



UNIVERSITY-BUSINESS
COOPERATION IN EUROPE

State of University- Business Cooperation

SLOVAKIA

University Perspective

Study on the cooperation between
higher education institutions and
public and private organisations



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The State of Slovak University-Business Cooperation: the university perspective

Partners



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Executive summary

Summary

This report seeks to contribute to our understanding of the higher education institution's (HEI) perspective of university-business cooperation (UBC). Examining the perceptions of academics, HEI managers and knowledge transfer professionals (KTP) provides positive signs for the future, with 98.4% of all respondents currently cooperating with businesses planning to maintain or increase their cooperation in the future. Yet, more can be done, for example, in supporting academics in their cooperation efforts, including the development of dedicated UBC structures, as well as the development of incentive systems for academics engaging in UBC.

About the study

The results presented in this national report are from the State of European University-Business Cooperation (UBC) study executed for the DG Education & Culture of the European Commission (EAC/10/2015) by a consortium led by the Science-to-Business Marketing Research Centre. The Transfer Centre of the Slovak University of Agriculture in Nitra and the Center for Educational Management from the Comenius University in Bratislava were invited as Slovak national partners. The project investigates university-business cooperation (UBC) from the perspective of both university and business, seeking clarity on mechanisms supporting it, drivers, barriers and challenges. The results are part of two quantitative surveys (university and business perspectives) ran in 2016 that received 17,431 responses, making it the largest International study yet completed on the topic.

University-Business Cooperation activities

Slovak academics respondents are involved in a variety of different cooperation activities, but their general involvement is low. Any UBC activity is undertaken for over 50% of the Slovak respondents. The most common activities are joint R&D and consulting. Just few academic respondents are involved in academic (25%) and student (18%) entrepreneurship.

Respondents see themselves as proactive initiators of UBC. 55% of all respondents state that they usually or always initiate such cooperation. In comparison, only 28% of respondents perceive internal intermediaries such as technology transfer officers as usually or always initiating cooperation. This share is only 19% for students.

The cooperation of Slovak HEIs tend to be with large companies over smaller ones and with those companies located in Slovakia and even in the same region.

Resourcing is key

Independent of whether academics are currently cooperating with business or not, bureaucratic procedures and insufficient funding are perceived as the primary barrier to UBC.

In the Slovak sample both cooperating and not cooperating academics see bureaucracy as the main barrier. Cooperating academics stress funding problems to a greater extent, while not cooperating academics emphasise the differing motivations and values, as well as problems in finding appropriate partners and suitable first contact points.

NOTE: This report provides a university perspective on university-business cooperation (UBC), drawing on a survey of European higher education institutions, academics and businesses. While acknowledging limitations relating to the generalisability of the results due to the size and non-random nature of the sample, the results provide positive signs both of the present and for the future, while also providing an indication of areas that require future development.

Executive summary

Due to the specific situation in Slovakia, it is necessary to consider sensitively the feasibility and applicability of cooperation models that are successfully applied abroad. It needs to be considered that the scientific potential of universities is indeed important, but UBC is currently used more at an individual than institutional basis. Additionally, topics of research cooperation are often adapted more to the existing funding schemes than to the real practice needs. Cooperation in Western and Northern European countries is usually based on the “pull” principle, where the companies are intensively looking for the new outcomes from research and development activities of the universities. But in Slovakia (and other EU countries), this principle is replaced by the “push” principle, where the universities and research institutions try to promote and apply their outcomes in practice.

Barriers most strongly perceived by HEI management relate primarily to resources, such as limited resources of SMEs as well as lack of business, university and government funding.

Relationships matter

Both Slovak HEI managers and academics perceived that mutual trust considerably facilitates UBC, as well as a previous relationship with the business partner. In this line, a shared goal is the factor that can facilitate UBC to a greatest extent.

Reputation and research in practice

HEI representatives in Slovakia rank the motivation to improve their organisation reputation on top, together with funding acquisition. Gaining new insight for research and putting research in practice are ranked next. Cooperative academics cite these two research motives as the most important ones.

Contrary, non-cooperating academics view addressing societal challenges and improving graduate employability as central motivators for potentially undertaking UBC.

Strategy first

Overall, mechanisms in Slovakia are lower than the European average. However, universities in Europe and Slovakia place a stronger emphasis on developing high-level strategic mechanisms such as top-level management commitment for UBC and a documented mission/vision embracing UBC. Yet, specific incentive systems, the integration of UBC in

academic performance assessment and the reduction in teaching time in exchange for extended cooperation emerge as less developed. Slovak HEIs still lack some of the basic UBC structures such as liaison offices or incubators and the operational mechanisms are also low developed, particularly entrepreneurship courses to academics. There seems to be a greater focus on mechanisms to support student interaction with businesses.

Cooperating with conviction

Cooperating academics have in general a very positive view of their abilities and roles in undertaking UBC. They trust in their ability to exchange knowledge and technology with business and believe they have a lot to offer to business. Yet, they admit they do not know enough about what business need and want and they do not have sufficient support to undertake UBC. When asked about contextual factors influencing UBC, Slovak respondents become less positive compared to the European average.

Currently over 50% of the Slovak cooperating academics plan to increase their UBC engagement and a large percentage of them are satisfied with their current cooperation, but more in research than in education. This shows a positive momentum for UBC in a country that still has a large room for improvement.

Specifics of Slovak UBC Landscape

Massification was not followed by diversification, funding and quality are low

In the course of about 15 years, the proportion of age cohort entering tertiary education grew from 1/3 to a maximum of 3/4. At the same time the number of HE institutions as well as study programs grew rapidly. In 2017, Slovakia became one of 3 OECD leaders in proportion of secondary level graduates (masters degree) in age cohort, with first level dual education as well as short cycle tertiary study programs at minimum levels. The structure of graduates' qualifications deviates in growing intensity from market demands and adjustments are required by employers. The quality of graduates is declining (see e.g. PIAAC results) not only due to massification of entries, but also due to growing numbers of best secondary level students leaving for foreign countries (most to universities in the Czech Republic). International comparisons show the performance of Slovak universities at low ranks (see e.g. U21, ARWU, QS, THE rankings).

Combined public and private spending on HE is (as proportion of GDP) strongly under the OECD average. Salary level of lecturers is in this comparison at the very bottom of country rankings if PPP (*purchasing power parity*) considered (see Education at a Glance, OECD 2017 report). Mainly due to EU funding an increase in university science and research spending emerged since 2014.

Strongly isolated universities from external stakeholders

Some of the above described trends were facilitated by the system of financing, which is in a significant part bound to the number of students. Another major impact comes from dominating and unified self-governance rules, where academics are fully in control of administrative, spending as well as academic decisions.

The participation of any external subject, including the business sector, is marginal. Top managers (rectors, deans) are elected and accountable dominantly to internal public.

Rather weak links to businesses

Slovakia is with 5 Million inhabitants a highly industry oriented country (e.g. with one of the world highest per capita proportion of automotive production). But incentives for UBC, coming from the business environment, are rather motivated by growing lack of labor force (significant in technical, IT and similar HE qualifications) as well as non-fitting competencies (STEM, digital, transferable skills – including foreign language), then it would be motivated by demand on outputs from university science. The discussion on graduates' employability and need of higher added value economy structure is driving UBC initiatives as well as relevant public incentive programs most.

UBC involvement of academics is typically individualized, not so often at team or institutional level, focusing at highly particular issues (specific research focus, not rarely adjusted to funding schemes, less to marketability), without larger scale fit to developments in respective industry, technology or social segment. The HE accreditation system is focusing strongly at internationally accepted scientific productivity of academic staff, which however does not necessarily provide for universities' adapting to the needs of the business environment.

Teaching is typically isolated from external lecturers and students are spending very limited time in business environment due to financing and self serving HR mechanisms of academic institutions.

NOTE:

To understand the results of the study in proper context, it is important to explain some key traits of the Slovak academic sector and its relationships to external stakeholders.

For this purpose two informative slides provide a brief overview about Slovak specifics.

Capacity of Slovak Universities

Currently, there are 35 higher education institutions with 115 faculties in Slovakia. Altogether 20 higher education institutions are public universities, 12 are private and 3 are state universities. Compared to 1989, the number of universities and their faculties has increased threefold.

19 Slovak towns can be considered university towns, i.e. a town that hosts at least one faculty. The largest centre of university education is Bratislava, the second largest is Košice while Nitra and Prešov are on the third place. Outside the university towns, universities provide education also in other towns using their detached workplaces.

The regional dimension shows that approximately 38% of students are studying in Bratislava Self-Governing Region. The second largest centre of higher education is Košice Self-Governing Region (13%) and Nitra Self-Governing Region is on the third place (11%).

The growth of the importance of universities as research institutions can be observed, particularly after 2010. Compared to 2002, the amount of funds for research and development increased from EUR 19 million to EUR 230 million in 2014. Nowadays, the share of universities expenditures for research and development is 34.4%, while in 2002 this share was lower than 10%.

The massive growth of the universities' share on expenditures for research and development was mainly due to the entry of Slovakia into the EU in 2004. However, relative importance of universities in funding of research and development was slightly decreasing after 2011 as a result of increase of expenditures of the business sector.

However, the increase of the universities' importance in research and development is uneven. There are considerable differences among regions in capacity distribution as well as in outcomes and productivity of

research and development. From the regional point of view, Bratislava Self-Governing Region is dominant in the field of university research, since it gathers more than one third of all research and development capacities of universities in Slovakia (5,404 employees). Košice Self-Governing region is on the second place (2,394 employees) and Žilina Self-Governing region is on the third place (2,182 employees).

With a population of approximately 5 million inhabitants Slovakia represents a small economy, which is however characterized by big regional differences. The higher education system is affected by two principal factors – the heritage of a centrally planned economy and the subsequent transformation process.

The development of connection between universities and companies, the civil society and other stakeholders is currently in progress. Universities are not inevitably attached to their immediate environment and the degree of cooperation notably differs among the regions. However, universities carry out a wide range of activities in technological development and orientation at economic growth.

The current system of accreditation of study programmes focuses on the internationally accepted scientific productivity of staff. This does not necessarily provide direct incentives for universities to adapt to the needs of the Slovak society.

Introduction to study results

About the study

The study focuses on the cooperation between higher education institutions (HEIs) and public and private organisations in the 28 European Union Member States and 5 associated countries.

The State of European university-business cooperation (UBC) study is executed for the DG Education and Culture at the European Commission (EAC/10/2015) by a consortium led by the Science-to-Business Marketing Research Centre (S2BMRC), in Germany from January 2016 until November 2017.

The aim of the study is to get a more profound, comprehensive and up to date understanding of the state of UBC in Europe: what is the state of play of a wide range of UBC activities in the different countries, what are the main drivers and barriers for the different stakeholders and at what levels; what is the regulatory framework and socio-economic conditions and what kind of measures/initiatives exist on a national level to support the development of UBC. The project investigates UBC from the perspective of both university and business.

Main activities

The main components of the project were a series of expert interviews with 23 recognised UBC experts, 52 good practice case studies, a UBC policy and indicators review as well as a major quantitative survey of stakeholders within both HEIs and business. The survey was translated into 25 languages and sent to all registered European HEIs (numbering over 3,000) in the 33 countries during

October-November 2016. Through this, a final sample of 17,410 representatives from within HEIs and business was achieved. This makes the study the largest international study into cooperation between HEIs and business yet completed.

Why care about university-business cooperation?

- UBC is considered to be the engine towards knowledge-based societies and economies
- UBC is specially needed in the European context, threatened by increased global competition, with ongoing economic and social problems and high levels of youth unemployment
- UBC helps to create a more connected and functioning relationship between government, business and HEIs, which is at the core of EU funding schemes, such as Horizon 2020 and Erasmus+.
- UBC direct outcomes include:
 - improving the competitiveness of business,
 - increasing the relevance and innovativeness of research and teaching in HEIs,
 - improving the future job prospects of students and graduates,which can in the longer term:
 - create jobs,
 - stimulate economic growth,
 - increase living standards,
 - reduce hindrances to good living.

Study Objectives

The specific objectives for the study are:

- Chart the current state of play and provide an in-depth analysis of UBC in the countries covered by this study, from the HE and business perspectives;
- Deliver 50 case studies of UBC (representative sample, balanced distribution among countries and organisations, balanced distribution of HEI and business led cases);
- Review indicators measuring UBC and propose possible scenarios for the implementations of UBC monitoring in Europe;
- Provide policy conclusions and recommendations for the furthering of UBC and the best approaches to take.



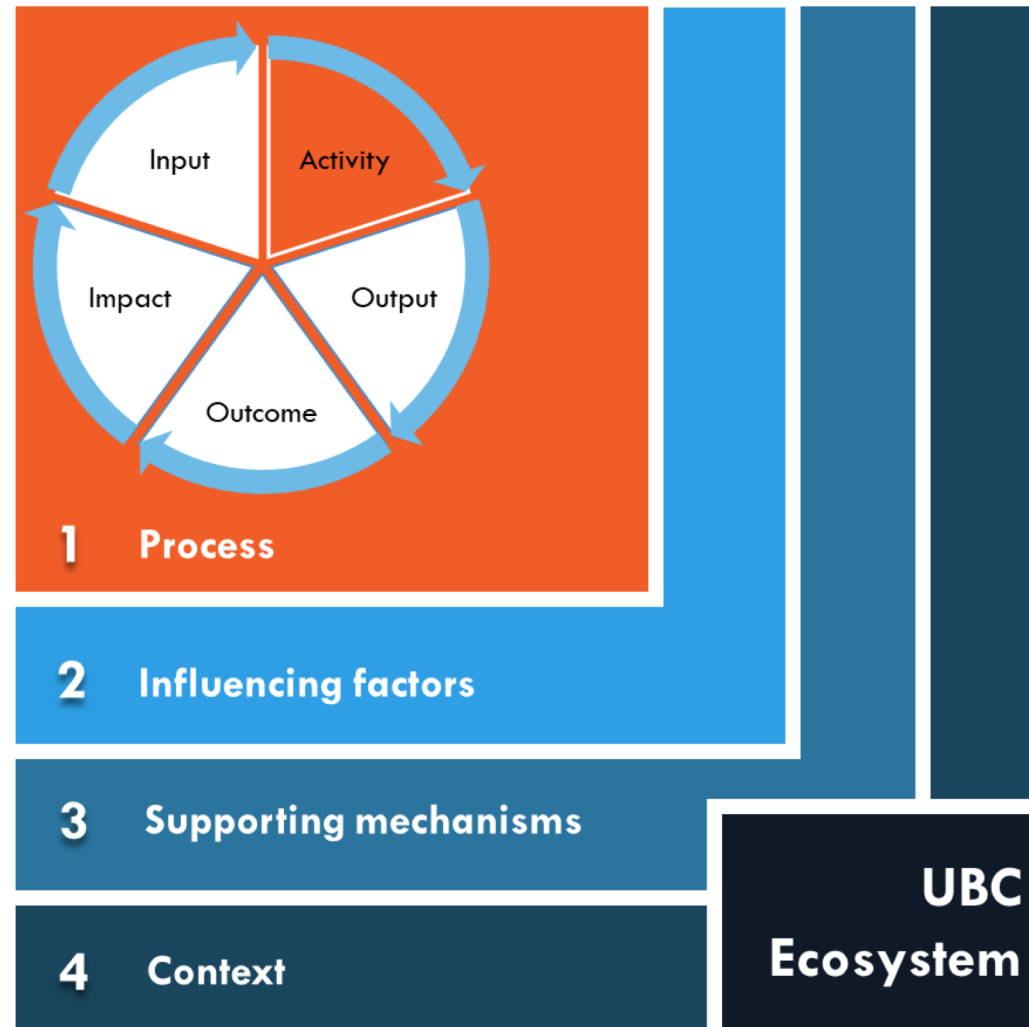
UBC activities

UBC Ecosystem Framework™

In order to best organise the project results, a project conceptual framework was chosen.

The UBC Ecosystem Framework has a number of interrelated elements including the process of undertaking UBC, factors that are influencing UBC, mechanisms supporting UBC and finally the context in which UBC occurs.

