BARRIERS AND DRIVERS 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

Science-to-Business Marketing Research Centre Münster University of Applied Sciences, Germany 31st August, 2011





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Title:

Barriers and Drivers in European University-Business Cooperation

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Science Marketing

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A summary of findings

The study

This report presents the findings related to the barriers and drivers 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 higher education institutions¹ (HEIs) 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.

Both drivers and barriers have a substantial influence on European UBC

Perceived barriers to UBC

All academics, regardless of their experience or extent of UBC, see the importance of barriers quite similarly. The vast majority of academics of all levels of UBC experience agree that funding barriers and bureaucracy within the HEI are the most relevant barriers. Further, they believe that the main responsibility for funding UBC rests with the HEI, thus seeing the main barriers to UBC within the HEI.

All HEI representatives with any degree of experience assessed the barriers similarly for HEIs. **The main barriers seen by most HEI representatives are almost entirely focussed on the lack of funding**, whilst bureaucracy is a factor not seen as such a barrier by HEI representatives. HEI representatives perceive the responsibility of funding UBC to be with governments and rated HEI-government relations as the highest source of barriers.

Barriers to UBC are perceived by all academics and HEIs similarly, although in various cases they can be overcome by the presence of high drivers.

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.

Perceived drivers of UBC

Regarding the drivers of UBC, the study shows that the perceived level of UBC drivers significantly affects the extent of UBC for academics and HEIs. This means that those academics or HEIs perceiving higher drivers for UBC are generally more engaged in UBC than those perceiving low drivers for UBC.

The results show that the most important drivers for both HEIs and academics concern their relationships with businesses. For both academics and HEIs, the existence of mutual trust, mutual commitment and shared goals are rated as essential drivers, followed by drivers relating to the UB relationship. HEI representatives (management and professionals involved with UBC) generally perceive the UBC drivers in existence for the HEI to be significantly higher than academics do for their own UBC.

Drivers and barriers are related

A barrier provides a hindrance or obstacle to do something, while a driver provides the motivation to do that. Funding has been listed by both academics and HEIs as the highest barrier to UBC, meaning that they perceive that UBC cannot occur if there are no funds available. However, both academics and HEIs did not assess the 'possibility to access funding / financial resources for working with business' as one of the main drivers of UBC. Thus funding alone is not a sufficient incentive for academics to cooperate. Instead, mutual trust, commitment and a shared goal were the highest rated drivers. This means that even with the lack of funds as the highest barrier (obstacle) owing to the impossibility of cooperating without funds, the presence of funds is not enough to cooperate if the 'relationship drivers' or perceived benefits (motivators) are not developed.

Drivers and barriers are not the only influencing factors in UBC

Other factors also influence the extent of UBC which are not mentioned in this report however were found nevertheless to have substantial influence. The factors of *benefits* and *situational factors* also need to be considered in respect to the UBC environment rather than simply viewing barriers and drivers in isolation.



Diagram: Factors influencing the extent of European UBC Davey, T., et al (2011)

Abbreviations

European Commission
European Economic Area
European Union
European University Association
Higher Education Institution
Information and Communication Technology
Intellectual Property
Intellectual Property Rights
Lifelong Learning
Münster University of Applied Sciences
National Qualifications Framework
Doctorate of Philosophy
Research and Development
Small- and Medium-sized Enterprise
Science-to-Business Marketing Research Centre
Technology Transfer Office
University-Business
University-Business Cooperation
University professional working with business
Free University of Amsterdam

Definitions

Drivers

Drivers are those factors that facilitate the academic or the HEI to engage in UBC. In essence they are factors that provide motivation to undertake UBC and can be grouped under two headings: relationship drivers and business drivers.

Type of driver	Explanation
Relationship drivers	 Drivers that relate to the relationship between the academic/HEI and the business, and these include: Existence of mutual trust, Existence of mutual commitment, Having a shared goal, Understanding of common interest by different stakeholders (e.g. HEIs; business; individuals; students), Prior relation with the business partner, Cooperation as effective means to address societal challenges and issues.
Business drivers	 Drivers that relate to the business factors that motivate UBC; and these include: Employment by business of HEI staff and students, Interest of business in accessing scientific knowledge, Possibility of accessing 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.

Barriers

Barriers are those obstacles that restrict or inhibit the ability of the academic or HEI to engage in UBC and can be grouped under three headings: usability of results, funding barriers and relational barriers.

