LEVERAGING SUCCESS OF YOUNG SCHOLARS IN BUSINESS DISCIPLINE

research monograph edited by
Maciej Mitręga

Visegrad Fund
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Introduction and research summary

The academic world is changing in such a way that the so-called "publish or perish" culture is becoming a dominant environment for scholars everywhere. The old fashion of disseminating scientific discoveries in the form of books is becoming less popular and the importance of publications in impact factor journals is growing. In turn, such journals are especially interested in novelty research that is presented in short forms and that can be easily distributed. All this creates strong pressure on scholars specialized in business as they need to change somehow their professional habits and priorities. The recent study conducted among management faculty in the US by Miller et al. (2011) illustrated that as well as there being positive effects of the popularization of the "publish or perish" culture (e.g. stronger motivation for publishing and more efforts devoted to publishing), there are important negative consequences, such us heightened stress levels, the marginalization of teaching, and delivering research that may lack relevance, creativity, and true innovation. It all means that global academia is at a turning point at the present moment and research on factors that may help scholars to adapt to the new situation is needed to make all these changes more effective and less problematic for the scholars themselves.

Research into factors that have an influence on scholars' success has a rather long tradition (e.g. Wanner, Lewis, & Gregorio, 1981), but only recently has this research field become a hot topic in management research (Ferris, Ketchen, & Buckley, 2008; Flynn, Feild, & Bedeian, 2011; White, James, Burke, & Allen, 2012), which means that our knowledge of the determinants of success in business academia is fairly new and fragmented. As concluded by Ito & Brotheridge (2007), although a growing body of research seeks to address conditions for scholars' success, studies on research productivity have focused on institutional and non-behavioural antecedents, and as a result there exists very little research that considers the strategies that individuals employ to improve their personal research productivity. Moreover, prior empirical research in this area was very US-centered, and those studies that were conducted in other countries have provided evidence that determinants of success are dependent to some extent on contextual factors (Bentley, 2011; Jonkers & Tijssen, 2008; Önder & Kasapoğlu-Önder, 2011).

The situation of business scholars in Europe is very specific. Among the 10 best MBA schools in global ranking (Financial Times, 2013[1]), only three are located in

[1] http://rankings.ft.com/businessschoolrankings/global-mba-ranking-2013

Europe, and the share of European scholars' publications in top-tier business journals is very low. For example, analysing the publication scores of scholars specializing in information systems in the best journals devoted to this area, Lyytinen et al. (2007) found that only 17,3% of the most successful scholars were from Europe. In contrast, 76,6% of them were from the USA. In the same fashion, among 39 scholars who were most productive in major marketing journals, there were only two scholars who represented European universities (Bakir, Vitell, & Rose, 2000). Lyytinen et al. (2007) suggested that these relatively low publishing scores of European scholars result from, among other factors, such things as weak publishing cultures, inadequate Ph.D. preparation for article publishing, weak reviewing practices, and poorer command of research methods, all these being features of European academia.

Similarly to the level of economic development (e.g. personal income level), Europe is not homogenous in terms of the academic systems developed in particular European countries. Specifically, the most important division is connected with the fact that countries from Central and Eastern Europe (CEE) were members, till the 1990s, of the Soviet political bloc. As a result, the academic systems in these countries were largely influenced by the principles of Soviet academic life, which meant, for example, limited access to English languages publications and concentration on either regional or national academic careers. Moreover, during the communist period CEE countries functioned as centrally planned economies totally dominated by state-owned enterprises, so management, as a scientific discipline focusing on managing practices in private companies, did not have a natural environment for development there. One can assume that only after the collapse of the Soviet Bloc, did the CEE universities open themselves up to so-called global science, which meant better access to international journals, increased international mobility of scholars and increased effort to publish in major, English language international journals. It should also be emphasized that the transformation of academic systems in CEE countries did not take place immediately, but usually followed some evolutionary steps which resulted in various country-specific hybrids of elements originating from the "old" system and elements incorporated from the "new" system. This was the specific situation of scholars in the so-called Visegrad Countries (V4), embracing the Czech Republic, Hungary, Poland and Slovakia, which are all post-communist countries (former members of the Soviet Bloc) and which all have been re-orienting their academic systems towards international standards. At the moment none of universities based in the V4 is ranked among the 100 universities with the best MBA programs (Financial Times, 2013[2]), which signals that this academic transformation has not brought about so far the most fruitful results.