The framework ties together the respective project activities, providing a common thread for reporting results and making recommendations.



Source: Galán-Muros, V.; Davey, T. (2017) *The UBC Ecosystem: Putting together a comprehensive framework for university-business cooperation*. *Journal of Technology Transfer*. <https://doi.org/10.1007/s10961-017-9562-3>

UBC Activities

Fourteen UBC activities are recognised and categorised into the areas of education, research, valorisation and management.

Area	Activity
Education	<ol style="list-style-type: none">1. curriculum co-<u>design</u>2. curriculum co-<u>delivery</u> (<i>e.g. guest lectures</i>)3. mobility of students (<i>i.e. student internships/placements</i>)4. dual education programmes (<i>i.e. part theory, part practical</i>)5. lifelong learning for people from business (<i>e.g. executive education, industry training and professional courses</i>)
Research	<ol style="list-style-type: none">6. joint R&D (<i>incl. joint funded research</i>)7. consulting to business (<i>incl. contract research</i>)8. mobility of professionals (<i>i.e. temporary mobility of academics to business and vice versa</i>)
Valorisation	<ol style="list-style-type: none">9. commercialisation of R&D results (<i>e.g. licencing/patenting</i>)10. academic entrepreneurship (<i>e.g. spin offs</i>)11. student entrepreneurship (<i>e.g. start-ups</i>)
Management	<ol style="list-style-type: none">12. governance (<i>e.g. participation of academics on business boards and businesspeople participation in university board</i>)13. shared resources (<i>e.g. infrastructure, personnel, equipment</i>)14. industry support (<i>e.g. endowments, sponsorship and scholarships</i>)

Overall, most UBC activities are less developed for Slovak academics than for their European counterparts.

Over 55% of Slovak academics do not engage in any of these activities. This is probably linked to several factors: the large differences in quality among and inside HEIs, with very few reaching high quality levels; the absence of incentives for UBC in a very isolated academic environment; the typical design of offers based on existing capacities and not reacting to external demand; the insufficient academic resources to attract relevant business partners; the operation of UBC as a personal basis based on personal links rather than a strategic long term institutional relationships.

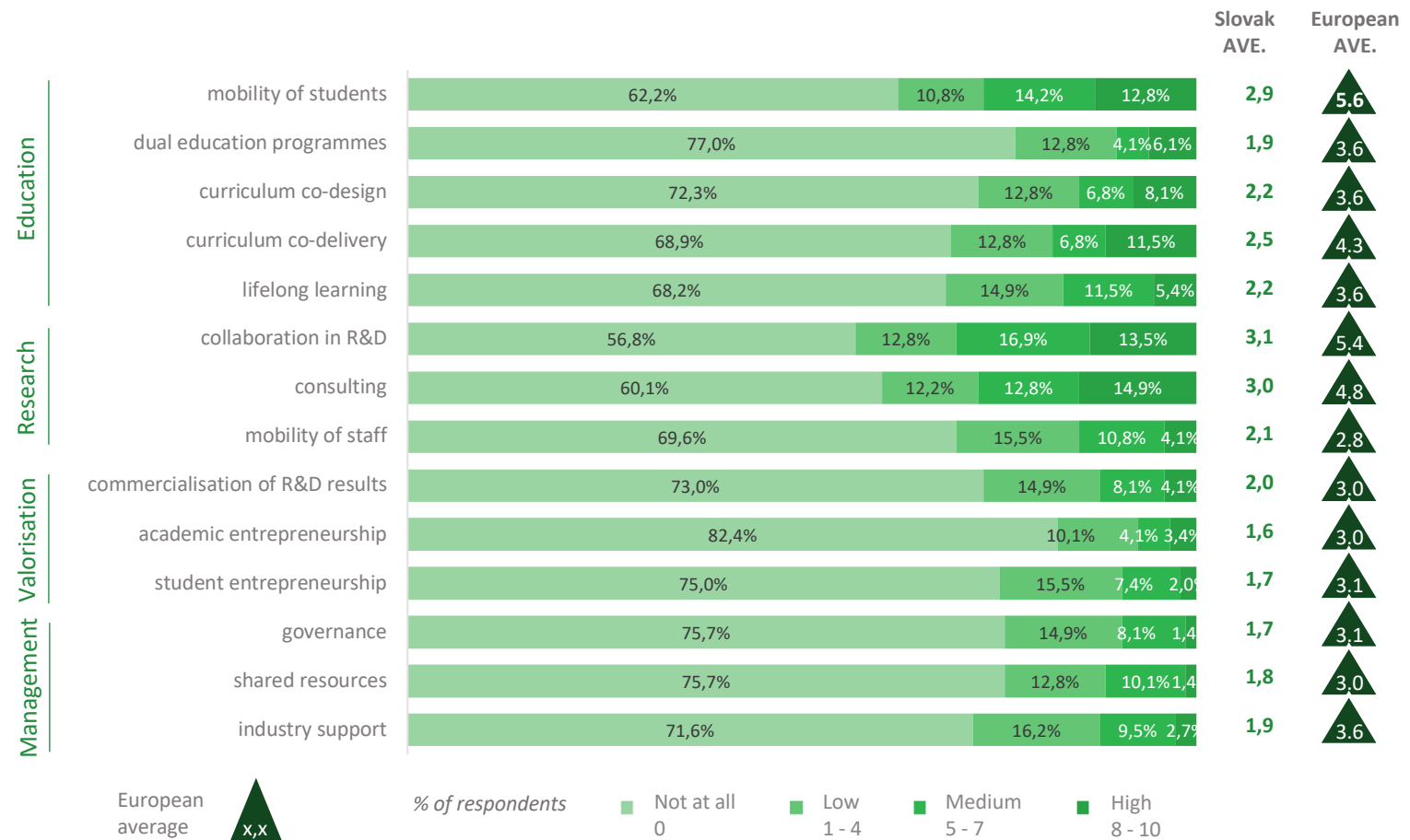
Slovak academics most commonly engage with business in joint R&D (3.1) and consulting (3.0). The third most developed UBC activity for Slovak academics is mobility of students (2.9). But while 12.8% report a high level of development, over 60% are not engaged at all. This problem may be because existing curricula often do not account for meaningful proportion of student mobility – practical experience. One of the reasons is the tendency to keep available teaching hours for internal academic staff. Student mobility happens often only if employers' approach HEI or government subsidies create incentives for student mobility – mostly for technical and IT programs.

All the UBC management and valorisation activities are not developed at all for over 70% of the Slovak academics.

Development of UBC activities

The extent of development of UBC activities

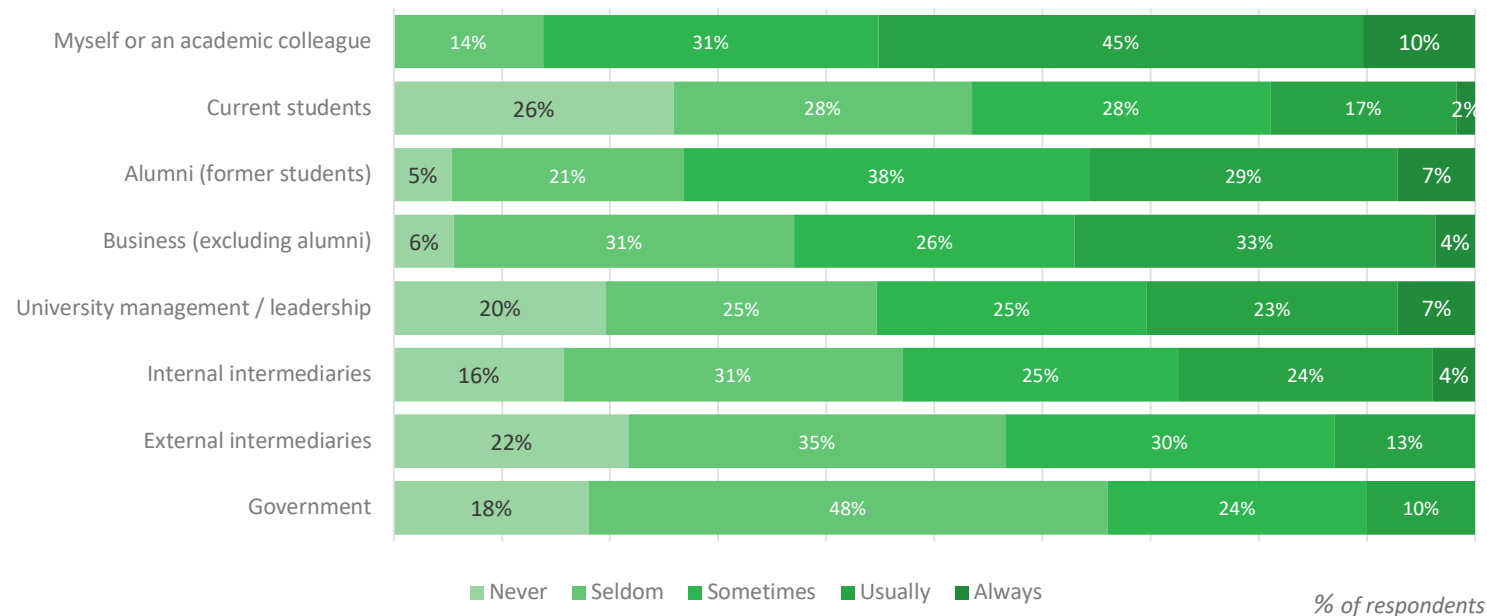
'Which UBC activities do you collaborate with businesses in?' – as answered by academics



Initiation of UBC

How UBC is initiated

'How often various stakeholders initiate UBC activities' – as answered by academics



Over half of Slovak academics (55%) consider themselves or their colleagues as actors who always or usually initiate UBC.

The generally low level of UBC and very limited communication has resulted in a rather deep isolation of academia, a loss of historically existing ties and a very one-sided perspective of academics and business people – without trust in the positive attitude of the other side towards UBC. At the same time, academics are gradually engaging with external partners more at individual level, finding opportunities for their own research results.

Academics perceive a lower role for intermediaries and the institutional management level. Additionally, they assign the most limited role to students as source of UBC initiation.

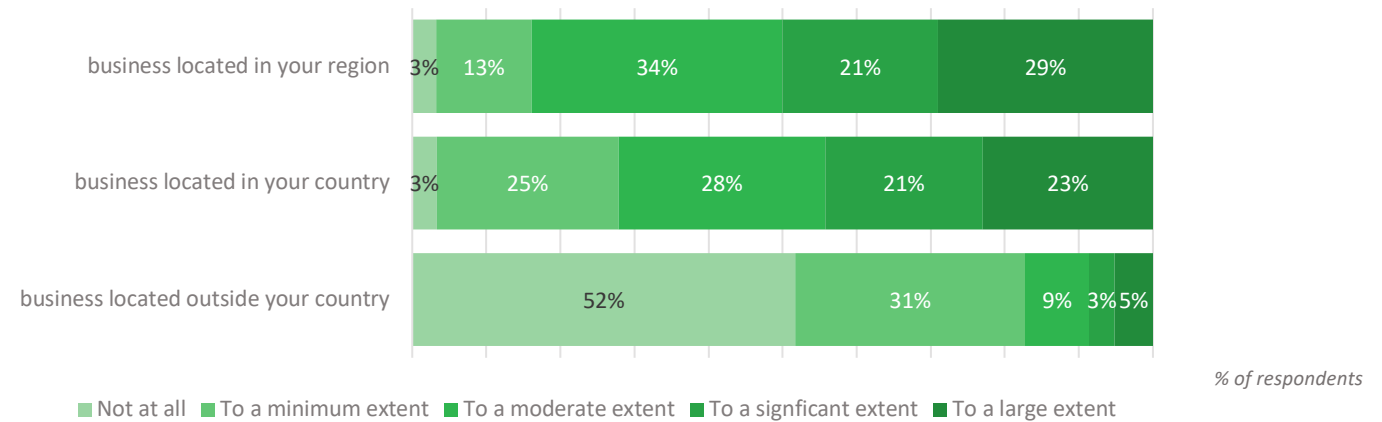
Alumni (35%) and businesses (37%) are also considered initiators, although to a lesser extent. Most HEIs do not have functioning systematic alumni tracking, so ties are weak. Often UBC is not based on academics' systematic adjustment to business sectors demands, but rather individual academics offer partial solutions in ad hoc relationships. The perceived pro-active demand from businesses environment is logically diminished in the eyes of academics.

Location of cooperating partners

The focus of Slovak universities is limited to the regional and national businesses despite external demands for international benchmarking (e.g. in accreditation process or in some conditions for successful grant applications).

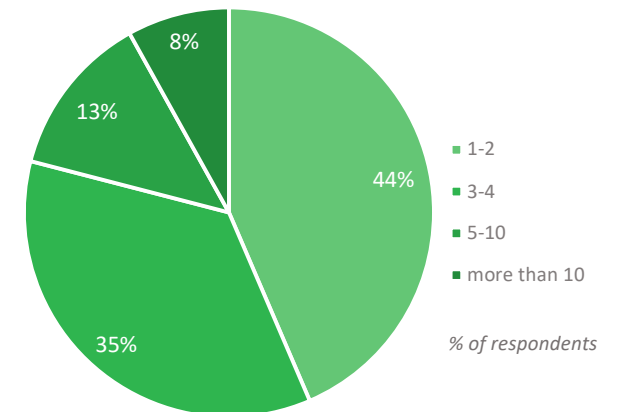
One of the reasons is the isolation fostered by protecting mechanisms of self-governance. Another is the capacity (mainly due to resources) to attract and keep high quality teaching a research staff, as well as high quality students. There is an important talent exodus and a prevailing dependence on the system of financing per student. Therefore, the attractiveness of Slovak HEIs for international partnerships is low.

Location of business partners



Slovak academics cooperate to a 'significant' and 'large extent' with Slovak businesses and businesses from the region (50% and 44% respectively). The cooperation with international business partners lags considerably behind.

Number of business partners

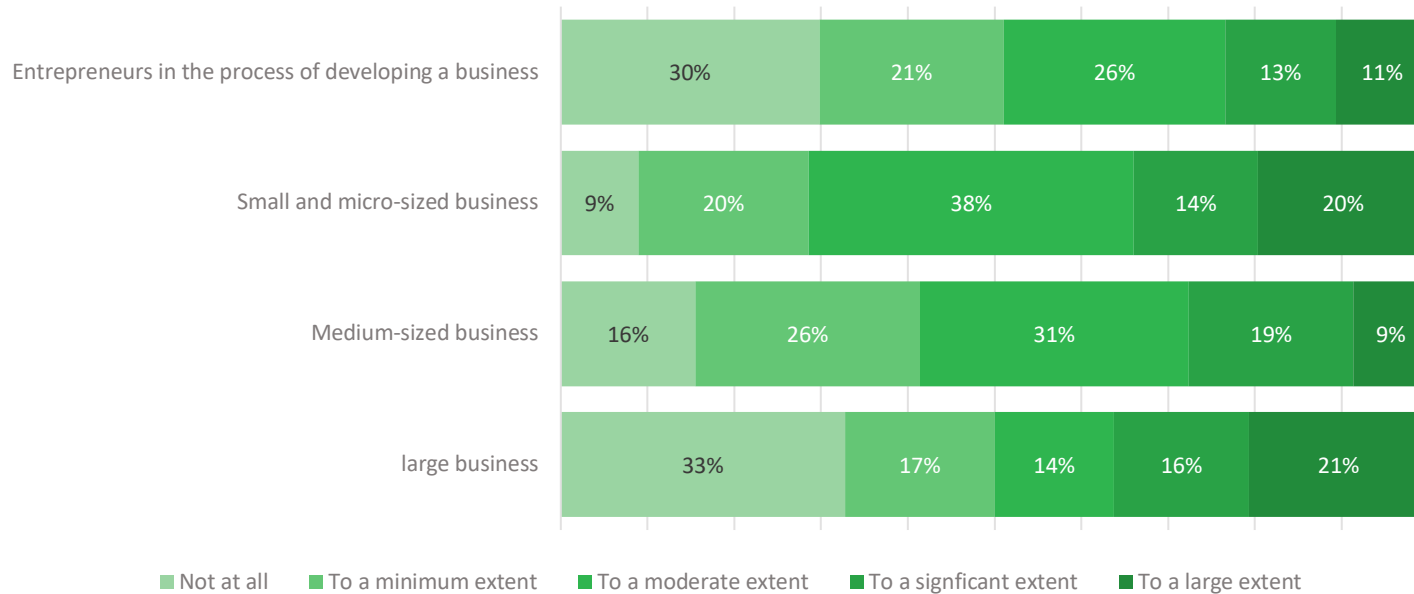


The majority of Slovak academics cooperate with 1 to 4 businesses (79%). The remaining 21% have partner relations with 5 or more partners.

