

SUPPORTING MECHANISMS IN EUROPEAN UNIVERSITY- BUSINESS COOPERATION

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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Science Marketing

Science-to-Business Marketing Research Centre Germany

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Authors: Todd Davey, Dr. Thomas Baaken, Victoria Galan Muros and Arno Meerman
Contributors: Michael Deery, Steffi Gosejohann, Anna Haasler, Christian Junker, Tobias Kesting, Thorsten Kliewe, Nisha Korff, Phillip Korzinetzki, Kerstin Linnemann, David Serbin, Anne Tijmsma (Science-to-Business Marketing Research Centre, Germany), Dr. Carolin Plewa (University of Adelaide), Dr. Clive Winters (Coventry University, UK), Dr. Peter van der Sijde (Free University, The Netherlands), Tomasz Kusio (Cracow University of Economics, Poland), Silvia Rodríguez Sedano (RedOTRI, Spain), Friederike von Hagen and Pilar Osca

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A summary of findings

The study

This report presents the findings related to the supporting mechanisms of university-business cooperation (UBC) that have been found to exist in Europe. These results derive from a fifteen and a half month study on the cooperation between HEIs¹ and public and private organisations in Europe. The study was conducted by the Science-to-Business Marketing Research Centre, Germany (S2BMRC) for the DG Education and Culture at the European Commission (EC) during 2010 and 2011.

The main components of the project are in-depth qualitative interviews with 11 recognised UBC 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 population of 6,280 academics and HEI representatives was achieved making the study the largest study into cooperation between HEIs and business yet completed in Europe. Further, 30 good practice UBC case studies have been created to provide positive examples of European UBC.

Which supporting mechanisms can help
to explain the extent of European UBC undertaken?

Actions that create and support European UBC (Action level)

A large piece of the UBC ecosystem is understood in the *supporting mechanisms*² of UBC, which constitute the 'action-level', where all stakeholders need to focus their efforts when they want to influence the amount of UBC. Supporting mechanisms include (i) *strategies*, (ii) *structures and approaches*, (iii) *operational activities* and (iv) *framework conditions*. The *supporting mechanisms* provide a checklist of actions that can be used to reduce barriers (obstacles) to UBC, increase the drivers (motivators) of UBC, address situational factors, provide benefits for UBC or stimulate the different types of UBC. **The research has shown that the extent of development of the *supporting mechanisms* significantly affect the extent of cooperation between HEIs and business.**

Perceived development of the actions that create and support UBC (the *supporting mechanisms*)

HEI representatives rate the mechanisms supporting European UBC (the *supporting mechanisms*) generally as moderately developed, providing some room for future improvement. The extent of development of the *supporting mechanisms* from most developed to least is *operational activities* (5.4 of a 10 point scale³), *structures and approaches* (5.1), *strategies* (4.9) and *framework conditions* (4.5).

¹ HEIs are understood to mean all types of institutions, which provide higher education. These institutions must be formally recognised by the relevant national/regional authority and includes:

- Universities,
- Universities of applied sciences,
- Polytechnics /technical universities,
- Colleges and tertiary schools.

² The term '*supporting mechanisms*' was created during the life of the project in reference to the different actions that can be undertaken by HEIs and the way these elements underpin UBC,

³ Using a 10 point scale, the extent of development of the *supporting mechanisms* were rated by the respondent using the following structure: 1 = not at all, >1 - 4 = low extent of UBC; >4 - 7 = medium extent of UBC; >7 - 10 = high extent of UBC,

In respect to the *strategies*⁴ for UBC, the ‘documented strategies’ (e.g. management committed to UBC or mission / vision embracing UBC) are said to be more developed than the ‘implementation strategies’ (e.g. the dedication of resources or the provision of incentives for UBC). Regarding *structures and approaches*⁵, the development of dedicated ‘agencies’ for UBC and the appointment of responsible people are perceived to be both developed to a medium extent. For *operational activities*⁶ those UBC activities targeting students are more developed than those UBC activities targeting academics. Finally, *framework conditions*⁷ are assessed by HEI representatives to have the lowest development of the *supporting mechanisms*, with ‘laws positively supporting UBC’ being more developed than those supporting *staff mobility*.

Academics were also asked to assess the development of two of the *supporting mechanisms*⁸. They perceive the pillars to be significantly less developed than the HEI representatives. This indicates either that the academics are perhaps not aware of the commitment within the HEI to UBC or of the existing support mechanisms in place for UBC or alternatively it may indicate that the HEI representatives are over-estimating the extent of development.

It was also found that the presence of some structures, such as the presence of a central contact person, a central agency or a programme or initiative specifically for UBC in entrepreneurship, LLL and/or mobility of students and academics, result in a significantly higher development of those types of UBC.

An analysis was undertaken to identify how much of the extent of UBC is explained by each of the *supporting mechanisms*. That is, how much the perception of the development of UBC increases when the perception of each of the pillars do so. It was found that UBC *strategies*, followed by *operational activities* and then *structures and approaches*, provide the highest contribution to the development of UBC. This suggests that a focus should be put on *strategies* since they are the pillars whose development will have the highest impact on the extent of UBC.

The *Supporting Mechanisms* are the ‘action-level’ where all implementation in UBC needs to be focused, regardless of the type of UBC or the situational factors in place

The creation and development of supporting mechanisms are critical for UBC

Activities followed by structures and approaches are the most developed of the *Supporting Mechanisms* in Europe

The UBC supporting mechanisms that are easier to implement, are much more developed than those that are more difficult to implement

The development of UBC Strategies (58%) (especially implementation strategies) followed by UBC Operational activities (53%) provide the greatest impact on the extent of UBC

⁴ *Strategies* are the drafting and implementation of cross-functional strategic decisions by a HEI that will enable it to achieve its long-term objectives with respect to UBC,

⁵ *Structures and approaches* are constructions created as a result of top-level strategic decisions within (or related to) a HEI that enable UBC and include the creation or development of institutions, positions, methods, policies and programmes,

⁶ *Operational activities* are actions of a practical nature undertaken by a HEI to create and support UBC whose scope and volume can be described/measured,

⁷ *Framework conditions* are mechanisms applied by regional, national and international governments to maximise the long term economic performance, welfare or other policy objectives of a region through UBC,

⁸ *Structures and approaches* as well as *framework conditions*.

Introduction

The following chapter explains various elements related to UBC that are important in understanding the paper.

Paper objective

The following section will endeavour to answer the following research question in respect to UBC:

Supporting mechanisms

F. What is the extent of development of the **supporting mechanisms?**

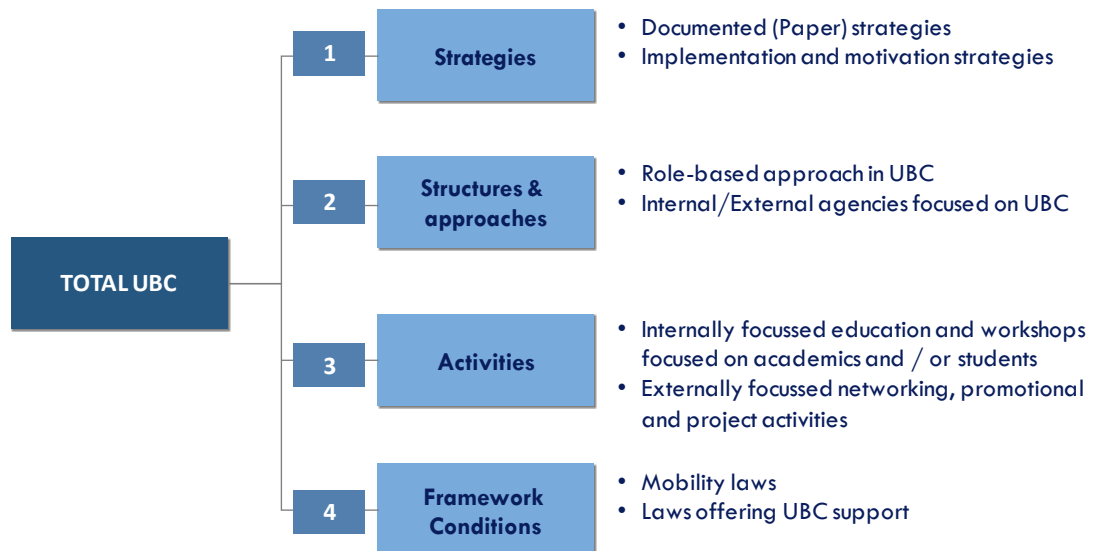


Diagram: Supporting mechanisms in European UBC

Davey, T., et al (2011)