[2] http://rankings.ft.com/businessschoolrankings/global-mba-ranking-2013

In this monograph we focus on factors contributing to the research success, especially publication success, of business scholars in V4 as representatives of the post-communist Europe. Considering prior international research devoted to scholars' success, we decided to include both: analysis of institutional factors that may influence publication productivity of V4 scholars (e.g. existing principles of academic promotion systems in particular countries) and V4 scholars' perceptions with regard to their scientific activities and factors that may stimulate their success. In our research project, we first analyzed and described academic promotion systems in V4 countries. Part I of the monograph is fully devoted to these issues and is divided into 4 chapters (the Czech Republic, Hungary, Poland and Slovakia). Thus, the first part of the monograph makes the secondary sources context for the empirical research results that are presented in Part II.

In our empirical study we concentrated only on young business scholars (up to 35 years of age), as we assumed that these V4 scholars are making the most substantial efforts on career development in international terms (e.g. they need to adjust to new requirements from transforming systems) and, many times, they lack guidance on how such career development may be achieved. Our empirical study was to some extent exploratory and to some extent confirmatory in nature. Exploration took form of conducting in-depth interviews with 19 young scholars from Visegrad countries. The majority of these scholars were employed at universities as assistant professors. In-depth interviews allowed us to draw a spontaneous picture of factors that young business scholars associate with success of their publications. We were especially interested in their opinions about publishing in international journals, and most importantly, impact factor journals. The qualitative research results, as well as detailed qualitative research design, are presented in the first chapter of Part II of the monograph.

The qualitative research results combined with the review of prior research about academic success determinants (e.g. Bland, Center, Finstad, Risbey, & Staples, 2005) resulted in constructing the questionnaire that was used in the international survey. In this questionnaire we referred to principal factors that could be associated with the success of young scholars from the Visegrad countries: professional competences and personality factors (see chapter 2 of Part II), organizational resources and organizational culture (chapter 3, Part II), network resources and academic teamwork (chapter 4, Part II) and demographic features (gender, age). We also asked informants about the results of their scientific activities, especially the number of their scientific publications and publications in indexed international journals (see chapter 5, Part II).

The majority of survey questions were adapted from prior studies and they mainly took the form of Likert scales. The questionnaire was originally created in English and then subsequently translated into four languages: Czech, Hungarian, Polish and Slovakian. Then the questionnaire was distributed, using both academic

social websites (via linkedin.com, researchgate.net, academia.edu), and face-to-face contact (through direct interactions with young scholars, e.g. Ph.D. students participating in the same lecture). We incorporated non-random, snowball sample technique to access those young business scholars in V4 who are the most productive or strongly oriented at career development. Eventually the full international sample consisted of 415 young scholars specializing in business disciplines, and who were quite evenly distributed among the four V4 countries: Poland – 101, Hungary – 100, Czech – 109, Slovakia – 105.

Our research project sheds light on the situation of young business scholars in the Visegrad countries. The review of academic systems in V4 suggests that there is an increasing pressure on young business scholars to publish in top international journals, as such cutting-edge publications are more and more treated there as important criteria for academic promotion. This is especially visible with regard to promotion requirements for post-doctoral positions in V4 (e.g. requirements for Full Professorship in Hungary); however, in general, academic promotion criteria in V4 are still largely a mixture of the old post-communist system and the new US-inspired requirements. As an illustration, in the case of all V4 countries there exists the habilitation procedure as an intermediate step between obtaining a doctor's degree and a full professorship. Such habilitation procedure is usually quite internalized at the faculty level, so the international performance of the applicant (e.g. impact factor publications) may not necessarily be counted as the main criterion in this procedure.

