits
4. UBC increases local GDP and disposable income
5. UBC creates local employment

Benchmark

...universities in your region!

Assisting governments and universities improve University-Business Cooperation

Using the State of European University-Business Cooperation study results, decision makers, managers and practitioners involved in university-business cooperation can benefit from receiving:

1. a benchmark in terms of UBC of your organisation, institution, sector, region or country against others.
2. a clear picture of progress in efforts to increase university-business cooperation,
3. proactive areas of focus for increasing UBC,
4. the required information to advance university-business cooperation within their region or institution

Provided to your organisation in the form of a report and/or presentation, a state of the UBC report dedicated to your organisation can assist with developing greater financial and other benefits from University-Business Cooperation



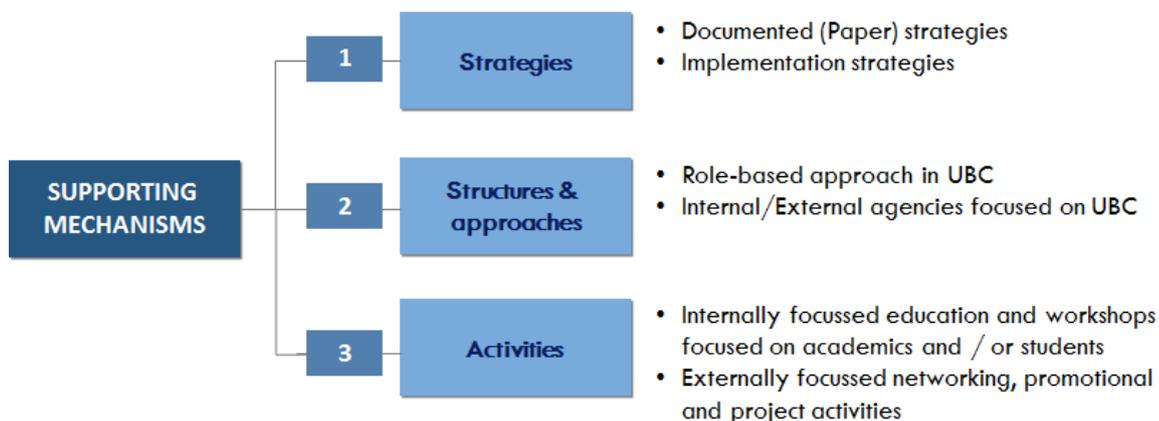
...your university!

Please contact davey@apprimo.com for more information.

Supporting mechanisms for UBC

Supporting mechanisms are interventions designed to support the development of cooperation between HEIs and business.

The coming section will outline the extent to which UBC *supporting mechanisms* are developed in Sweden. The development of these mechanisms has been found to significantly influence cooperation within the European context.



Supporting mechanisms explained

The UBC *supporting mechanisms* constitute the 'action-level', where all stakeholders need to focus their efforts when they want to influence the extent of UBC.

The specific role and importance of *supporting mechanisms* at HEIs has long been recognised in both practice and literature. They are often recognised in multiple ways including (i) in a variety of different names (e.g. interventions, enablers), (ii) captured in a model (e.g. ecosystem, regional innovation system) or (iii) known as individual elements (e.g. activities, infrastructure).

A key finding of the *State of European UBC Report* was that the extent of development of the *supporting mechanisms* was found to significantly affect the extent of general activity between HEIs and business. The nature of the *supporting mechanisms* in terms of (i) responsibility, (ii) expense and (iii) time to impact are summarised in the table below.

	Primary responsibility for the mechanism	Secondary responsibility	Expense	Time to impact
Strategies	HEI management	All UBC stakeholders	Low	Long term
Structures and approaches	HEI / regional Govt. and agencies	Regional UBC stakeholders	Agencies: High Personnel: Med-high	Agencies: Long Personnel: Medium
Operational activities	Knowledge transfer Professionals	Regional UBC stakeholders	Medium	Short-medium term

Strategies for UBC

Strategies are the drafting and implementation of cross-functional decisions by a HEI that will enable it to achieve its long-term objectives with respect to UBC.

The primary responsibility for the creation of UBC strategies is with HEI management as a strategic instrument is usually created by decisions made at a HEI board level.