Action level – the supporting mechanisms

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

Type of pillar	Explanation	Primary responsibility
Strategic instrument	<p><i>Def: The drafting and implementation of cross-functional strategic decisions by a HEI that will enable it to achieve its long-term objectives with respect to UBC.</i></p> <p>A strategic instrument is usually created by decisions made at a HEI board level. The study will seek to understand whether cooperation with business is part of their mission, whether HEIs have clearly defined strategies to address UBC, and if so, what are they and which areas are addressed.</p>	HEI management
Structural instrument or approach	<p><i>Def: Constructions created as a result of top-level strategic decisions within (or related to) a HEI that enable UBC and include the creation or development of institutions, positions, methods and policies and programmes.</i></p> <p>The study will seek to understand the kind of structures and approaches put in place in order to promote, develop or implement UBC. They can be on the level of HEI governance, curriculum development, career guidance offices and/or technology transfer offices. The two primary structural instruments are related to the creation and /or expansion of positions (personnel) and agencies (units of focus).</p>	Governments, regional agencies, HEIs, business
Operational activity	<p><i>Def: Are actions of a practical nature undertaken by a HEI to create and support UBC whose scope and volume can be described/measured</i></p> <p>The study will seek to understand the kind of concrete cooperation activities that exist within HEIs. Examples could include exchange of staff, placements of students, students working on concrete problems defined by companies (e.g. master thesis, PhD), specific curriculum for people in the work place (LLL) and research projects.</p>	Governments, regional agencies, HEIs, business
Framework conditions	<p><i>Def: Conditions applied by regional, national and international governments to maximise the long term economic performance, welfare or other policy objectives of a region through UBC.</i></p> <p>The conditions usually exist (i) in the form of regulations, institutions, promotional measures or (ii) incentive schemes in the form of policy, economic or legal conditions.</p>	Governments

Abbreviations

EC	European Commission
EEA	European Economic Area
EU	European Union
EUA	European University Association
HEI	Higher Education Institution
ICT	Information and Communication Technology
IP	Intellectual Property
IPR	Intellectual Property Rights
LLL	Lifelong Learning
MUAS	Münster University of Applied Sciences
NQF	National Qualifications Framework
PhD	Doctorate of Philosophy
R&D	Research and Development
SME	Small- and Medium-sized Enterprise
S2BMRC	Science-to-Business Marketing Research Centre
TTO	Technology Transfer Office
UB	University-Business
UBC	University-Business Cooperation
UPB	University professional working with business
VU	Free University of Amsterdam

Explanation of the results

The following information provides instructions for the comprehension of results.

Who answered the survey (academic or HEI)

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. **HEIs representatives** (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 though the report to identify those results received from the academic (green) and those results received from the HEI (orange).

Qualitative interviews

Comments and findings from experts in UBC

Content found in a box like this is relevant information from the qualitative interviews with experts/practitioners in European UBC.

Case studies results

Content found in a box like this include relevant information from the cases studies analysis carried out as part of the entire study.

Hypotheses testing

During the secondary research review, many statements about UBC were gathered and converted into hypotheses. Using the data from the survey, it was tested whether the hypotheses could be rejected or not.

The source of the hypothesis is stated next to the hypothesis.

“Where the hypothesis came from is detailed here”⁹

The hypothesis is stated here

The result is here

The hypothesis <u>has been</u> confirmed by the results of the survey	✓
The hypothesis <u>has not been</u> confirmed by the results of the survey	✗

⁹ Crosier et al (2007)

Strategies

Documented (Paper) strategies	Extent of development (1-10) as perceived by	
<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. 	ACAD	5.4 (Medium)
	HEI	6.8 (Medium)

Focus for strategies of UBC

Are scientifically proven to be structured into two areas:

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

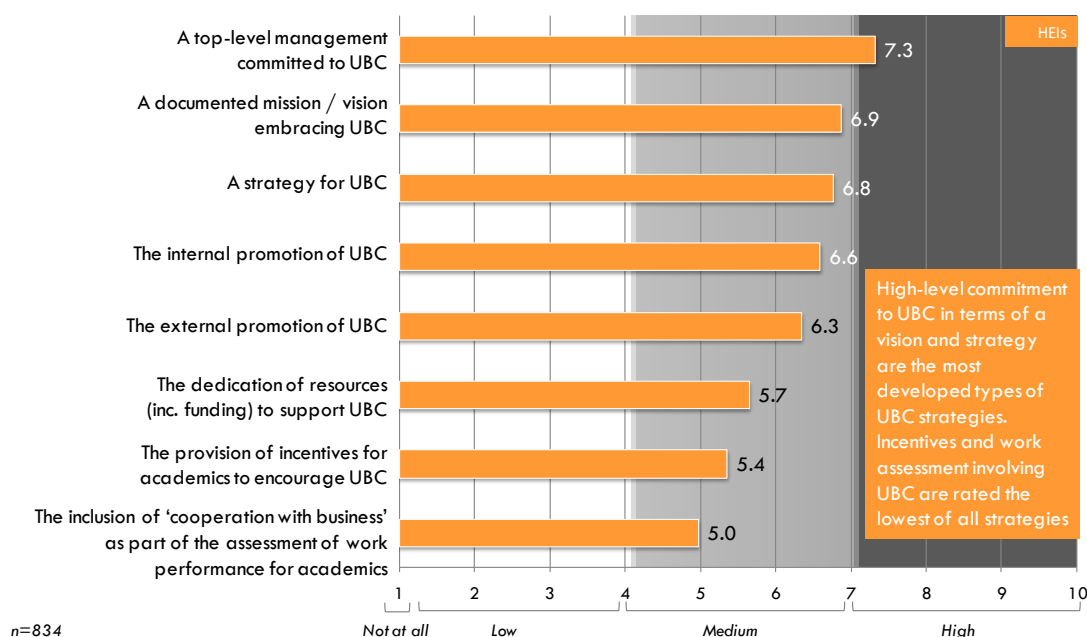
Documented and motivation strategies

are the highest developed strategies (assessed by both academics and HEI representatives)

Implementation and motivation strategies	Extent of development (1-10) as perceived by	
<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. 	ACAD	4.0 (Medium)
	HEI	5.4 (Medium)

'Documented strategies' are substantially more developed than *implementation and motivation strategies* within the HEI. This result suggests that many more European HEIs have developed *documented strategies*, a first step in the direction of developing *implementation and motivation strategies*. Special attention should be paid to assure that "documented strategies" do not remain in paper and are also applied, becoming "implementation and motivation strategies".