The results of our survey and qualitative study (see details in Part II of the monograph) suggests that individual international success of business scholars in Visegrad area is usually a mixture of both: professional competences (research skills, grant-getting skills, English language skills, and strong orientation toward personal achievement) and network resources (collaborative ties with scholars from other universities). Among the young scholars who participated in our survey, the most productive were those who had close and large network ties with scholars working in more advanced countries. Such research result can be utilized by academic authorities from Visegrad countries to stimulate international networking among young business scholars (e.g. international conferences, visiting positions). The organizational factors at the university level, except for a fair system for rewarding outstanding research achievements, seem to play a less important role here. This suggests that the "publish or perish" orientation is being implemented quite slowly in the organizational cultures of universities from Visegrad countries and the international successes of young Visegrad scholars are mainly driven internally (e.g. by their personal goal achievement orientation) or by their networking experience.

Maciej Mitrega

Part 1

Academic promotion system in Visegrad countries

Chapter 1

Academic promotion system and scholars' success indicators in the Czech Republic

Vojtěch Spáčil[1]

1.1. Introduction

One of the most enduring beliefs in academe relates to what is often called as the "publish or perish" phenomenon (Caplow and McGee, 1958). Pressure to publish has long been considered a fact of life within all academic disciplines (Lucas, 2006; Smith, 1990), including management (Baruch and Hall, 2004, Miller, Taylor and Bedeian, 2011).

There are many reasons why Czech scholars are more compelled to concentrate on publishing in peer-reviewed journals. Firstly, in the last decade the system of financing public universities has dramatically changed. For a long time the contribution per student was a key source of funding for universities. This quantitative approach was complemented by adding qualitative factors which include the assessment of scientific performance (number of publications in reviewed journals, number of external grants), level of internationalization (number of full-time international students, number of exchange students, number of visiting professors) and employment rate of graduates.

Secondly, the strategy of the Czech Science Foundation, which is among the key providers of research funding, has been modified. Only applicants with impacted journals in their publication list have a chance to win grants.

Thirdly, the Accreditation Commission, a body appointed by the Ministry of Education, Youth and Sport, has rapidly increased demands on the promotion process at Czech universities. The Accreditation Commission evaluates the activities of universities and the quality of accredited activities and publishes the results. The Accreditation Commission issues an opinion for accreditation of study programs and for authorization to carry out habilitation and professorship procedures. It

[1] Vojtěch Spáčil, Technical University of Ostrava

audits the quality of dissertation theses and habilitation theses. The Accreditation Commission also assesses the scientific and teaching profiles of newly-appointed associate professors and full professors. In some cases the university and faculty have been asked to modify (tighten) internal criteria for the habilitation process and the process for appointing full professors.

These changes were caused by the desire to intensify the scientific potential at the universities and strengthen their competitive position in the international environment. Only two Czech universities are in the TOP 500 world university ranking based on The Times survey. The same situation obtains in Hungary. Poland has three universities in the TOP 500.[1]

1.2. Czech Academic Promotion System

In the Czech Republic, there is actually a three-level system of building an academic career. We distinguish three academic positions – Ph.D. (Assistant Professor), Habilitated Docent (Associate Professor) and Professor (Full Professor). The promotional system is generally defined by Act No. 111/1998 about Universities. This Act has been amended many times. The attempt to submit and adopt a new law has failed due to disagreements in the political environment.

The doctoral study program is aimed at scientific research and independent creative activity in the field of research. The standard period of study is from three to four years. Study in the doctoral program is by an individual under a supervisor's control. The study is completed with a state doctoral examination and defense of a dissertation, which demonstrates ability and readiness for independent work in research.

The thesis must contain original and published results or results accepted for publication. Graduates of doctoral study programs are awarded the academic title of „Doctor" (Ph.D). The doctoral study program is monitored and assessed by a specialist board appointed by the internal regulations of the institution or the part of it that offers the accredited degree program. The doctoral council is elected from among its members.