Two groups of UBC strategies

Resulting from a factor analysis of the results, strategies can be categorised in the following groups:

1. *Documented strategies*
2. *Implementation and motivation strategies*

Development of UBC strategies (grouped) – Sweden vs. Europe

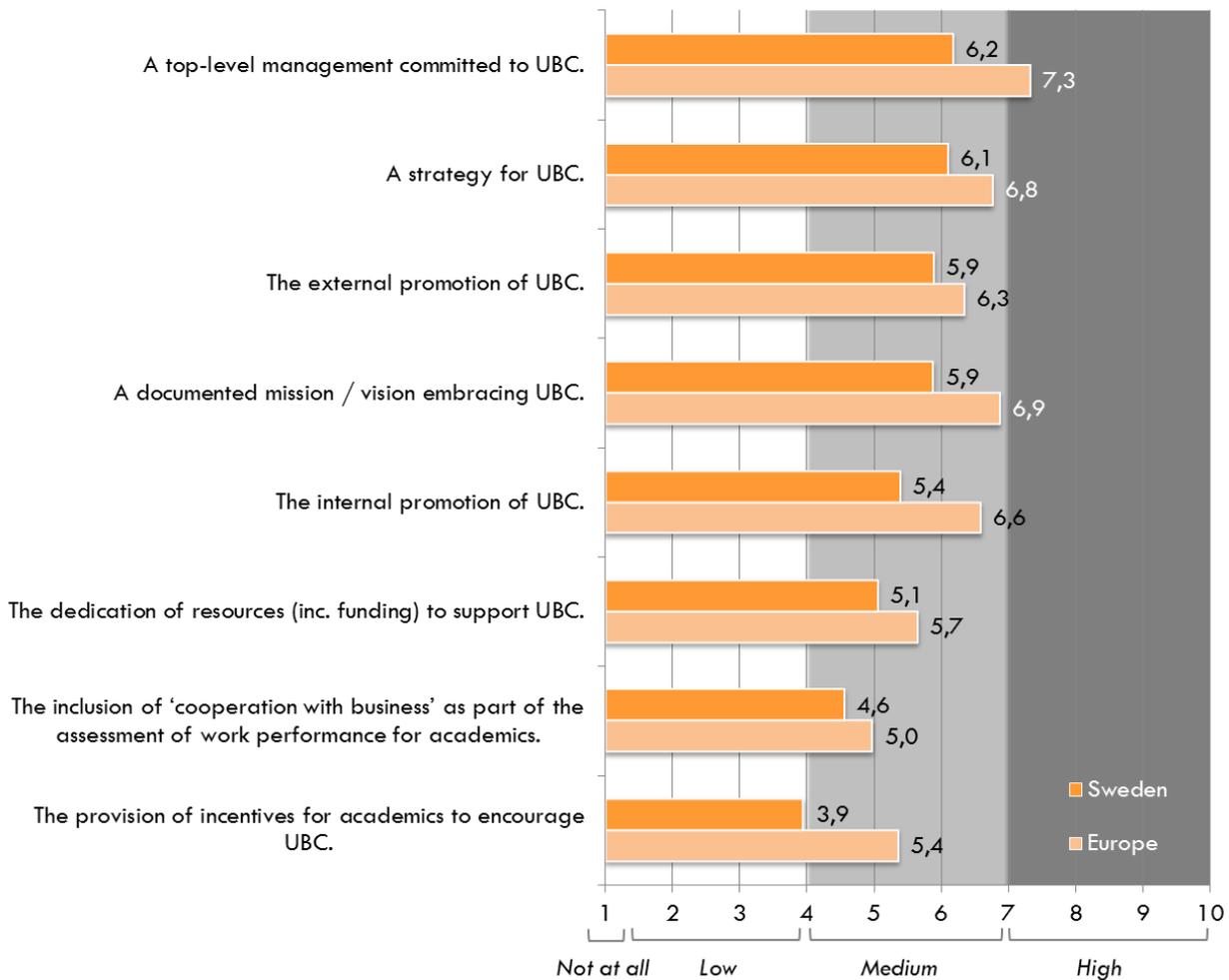
As answered by HEI management

Documented (Paper) strategies	Extent of development (1-10)		Extent of development (1-10)	
	Sweden		Europe	
	HEI	5.9	HEI	6.8
<ul style="list-style-type: none"> • A top-level management committed to University-Business cooperation, • A documented mission / vision embracing University-Business cooperation, • A strategy for University-Business cooperation, • The internal promotion of University-Business cooperation., • The external promotion of University-Business cooperation. 				