Extent of development



Hypothesis source

“There is little incentive for faculty members to engage in non-traditional activities”¹⁰

Hypothesis

The provision of incentives for academics to encourage UBC is poorly developed

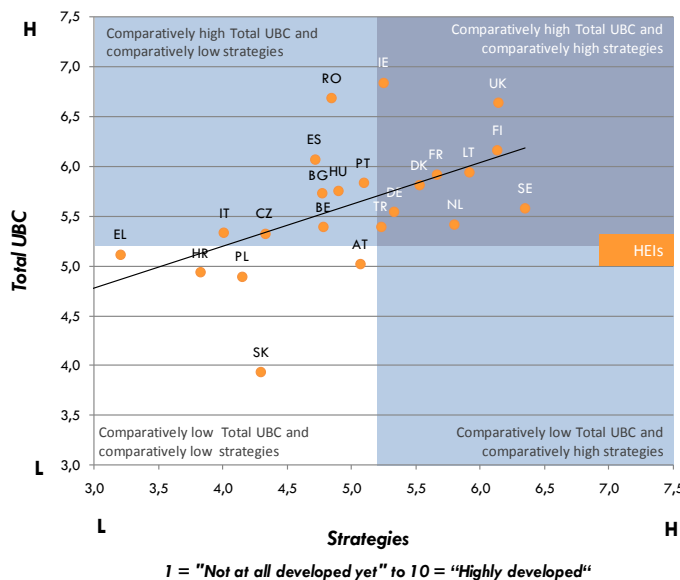
Result



The relationship between strategies and Total HEI UBC (per country)

Relating Total UBC with development of UBC strategies per country

The relationship between Total UBC and strategies for UBC is evident in the diagram below. It can be seen that as the development of strategies increase, so does the extent of Total UBC (the reverse is also theoretically possible, though experience would suggest otherwise).



Country	Short Code	STRAT mean	TOTAL UBC (HEI)
Austria	AT	5.1	5.0
Belgium	BE	4.8	5.4
Bulgaria	BG	4.8	5.7
Croatia	HR	3.8	4.9
Czech Republic	CZ	4.3	5.3
Denmark	DK	5.5	5.8
Finland	FI	6.1	6.2
France	FR	5.7	5.9
Germany	DE	5.3	5.5
Greece	EL	3.2	5.1
Hungary	HU	4.9	5.8
Ireland	IE	5.3	6.8
Italy	IT	4.0	5.3
Lithuania	LT	5.9	5.9
Netherlands	NL	5.8	5.4
Norway	NO	3.0	4.8
Poland	PL	4.2	4.9
Portugal	PT	5.1	5.8
Romania	RO	4.9	6.7
Slovakia	SK	4.3	3.9
Spain	ES	4.7	6.1
Sweden	SE	6.4	5.6
Turkey	TR	5.2	5.4
United Kingdom	UK	6.1	6.6

The diagram above suggests that there is a positive relationship between the development of strategies and the extent of UBC. A few countries show a high level of Total UBC with a low development of strategies; however, in most cases a high level of UBC corresponds with a relatively high extent of strategy development.

Highest three means for the pillar

Hypothesis source

“Need to consider UBC in the career development/promotion of professors.”¹¹

Hypothesis

The inclusion of “cooperation with business” as part of the assessment of work performance for academics is poorly developed

Result



“Clear HEI strategies and rules relating to research cooperation with industry need to be improved”¹²

Strategies of UBC are poorly developed



¹⁰ Crosier et al (2007)
¹¹ European Commission (2008)
¹² European Commission (2006)

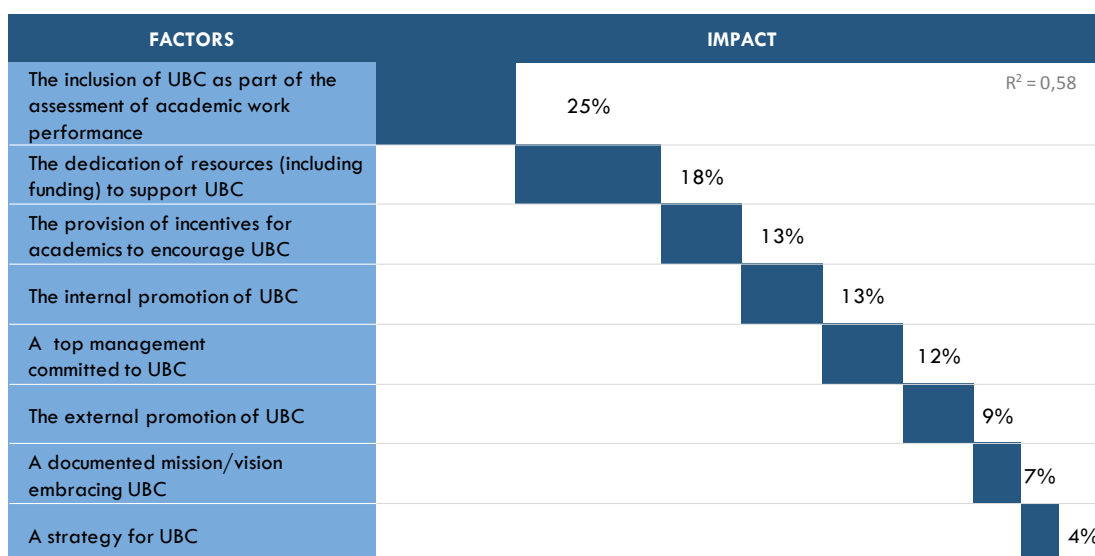
“Universities of applied sciences align their mission with UBC”¹³

Universities of applied sciences have a higher development of missions embracing UBC



Impact of strategies on UBC

According to the respondents’ perceptions, the following graphic explains the impact of each of the strategies on UBC. It details the impact that the development of each of the strategies considered have on UBC, suggesting the ones in which the HEIs should focus their efforts.



When the impact of *strategies* on UBC and the actual development of strategies are compared, it can be seen that *implementation strategies*, which have the highest impact on Total UBC, are the most underdeveloped. This means that HEIs are currently developing strategies with the lowest impact (*documented strategies*) and a re-focus on the strategies with higher impact is required (*implementation strategies*).

Key findings	<p>‘<i>Documented strategies</i>’ are quite well developed while ‘<i>implementation strategies</i>’ (providing motivation for academics) are much less developed, especially in the eyes of academics.</p> <p>The most developed strategies are those with the lowest impact in Total UBC.</p>
Recommendation(s)	<p>Greater focus on those strategies with the highest impact, the ‘<i>implementation strategies</i>’, including UBC as part of the assessment of work performance for academics and increasing their chances of promotion to rise academics’ perceived benefits of UBC for themselves.</p>

¹³ Expert interview: respondent 10

Structures and approaches

Roles-based approaches in UBC	Extent of development (1-10) as perceived by HEI
<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 University-Business cooperation. The practise of recruiting industry professionals into the knowledge transfer area., An alumni network. 	5.4 (Medium)

Internal/External agencies focused on UBC	Extent of development (1-10) as perceived by HEI
<ul style="list-style-type: none"> Career offices within the HEI, Agencies (internal) within the HEI, dedicated to University-Business cooperation, Incubators for the development of new business. 	5.3 (Medium)