The habilitation procedure may take place at a university that has an accredited doctoral degree program, under which the habilitated field or at least a substantial part of it has been offered. It is also necessary that the university or faculty possess a valid accreditation of habilitation procedure. The habilitation procedure is initiated on the request of the applicant. The proposal must contain a curriculum vitae, documents proving acquired titles and teaching practice, and a list of grants,

publications and citations or other documents evidencing the scientific skills. The requirements needed for submitting the application are specifically defined by each faculty or university. The proposal must also specify the field in which it called for habilitation and the applicant has to submit the habilitation thesis. The proposal is sent to the dean of the faculty that is accredited in the field of habilitation, or rector, if accredited in the field of the university.

Then dean or rector submits a proposal for the composition of the inaugural five-member committee. The habilitation committee consists of professors, associate professors and other distinguished representatives of the same or a related field. The habilitation committee will assess the scientific qualification of the candidate for the field and his (her) previous teaching experience. The chair of the committee and three members must be from other institutions than the university, in which the habilitation procedure is held.

The habilitation lecture and defense of the habilitation thesis take place in a public session of the Scientific Council. After the debate, in which the candidate must be given the opportunity to comment on the opponents'report, defend his/her thesis and speak about his/her previous scientific and educational activities, the scientific council by secret ballot act on whether the candidate is to be appointed associate professor.

In the case of a positive result of ballot, the associate professor is appointed by the rector according to the habilitation procedure. The college informs the Ministry of the opening of habilitation as well as the results of the habilitation procedures and the Ministry publishes the information on its website.

The professorial appointment procedure may take place at a university that also has an accredited doctoral degree program, under which the field of appointment or at least a substantial part of it has been offered. It isessential that the university possesses a valid accreditation for professorship procedures.

Within the professorship procedures, the educational and scientific qualifications of the applicant are verified. The applicant should be a prominent and recognized scientific personality in his (her) field. The habilitation procedure is a prerequisite for launching the applicant's appointment as professor.

The professorial appointment procedure is initiated at the request of the applicant, supported by at least two written opinions of professors in the same or a related field. The process should also be launched on the request of the dean or the rector submitted to the Scientific Council. For the assessment of the proposal, the dean or rector appoints a five-member committee composed of professors, associate professors and other distinguished representatives of related fields.

The evaluation committee assesses the qualifications of candidates and votes by ballot on whether the candidate has been appointed professor. The requirements which the applicant should fulfill are defined by the Scientific Council of faculty.

The Scientific Council shall invite the applicant to give a lecture at a public meeting. The applicant presents a concept of scientific work and teaching in the field. After the lecture, the Scientific Council shall act by secret ballot on whether the candidate is to be appointed professor. Professors in specific fields are appointed by the President of the Czech Republic.

Macháček and Kolcunová (2005) have analyzed habilitation procedures and professor appointment procedures at Czech economic faculties in the years 1999-2005. Their sample included 67 full professors and 115 associate professors who successfully passed the promotional process. They found that 49% of professorial and 55% of habilitation procedures resulted in the granting of titles without the candidate needing to submit any publication in peer-reviewed journals. Just 11% of associate professors and 15% of full professors had published at least one article in a worldwide peer-reviewed journal before their habilitation or professorial appointment.

As might have been expected, there is significant interdisciplinary disproportion in the publication profiles of successful candidates. While 30% of associate professors (and 33% of full professors) from the field of economic slack even a single article in peer-reviewed journals, 80% of associate professors (and 60% of professors) in the fields of accounting and financial management and as much as 81% of associate professors (and 72% of professors) in the field of business administration and management have failed to publish a single article in such journals (Macháček, Kolcunová, 2005).

Thereafter, the disappointing results of habilitation and professorial procedures led to a tightening of the accreditation process. Faculty had to take measures to increase the intensity of habilitation and professorship procedures and to work out more demanding requirements for both types of proceedings.