Implementation and motivation strategies	Extent of development (1-10)		Extent of development (1-10)	
	Sweden		Europe	
	HEI	4.5	HEI	5.4
<ul style="list-style-type: none"> • The dedication of resources (inc. funding) to support University-Business cooperation, • The provision of incentives for academics to encourage University-Business cooperation, • The inclusion of 'cooperation with business' as part of the assessment of work performance for academics. 				

Development of UBC strategies – Sweden vs. Europe

As answered by HEI management



Documented (paper) strategies are the most developed strategies in Sweden (see graph above)

The most developed UBC strategies in Sweden, as reported by Swedish HEI management, are 'a top-level management committed to UBC' (6.2), 'a strategy for UBC' (6.1), 'the external promotion of UBC' (5.9) and 'a documented mission / vision embracing UBC' (5.9). On the other extreme, 'the provision of incentives for academics to encourage UBC' (3.9) and 'the inclusion of cooperation with business as part of the assessment of work performance for academics' (4.6), are only developed substantially lower (compared to other strategies).

Both documented and implementation strategies are lower developed in Sweden compared to Europe (see graph above)

HEI managers perceive the development of UBC strategies in Swedish HEIS to be lower than their European equals, with the largest difference being 'the provision of incentives for academics to encourage UBC' (3.9 compared to 5.3) and 'a top-

level management committed to UBC' (6.2 compared to 7.3).

On a factored level (see previous page), 'documented strategies' are considered to be significantly more developed in Sweden than 'implementation and motivation strategies' supporting UBC.

Moderately developed	<ol style="list-style-type: none"> 1. A top-level management committed to UBC 2. A strategy for UBC 3. The external promotion of UBC 4. A documented mission / vision embracing UBC 5. The internal promotion of UBC 6. The dedication of resources (incl. funding) to support UBC 7. The inclusion of 'cooperation with business' as part of the assessment of work performance for academics
Low developed	<ol style="list-style-type: none"> 8. The provision of incentives for academics to encourage UBC

Structures and approaches for UBC

UBC *structures and approaches* are mechanisms created as a result of top-level strategic decisions within (or related to) a HEI. They are enablers of UBC and include the creation or development of positions or agencies put in place in order to promote, develop or implement UBC with a mid to long term focus. They can be created within the HEI or externally, as a bridge between the HEI and business. *Structures and approaches* usually involve significant investment and can be funded by the HEI, the government, business or a combination of these sources.

Two groups of UBC structures and approaches

Resulting from a factor analysis of the results, *structures and approaches* can be categorised in the following groups:

1. *the creation and /or expansion of positions (personnel) and*
2. *agencies (units of focus).*