Size of cooperating partners

Size of cooperating partner

'With whom do you collaborate?' – as answered by academics



37% of cooperating academics in Slovakia engage to a significant or large extent with large businesses. In recent years, large businesses are seeking ties with HEIs more actively, mainly motivated by their demand on graduates. This trend is dominated by businesses from manufacturing sectors, followed by ICT.

Substantial UBC is reduced to 34% for small/micro-sized businesses, and to 28% for medium-sized businesses. It is more demanding for smaller companies to allocate resources to UBC. This is the case for activities related to graduate talent acquisitions but even more for shared R&D activities.

Half of academics report they do not collaborate with entrepreneurs, or to a minimum extent. This may be also due to a growing number of more efficient and better accessible non-academic schemes and incubators, which are attracting a larger number of business developers and start-ups.

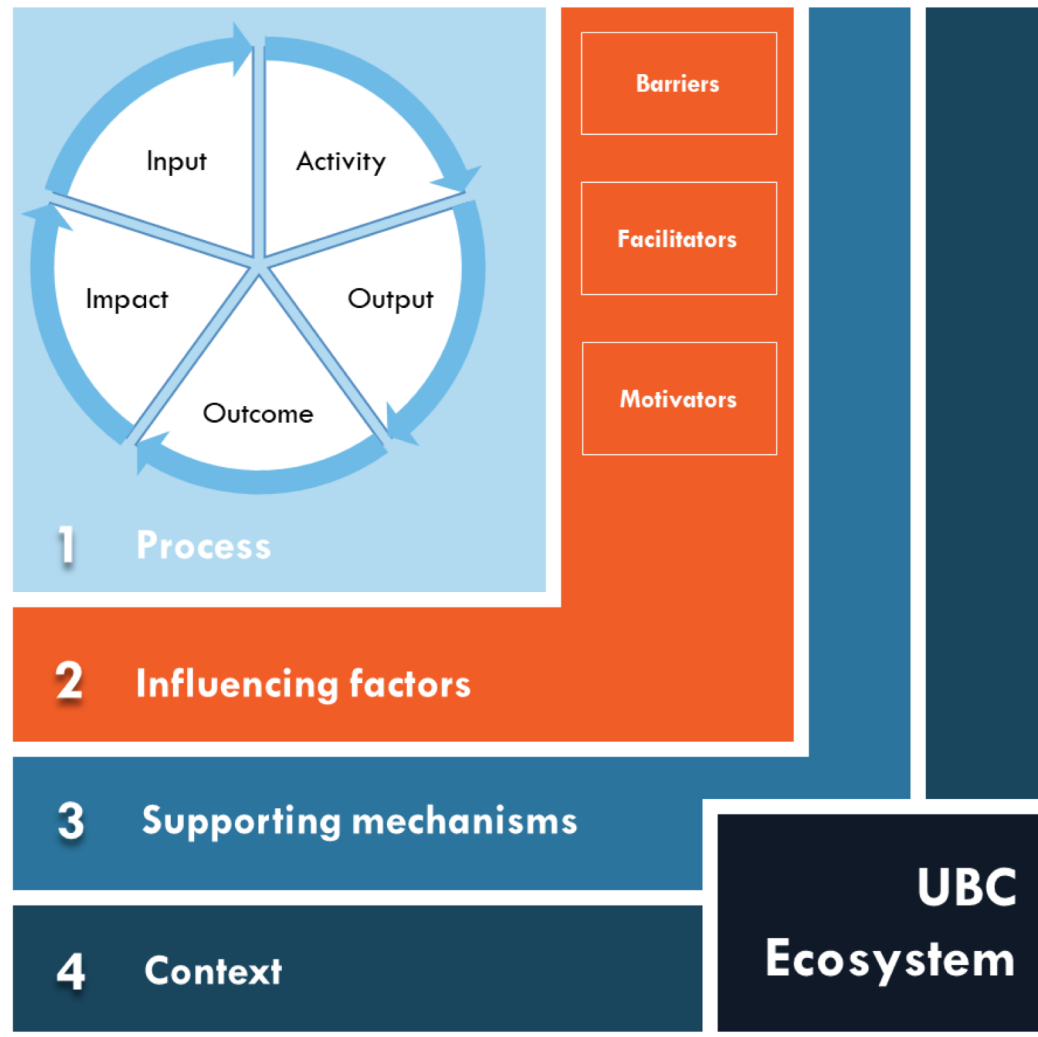
Factors influencing UBC

This section outlines the extent to which various factors affect UBC.

Generally, a barrier provides a hindrance or obstacle to do something. Drivers comprise facilitators, which enable or ease the process, and the motivators, which trigger the starting of an activity and are often related to the expected outcome(s).

At the European level, this study has found that removing a barrier does not necessarily create UBC but rather it makes UBC possible. Instead, it is the facilitators and motivators (drivers) that initiate UBC.


For example, even when a lack of funds is often named as a major barrier to cooperation, the presence of funds may not be enough for cooperation to happen if the perceived facilitators or motivators are not sufficiently present.



Barriers hindering UBC

Barriers

What is inhibiting your cooperation with business?' – as answered by academics



	Academics collaborating with business	Academics not collaborating with business
1.	Bureaucracy related to UBC	Bureaucracy related to UBC
2.	Lack of government funding for UBC	Differing motivation / values between university and business
3.	Lack of university funding for UBC	Difficulty in finding the appropriate collaboration partner
4.	Lack of business funding for UBC	Lack of university funding for UBC
5.	Limited resources of SMEs	No appropriate initial contact person within either the university or business
<i>Lowest</i>	Frequent staff turnovers within my university or the business	Frequent staff turnovers within my university or the business

The top five UBC barriers for Slovak academics relate to resources, as well as administrative and cultural issues. However the academics that are engaged in UBC and their non-collaborating colleagues have different perceptions.

Thus both groups agree on the importance of bureaucracy related to UBC as the main barrier inhibiting their collaboration with businesses. This may be related to internal academic structures, where only the rector is representing the whole HEI as a statutory body and so all inter-institutional contracts have to go through the HEI management bureaucracy. Another reason might be, that UBC is typically dependent on EU funding and so it is subject to its extensive bureaucracy.

Collaborating academics are mostly hindered by funding and resources related factors, but they have obviously identified opportunities and have challenged this situation. Contrary, academics who do not undertake any collaborative activities are isolated from external environment and attribute this to barriers related to differing motivations and difficulties in finding the appropriate collaboration partner and the existence of an suitable initial contact person.

Slovak academics and their European counterparts have somewhat different perceptions of UBC barriers.

Slovak academics are considerably more hindered by bureaucracy related to UBC, which is the strongest barrier for them and they also have a stronger perception of funding barriers than their European counterparts. This is an obvious consequence of a stronger dependence on external incentives for any UBC activity. It also correlates with the generally low level of funding for higher education in Slovakia as well as lower success rate of Slovak HEIs when applying for international grants.

A substantial difference can be also recognized in the much more intensive belief of Slovak academics, that HEIs lack awareness of opportunities arising from UBC. This is another documentation for the rather isolationist HEI culture with few links to external environment.

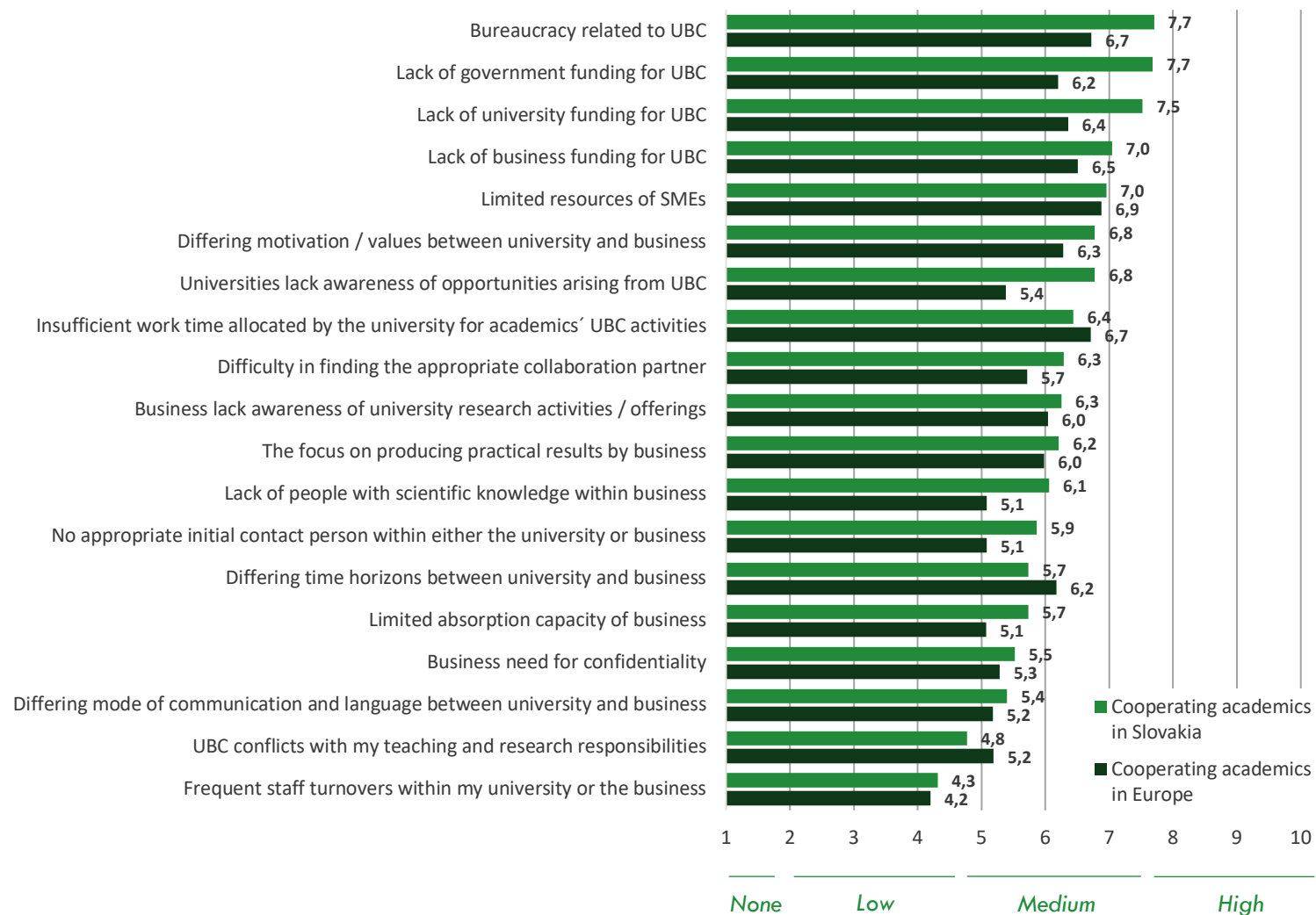
Compared to the European average, Slovak academics are less hindered by the barriers related to time issues, including differing time horizons and insufficient time allocated for their UBC activities. This may reflect the low proportion of involvement in UBC based on solely commercial, performance oriented and not on subsidised basis.

Both groups agree that the 'frequent staff turnovers' is the weakest barrier hindering UBC, which shows a relative stability of staff or at least one that allows continuity.

Barriers hindering UBC

Barriers

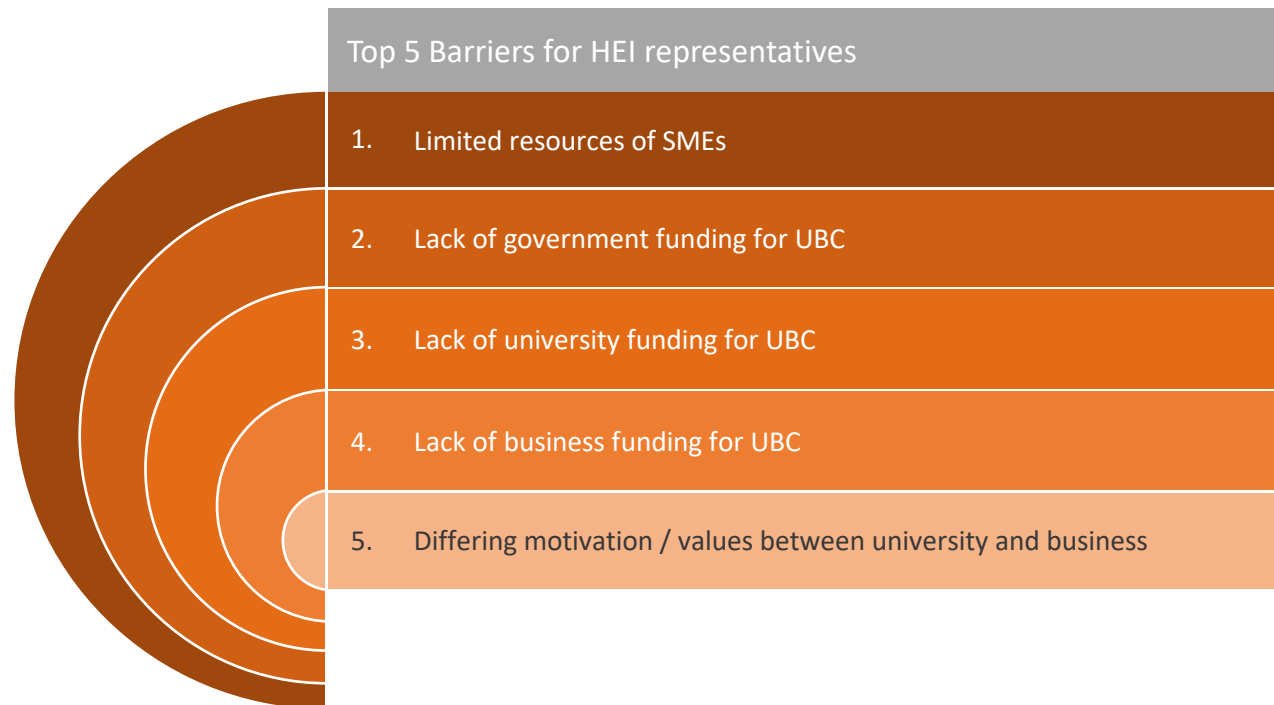
'What is inhibiting your cooperation with business?' – as answered by academics



Barriers hindering UBC

Barriers

'What inhibits your HEI cooperation with business?' – as answered by HEI representatives



Slovak HEI representatives are inhibited to engage in UBC mostly by the lack of resources but also by cultural differences to a lesser extent.

The lack of resources of SMEs is the largest barrier for them. This can indicate that SMEs are not ready to invest in UBC because the expected added value for their business is not important enough. It would require from HEI representatives to establish a very large scale of contacts to find motivated SME partners. Probably it is much easier for them to team up with few large partners, who (as study shows) are mainly interested in future graduates acquired through UBC (and can afford spending on UBC with such purpose).

Further resources-related factors including lack of funding from government, university and business also bear great importance as barriers. This is consistent with the academic perspective and proves the hypothesis that UBC in Slovakia is largely dependent on external incentives (i.e. funds, subsidies).

HEI representatives recognise that the culture-related barrier such as the differing motivations between two organisations can also considerably inhibit UBC in Slovakia and it points to deeper rooting of non-flourishing UBC in the country – at value level, not only at operational level.

Barriers hindering UBC

Overall, Slovak and European HEI representatives have slightly different perceptions of barriers inhibiting UBC.