The requirements used for the habilitation procedure are usually structured into three fields. Each applicant for the position of associate professor should fulfill a minimum of quantitative standards. These three evaluation fields are as follows:

1. Requirements for creative and scientific activities
    - At least one monograph (research monograph) or textbook with a substantial share of the applicant issued by a recognized publisher.
    - At least two articles in peer-reviewed journals or conference proceedings, which are registered in the database WoS (Web of Science) or Scopus. At least one of these two articles must be in a peer-reviewed journal (periodical).
    - At least 5 articles in peer-reviewed journals (periodicals), while an article in the WoS database is counted 4 times and 2 times in Scopus.

- At least 10 articles in peer-reviewed journals (periodicals) or conference proceedings, while an article in the WoS database is counted 4 times and 2 times in Scopus.
- At least three of the above 10 articles must be in a foreign language published abroad or in international databases WoS or Scopus.
- Obtaining a research project (grant).

2. Requirements for recognition of the work of the applicant by expert
   - At least 10 citations (excluding self-citations) in peer-reviewed journals (periodicals), conference proceedings or scientific monograph,while at quote in the WoS database is counted 4 times and 2 times in Scopus.
   - At least one quotation (excluding self-citations) in database WoS or Scopus.
3. Requirements for teaching skills certified by the higher education practice
   - At least 4 years' college teaching experience, of which at least 2 years is in the field of habilitation and at least 2 years'teaching is performed – after obtaining the scientific degree (Ph.D.).

The habilitation committee and the Scientifc Council of the faculty not only assess the fulfilment of requirements but evaluate the quality of the submitted monographs and articles.

The style of requirements for the professorial appointment procedure is generally the same. Each applicant for the position of associate professor should fulfill the minimum of quantitative standards.

The requirements for professors can be also divided into three fields, as follows:

1. Requirements for the creative and scientific activities
   - At least one monograph (Research Monograph) or textbook with a substantial share of the applicant.
   - Authorship (co-authorship) at least two other professional books.
   - At least one article in a peer-reviewed journal (periodical) recorded in the database WoS (Web of Science) or Scopus.
   - At least 4 articles in peer-reviewed journals (periodicals) or conference proceedings.
   - At least 10 articles in peer-reviewed journals (periodicals), while the database record is counted 4 times WoS and Scopus 2 times.
   - At least 30 articles in peer-reviewed journals (periodicals) or proceedings. At least five of the above-mentioned 30 articles must be issued in the foreign language abroad or in international databases for WoS or for Scopus.
   - Obtaining a full or significant share in the solution of a scientific project (grant).

2. Requirements for recognition of the work of the applicant by expert
   - At least 15 citations (excluding self-citations) in peer-reviewed journals (periodicals), conference proceedings or scientific monographs, while the quote in the WoS database be counted 4 times and in Scopus 2 times.
   - At least two citations in WoS database or Scopus database.
3. Requirements for teaching skills certified by the higher education experience
   - At least five years university teaching experience in the field of appointment, of which at least 3 years in the field after the attaining of habilitation.
   - Obtaining a full or significant share in a pedagogical project (grant).
   - Supervisor of at least three doctoral students, of which at least two have defended their doctoral theses.

The evaluation committee and Scientifc Council of faculty (Scientific Council of the university) assess the complete scientific and teaching profile of the applicant. Requirements express standard criteria which are used as a guide for potential applicants.

The above-mentioned criteria for habilitation procedure and professorial appointment procedure do not come from a particular faculty or university but mirror standards typical for public economic faculties (universities) throughout the Czech Republic [2], [3], [4], [5].