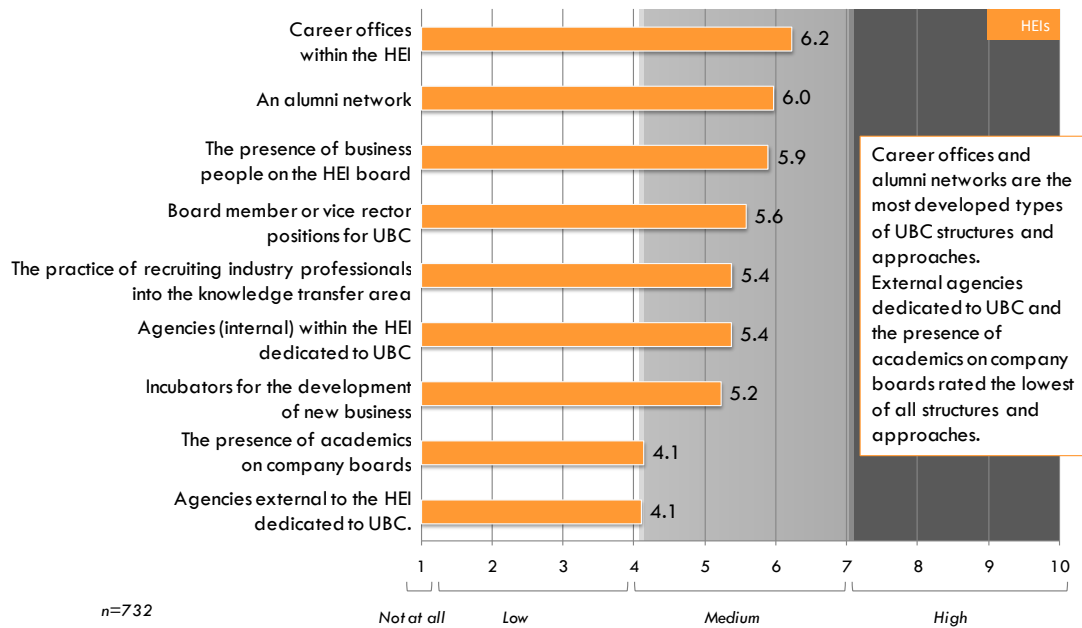
Focus for structures and approaches of UBC

Are proven to be structured into two areas:

1. Role-based approaches in UBC,
2. Internal/External agencies focused on UBC.

Role-based approaches are the highest developed structures and approaches (assessed by HEI representatives).

Extent of development



Comments and findings from literature

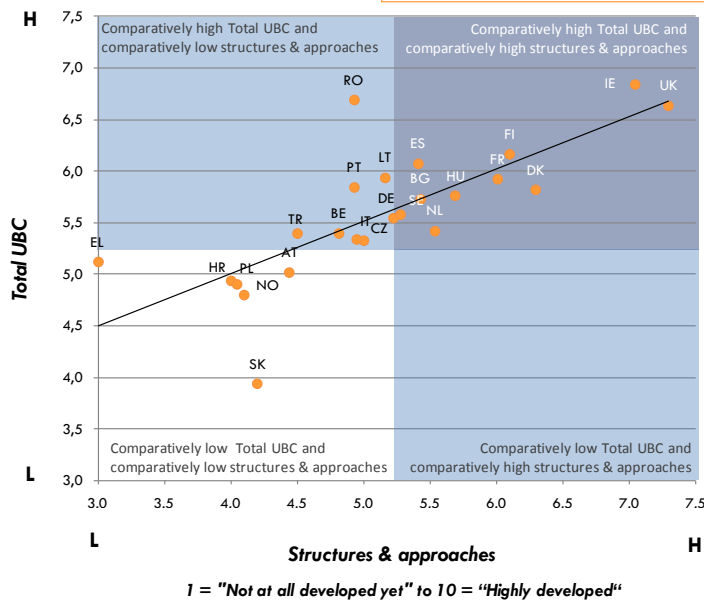
“Change is difficult. Structures are rigid, knowledge is limited easy to try and go in a certain direction, but the caravan has to follow. Getting academics into the discussion on human resources, businesses, accounting etc. is not easy. No change comes without a champion, but often more than one champion with different opinions is found.”¹⁴

Universities, departments and faculties should develop their alumni networks in order to build closer relationships with their graduates working in the business community”.¹⁵

The relationship between structures and approaches and Total HEI UBC (per country)

Relating Total UBC with development of UBC structures & approaches per country

The relationship between Total UBC and structures & approaches for UBC is evident in the diagram below. It can be seen that as the development of structures & approaches increase, so does the extent of Total UBC (the reverse is also theoretically possible, though experience and logic suggests otherwise).



Country	Short Code	STRUCT mean	TOTAL UBC (HEI)
Austria	AT	4.4	5.0
Belgium	BE	4.8	5.4
Bulgaria	BG	5.4	5.7
Croatia	HR	4.0	4.9
Czech Republic	CZ	5.0	5.3
Denmark	DK	6.3	5.8
Finland	FI	6.1	6.2
France	FR	6.0	5.9
Germany	DE	5.2	5.5
Greece	EL	3.0	5.1
Hungary	HU	5.7	5.8
Ireland	IE	7.0	6.8
Italy	IT	5.0	5.3
Lithuania	LT	5.2	5.9
Netherlands	NL	5.5	5.4
Norway	NO	4.1	4.8
Poland	PL	4.1	4.9
Portugal	PT	4.9	5.8
Romania	RO	4.9	6.7
Slovakia	SK	4.2	3.9
Spain	ES	5.4	6.1
Sweden	SE	5.3	5.6
Turkey	TR	4.5	5.4
United Kingdom	UK	7.3	6.6

The diagram above suggests that there is a positive relationship between the development of structures and approaches and the extent of UBC. A few cases show a high level of Total UBC with a low development of structures and approaches; however, in most cases a high level of UBC corresponds with a relatively high extent of structures and approaches development. Those HEIs that have developed their UBC structures and approaches to a high extent will likely show high levels of Total UBC.

Hypothesis source

“They sit more often on boards. Even at the beginning of this year business men started to sit on boards at the traditional universities in Finland”.¹⁶

Hypothesis

The presence of business people on the HEI board is significantly higher in Finland than in any other EU country

Result



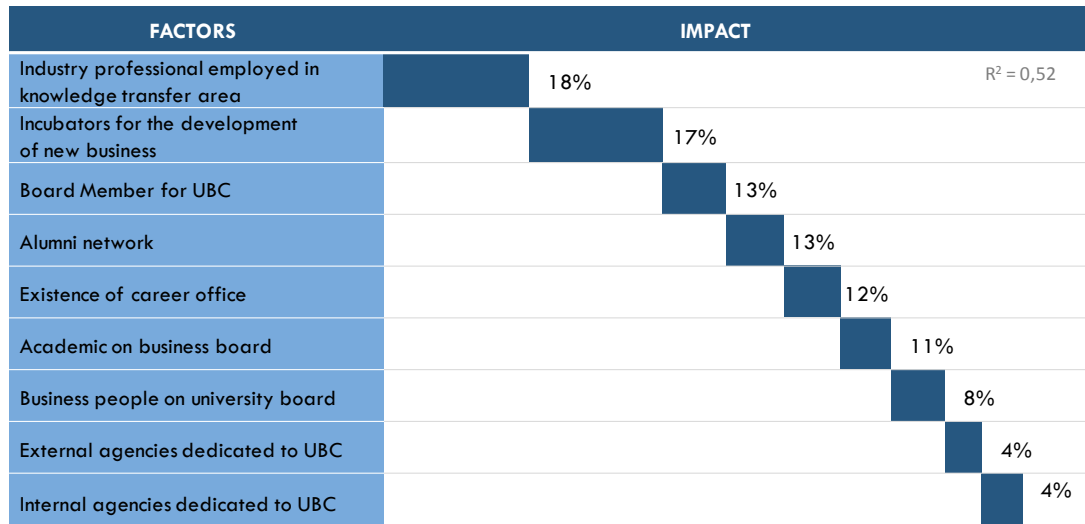
¹⁴ European Commission (2009)

¹⁵ Lambert (2003)

¹⁶ Expert interviews: Respondent 10

Impact of structures and approaches on UBC

According to the respondents' perceptions, the following graphic explains the impact of each of the structures and approaches on UBC. It details the impact that the development of each of the structures and approaches considered have on UBC, suggesting the ones in which the HEIs should focus their efforts.



When the impact on UBC and the actual development of *structures and approaches* are compared, it is shown that there is no clear trend between the degree of development and the impact in this pillar.

Key findings	Both UBC roles and internal/external agencies are moderately well developed. There are a series of <i>structures and approaches</i> with high impact on UBC that are underdeveloped.
Recommendation(s)	Focus on those <i>structures and approaches</i> that provide the largest impact, like industry professionals working in knowledge transfer area and incubators for the development of new business.