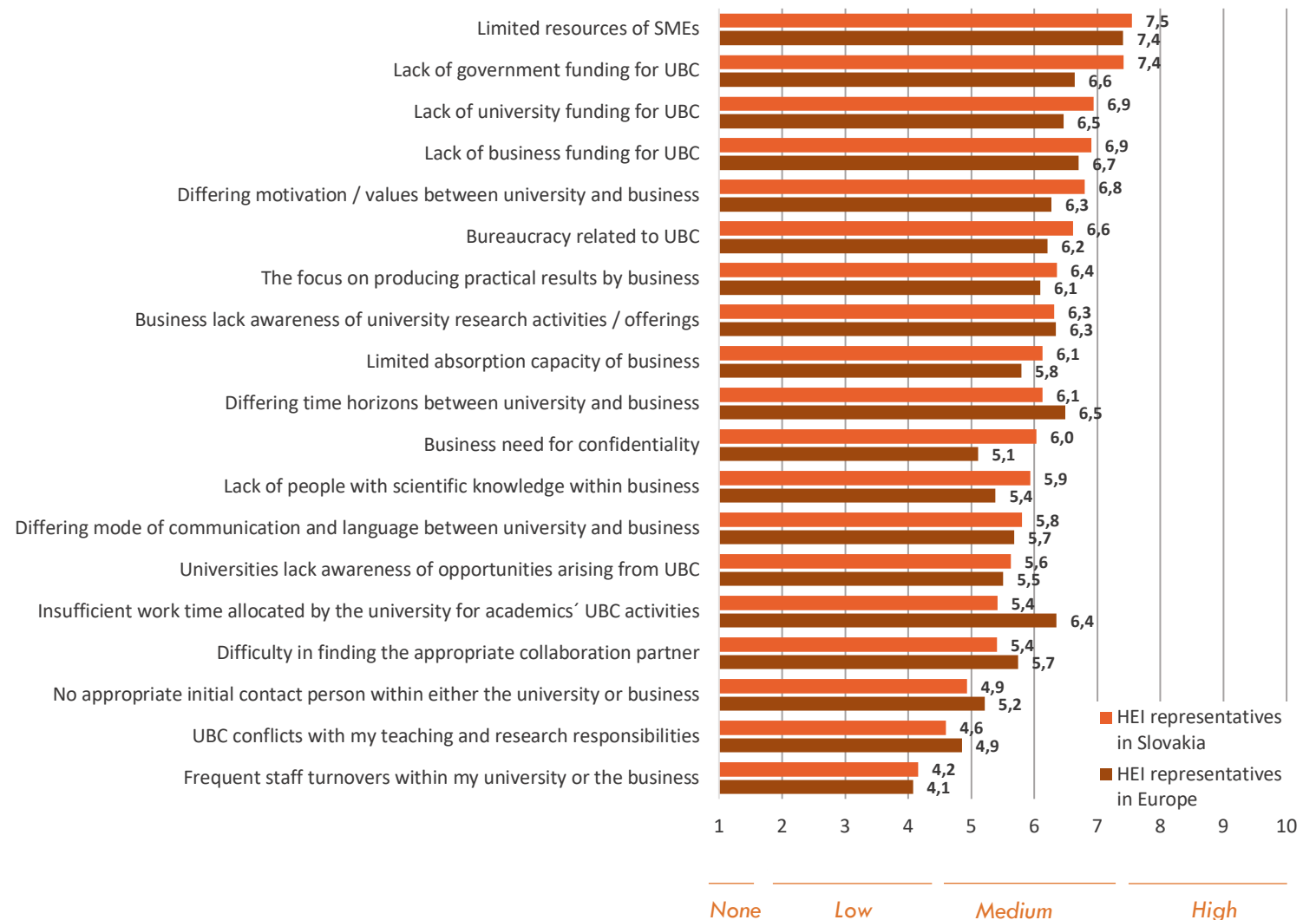
While resources related factors are the most inhibiting for Slovak HEI representatives, for European ones those also include time differences. The Slovak barriers indicate that the unprecedented sums of government funded investments in science and innovation, as well as UBC during the period 2013 to 2017 were inefficient and did not bring the expected benefit for HEIs.

The more intensively perceived cultural differences – motivation/values – between HEI and business when compared to other researched countries indicate a substantial distance that still separate these partners and remain a pending issue to face.

The mission and functioning of universities are in many cases perceived in a totally different perspective if Slovak universities and businesses are asked. The dominant orientation toward scientific and less applied education and research at universities is currently being confronted with requirements of businesses, who are asking for more relevance of education and research to the needs of the labour market, technology innovation and social developments. As comparison to other countries indicate - it may inhibit mutual understanding, if Slovak HEI representatives view business partners as inferior in scientific knowledge.

Barriers

‘What inhibits your cooperation with business?’ – as answered by academics and HEI representatives



Drivers stimulating UBC

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

Drivers of UBC are divided into two factors:


1. **Facilitators** – factors that enable or ease cooperation
2. **Motivators** – incentives or benefits that the respective stakeholders would like from the cooperation

Together, these two factors provide a comprehensive picture of what compels businesses to cooperate.

The 2010-11 State of European UBC study showed that for European universities the existence of strong UBC drivers can overcome the presence of barriers to UBC.

Facilitators

'What is facilitating your cooperation with business?' – as answered by academics and HEI representatives



	Academics cooperating	HEI representatives
1.	Existence of a shared goal	Existence of a shared goal
2.	Existence of mutual trust	Existence of funding to undertake the cooperation
3.	Interest of business in accessing scientific knowledge	Interest of business in accessing scientific knowledge
4.	Existence of funding to undertake the cooperation	Prior relation with the business partner
5.	Prior relation with the business partner	Existence of mutual trust

The main five factors that facilitate UBC for both Slovak academics and HEI representatives are identical, although ranked differently.

Both groups agree on the importance of the existence of a shared goal as the main facilitating factor. This is a sensitive issue, in which some doubts resulting from previously described cultural differences may have to be overcome. This is even more true for academics, who rank existence of mutual trust as a major driver. But mutual trust is also related to performance in UBC, so it shows more direct contact to a project implementation phase by academics compared to HEI representatives.

The importance of the prior relation with the business partner also shows that individual relationships matter for UBC to emerge and develop.

HEI representatives attribute higher importance to the existence of funding, whereas for the academics this factor is also relevant but to a lesser extent. This points out again to the centralised internal financing structure for interaction with external actors.

Both groups perceive the business' interest in accessing scientific knowledge and also as further relevant drivers facilitating UBC. This may be underlining the expectation, that it should be the business, who shows interest in the specific scientific knowledge that the university possesses, not the university who fits science focus to business developments.

Drivers stimulating UBC

The European and Slovak academics have slightly different perceptions of UBC facilitators.

For both groups, the most important facilitators are those related to the relationship aspect of UBC. The academics highlighted the existence of a shared goal and mutual trust among the most important facilitators influencing their cooperation with businesses. This shows that finding of common purpose is crucial for them.

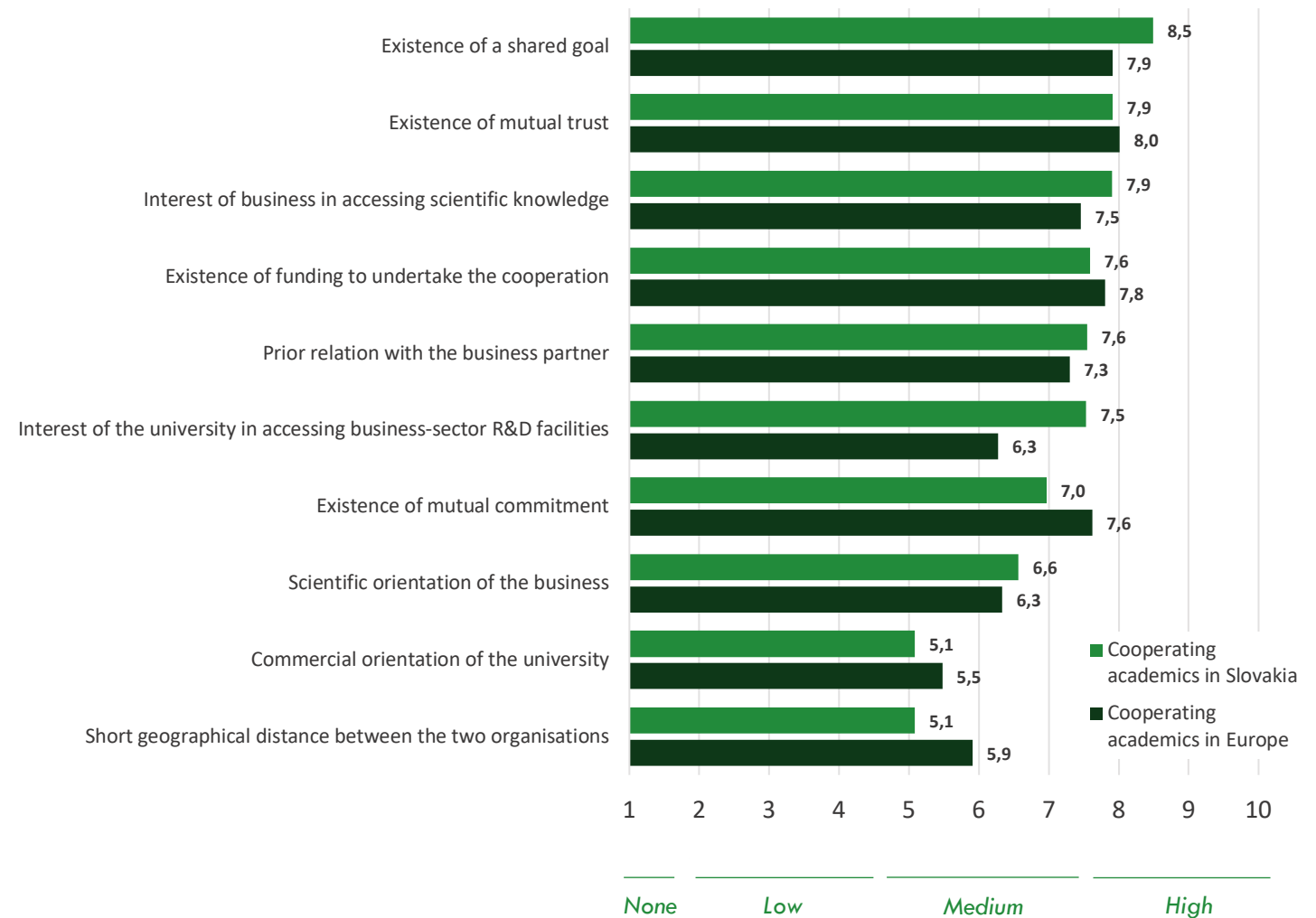
In addition to the relationship facilitators, the existence of funding and the interest of business in accessing scientific knowledge also play important roles for both groups.

For Slovak academics accessing business-sector R&D facilities plays a more relevant role than for their European counterparts. This can be partly explained due to the poorer facilities in Slovakian HEIs and businesses compared to other European countries.

The commercial orientation of the university and short geographical distance between the two organisations emerge as the least strong facilitators for both groups, while for Slovaks these are even more marginal.

Facilitators

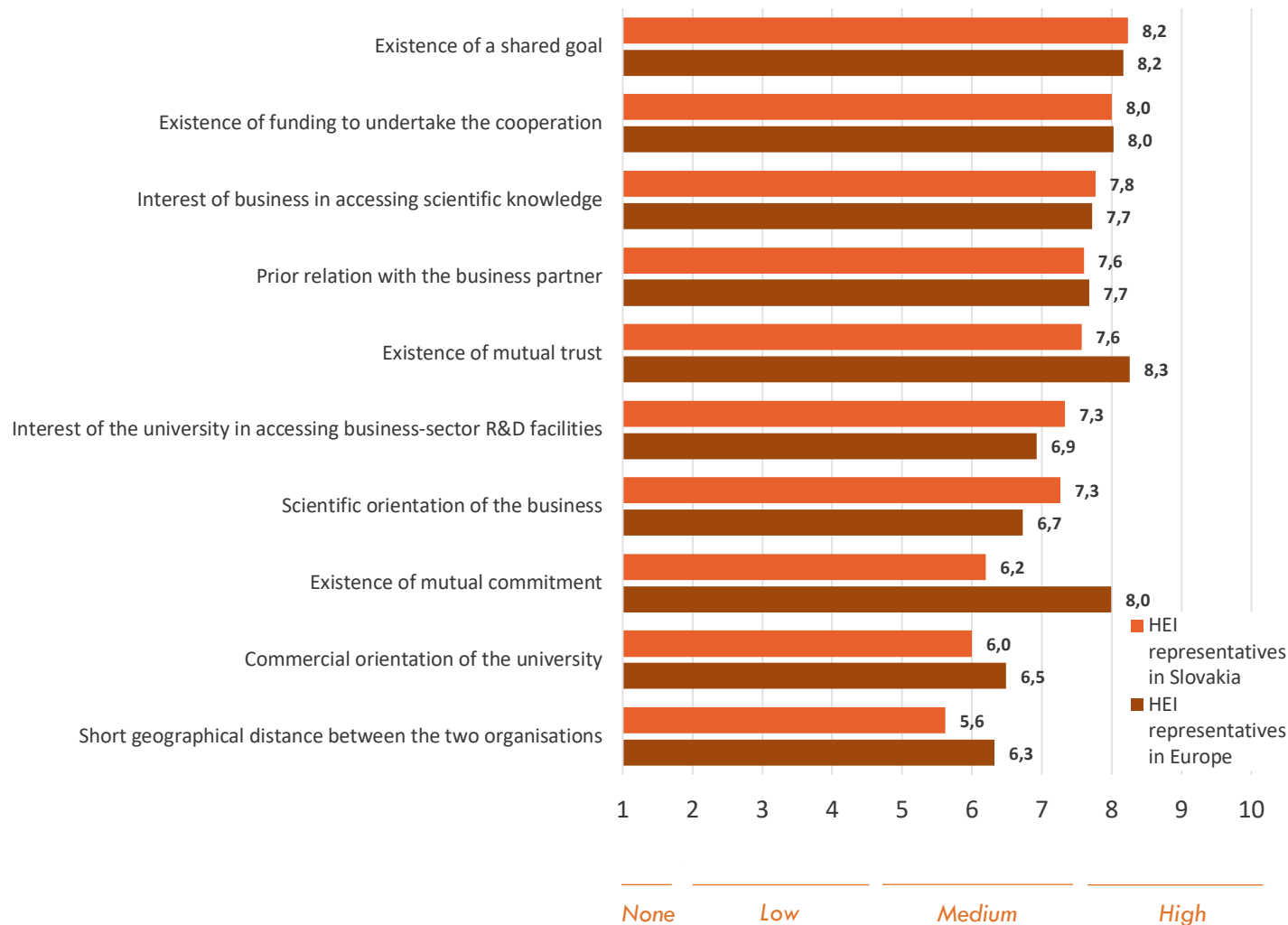
'What facilitates your cooperation with business?' – as answered by academics



Drivers stimulating UBC

Facilitators

'What facilitates your cooperation with business?' – as answered by HEI representatives



Slovak HEI representatives and their European counterparts perceive most facilitators in a very similar way.

For both groups, the strongest facilitator relates to the existence of a shared goal.

The existence of funding and the interest of business in accessing scientific knowledge also play an important role in facilitating UBC.


Compared to the European average, Slovak HEI representatives have considerably lower perception of the existence of mutual trust as well as mutual commitment. This is supporting strongly the hypothesis on cultural cleavage between HEI and business.

Similarly to academics, the commercial orientation of the business and the short geographical distance between the two organisations are the weakest facilitators, although they still play a role in facilitating UBC.

Drivers stimulating UBC

Motivators

'What motivates you to cooperate with business?'- as answered by academics



	Academics who cooperate	Academics who <u>do not</u> cooperate
1.	Gain new insights for research	Contributes to the mission of the university
2.	Uses my research in practice	Addresses societal challenges and issues
3.	Contributes to the mission of the university	Improves graduate employability
4.	Improves my teaching	Improves my teaching
5.	Improves graduate employability	Improves my future research

Motivators of Slovak academics who already cooperate with businesses and motivators of non-cooperating academics have certain discrepancies.