1.3. The Assessment of Scientific Performance

Before proceeding to evaluate scientific output one must first understand how the system of science and research works overall in the Czech Republic. The Research, Development and Innovation Council is the essential organization for the advancement of science in the Czech Republic. It is also the government advisory body. According to its statute, the prime minister is its chairman. Within the scope of this body's responsibilities there is for instance the task of forming the national strategy on science and research, defining priorities of applied research, development and innovation, making analyses and presenting opinions to the government in the field of science, research and innovation. The Research, Development and Innovation Council also suggests nominations of members of the board and the chairman of the Technology Agency of the Czech Republic [6] and the Czech Science Foundation [7]. These institutions are the major providers of science and research funding in the Czech Republic. Czech institutions may apply for additional financial support from

the funds of the European Union, especially from the operational programs Research and Development for Innovation and Education for Competitiveness (Fabián, 2013).

The formulation of rules for evaluation and funding of science and research organizations in the Czech Republic is one of the most important tasks of the Research, Development and Innovation Council. This methodology is then not only used to evaluate the quality of publications of universities and research institutions, but it is also authoritative for subsequent funding of these institutions from the national budget. Universities and research organizations submit their outputs annually to the RIV system (information register about R&D results)[8] where they are scored and subsequently financially rewarded. Among significant eligible outputs, there are scientific monographs, conference papers, patents and, prominently, scientific articles. These are scored and financially rewarded only if the source journal is in one of the following:

- JCR;
- Scopus;
- the ERIH registry;
- the list of peer-reviewed, non-impacted periodicals published in the Czech Republic.

Authors are therefore motivated by the management of their institutions to publish their articles only in these types of journals. Impacted journals are the ideal target (IF journals) because they receive the highest score, and in turn, secure the highest financial rewards. The universities are assessed based on the methodology of the Research, Development and Innovation Council and they get a cumulative score for more recent five years. Reviews are presented through uncommented table summarizing the "value" of university (faculty) outputs expressed via RIV points (see Table 1).

Table 1. Score of TOP10 Czech Universities based on RIV points

Institution	2010	2011	2012
Charles University Prague	487227	513338	544457
Czech Technical University Prague	194547	211796	235606
Masaryk University Brno	191667	197256	209251
Palacký University Olomouc	101708	122835	153671
Brno University of Technology	115882	134934	148397
Institute of Chemical Technology Prague	65174	79556	86497
University of South Bohemia	55586	65244	75282
Technical University Ostrava	35267	52308	72274
West Bohemia University Plzen	49036	62241	71835
University of Pardubice	49098	56925	63489

Source: [9]

Outputs from the RIV system have a quantitative character. It is difficult to recognize whether scholars at university concentrate on many articles in peer-reviewed, non-impacted periodicals published in the Czech Republic, or whether they publish a limited number of articles in journals with high impact factor.

Browsing the records in the database of WoS is the other way to analyze the scientific performance of universities. Table 2 contains the number of articles for the six most productive Czech universities in the Web of Science database in period (2010-2014). These results include articles in peer-reviewed journals and publications in worldwide conferences. The concentration ratio in this case is enormous. Charles University as the top Czech university has in the WoS database the same number of records as the universities in the second, third, fourth and fifth places combined.

Table 2. Number of articles in WoS at TOP6 Czech Universities in 2010-2014

University	Articles
Charles University Prague	16242
Masaryk University Brno	5202
Czech Technical University Prague	4840
Palacký University Olomouc	3884
Technical University Ostrava	2325
Mendel University Brno	1203

Source: WoS

This summarized table does not reflect the great diversity in publishing practices of individual disciplines, but only add up the number of different types of R & D results at the universities.

In the Czech Republic we also know very little about the scope of the quality of the results of universities and research centers in various fields (scientific disciplines) at the national level. In various fields the RCIO index provides information about the number of articles of Czech authors in journals registered in the databases of WoS. This index captures the response of published academic articles on the average value. In that calculation all published articles are included (both the very frequently and the very little cited). The informative value for the index RCIO index is therefore relatively low (Jurajda, Münich, 2012).