Operational activities

Internally focused education and workshops focused on academics <ul style="list-style-type: none"> Workshops, information sessions and forums for University-Business collaboration targeting academics, Entrepreneurship education offered to academics. 	Extent of development (1-10) as perceived by HEI 5.3 (Medium)
Internally focused education and workshops focused on students <ul style="list-style-type: none"> Entrepreneurship education offered to students. 	Extent of development (1-10) as perceived by HEI 6.3 (Medium)
Externally focused networking, promotional and project activities <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. 	Extent of development (1-10) as perceived by HEI 5.7 (Medium)

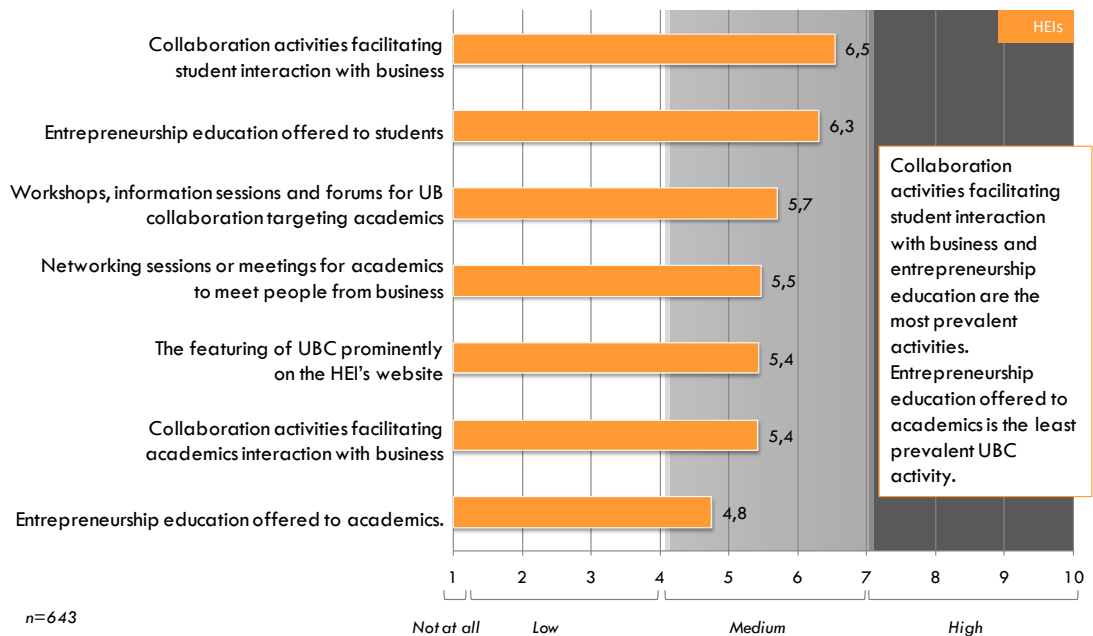
Focus for operational activities of UBC

Are scientifically proven to be structured into three areas:

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

Externally focused networking, promotional and project activities are the highest developed operational activities (assessed by HEI representatives).

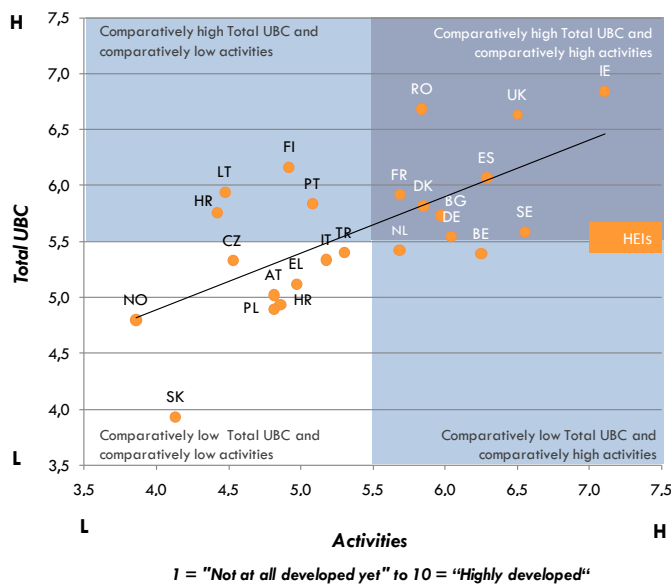
Extent of development



The relationship between operational activities and Total HEI UBC (per country)

Relating Total UBC with development of UBC activities per country

The relationship between Total UBC and activities for UBC is evident in the diagram below. It can be seen that as the development of activities increase, so does the extent of Total UBC (the reverse is also theoretically possible, though experience would suggest otherwise).



Country	Short Code	ACTIVITIES TOTAL	
		Mean	UBC
Austria	AT	4.8	5.0
Belgium	BE	6.3	5.4
Bulgaria	BG	6.0	5.7
Croatia	HR	4.9	4.9
Czech Republic	CZ	4.5	5.3
Denmark	DK	5.8	5.8
Finland	FI	4.9	6.2
France	FR	5.7	5.9
Germany	DE	6.0	5.5
Greece	EL	5.0	5.1
Hungary	HU	4.4	5.8
Ireland	IE	7.1	6.8
Italy	IT	5.2	5.3
Lithuania	LT	4.5	5.9
Netherlands	NL	5.7	5.4
Norway	NO	3.9	4.8
Poland	PL	4.8	4.9
Portugal	PT	5.1	5.8
Romania	RO	5.8	6.7
Slovakia	SK	4.1	3.9
Spain	ES	6.3	6.1
Sweden	SE	6.6	5.6
Turkey	TR	5.3	5.4
United Kingdom	UK	6.5	6.6

The diagram above suggests that there is certain positive relationship between the development of operational activities and the extent of UBC. A few cases show a high level of Total UBC with a low value for operational activities; however, in most cases a high level of UBC corresponds with a relatively high extent of operational activities development.

Highest three means for the pillar

Hypothesis source

“HEIs don’t teach people to be entrepreneurs”.¹⁷

Hypothesis

The entrepreneurship education offered to students is significantly higher in applied sciences universities

Result



“Universities of applied sciences focus on student internships as a part of their study programmes and cooperate intensely with businesses in this respect”.¹⁸

Universities of applied sciences carry out significantly more internships



¹⁷ European Commission (2009)

¹⁸ Stifterverband für die Deutsche Wissenschaft (2007)

Impact of activities on UBC

According to the respondents' perceptions, the following graphic explains the impact of each of the activities on UBC. It details the impact that the development of each of the activities considered have on UBC, suggesting the ones in which the HEIs should focus their efforts.

FACTORS	IMPACT
Collaboration activities facilitating student interaction with business	27% $R^2 = 0,53$
Workshops, information sessions and forums for UBC targeting academics	25%
Entrepreneurship education offered to students	16%
Collaboration activities facilitation academics interaction with business	12%
The featuring of UBC prominently on the university's website	8%
Networking sessions or meeting for academics to meet people from business	7%
Entrepreneurship education offered to academics	5%

When the impact of UBC and the actual development of *activities* are compared, it is shown that *internally-focussed UBC activities focused on students*, which are the *operational activities* with the highest impact on UBC are also the most developed ones, meaning that the current priorities should be kept as they are.