For cooperating academics, the hands-on experience brings clearly concrete added value aspects as the top motivations: gaining new insights for research, using research in practice. While cooperating academics highlight motivations related to their own research, their non-cooperating colleagues would be more driven by the benefits other stakeholders could get from collaboration.

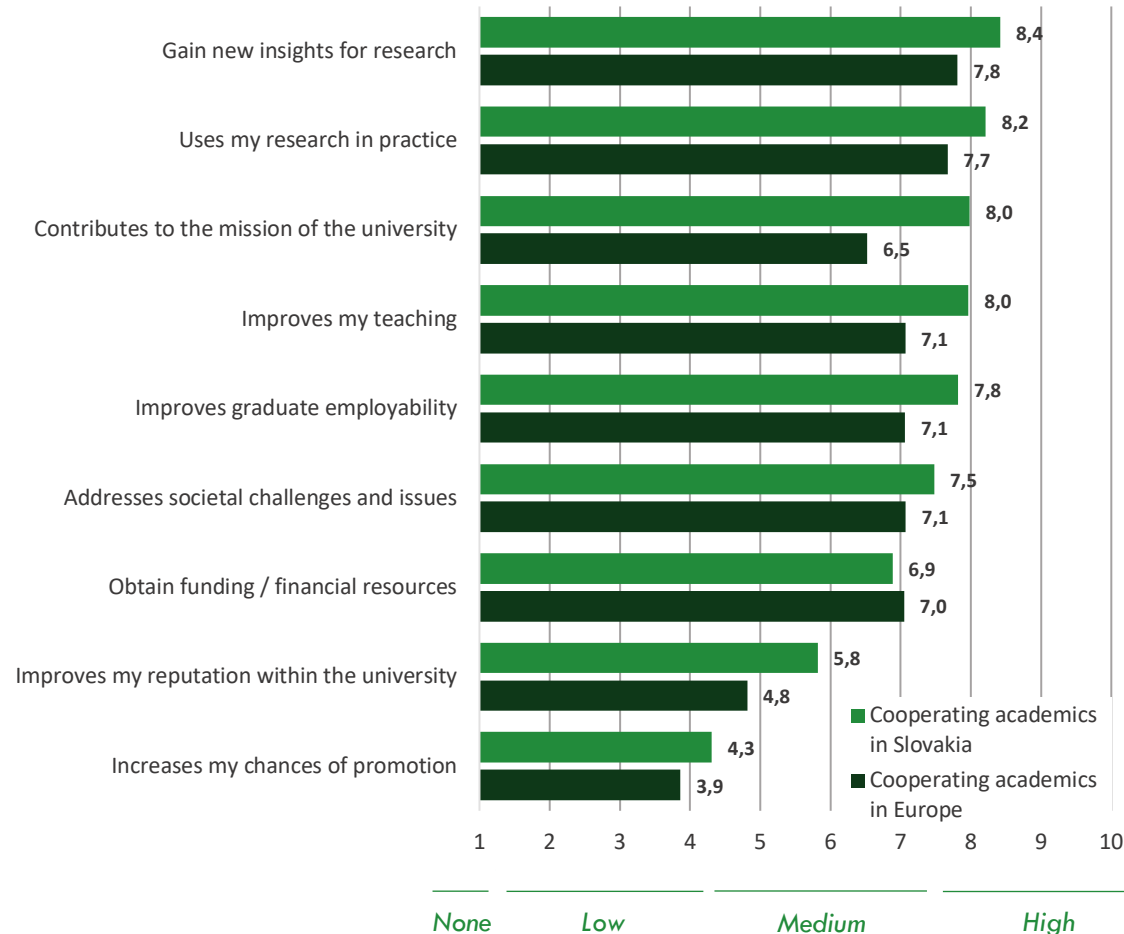
The picture of UBC is in the minds of non-cooperative academics is less realistic and remains abstract. Top motivators for non-cooperative academics include the potential to contribute to the university mission, to address societal challenges, and to improve graduate employability. The fact that the main motivation are not related directly to themselves might imply less willingness to engage.

Both groups are equally motivated to improve their teaching. This position UBC as a vehicle to make their teaching more applied and practical, which in turn will also contribute to improve graduate employability,

Drivers stimulating UBC

Motivators

'What motivates you to cooperate with business?'- as answered by academics



The European and Slovak academics have differing perceptions of UBC motivators. Slovak academics rate most of them slightly higher than their European counterparts. It shows that it may take generally higher levels of motivation (more intense valuation of related benefits) to engage in UBC for Slovak academics, in addition to the UBC opportunities offered to them.

It also shows that the UBC experience of Slovak academic involved is perceived as more enriching than in other countries. Slovak cooperating academics are believers in what they are doing.

Compared to the European counterparts, Slovak academics are considerably more driven by the willingness to contribute to the mission of the HEI. This may indicate that Slovak cooperating academics have in mind the mission dilemma frequently discussed nowadays and lean toward strong support of their attitudes.

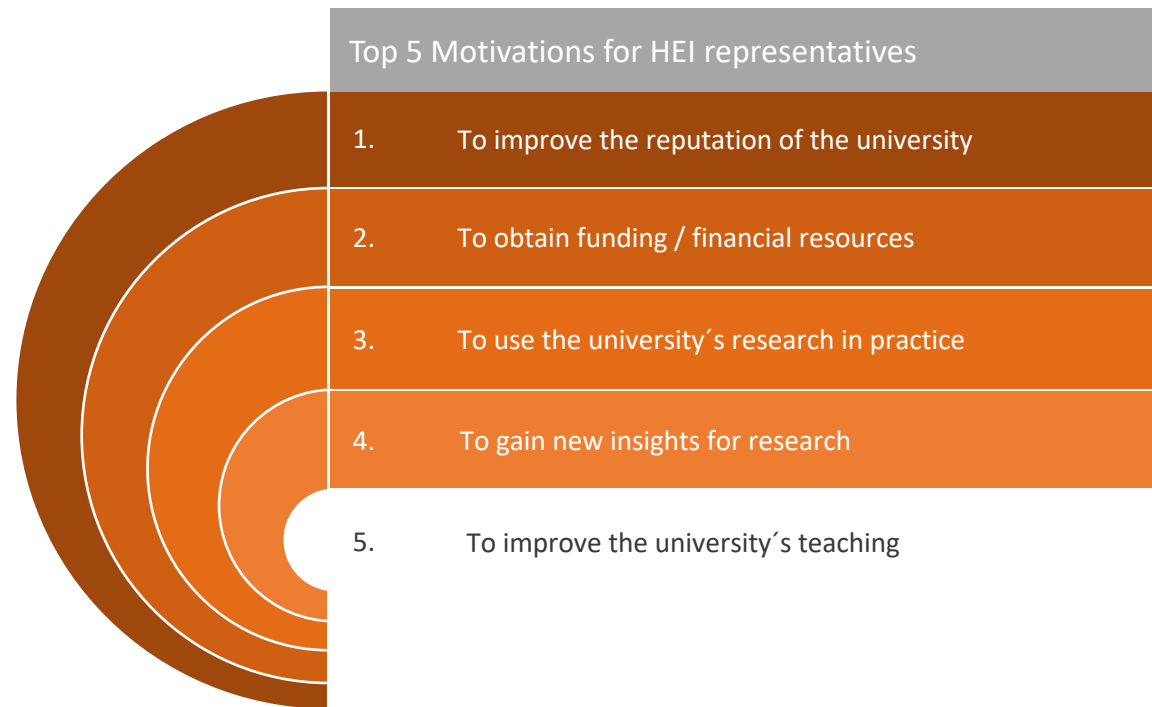
They would demand more open and flexible adaptation of the HEI curricula and research towards social, economic and technological demands. Perceived high motivation through improved teaching and/or graduate employability might be other demonstrations of this attitude.

Neither in Slovakia, nor in other countries the motivation to engage in UBC are related to promotion since UBC is rarely a criterion for academic assessment.

Drivers stimulating UBC

Motivators

'What motivates your HEI to cooperate with business?'- As answered by HEI representatives



HEI representatives are more motivated by the benefits that their HEIs can get from UBC, such as improvement of reputation and financial resources.

This is followed by motivators specifically related to improving research and teaching.

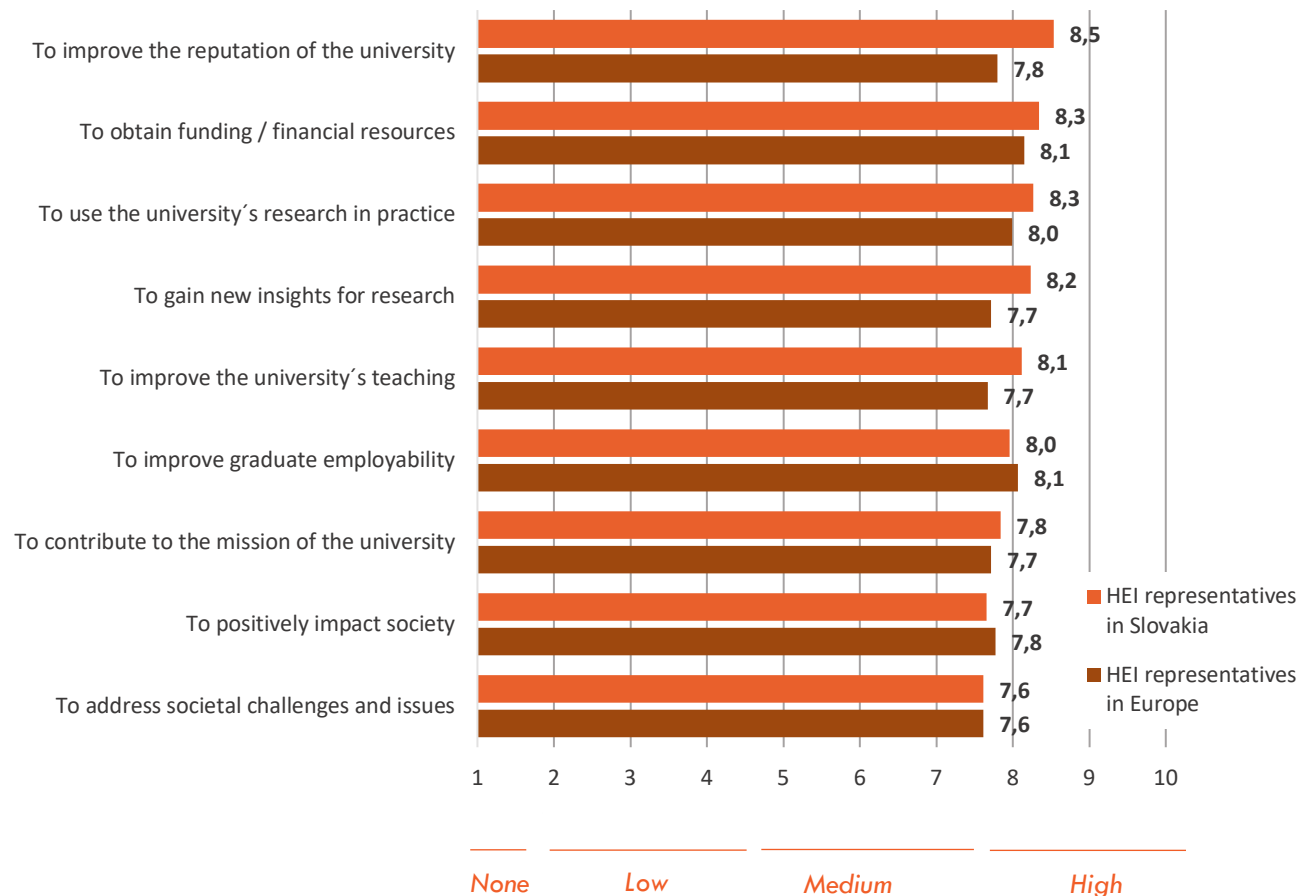
Compared to cooperating and not cooperating academics, the HEI representatives top motivators show a mixture of both.

It is highly promising, having in mind the described cleavage between business and university cultures, that the HEI representatives do consider UBC as beneficial to the brand image of their institution, which should motivate them to look for ways how to bridge existing gap of interests and motives. Funding seems to be a crucial motivator, which could help to get over this bridge.

Drivers stimulating UBC

Motivators

'What motivates your HEI to cooperate with business?'- as answered by HEI representatives



Slovak HEI representatives are motivated by similar drivers and to a similar extent than their European counterparts.

More crucially, for both European and Slovak HEI representatives all motivators are ranked of nearly equal importance (from 7.6 to 8.5), which ultimately means that all these motives have a potential of stimulating UBC for HEIs. In other words, it is a widely recognized virtue to engage in UBC.

Slovak HEI representatives engage in UBC to improve the reputation of their organisation, to obtain financial resources and use the research in practice. The motivation related to teaching and student employability are of slightly less importance. The lowest motivations, although still important, are those related to the societal benefits.

Benefits of UBC

Slovak academics and HEI managers have similar perceptions about the stakeholders that benefit from UBC, except for society.

Businesses are perceived by both groups as the stakeholder group who benefits the most from UBC. Therefore, the approach they will have to UBC can be expected as at least cautious, if not defensive.

This applies even more to university managements, who also put society above universities as beneficiaries. It means, that UBC for them has more social pressure than recognised university benefits. Therefore, some HEI survey responses could be influenced by perceived social desirability.

Notably, both groups see the benefits for academics lower than the benefits for students. This is probably due to the present focus of UBC on student involvement, driven by employers and their demand for better employable graduates.

The Slovak government is believed by both groups to gain little benefits from UBC.


Benefits are the perceived positive outcomes (financial and non-financial) from undertaking UBC as relevant for the different stakeholder groups that can potentially participate in UBC.

The perception regarding who benefits from such cooperation can influence the decision to increase or decrease their participation or the involvement

of other groups. For example, if academics perceive their own *benefits* to be low, they may refrain from engaging in UBC. Yet, if they perceive *benefits* for students to be high, they might undertake actions that contribute to students' involvement in UBC.

Benefits

'Who receives the benefits of UBC?' - as answered by academics and HEI representatives

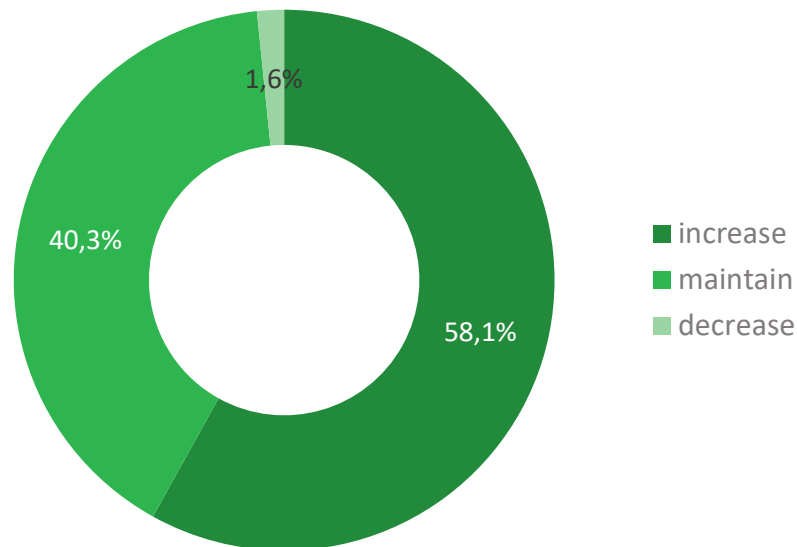


	Academics	HEI representatives
1.	Businesses	Businesses
2.	Universities	Society
3.	Students	Universities
4.	Academics	Students
5.	Society	Academics
6.	Government / public authorities	Government / public authorities

Future intentions

Future UBC intentions – Slovakia

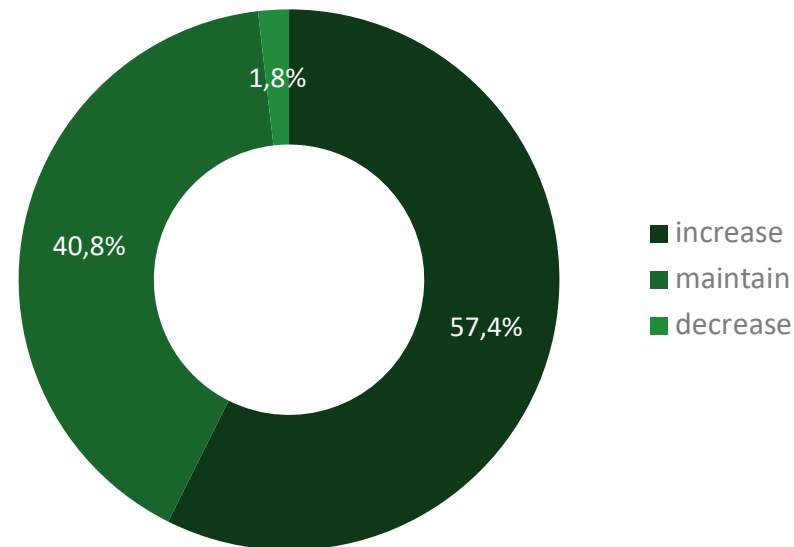
As answered by Slovak academics



Slovak academics show a very strong commitment to UBC. 98.4% of academic expect to maintain or increase their UBC activities. In this sense, Slovakia proves to be an attractive country for UBC, with positive momentum for the future.