Type of barrier	Explanation
Usability of results	 Barriers that relate to the way the results of UBC (mainly R&D results) are utilised by business; and these include: The focus on producing practical results by business, The need for business to have confidentiality of research results, Business fears that their knowledge will be disclosed.
Funding barriers	 Barriers that relate to the provision of funds for UBC from both internal and external sources; and these include: Lack of external funding for UBC, Lack of financial resources of the business, Lack of HEI funding for UBC, The current financial crises.
Relational barriers	 Barriers that relate to or affect the actual UBC relationship or interactions, occurring between the academic /HEI and the business; and these include: Business lack awareness of HEI research activities / offerings, The limited absorption capacity of SMEs to take on internships or projects, Differing time horizons between HEI and business, Differing motivation / values between HEI and business, HEIs lack awareness of opportunities arising from UBC, Bureaucracy within or external to the HEI, Limited ability of business to absorb research findings, Differing mode of communication and language between HEI and business, A lack of contact people with scientific knowledge within business, Difficulty in finding the appropriate collaboration partner , No appropriate initial contact person within either the HEI or business.

Survey sample size

The survey was created, translated and sent to over 11,000 HEI managers within Europe in February 2011 and was concluded in April 2011 with the response rates recorded as follows:

	Groups	No. of responses
1	Academics	4,123
Ш	HEI management	1,150
Ш	University professional working with business	1,007
	Total responses (after data cleansing ²)	6,280

Target group

<u>Target countries</u> – existing and candidate members of the EU plus those partly committed to the EU economy and regulations as members of the European Economic Area (EEA) were targets of the study. Refer to the map below which describes the participating countries,

<u>Target respondents</u> – HEIs and academics within the target countries are the target respondents of this study. The study provides relevant information on a representative sample of HEIs, in terms of geographical and typological distribution and a representative number of academics, in terms of gender, age, experience and area of knowledge.



 $^{^{\}rm 2}$ Data cleansing consisted of :

- 1. Removing responses in which 'required questions' were not answered
- 2. Removing responses in which inconsistencies were identified
- 3. Removing responses containing extreme outliers

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	
2	HEIs	HEI management and university professionals working with industry	

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" $^{\rm 3}$

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



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³ Crosier et al (2007)

Focus for barriers of UBC Are scientifically proven to be structured into three

1. Usability of results

Relational barriers.

NB Barriers were determined through two rounds of research (secondary and

primary) and then further

* A factor analysis was performed to

tested in a pre-test.

determine this

Funding barriers are the biggest barriers for UBC (assessed by both academics and HEI representatives).

areas:

3.

2. Funding

Barriers to UBC

Lack of funding and excess of bureaucracy at all levels (HEI, national, European) are the highest barriers to UBC ... however removal of barriers does not create UBC

Explanation

A series of barriers for European UBC were identified through literature and a round of expert interviews. These barriers were considered in the study and grouped in 3 categories using a factor analysis. In the study, both academics and HEI representatives were asked to indicate the extent to which there were barriers to UBC on the following scale:

1 no UBC >1-4 low >4-7 medium >7-10 high

In the tables, the figures represent the mean UBC value of respondents on the scale.

Type and grouping of barriers

Usability of results Extent of relev (1-10)		nt of relevance (1-10)	
 The focus on producing practical results by business, The need for business to have confidentiality of research results, Business fear that their knowledge will be disclosed. Funding barriers		6.1 (Medium)	
		6.0 (Medium)	
		nt of relevance (1-10)	
 Lack of external funding for University-Business cooperation, Lack of financial resources of the business, Lack of HEI funding for UBC, The current financial crises. 		6.5 (Medium)	
		6.8 (Medium)	
Relational barriers	Exter	Extent of relevance (1-10)	
 Business lack awareness of HEI research activities / offerings, 	ACAD	6.4 (Medium)	
 The limited absorption capacity of SMEs to take on internships or projects, 	HEI	6.2 (Medium)	

- Differing time horizons between HEI and business,
- Differing motivation / values between HEI and business,
- Universities lack awareness of opportunities arising from UB-cooperation,
- Bureaucracy within or external to the HEI ,
- Limited ability of business to absorb research findings,
 Different to a second secon
- Differing mode of communication and language between HEI and business,
- A lack of contact people with scientific knowledge within business,
- Difficulty in finding the appropriate collaboration partner,
 No appropriate initial contact person within either the HEI or business.

Hypothesis source

"The most prevailing structural <u>barriers</u> companies and universities have to overcome are the bureaucracy and the difficulty of finding an appropriate cooperation partner."⁴

Hypothesis

Result

The bureaucracy within or external to the HEI for the UBC is relevant / very relevant



⁴ Corsten (1987)

Extent of barriers



Funding for UBC (i.e. lack of external funding, lack of financial resources of business, lack of HEI funding) is identified as the most important barrier, or more specifically, how the lack of it hinders both HEIs and academics in undertaking UBC. Academics also perceive the bureaucracy within or external to the HEI as an important barrier in undertaking UBC, whereas the HEIs rated the importance of this barrier significantly lower.