Development of UBC structures and approaches (grouped) – Sweden vs. Europe

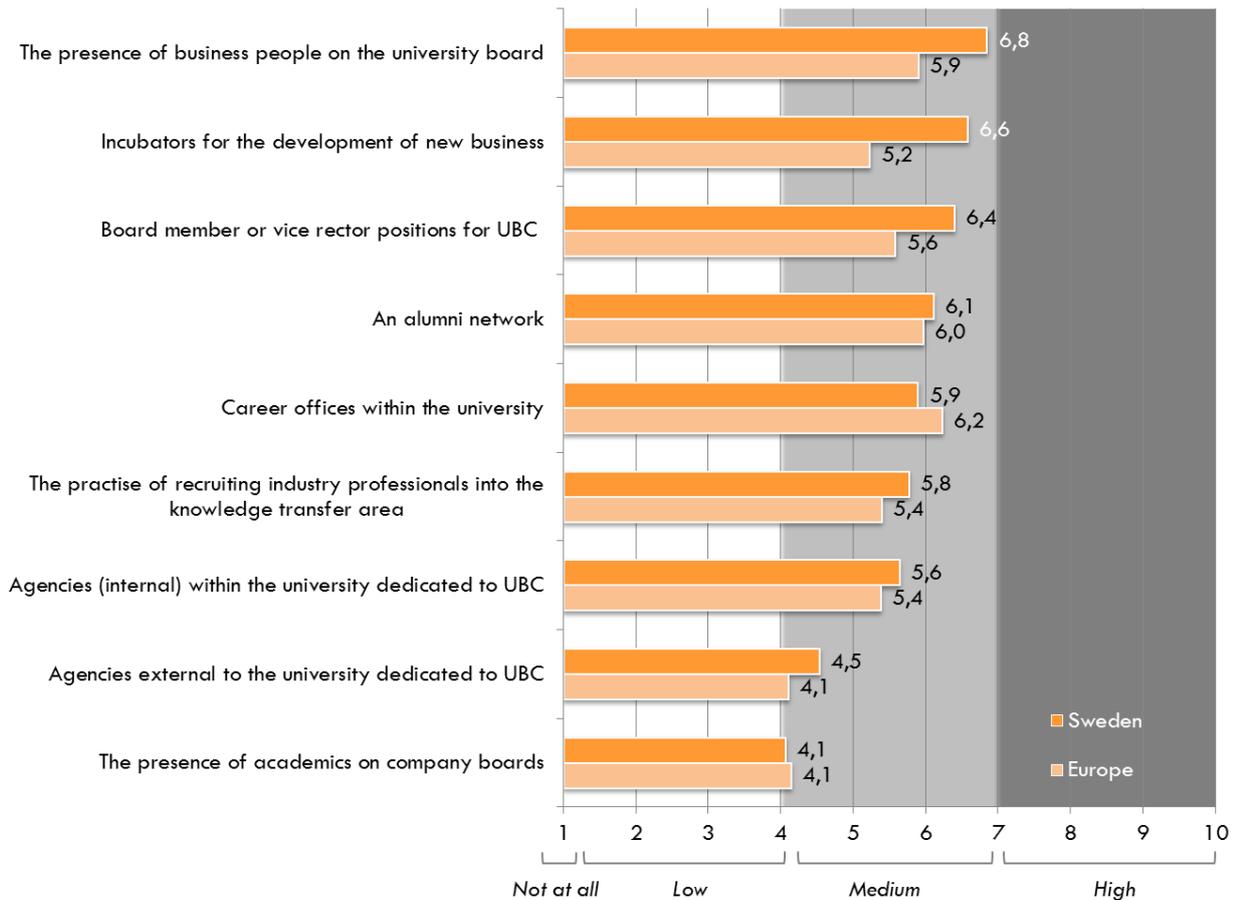
As answered by HEI management

Roles-based approaches in UBC	Extent of development (1-10)		Extent of development (1-10)	
	Sweden		Europe	
	HEI	5.9	HEI	5.4
<ul style="list-style-type: none"> • The presence of academics on company boards, • The presence of business people on the HEI board, • Board member or vice rector positions for UBC. • The practise of recruiting industry professionals into the knowledge transfer area,, • An alumni network. 				

Internal/External agencies focused on UBC	Extent of development (1-10)		Extent of development (1-10)	
	Sweden		Europe	
	HEI	5.7	HEI	5.3
<ul style="list-style-type: none"> • Career offices within the HEI, • Agencies external to the HEI dedicated to UBC • Agencies (internal) within the HEI dedicated to UBC, • Incubators for the development of new business. 				

Development of UBC structures and approaches –Sweden vs. Europe

As answered by HEI management



The involvement of UBC in the university board (through business people or type of positions) is the highest developed type in Sweden (see table previous page)

The extent of development of the structures and approaches for UBC in Sweden shows that especially the 'presence of business people on HEI boards' is well developed, amongst which the 'presence of business people on the university board' (6.8) and 'board member or vice rector positions for UBC' (6.4). Overall, the development of both the 'role-based approaches in UBC' and the 'internal/external agencies focussed on UBC' are of a similar extent of development in Sweden (respectively 5.9 and 5.7).

Similar development of structures and approaches to Europe

Both 'internal/external agencies focused on UBC' as well as 'role-based approaches' show a similar extent of development in Sweden compared to the European average (5.9 to 5.4 and 5.7 to 5.3). However, both 'the involvement of business people on university boards' (6.8 to 5.9) and 'incubators for the development of new businesses' (6.6 to 5.2) are significantly higher developed in Sweden compared to the European average.