Future UBC intentions – EUROPE

As answered by European academics



Academics in Europe show an equal commitment to increasing UBC activities. 57.4% of cooperating academics expect to increase their cooperation and only 1.8% plan to decrease their collaborative activities with businesses. This shows a positive projection for UBC in Europe.

Willingness to recommend UBC

The willingness of Slovak cooperating academics to recommend to a colleague to engage in UBC slightly varies depending on whether this cooperation is in research or in education.

Slovak academics are more satisfied with UBC in research than their European counterparts (NPS=17). While over half (53%) of them will promote it positively, a quarter (26%) of them would do it negatively.

Compared to European average, Slovak academics are also more satisfied in education-related (NPS=8), but their satisfaction is lower than in the research field. 41% of them would act as promoters, whereas 33% would be detractors.

Slovak academics are more satisfied with those UBC activities in the research field, which are those that are more developed. The higher satisfaction in research activities is similar to other European countries. Despite the lower development than the European average, the satisfaction of Slovak academics is higher. This fact, together with their favourable future intentions are a very positive sign for the future development of UBC in Slovakia.

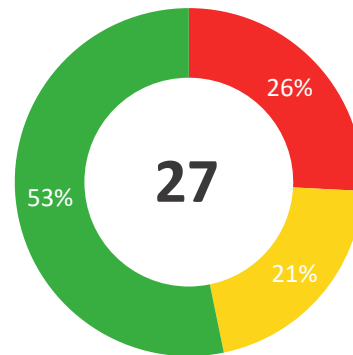
Willingness to recommend to an academic colleague cooperation with business in R&D and education

As answered by academics

	Detractors	Passives	Promoters	Net promotor score
Academics cooperating in E&T	33%	27%	41%	8
Academics cooperating in R&D	26%	21%	53%	27

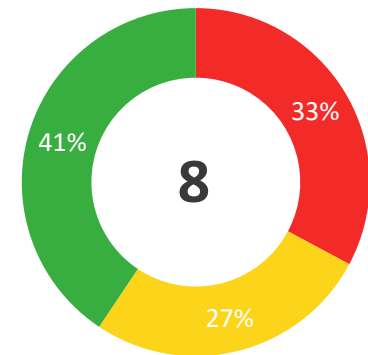
Satisfaction in cooperation with businesses (net promotor score)

Academics cooperating in research



■ Detractors ■ Passives ■ Promoters

Academics cooperating in education

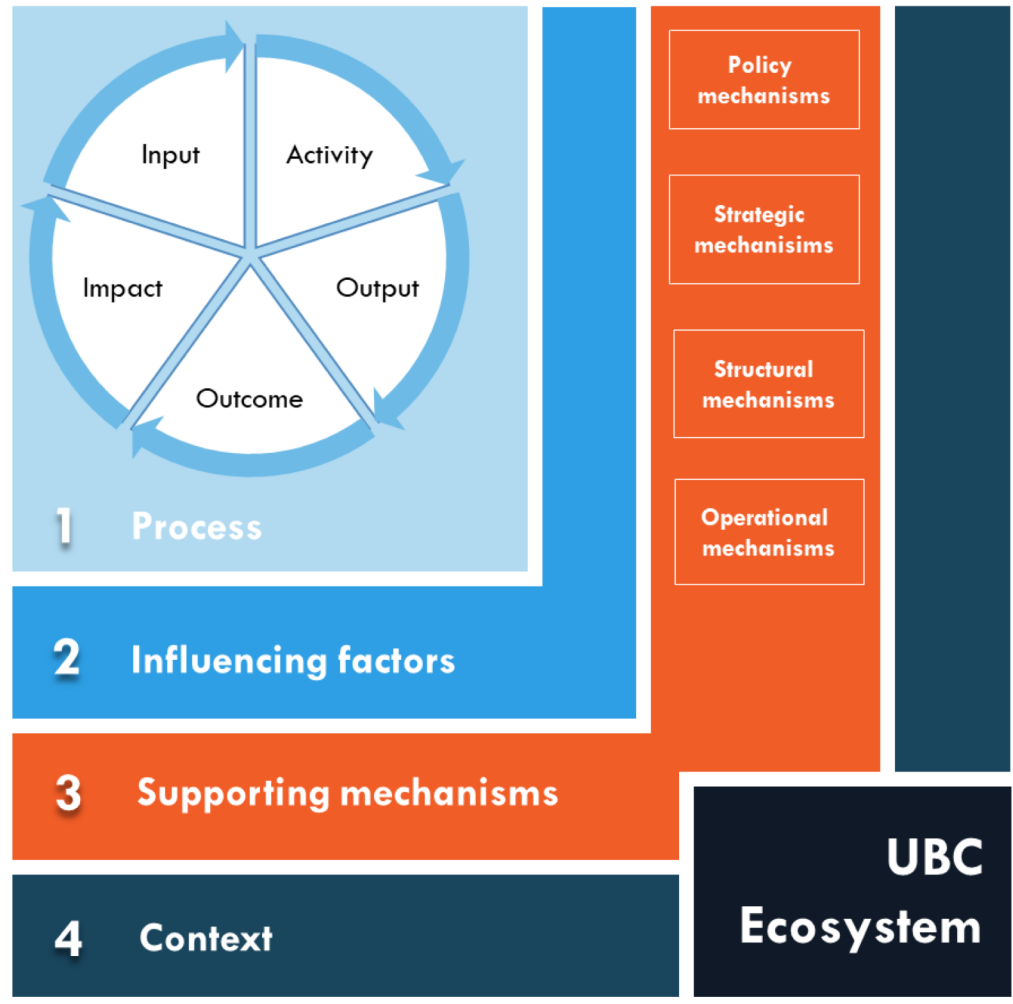


■ Detractors ■ Passives ■ Promoters

European academics' NPS result: 17

European academics' NPS result: -13.8

Supporting mechanisms for UBC



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

There are four types of supporting mechanisms:

- Policy
- Strategic
- Structural
- Operational

This section outlines the extent to which UBC supporting mechanisms are developed in this sample from the HEI perspective.

At the European level, the extent of development of all these mechanisms considerably influences the extent of cooperation.

Supporting mechanisms for UBC

Slovak HEI representatives perceive most policy mechanisms to be developed to a low level. These perceptions are lower than those of their European counterparts.

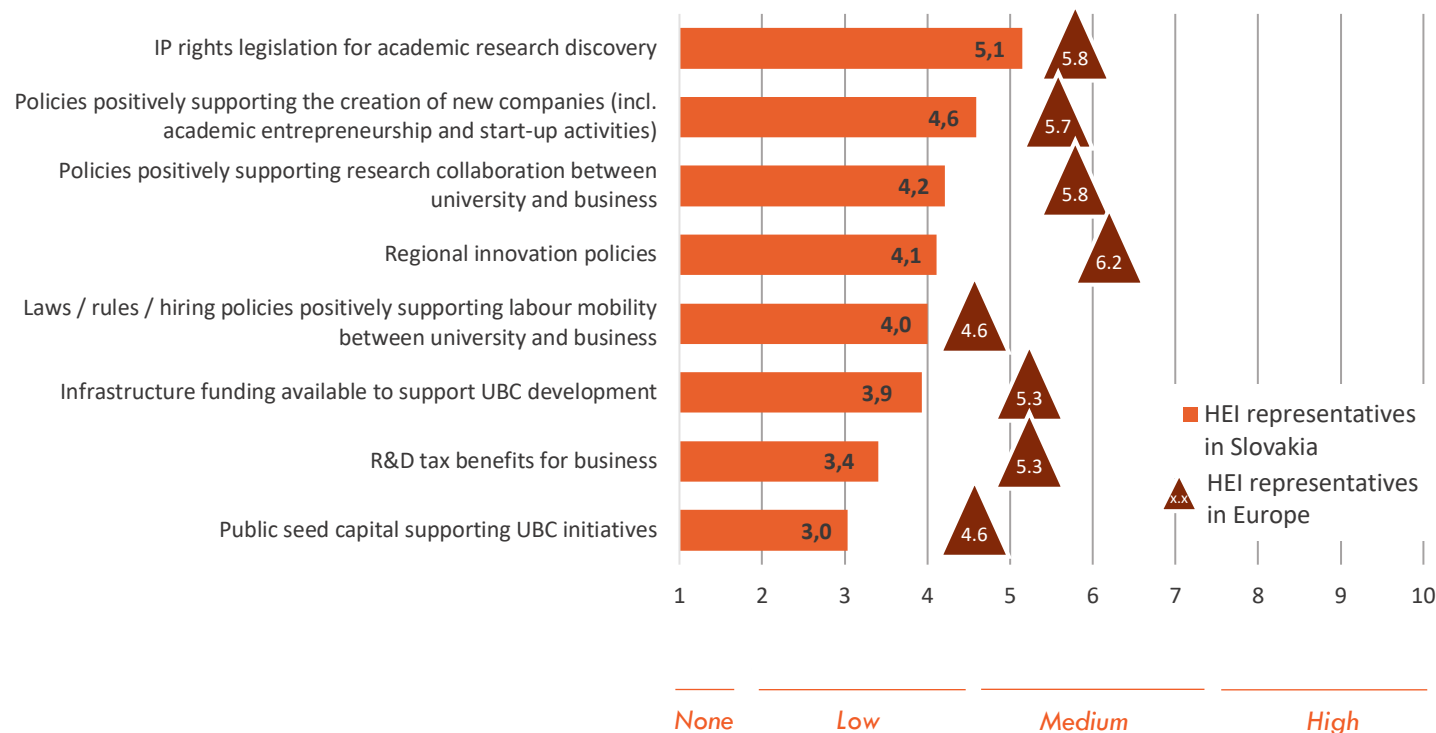
IP rights legislation for academic research discovery is the most developed supporting mechanism (5.1), as there is some support from the Slovak central government for this purpose.

This legislation is followed by the policies positively supporting the creation of new companies (4.6) and research collaboration between university and business (4.2). This is mostly connected to dedicated EU funding and to the growing activity of private start-up incubators.

The least developed mechanism, also considerably lower than the EU average, is the public seed capital supporting UBC initiatives (3.0). This form of support is basically non-existent in Slovakia at the moment, although some steps have been already given to start developing it in the next few years.

Policy mechanisms

'To what extent do these mechanisms support UBC in your HEI?' - as answered by HEI representatives



Supporting mechanisms for UBC

Strategic mechanisms

'To what extent do these mechanisms support UBC in your HEI?' - as answered by HEI representatives



The development of the strategic mechanisms in Slovak HEIs is generally slightly lower than in European HEIs .

In Slovakia, paper strategies are substantially more developed than implementation strategies. The commitment of the top-level management, the vision and the strategy for UBC shows the official commitment of Slovak HEIs to UBC above the actual dedication of resources.

The least developed mechanisms are the practice of recruiting businesses professionals into the knowledge transfer area (4.1) and career/alumni offices (3.6), followed by the reduction of teaching time for undertaking UBC (3.3). Business professionals are getting in general very low involvement in HEI. This is due to poor salary standards as well as to a very closed human resources policy at HEIs, related to the mechanisms for awarding degrees and accreditation standards.

The development of structural mechanisms is slightly lower in Slovak HEIs than in European HEIs.

Both European and Slovak HEI representatives indicated the same two structural mechanisms among the top four: agencies dedicated to UBC and alumni networks. This is rather surprising for Slovakia, where alumni networks have appeared as a weakness in most previous research.

But two of the very top items in European average: board members or vice rector positions and career offices are much less present in Slovak HEIs. This points out to a lack of external representation in university management and a very low focus at graduates' careers by Slovak universities.

Adjunct positions within the HEI for business people are one of the least developed mechanisms for both samples. However, business people more engaged in lifelong learning programmes - more in Slovakia than the European average.

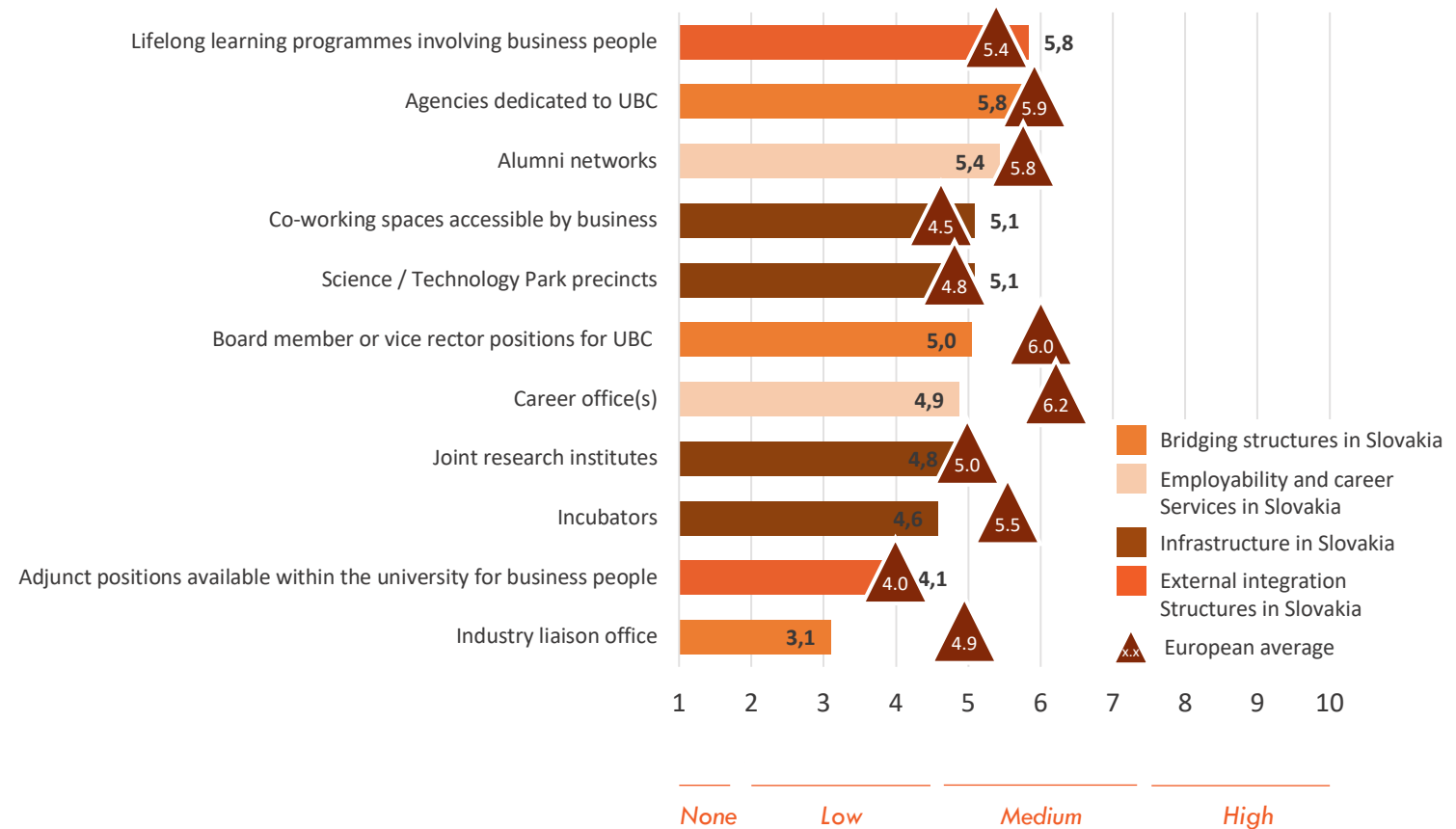
In Slovakia, UBC organizational units, such as incubators and industry liaison offices, are lacking or underdeveloped. Business incubators are created at universities often within science parks projects, with diverse success and lifetime. Some of them act as independent institutions.