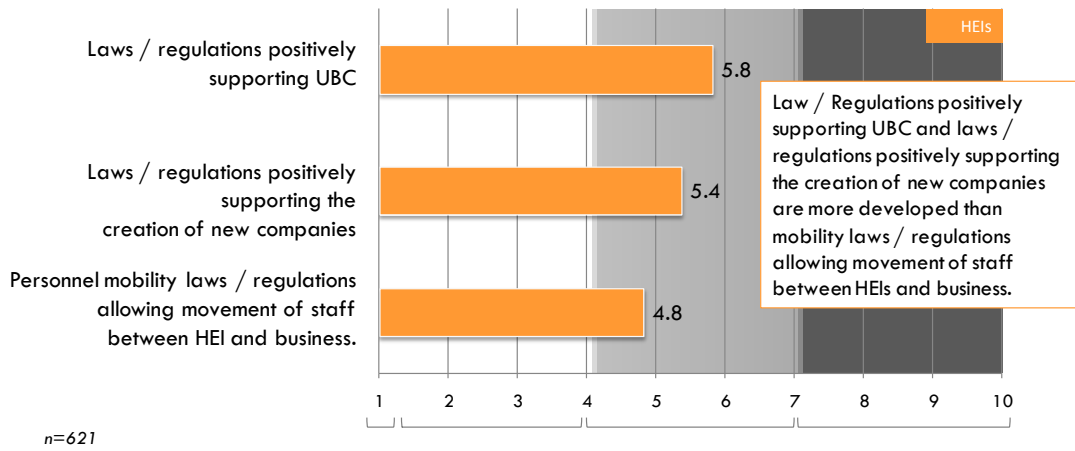
Key findings	<p>UBC <i>activities</i> centred on students are the most developed activities followed by the external activities and finally then UBC activities focussed on academics.</p> <p>The most developed activities are those with the highest impact in Total UBC.</p>
Recommendation(s)	<p>Keep the focus on the activities with the highest impact on UBC, such as "internally-focussed UBC activities centred on students".</p>

Framework conditions

Framework conditions operate under the philosophy that incentives or conditions offered for UBC stimulate knowledge-based economic development.

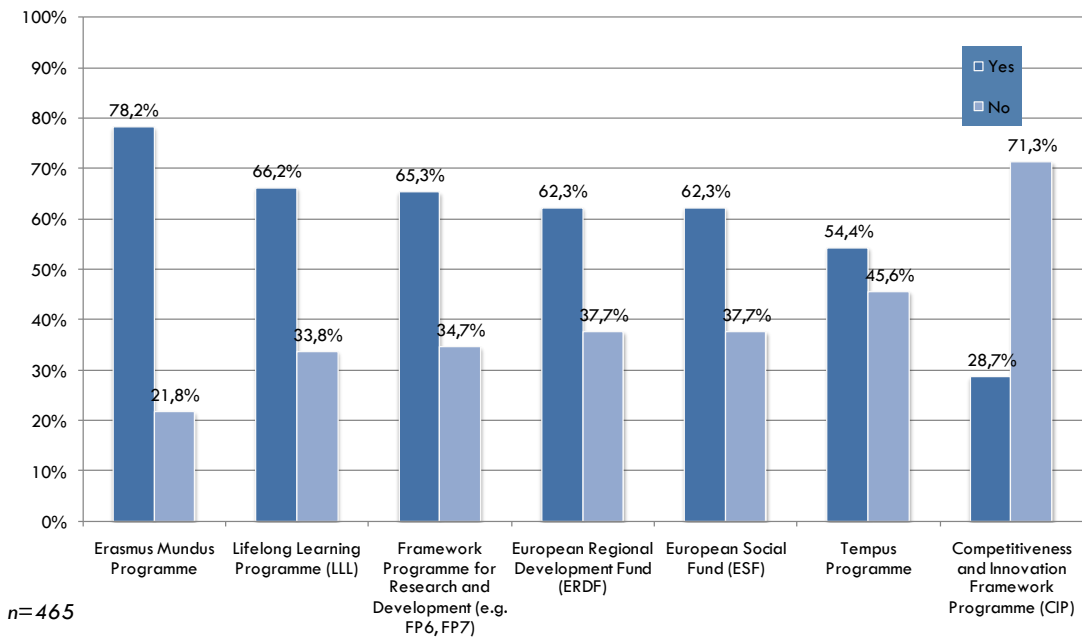
<p>Mobility laws</p> <ul style="list-style-type: none"> Personnel mobility laws / regulations allowing movement of staff between HEI and business. 	<p>Extent of development (1-10) as perceived by</p> <p>ACAD 4.6 (Medium)</p> <p>HEI 5.3 (Medium)</p>	<p>Focus for framework conditions of UBC</p> <p>Are scientifically proven to be structured into two areas:</p> <ol style="list-style-type: none"> Mobility Laws, Laws offering UBC support. <p>Laws offering UBC support are the highest developed <i>framework conditions</i> (assessed by both academics and HEI representatives).</p>
<p>Laws offering UBC support</p> <ul style="list-style-type: none"> Laws / regulations positively supporting the creation of new companies, Laws / regulations positively supporting University-Business cooperation. 	<p>Extent of development (1-10) as perceived by</p> <p>ACAD 4.7 (Medium)</p> <p>HEI 5.6 (Medium)</p>	

Extent of development



Participation in EU funding programmes

HEI representatives were asked to indicate whether their HEI participate in the following EU programmes:



The chart above shows the percentages of HEIs participating in the mentioned EU programmes. Erasmus Mundus is the most popular type of EU programme, while competitiveness and innovation framework programme is the least common. Additionally, it was found that the higher the number of EU projects in which the HEI participates, the significantly higher its extent of UBC. The reasons could be (i) that the UBC mentality already exists at the HEI causing them to seek EU funding for UBC activities, or (ii) the funding programmes themselves create a higher level of UBC.

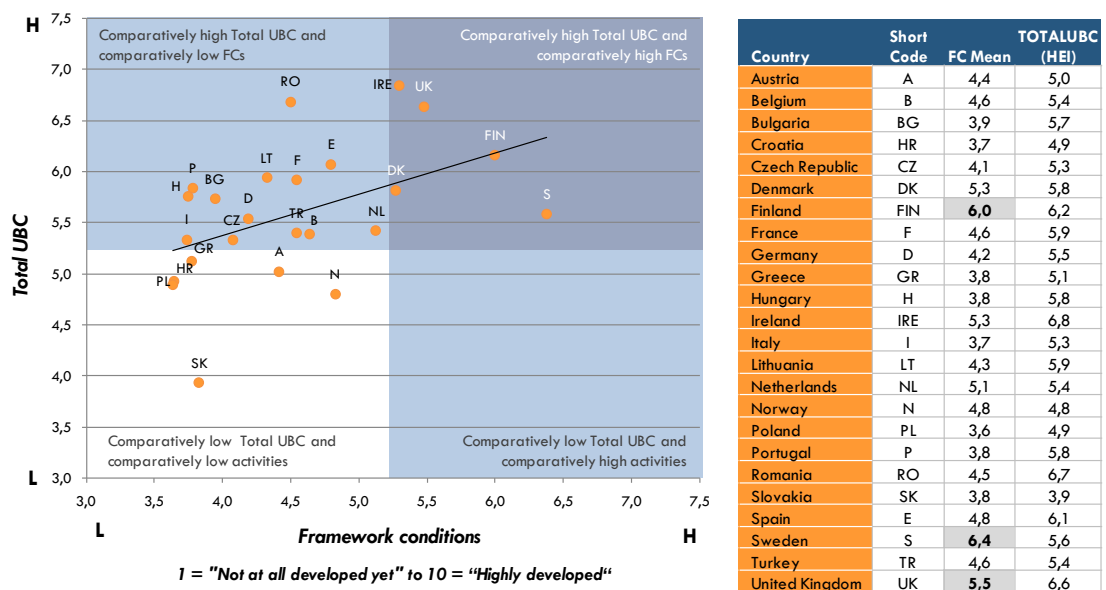
Comments and findings from experts in UBC, respondent 1

The interviewee stated that the role of framework conditions is primarily the responsibility of governments, and the existence is very important for successful UBC despite the fact that government strategy can be confusing towards stimulating UBC.¹⁹

The relationship between framework conditions and Total HEI UBC (per country)

Relating Total UBC with development of UBC framework conditions per country

It can be seen from the diagram below that the relationship between framework conditions and Total UBC is not as strong as with the other three Pillars.