Medium developed structures and approaches	<ol style="list-style-type: none"> 1. The presence of business people on the HEI board 2. Incubators for the development of new business 3. Board member or vice rector positions for UBC 4. An alumni network 5. Career offices within the university 6. The practise of recruiting industry professionals into the knowledge transfer area 7. Agencies (internal) within the HEI dedicated to UBC 8. Agencies external to the university dedicated to UBC 9. The presence of academics on company boards
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Operational activities for UBC

Operational activities are actions of a practical and immediate nature undertaken by actors within HEIs, governments, regional agencies and business to create and support UBC. *Operational activities* are usually the *supporting mechanisms* that require the lowest financial investment and the lowest commitment and whose scope and volume can be more easily described, measured and managed.

Three groups of UBC operational activities

Resulting from a factor analysis of the results, *Operational activities* can be categorised in the following groups:

1. *Internally focused education and workshops focused on academics*
2. *Internally focused education and workshops focused on students*
3. *Externally focused networking, promotional and project activities*

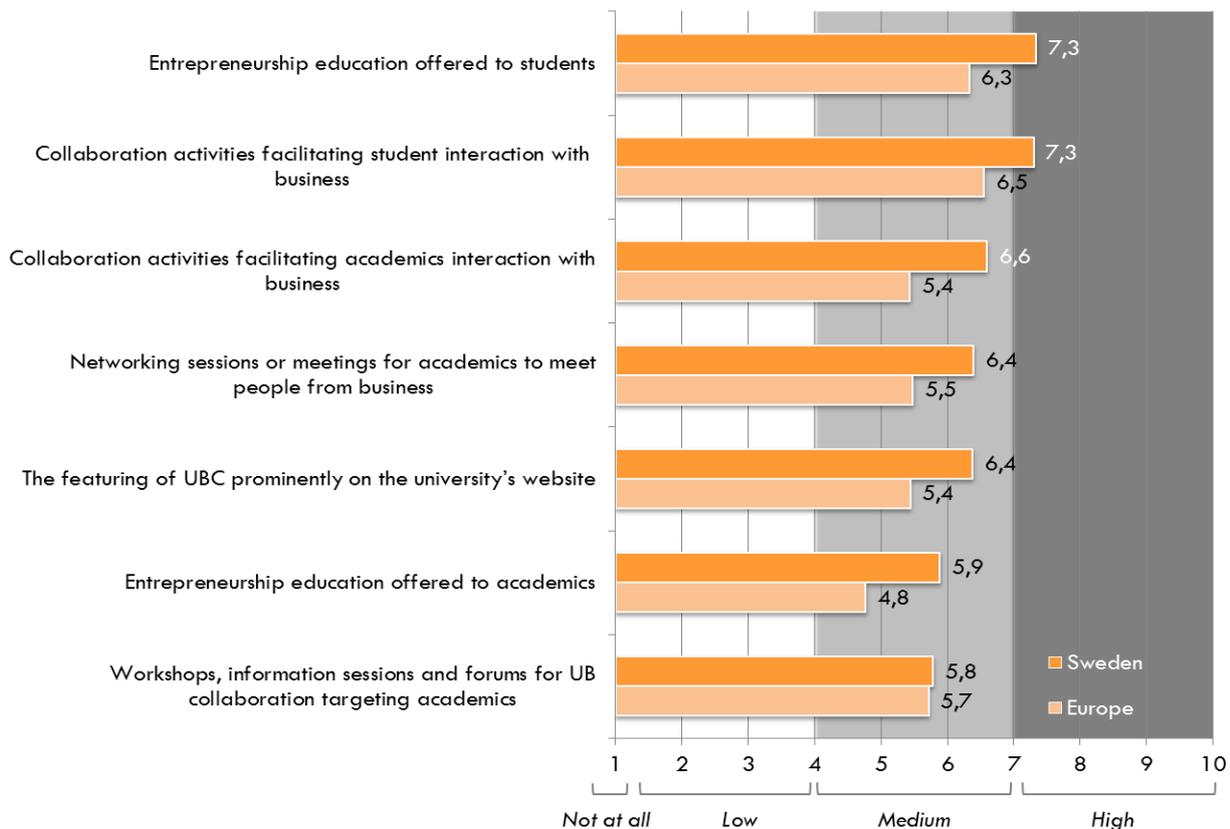
Development of UBC operational activities (grouped) – Sweden vs. Europe