Several schools run career or counselling centres and information portals for students and graduates. They offer guidance, scholarship programmes, jobs and internships opportunities. These activities are organised either directly by the HEIs or by private companies and agencies. In such cases, HEIs still provide support, professional background, human resources, etc.

Supporting mechanisms for UBC

Structural mechanisms

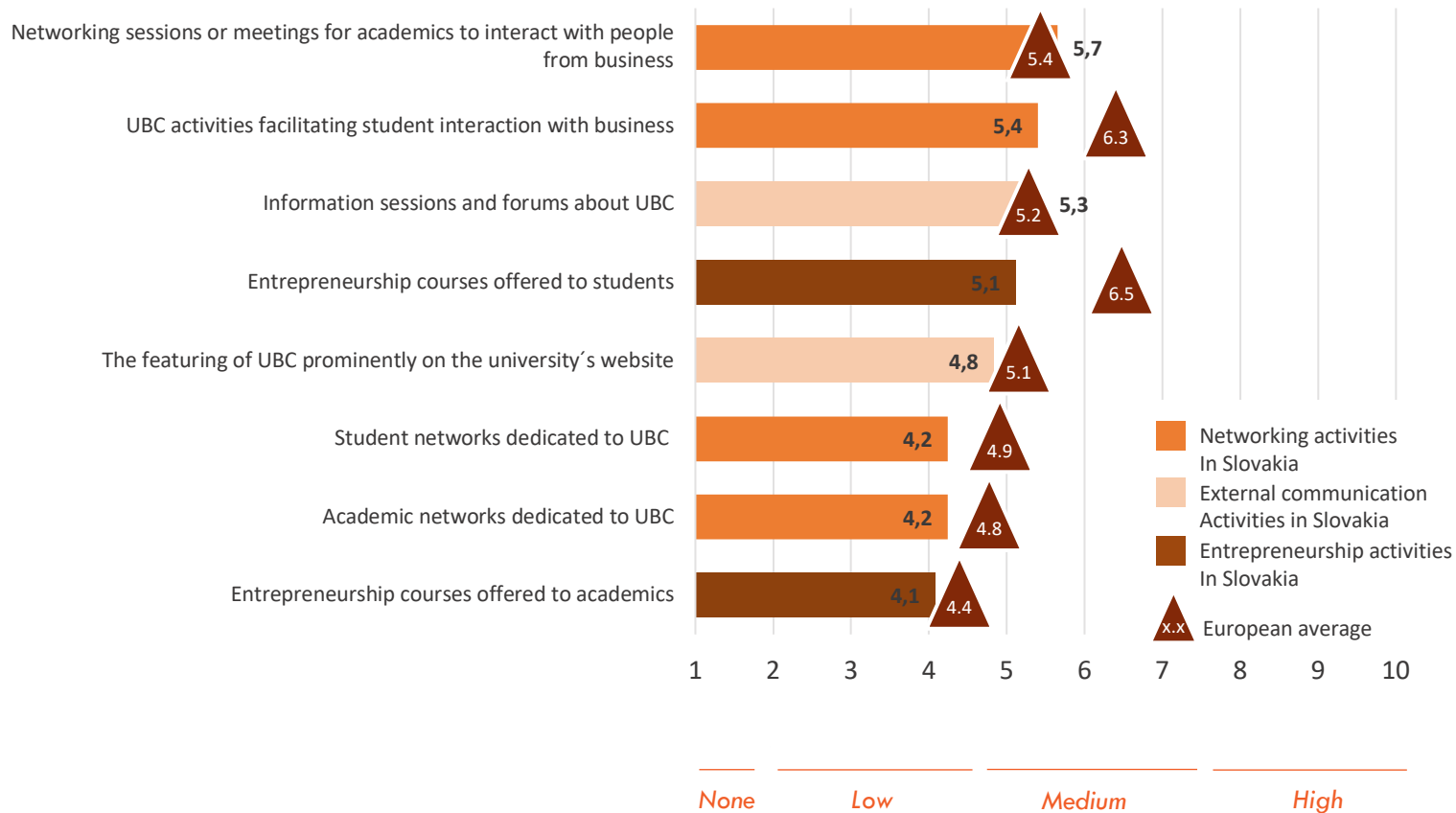
'To what extent do these mechanisms support UBC in your HEI?' - as answered by HEI representatives



Supporting mechanisms for UBC

Operational mechanisms

'To what extent do these mechanisms support UBC in your HEI?' - as answered by HEI representatives



Overall, the development of operational mechanisms in Slovak HEIs is lower than in European HEIs, with the only exception of the networking sessions for academics' interaction with business (5.7 vs 5.4).

Networking related mechanisms including also UBC activities facilitating student interaction with business (5.4) are the most developed operational mechanisms. This could be related to the participation of academics in seminars.

Among the activities focused on academics, the academic networks dedicated to UBC (4.2) and entrepreneurship courses offered to them (4.1) are the least developed operational mechanisms for both groups, scoring lower in Slovakia than the European average.

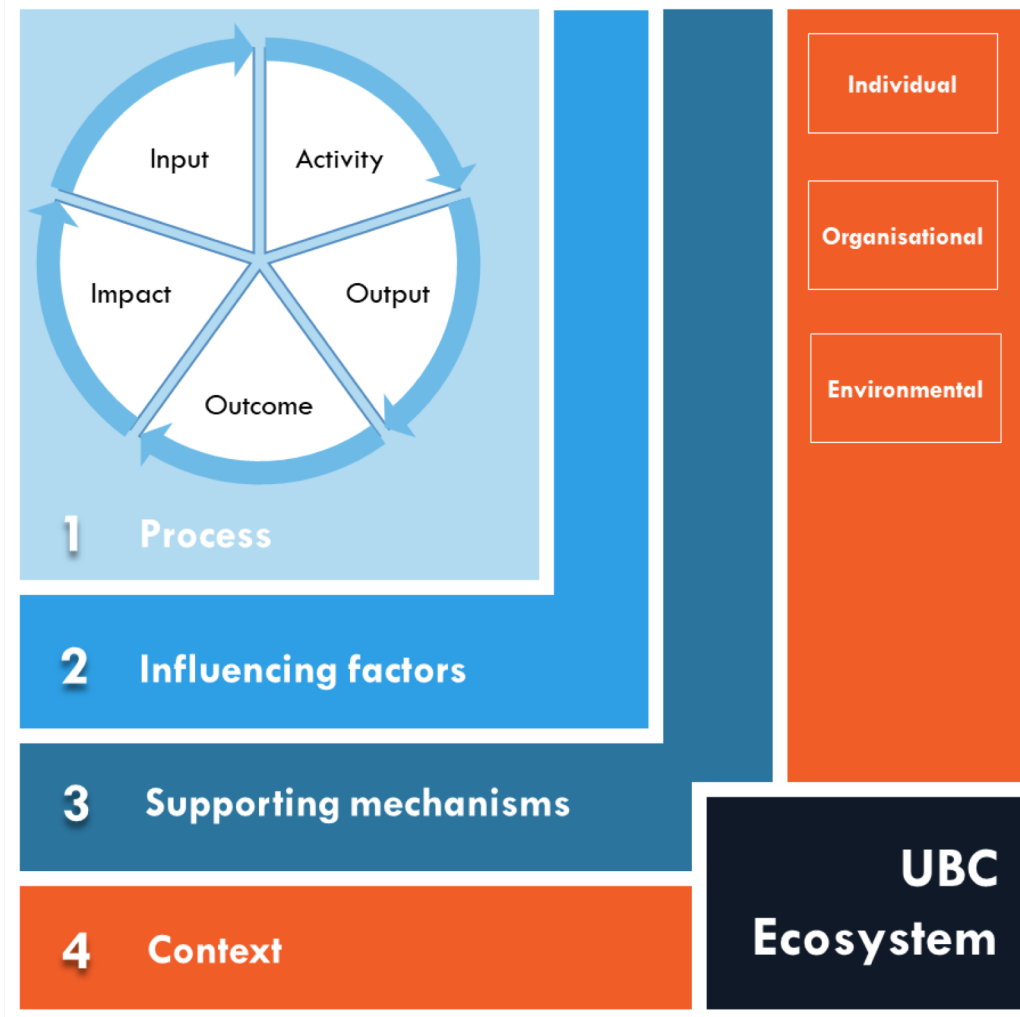
Entrepreneurship courses offered to students show the greatest gap between mechanisms in Slovakia and other European countries. Another, complementary gap harming students education can be identified in much lesser extent of activities facilitating student interaction with business. This occurs despite the existence of regular events such as career days, presentation days, days of graduates, university labour markets, etc.

Context

The degree to which UBC takes place is influenced by a set of elements present in the context of the organisation that cannot be changed in short or medium term.

These include the characteristics of individual actors involved, the institutional factors relating to the university and business, as well as by a set of broader environmental factors (political, economic, social, technological, etc.).

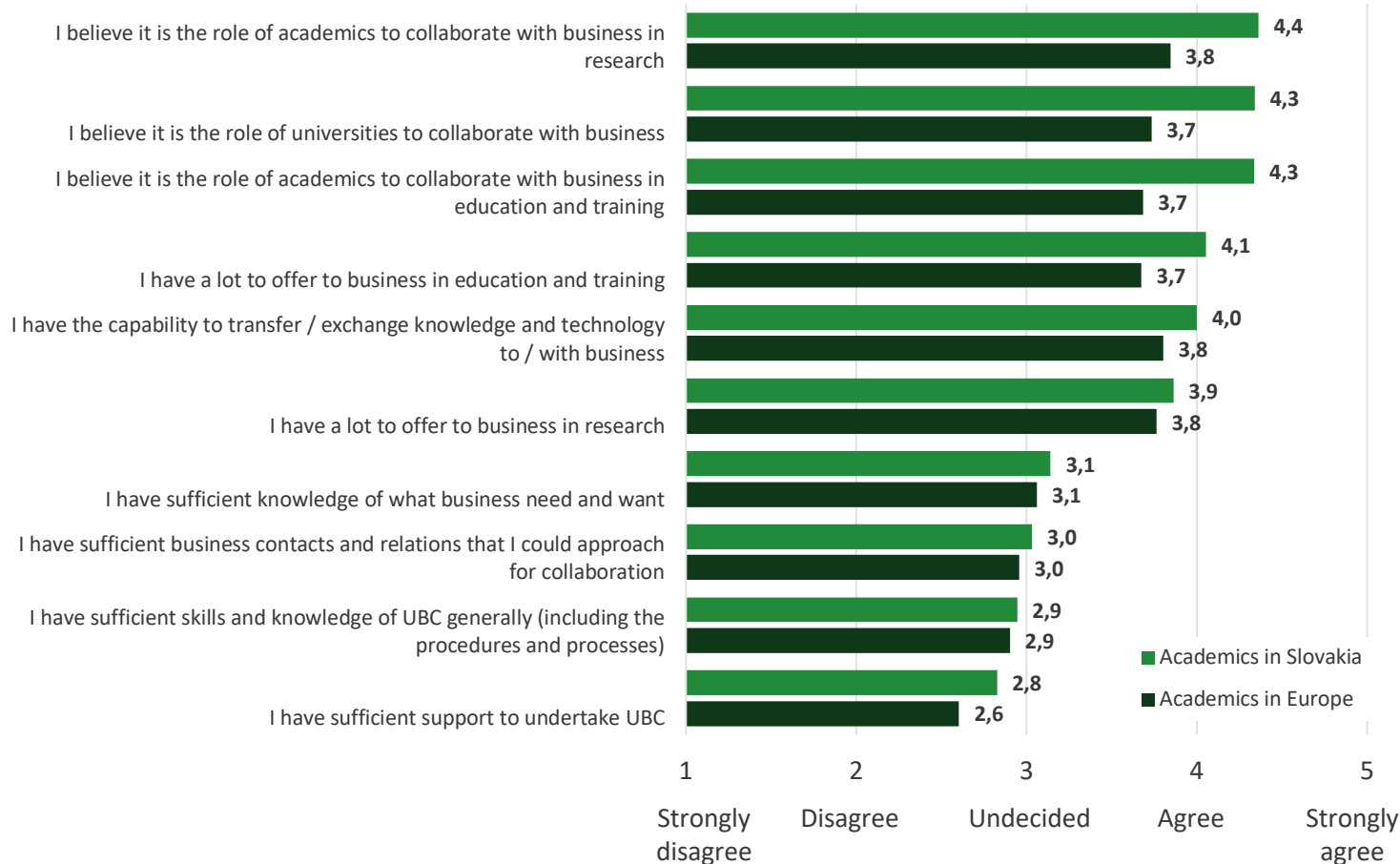
This section outlines how some contextual factors influence UBC in the country.



UBC capabilities

Capabilities for UBC

'To what extent do you agree or disagree with the following statements?' - as answered by academics



Slovak academics have more positive attitude to the capabilities and beliefs about UBC compared to the European average.

They believe that it is university's and their role to collaborate with businesses in both research and education (4.3).

Slovak academics identified their strengths in the ability to deliver education and training (4.0) and to transfer knowledge to business (3.9).

Similarly to academics from other countries, they however perceive they have insufficient business contacts (3.0) and general knowledge (2.9) to undertake UBC, although still over the European average.

Overall, Slovak academics like their European counterparts believe that they lack support to undertake UBC (2.8). It seems like institutions would be less ready for UBC than individuals.

If we compare findings in this set of questions to most other results of this survey, it looks surprising, that Slovak academics are showing such positive personal attitudes toward UBC. Despite in most other survey questions UBC seems less developed if compared to other countries. On one hand it may be a result of socially desirable responding ("we should state this"), on the other hand it can indicate, that the sensitivity of Slovak academics, if invited to UBC, should be high enough for them to get involved – when external motivators fit as well.

Context

Both Slovak and European academics declare a positive attitude towards UBC (4.2 and 4.3).