⁵ Expert interviews: respondent 8

⁶ Expert interviews: respondent 10

Key finding	All academics and HEIs see the importance of barriers quite similarly regardless of their level of UBC. The highest barriers for academics are related to bureaucracy and funding, while the ones for HEIs exclusively with funding.
Recommendation(s)	Reduce the highest barriers, particularly ensuring that funds are available to encourage UBC as well as simplifying the bureaucratic procedures of UBC

Drivers of UBC

Personal relationships drive UBC. It's a people game!

Existence of mutual trust and commitment are the most important drivers of UBC for both academics and HEIs. Those academics or HEIs perceiving higher drivers for UBC are more engaged in UBC than those perceiving low drivers for UBC

Explanation

A series of drivers of European UBC were identified through literature and a round of expert interviews. These drivers were considered in the study and grouped in 3 categories using a factor analysis. In the study, both academics and HEI representatives were asked to indicate the extent to which drivers facilitated their extent of UBC undertaken on the following scale:

1 no UBC >1 - 4 low >4 - 7 medium >7 - 10 high

In the tables, the figures represent the mean UBC value of respondents on the scale.

Type and grouping of drivers

Relationship drivers		Extent of facilitation (1-10)	
• Existence of mutual trust,	ACAD	6.7 (Medium)	
 Existence of mutual commitment, Having a shared goal. 	HEI	7.0 (High)	

- 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.

Business drivers	Exter	nt of facilitation (1-10)
• Employment by business of HEI staff	ACAD	5.6 (Medium)
and students,Interest of business in accessing scientific		6.7 (Medium)
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.

Focus for drivers of UBC

Are scientifically proven to be structured into two areas:

- 1. Relationship drivers
- 2. Business drivers

Relationship drivers are the biggest facilitators of UBC (assessed by both academics and HEI representatives).

NB Drivers were determined through two rounds of research (secondary and primary) and then further tested in a pre-test.

* A factor analysis was performed to determine this



Extent of facilitation of drivers

The drivers that facilitate both HEIs and academics in their UBC are perceived similarly by both groups. The drivers related to mutual trust, commitment and respect are clearly perceived to be important in the facilitation of UBC, whilst 'the commercial orientation of the HEI' as well as 'the access to business-sector research and development facilities' are perceived to be the lowest facilitators of UBC.

Hypothesis source		lypothesis	Result
The most important drivers of commitment and communica	are trust, tion/integration ⁷	Trust and commitment are the most important drivers of UBC	
Key finding	Relationship drivers, are the highest rated are perceived lower	especially mutual trust, commitment and respe I drivers by both groups. Contrary, business d facilitators of UBC.	ct rivers
Recommendation(s)	Support or increase t awareness of the exi academics and HEI re UBC.	the most important drivers while increasing the istence and the benefits of UBC drivers for epresentatives as a way to increase the exten	t of

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⁷ Corsten (1987)

Comparing drivers and barriers

Comparing drivers and barriers creating a favourable environment for UBC For UBC to prosper, it is preferable to create an environment where the drivers and high and the barriers are low. Approximately half of the countries fit into the favourable UBC situation of high drivers and low barriers lead by Denmark, Finland, Sweden and Germany. It is revealed that the Czech Republic has very low drivers for UBC whilst Greece and Spain had the highest UBC barriers.



9.9 Highest driver /lowest barrier mean					
Short					
Country	Code	Drivers	Barriers		
Austria	AT	6.2	6.2		
Belgium	BE	6.4	6.2		
Bulgaria	BG	5.8	6.4		
Croatia	HR	5.6	6.8		
Czech Republic	CZ	4.8	6.5		
Denmark	DK	7.1	5.7		
Finland	FI	6.9	5.9		
France	FR	6.8	6.3		
Germany	DE	6.6	5.6		
Greece	EL	6.0	7.1		
Hungary	HU	5.5	6.4		
Ireland	IE	6.6	6.4		
Italy	IT	6.7	6.8		
Latvia	LV	6.1	6.5		
Lithuania	LT	6.5	6.9		
Netherlands	NL	6.1	5.8		
Norway	NO	5.6	6.1		
Poland	PL	5.5	6.6		
Portugal	PT	6.7	6.9		
Romania	RO	6.5	6.8		
Slovakia	SK	5.9	6.6		
Spain	ES	5.9	7.0		
Sweden	SE	7.1	6.1		
Turkey	TR	5.8	6.3		
United Kingdom	UK	6.5	6.1		

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

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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 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[™]).



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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.



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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



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