As answered by HEI management

Internally focused education and workshops focused on <u>academics</u>	Extent of development (1-10)	Extent of development (1-10)
<ul style="list-style-type: none"> • Workshops, information sessions and forums for University-Business collaboration targeting academics, • Entrepreneurship education offered to academics. 	Sweden	Europe
	HEI	5.8
	HEI	5.3
Internally focused education and workshops focused on <u>students</u>	Extent of development (1-10)	Extent of development (1-10)
<ul style="list-style-type: none"> • Entrepreneurship education offered to students. 	Sweden	Europe
	HEI	7.3
	HEI	6.3
Externally focused networking, promotional and project activities	Extent of development (1-10)	Extent of development (1-10)
<ul style="list-style-type: none"> • Networking sessions or meetings for academics to meet people from business, • The featuring of University-Business cooperation prominently on the HEI's website, • Collaboration activities facilitating student interaction with business, • Collaboration activities facilitating academics interaction with business. 	Sweden	Europe
	HEI	6.6
	HEI	5.7

Development of UBC operational activities – Sweden vs. Europe

As answered by HEI management



Students are the focus of UBC activities in Sweden (see graph this page)

Regarding 'collaboration activities facilitating student interaction with business', Sweden is very well advanced, also in comparison to the European average (7.3 compared to 6.5), as is 'collaboration activities facilitating student interaction with business' and 'collaboration activities facilitating academic interaction with business'. At the other end of the development scale, 'workshops, information sessions and forums for UB collaboration targeting academics' (5.8) and 'entrepreneurship education offered to academics' (5.9) are found to be the least developed operational activities measured.

Operational activities are more developed than in the average European HEI (see table previous page)

On a factored (grouped) level, it can be summarised that Sweden is more developed than the European average with respect to all types of *operational activities*. This is especially true for the '*externally focused networking, promotional and project activities*' (6.6 compared to 5.7) as well as '*internally focused education and workshops focused on students*' (7.3 compared to 6.3). Another difference between Sweden and Europe is that where 'workshops, information sessions and forums for UB collaboration targeting academics' are third in respect to their level of development in Europe, in Sweden they are

perceived by HEI managers to have the lowest level of development (5.8).

Highly developed	<ol style="list-style-type: none"> 1. Entrepreneurship education offered to students 2. Collaboration activities facilitating student interaction with business
Moderately developed	<ol style="list-style-type: none"> 3. Networking sessions or meetings for academics to meet people from business 4. The featuring of UBC prominently on the university's website 5. Entrepreneurship education offered to academics 6. Workshops, information sessions and forums for UBC targeting academics

The UBC Ecosystem

The UBC ecosystem is a model for understanding the important elements affecting University-Business Cooperation (UBC)

Model created by

Todd Davey, Victoria Galan Muros, Arno Meerman.

Model validation partners

Science-to-Business Marketing Research Centre, UIIN, aprimo UG

Co-created by

105 practitioners validating the model in their work.

The model relationships have been scientifically validated by the Science-to-Business Marketing Research Centre