Since publishing practice is different in various fields, researchers can assess the number of publications with high impact factor only within disciplines and never across disciplines. Jurajda and Münich (2012) have published a study in which they assess the excellence of universities via published articles with impact factor within the period from 2006 up 2010. Journals are in every field defined in WoS sorted by impact factor (IF) from the highest to the lowest. Ranked journals are divided into

three equally sized groups (third): upper tertile (highest IF), middle tertile and lower tertile (lowest IF). (The symbols U, M and L are used in the presentation of results.)

They have found that 45 Czech institutions (universities and research centres) have published at least one article in journals with impact factor in the field of economics. As you can see in Table 3 the distribution of publication outputs is very uneven. Just seven institutions have scored in a journal with highest IF (upper tertile).

Table 3. Publications in Journals with IF of TOP 10 Czech Institutions in Economics (2006-2010)

Institution	U	M	L	Total
Economics Institute of the Academy of Sciences of the Czech Republic	16	15	22	53
Charles University Prague – CERGE	9	14	8	31
Charles University Prague – Faculty of Social Sciences	5	9	67	81
University of Economics Prague – Faculty of Economics	2	13	29	44
University of Technology Brno – Faculty of Business and Management	2	0	0	2
Technical University Ostrava – Faculty of Economics	1	7	13	21
University of Economics Prague – Faculty of Business Administration	1	2	8	11
University of Economics Prague – Faculty of Finance and Accounting	0	7	25	32
Masaryk University Brno – Faculty of Economics and Administration	0	5	14	19
Mendel University Brno – Faculty of Business and Economics	0	6	7	13

Source: Jurajda, Münich, 2012.

The TOP 5 institutions ranked by total publications with IF account for nearly 80% of all publications produced by all TOP 10 institutions. Results in the field of sociology (which is included with politics and psychology among the social sciences) is very similar (see Table 4).

Table 4. Publications in Journals with IF of TOP 10 Czech Institutions in Sociology (2006-2010)

Institution	U	M	L	Total
Institute of Sociology of the Academy of Sciences of the CR	7	4	73	84
Czech University of Life Sciences – Faculty of Management and Economics	2	0	0	2
Masaryk University Brno – Faculty of Social Sciences	1	2	34	37
Charles University – Faculty of Social Sciences	1	0	31	32
University of West Bohemia – Faculty of Philosophy and Arts	1	0	8	9
Charles University – CERGE	1	0	2	3
Charles University – Faculty of Humanities	0	2	15	17
Charles University – Faculty of Sciences	0	4	8	12
Charles University – Faculty of Arts	0	0	10	10
University of Ostrava – Faculty of Social Sciences	0	0	6	6

Source: Jurajda, Münich, 2012

To make a comparison of the results in publications with IF in the fields of natural sciences and various technical fields does not make sense. These disciplines

are ruled by other principles. They are more concentrated on basic research, the number of students per lecturer (research) is much lower than in the disciplines of the social sciences and they have more publication opportunities. The TOP 2 research institutions (Faculty of Mathematics and Physics of Charles University and Institute of Physics of Academy of Sciences) in the Czech Republic have published 1300 and 1000 articles, respectively, in the journals with the highest IF (upper tertile) (Jurajda, Münich, 2012).

It is also important to note that the number of published articles with IF in some fields is caused by existence in the Czech Republic published journals, which are included in the database WoS. In the WoS database in 2011 there were introduced ten social science journals with IF issued in the Czech Republic and 31 such journals in other fields of science. Czech published journals with IF are mostly located in the lower tertile of IF. The Journal of Psychology, which is published by the Institute of Psychology of the Czech Republic, is an example of a real national journal in the WoS. The Institute has published in this journal about two thirds of its IF publication, which account for the overwhelming majority of articles in the lower tertile of IF. In contrast, for example in the field of politics the Czech Republic lacks an impacted journal, so the number of impacted articles in this field is much lower and publication is dominated by articles in international journals (Jurajda, Münich, 2012).