The diagram above suggests that there is a positive relationship between the development of framework conditions and the extent of UBC. Most cases are undertaking medium UBC with a low level of development of framework conditions; underlying that the relationship between the framework conditions and Total UBC is not as strong as with the other three Pillars.

Highest three means for the pillar

Hypothesis source

"There are geographical differences in legislation concerning UBC."²⁰

"Whilst there are conflicting opinions, research by Polt et al. into UBC has suggested a weak and indirect relationship between framework conditions and successful UBC."²¹

Hypothesis

There are significant differences among countries/regions regarding laws/regulations positively supporting UBC

There is a weak and indirect relationship between framework conditions and successful UBC

Result



¹⁹ Expert interviews: Respondent 1
²⁰ European Commission (2006)
²¹ Polt et al (2006)

Impact of framework conditions on UBC

According to the respondents' perceptions, the following graphic explains the impact of each of the framework conditions on UBC. It details the impact that the development of each of the framework conditions considered have on UBC, suggesting the ones in which the HEIs should focus their efforts.

FACTORS	IMPACT
Laws/regulations positively supporting UBC	54% $R^2 = 0,40$
Laws/regulations allowing movement of staff between university and business	39%
Laws/regulations positively supporting the creation of new companies	7%

When the impact of UBC and the actual development of activities are compared, it is shown that the *framework conditions* with the highest impact on UBC are the most developed ones, meaning that the current priorities should be kept as they are.

Key findings	Laws/regulations positively supporting UBC are the most developed <i>framework conditions</i> while laws/regulation supporting the creation of new companies is the least developed. Those <i>framework conditions</i> with higher impact in Total UBC are those more developed.
Recommendation(s)	Continue focusing on those <i>framework conditions</i> that provide the largest impact, especially laws and regulation positively supporting UBC.

The supporting mechanisms per country

Extent of 4 Pillar development by country

Country	STRATEGIES	STRUCTURES	ACTIVITIES	FRAMEWORK
Austria	5.1	4.4	4.8	4.4
Belgium	4.8	4.8	6.3	4.6
Bulgaria	4.8	5.4	6.0	3.9
Croatia	3.8	4.0	4.9	3.6
Czech Republic	4.3	5.0	4.5	4.1
Denmark	5.5	6.3	5.8	5.3
Finland	6.1	6.1	4.9	6.0
France	5.7	6.0	5.7	4.5
Germany	5.3	5.2	6.0	4.2
Greece	3.2	3.0	5.0	3.8
Hungary	4.9	5.7	4.4	3.7
Ireland	5.2	7.0	7.1	5.3
Italy	4.0	4.9	5.2	3.7
Lithuania	5.9	5.2	4.5	4.3
Netherlands	5.8	5.5	5.7	5.1
Norway	3.0	4.1	3.9	4.8
Poland	4.1	4.0	4.8	3.6
Portugal	5.1	4.9	5.1	3.8
Romania	4.8	4.9	5.8	4.5
Slovakia	4.3	4.2	4.1	3.8
Spain	4.7	5.4	6.3	4.8
Sweden	6.4	5.3	6.6	6.4
Turkey	5.2	4.5	5.3	4.5
United Kingdom	6.1	7.3	6.5	5.5
Average	4.9	5.1	5.4	4.5

1 = "Not at all developed yet" to 10 = "Highly developed"

HEI representatives perceive that UBC *operational activities* followed by *structures and approaches* are the most developed of the *supporting mechanisms*, while *framework conditions* are the least developed ones. This could be explained because of the easier implementation and smaller investment required to undertake *activities*.

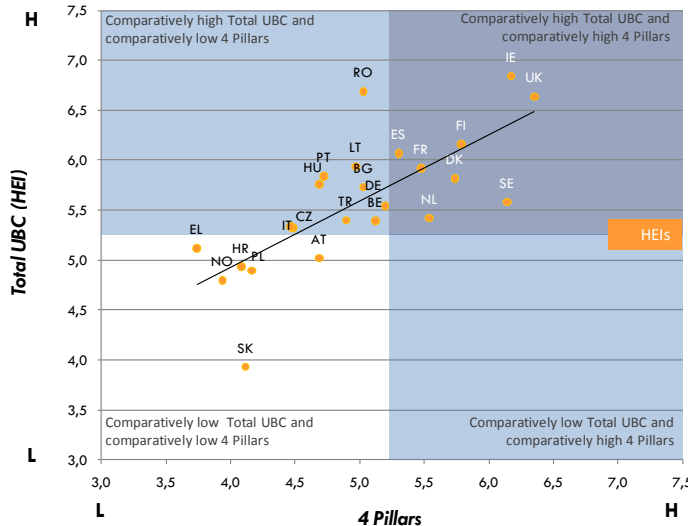
According to the HEI representatives, Northern European countries, Ireland, Sweden and United Kingdom are leaders in the development of the *supporting mechanisms*.

9.9 Highest mean per type of UBC
9.9 Highest mean per Pillar

The relationship between the supporting mechanisms and Total HEI UBC by country

Relating Total UBC with development of the 4 Pillars per country

The relationship between Total UBC and the 4 Pillars can be seen in the diagram below. According to the perception of HEI representatives, there are no cases where the 4 Pillars are comparatively high and Total UBC is low. It is possible to have a higher level of Total UBC and lower value for the 4 Pillars, however the countries that have the highest UBC all have a corresponding extent of development of the 4 Pillars.



1 = "Not at all developed yet" to 10 = "Highly developed"

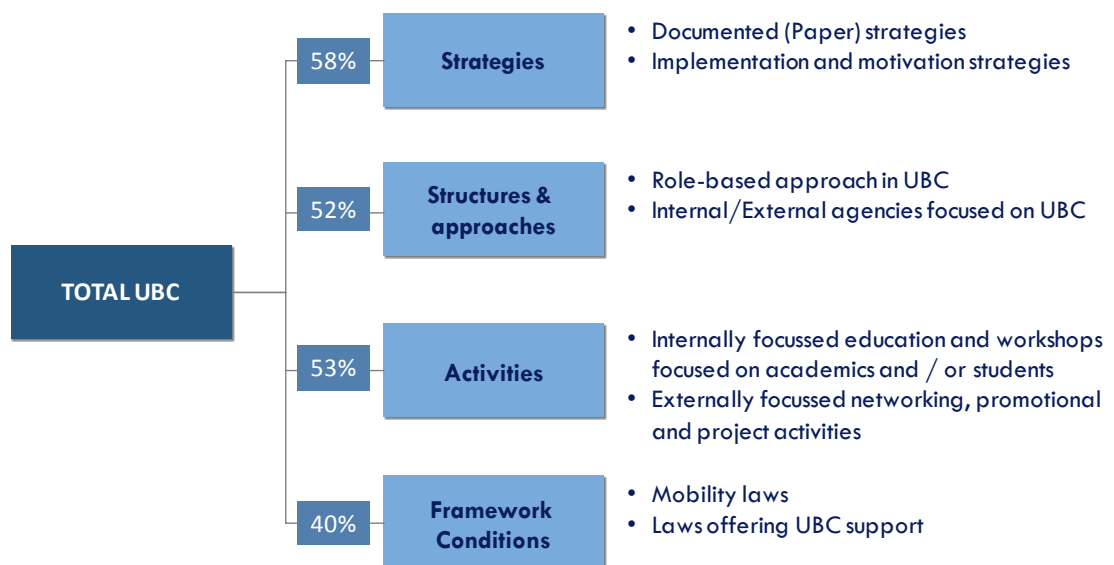
Country	Short Code	4 Pillars Mean	TOTALUBC (HEI)
Austria	AT	4.7	5.0
Belgium	BE	5.1	5.4
Bulgaria	BG	5.0	5.7
Croatia	HR	4.1	4.9
Czech Republic	CZ	4.5	5.3
Denmark	DK	5.7	5.8
Finland	FI	5.8	6.2
France	FR	5.5	5.9
Germany	DE	5.2	5.5
Greece	EL	3.7	5.1
Hungary	HU	4.7	5.8
Ireland	IE	6.2	6.8
Italy	IT	4.5	5.3
Lithuania	LT	5.0	5.9
Netherlands	NL	5.5	5.4
Norway	NO	3.9	4.8
Poland	PL	4.2	4.9
Portugal	PT	4.7	5.8
Romania	RO	5.0	6.7
Slovakia	SK	4.1	3.9
Spain	ES	5.3	6.1
Sweden	SE	6.1	5.6
Turkey	TR	4.9	5.4
United Kingdom	UK	6.4	6.6