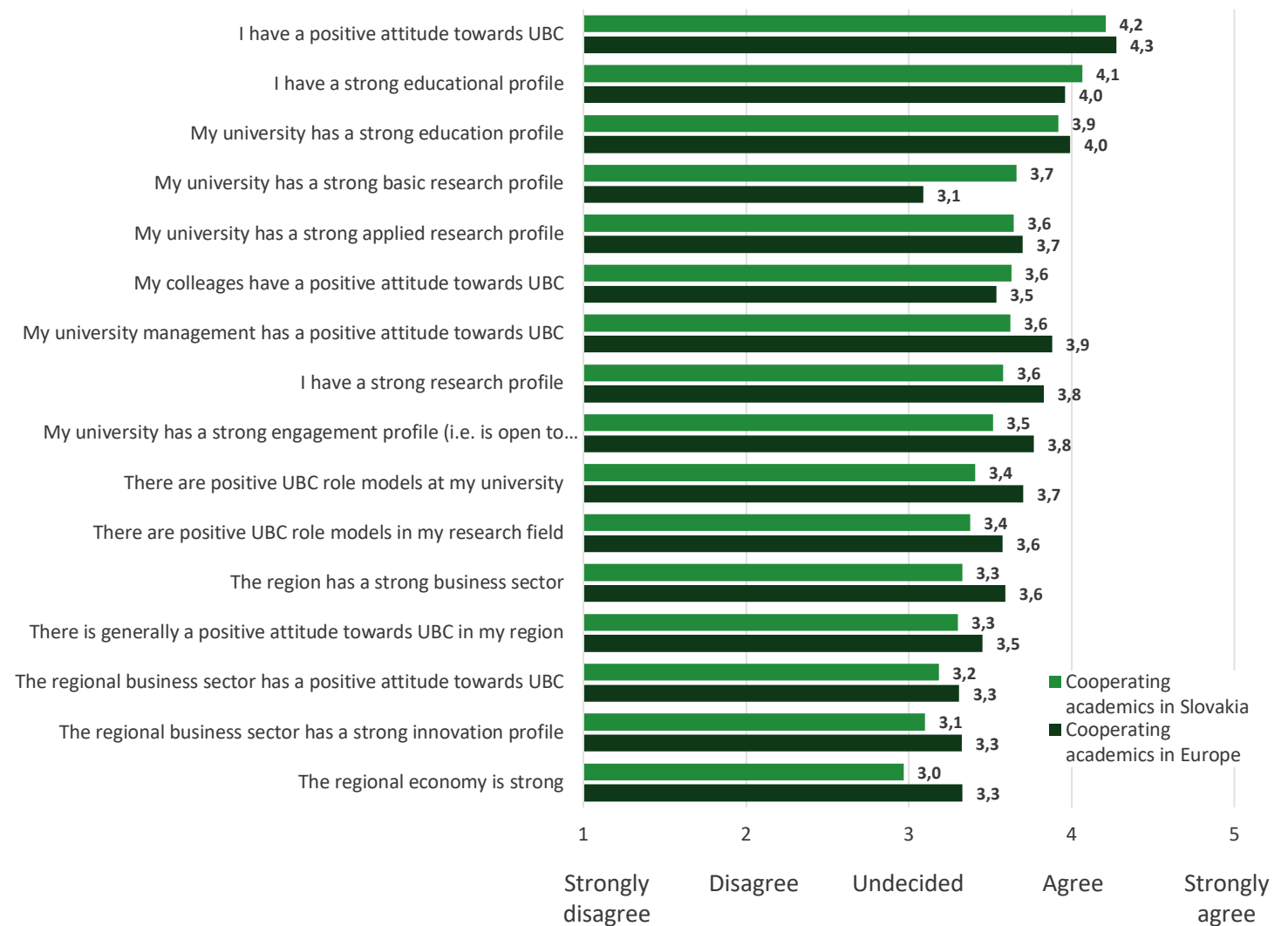
But Slovak academics perceive slightly less positive attitude of their own university and region, including regional business sector towards UBC. If asked about others, UBC gets in the eyes of academics lower support. Reasons for UBC failure might then be attributed also more to external factors.

Although Slovak and European academics perceive their contextual factors similarly, the perception of most contextual factors is slightly less positive in Slovakia.

The only exception is that Slovak academics perceive their universities to have a stronger basic research profiles. This is a symptom related to the self-perception of Slovak universities as science devoted entities. Therefore it is not related to the actual scientific performance of Slovak universities compared to international standards.

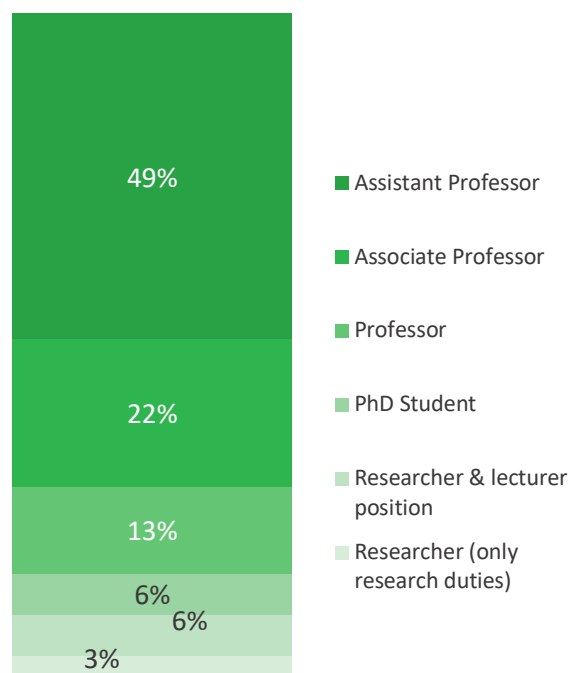
Contextual factors affecting UBC

'To what extent do you agree or disagree with the following statements?' - as answered by academics



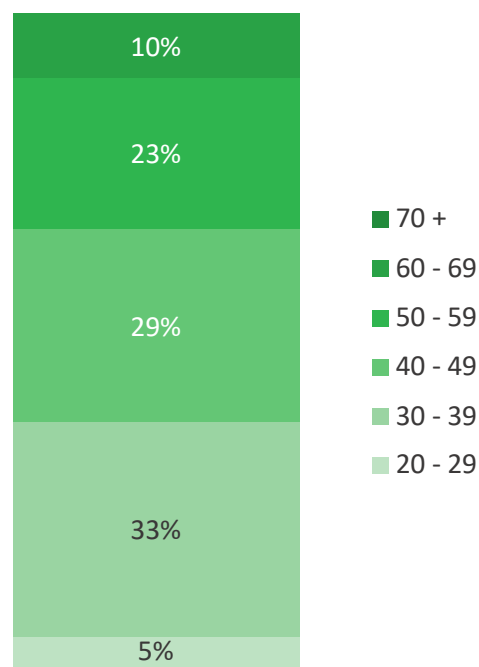
Respondent profile – academics

Position of respondent



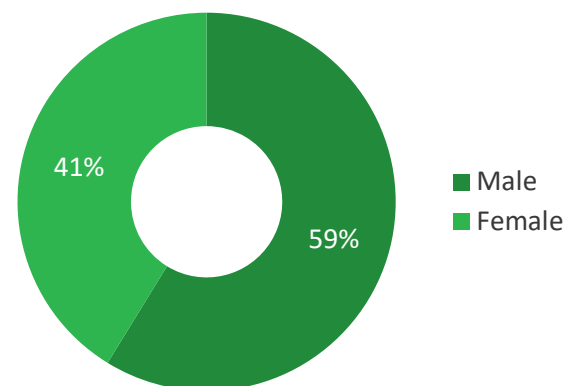
Assistant professors (49%) comprise the largest group, followed by associate professors (22%). The remaining academics identified themselves as professors (13%), researchers and lecturers (6%), PhD students (6%) and researchers (3%).

Age of respondents



Most Slovak academics in the sample are in the middle of their working life. A third of the academics (33%) in the sample are between 30 and 39. Other significant groups are those aged 40-49 (29%) and 50-59 (23%), followed by those aged 60-69 (10%). Academics younger than 30 are 5%.

Gender of respondents



The gender distribution in the academic sample in Slovakia is skewed towards male respondents (59%).

Respondent profile – academics

Context:

There are 35 HEI in Slovakia (of which 20 are public, the rest is private or state owned) with a total of 147 680 students in 2016.

Number of graduates in 2014:

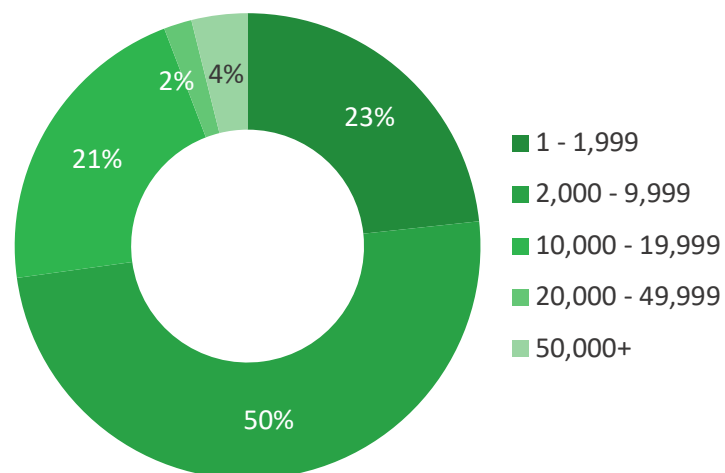
- First level 28,569
- Second level 28,,827

The share of second level university graduates in age cohort 23-28 was 35%.

In the same year there were more than 9,700 lecturers employed, with an average salary of 1,437 Euro/monthly. The number of professors was 1,475 with an average salary of 2,130 Euro/monthly.

In 2014, the combined spending (public and private) on tertiary education was 1.1% of national GDP. Spending on R&D grew between 2014 and 2015 from 0.3% to 0.5% of GDP – mainly due to an increase of EU funding.

Number of students of the HEI

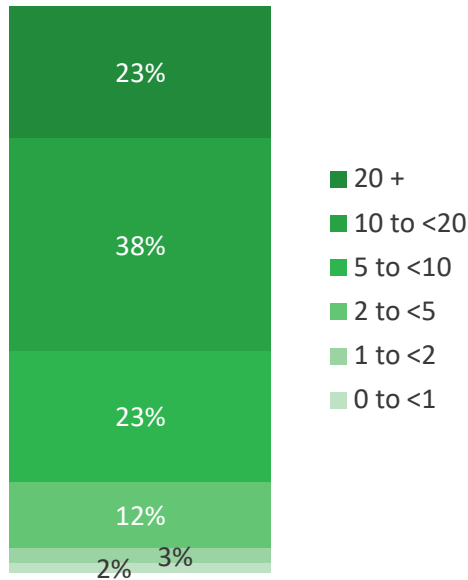


Half of the Slovak academics in the sample work for small HEIs (2,000 to 9,999 students). 23% of them are based in very small HEIs (under 2,000 students). Medium-sized HEIs (10,000 to 29,999 students) are represented by 21% of respondents.

Sample Size	
Slovak Academics	n=148
European Academics	n=10.836
Slovak HEI representatives	n=37
European HEI representatives	n=3.482

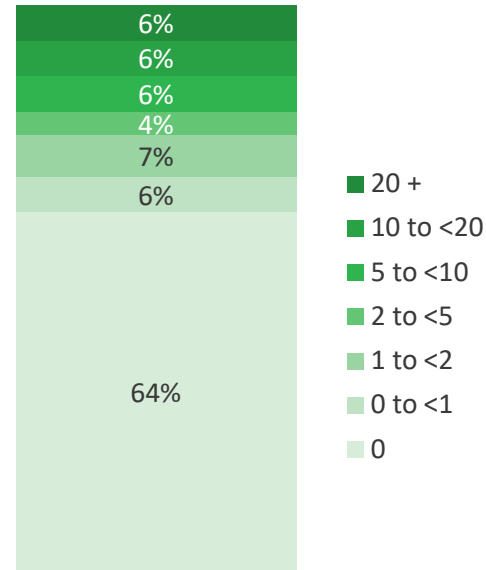
Respondent profile – academics

Years working in university



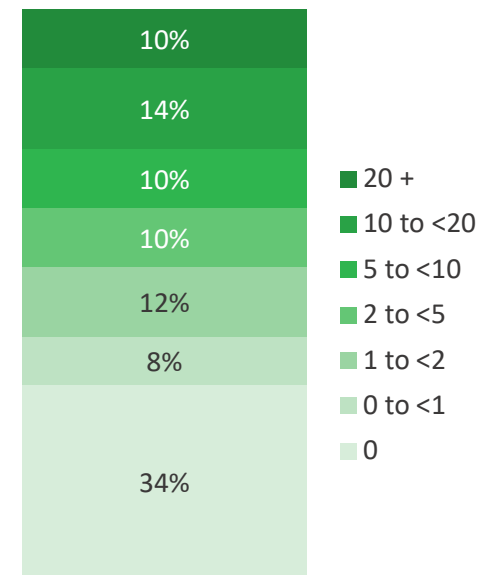
Most academic respondents have worked in academia for several years. Over half of them (61%) have worked in academia for over 10 years. 23% have 5-10 years of experience and 12% have worked in academic for 2-5 years. 5% of the academics have less than 2 year of experience.

Years working in business



Two thirds (64%) of the Slovak academic respondents have never worked in industry before. 11% of them have worked in industry for 2 to 5 years. An even proportion (6%) have 5 to 10 years and 10 to 20 years of industry experience. Only 6% have worked in business for over 20 years.

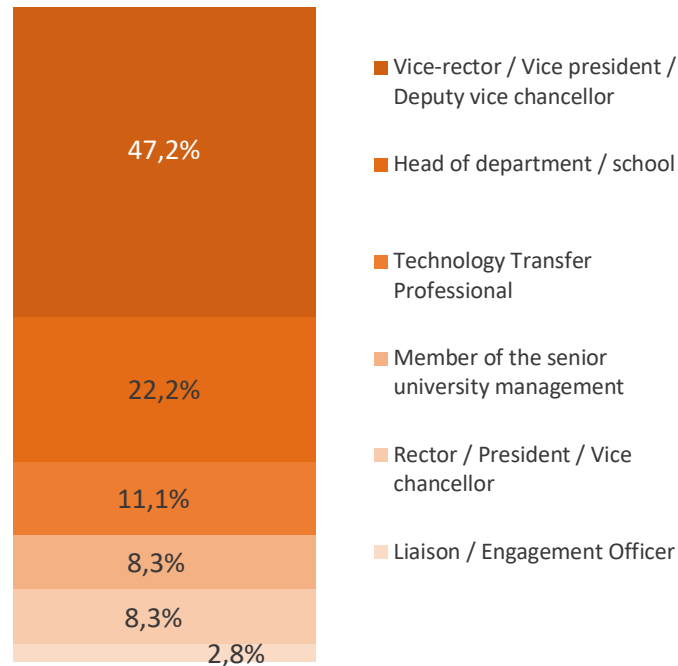
Years involved in UBC whilst working at a university or business



Above two thirds (66%) of academic respondents in Slovakia have some UBC experience. Although only 10% have been involved in UBC for over 20 years, 20% have between 5 and 20 years of experience and 22% between 1 and 5 years of experience.

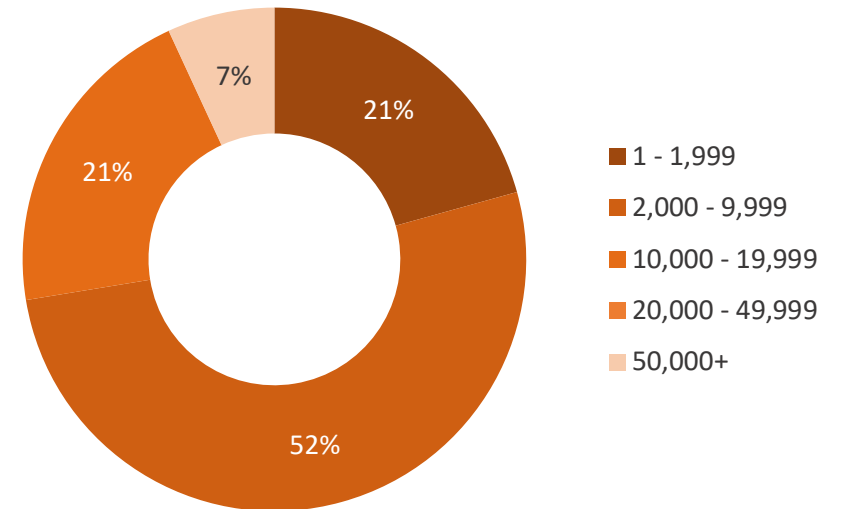
Respondent profile – HEI representatives

Position of respondent



Slovak HEI representatives hold a variety of roles. Almost half of them are vice-rectors or vice-presidents (47%). The second largest group (22%) is represented by heads of departments/schools. The smallest groups are technology transfer professionals (11%), members of the senior university management (8%), rectors or presidents (8%) and liaison officers (3%).

Number of students of the HEI



Overall, over two thirds of HEI representatives work for small HEIs (under 10,000 students), from whom 21% of them work for very small HEIs (under 2,000 students). 21% are based in medium-sized HEIs (10,000 to 19,999 students) while only 7% work in large HEIs (over 50,000 students).

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This report is part of the DG Education and Culture study on the University-Business Cooperation in Europe: drivers, challenges and opportunities in Europe EAC/10/2015. Further information can be found at www.ub-cooperation.eu

This report is also part of the Global University-Business Monitor initiative, a global study into university engagement and cooperation between university and business. Further information can be found at www.uni-engagement.com