1 Indirect outcome (society)

2 Direct outcome (actors)

3 University-Business Cooperation (UBC) types

4 Influencing factors

5 Supporting mechanisms

6 Key stakeholders

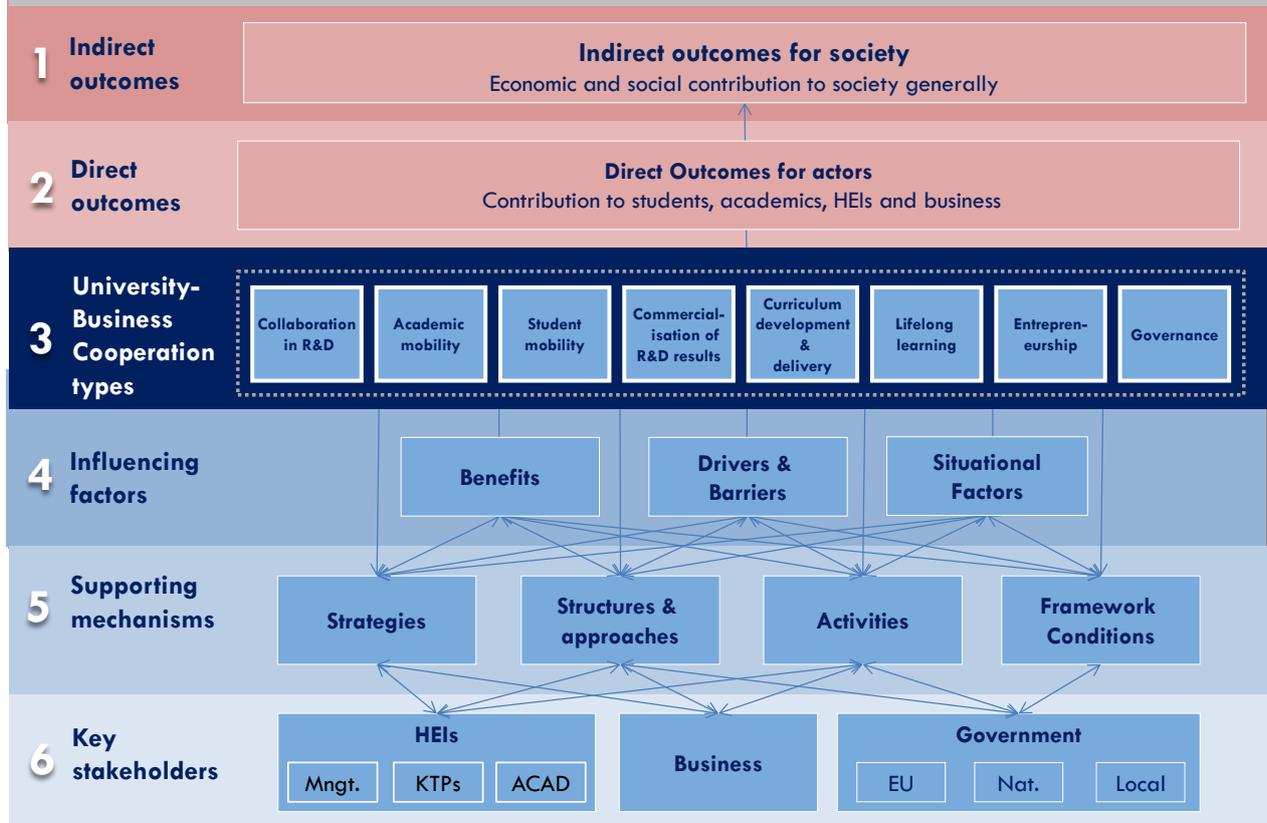
Are you...?

- ...attempting to develop UBC within your organisation?
- ...repetitively thinking about the factors affecting cooperation between university and business as well as their how they relate to each other?
- ...trying to foster open innovation involving universities?
- ...continually confronted with the challenge of creating better relationships between HEIs and business?
- ...a revolutionary trying to match researchers with business partners?

... if you answered 'yes' to any of these questions, you are not alone: this model was developed by people like you for these reasons



UBC ECOSYSTEM MODEL > Detailed



6 Ecosystem Elements (and their key findings)

1. UBC is vital in creating a knowledge society
2. UBC provides direct outcomes for students, HEIs, academics and businesses
3. Those UBC types with more direct, measurable, and promotable *benefits* are the most developed (e.g. *Collaboration in R&D*, *Mobility of students*)
- 4a. Situational factors (e.g. age, faculty) help to explain UBC but there is little that can be implemented from these results
- 4b. Lack of funding and excess of bureaucracy at all levels (HEI, national, European) are the highest *barriers* to UBC
- 4c. Personal relationships drive UBC. It's a people game!
- 4d. Perceptions of high personal benefits & incentives are motivators of UBC
5. The creation and development of *supporting mechanisms* (especially those with the highest impact) are critical for UBC
6. In the UBC ecosystem, the multiple actors need to work cooperatively and in a coordinated manner

UBC ECOSYSTEM Layers explained		All aspects are measurable (benchmarking)
1 Indirect Impact	Impact level	How it impacts society
2 Direct outcomes	Outcome level	How it affects stakeholders
3 University-Business Cooperation types	Result level	What occurs
4 Influencing factors	Factor level	What you have to consider
5 Supporting mechanisms	Action level	What you can do
6 Key stakeholders	Stakeholder level	

Please go to <http://ub-cooperation.eu/pdf/UBCECO.pdf> for more information or contact davey@apprimo.com.

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