Highest three means for the 4 pillars

Impact on Total UBC

Total UBC by the factored mechanisms supporting UBC (*supporting mechanisms*)

Using regression analyses for each of the mechanisms supporting UBC (*supporting mechanisms*), their contribution to the extent of UBC in Europe was estimated. The results provide a greater understanding of UBC by explaining the contribution of each of the *supporting mechanisms* to UBC. In the context of European UBC, *strategies* explain 58% of European UBC, *activities* explain 53%, *structures and approaches* 52% and *framework conditions* 40%. In practice these figures provide the focus for efforts to increase UBC efficiently in a given HEI, region or nation. In this case, UBC *strategies*, as we have previously seen particularly implementation strategies, should receive the highest focus within the pillars.



Focus

Focus for strategies

Focus for strategies should be on the following factors:

- The inclusion of UBC as part of the assessment of work performance for academic (25%),
- The dedication of resources (including funding) to support UBC (18%),
- The provision of incentives for academics to encourage UBC (13%),
- The internal promotion of UBC (13%).

Focus for structures and approaches

Focus for structures and approaches should be on the following factors:

- Industry professional employed in knowledge transfer area (18%),
- Incubators for the development of new business (17%),
- Board member for UBC (13%),
- Alumni network (13%).

Focus for operational activities

Focus for activities should be on the following factors:

- Collaboration activities facilitation student interaction with business (27%),
- Workshops, information sessions and forums for UBC targeting academics (25%),
- Entrepreneurship education offered to students (16%).

Focus for framework conditions

Focus for activities should be on the following factors:

- Laws/regulations positively supporting UBC (54%),
- Laws/regulations allowing movement of staff between university and business (39%).

Differences in perception exist between HEI representative and academics

Academics were also asked to assess the development of the UBC *strategies* and *framework conditions* (2 of the *supporting mechanisms*) at the HEI level and it was found that HEI representatives perceive the development of those pillars substantially higher than academics do. This indicates that either HEI representatives are overestimating their extent of development or academics are not fully aware of the UBC strategies and framework conditions that exist in their HEIs.

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Project Team



Prof. Dr. habil. Thomas Baaken, Project Director



Thomas Baaken is a Professor in Technology- and Business-to-Business Marketing at Münster University of Applied Sciences, Germany. He holds an Adjunct Professorship at the University of Adelaide, AUS since 2008 and a visiting professor at Christ University in Bangalore, India. From 1998 to 2003 he served as Vice-rector Research and Technology Transfer in his the university. In 2002 Thomas Baaken founded the Science-to-Business Marketing Research Centre.



Todd Davey, Project Manager



Todd Davey is an invited lecturer in innovation and entrepreneurship at Münster University of Applied Sciences, Germany, Free University, Holland and Nelson Mandela Metropolitan University, South Africa whilst leading the Science-to-Business Marketing Research Centre's European project commitments. Todd is a PhD candidate and is also the Managing Director at *Apprimo*, a strategic consultancy dedicated to University-Business Cooperation. Prior to MUAS he was Senior Manager at Deloitte Australia in their Technology Commercialisation Group.



Arno Meerman, Data Management and Analysis



Arno Meerman is an undergraduate at the International Business School of the Hanze University of Applied Sciences, Holland. Within his role as scientific support for international projects, Arno has undertaken the survey distribution and promotion as well as the data management. Arno is academic researcher at the Science-to-Business Marketing Centre and has also been involved in the development and commercialisation of a technology assessment handbook (TechAdvance™).



Victoria Galan Muros, Analysis Management



Victoria is a researcher and assistant lecturer in the Business School of the University of Granada, Spain and holds an Adjunct Scientific Researcher position at the Science-to-Business Marketing Centre. With a background in Business Management (BA, UGR) and Marketing (BS, UGR) and a specialisation in Social Research Methods (MSc, LSE) she has academic and research experience in six different universities and is currently doing her PhD on University-Business Collaboration.



David Serbin, Survey Design and Data Management



After having worked at the department of quantitative methods at the Münster University of Applied Sciences, David Serbin joined the Science-to-Business Marketing Research Centre in 2009 where he works in the area of empirical methods where he is involved in the development and undertaking of international empirical studies for multinational companies. He is currently completing his master study.



Michael Deery, Case Study Management



Michael is an undergraduate at the Münster University of Applied Sciences and has been working within the Science-to-Business Marketing Research Centre since 2010. Originally from Ireland, the German native speaker has spent time in Hong Kong working in the finance industry and for his bachelor thesis, completed an international innovation project with a leading Australian company.

Key project contributors (Science-to-Business Research Centre, Germany)

Volker Hölscher	Thorsten Kliewe	Anna Haasler	Nisha Korff	Christian Junker	Kerstin Linnemann
Anne Tijmsa	Pilar Osca	Phillip Korzinetzki	Steffi Gosejohann	Tobias Kesting	Yevgeniya Peretyatko

Project partners (Project Technical Excellence Advisory Board)

Dr. Clive Winters, Coventry University, UK	Tomasz Kusio, Cracow University of Economics, Poland
Dr. Peter van der Sijde, Free University, The Netherlands	Silvia Rodríguez Sedano, RedOTRI Universidades, Spain

Key project advisors

Friederike von Hagen, Germany	Dr. Carolin Plewa, Australia
Prof. Dr Miemie Struwig, South Africa	

Science-to-Business Marketing Research Centre



The Research Centre Science-to-Business Marketing Research Centre at the Münster University of Applied Sciences in Germany developed the first strategic approach worldwide for successful commercialisation of research competencies, capacities and results with its concept of Science-to-Business Marketing.

Globally recognised for research in interface between universities and industry

The Science-to-Business Marketing Research Centre (S2BMRC) is world recognised for the project partnership approach to university-business cooperation. Further highlights include:

- Co-developer of the 'Responsible Partnering Handbook'
- Leading centre for the development of approaches to university/industry partnerships, as used by Coventry University
- Development of the "Science Marketing Toolbox" including 58 instruments to assist Science Marketing
- Developer and publisher of the TechAdvance TM Technology Evaluation Handbook which provides a method for the evaluation of technologies
- Organiser of the international 'Science-to-Business Marketing' Conferences held in Germany, Belgium, China, South Africa, Japan, Australia, France and Russia.
- We are regularly engaged to:
 - Conduct research in university-business cooperation
 - Present at conferences
 - Conduct workshops on this topic
- The S2BMRC team are also regular publishers of journal and news articles on this topic

Contact us

Münster University of Applied Sciences
Science-to-Business Marketing Research Centre
+49 251 208039-80
(Fax) +49 251 208039-90
Johann-Krane-Weg 27
48149 Münster
Germany