The same study (Jurajda, Münich, 2012) informs us about distribution of articles with IF factor for given faculties and research centre in different disciplines. However this study does not research the number of citations per article. Macháček and Kolcunová (2008) have tried to calculate a Hirsch index of Czech economists. The Hirsch number is a very important performance indicator because for high value is needed a quantity of frequently cited publications. The authors of the paper (Macháček, Kolcunová, 2008) have found very low value of Hirsch index and very low number of citations. Just four Czech economists have a Hirsch index higher than 4. Three of them have gained the citations for more than 50% of articles published in journal with impact factor and all four of them have collected more than 50 citations for all academic outputs published in journals with IF. These figures document the very weak position of Czech economists in worldwide the journal portfolio.

To get a complete picture of institutional research performance it is necessary to browse directories with open access publications. The analysis of data from such databases as Journal Citation Reports (JCR), Scopus and DOAJ (Directory of open access journal) can provide searched sources. JCR was used to evaluate all Czech impacted journals and this resulted in an analysis of the number of paid and open access journals from the Czech Republic. The same approach was used with the Scopus database. Although the data on the Scopus documentation portal does say whether the included journals are registered in DOAJ, it is not completely relevant because not all open access (OA) journals are listed in DOAJ. Therefore,

a more detailed analysis was made, which clearly divides the journals from Scopus into paid and freely accessible journals. The DOAJ database then served as a resource for a more detailed specification of registered Czech OA journals and at the same time as a basis for comparing the number of registered Czech OA journals with other Central European countries (Fabián, 2013). These countries (Poland, Hungary, Slovakia, Slovenia and Croatia) were selected on purpose, because they follow a similar historical development as that of the Czech Republic and in the early 90s they were on the same starting-line in terms of scientific publishing. A comparison with, e.g. developed West European countries or the USA would not be as relevant.

1.4. Conclusion

The presented results demonstrate that Czech academics are not competitive in publishing on a global scale. The Czech Republic was in 32nd place based on the Taiwanese ranking in 2011 (Moskovkin, Delux, 2011). The number of articles in journals with IF is very limited, especially in the category with highest IF (upper tertile). Scholars often rely on publishing in Czech peer-reviewed journals and Czech journals with IF (sometimes written in the Czech language). This results in a very low number of citations (Macháček, Kolcunová, 2008). The evaluation process of research performance led by the Research, Development and Innovation Council primarily stimulates quantity at the expense of quantity. Research outputs measured via RIV points display substantial increase for all TOP10 universities (see table 1), but without visible qualitative improvement.

The methodology used for evaluation and funding of science and research in the Czech university environment is one of the reasons leading to the unsatisfactory results. The methodology is based on a general set of criteria applied for various fields (social sciences, natural sciences, technical disciplines) which creates many conflicts on the faculty and university levels. The unstable character of methodology is another problem. Authors very often do not know the rules of assessment in the long-term perspective. Substantial changes are made every year so within the period between the writing of the article and its acceptance the assessment criteria may have been modified. The methodology also does not take into account the citations from publications. Therefore it is necessary to set up a methodology of assessment which will respect the specific character of diverse scientific fields, and offer better measurable criteria, stimulating competitiveness and reflecting citation response.

The development of research and science at Czech universities is not supported by the present promotional system. The gap between the requirements demanded of the applicant and the actual scientific potential of candidates is too high. Based on

request of the accreditation council the scientific councils of faculties set up too strict requirements for habilitation procedures and professorial appointment procedures and both processes are practically stopped. Since 2010 just 32 associate professors and 6 full professors were appointed in the field of Business Administration and Management in the Czech Republic. The requirements for professorial appointment procedures, in particular, are too ambitious. A paradox lies in the fact that the rules (requirements) are determined by those senior lecturers who have graduated from habilitation and professors procedures under much easier conditions up to 2005 (see study Macháček, Kolcunová, 2005). This only increases the disincentives of candidates for promotion and their motivation for research.

Those senior lecturers mostly supervise dissertation and habilitation theses. It is hard to expect that if they never published in journals with IF, they will be able to develop the competencies of junior lecturers for publishing. The solution to this problem lies in the internationalization of the academic environment. The residencies in the foreign universities and participation in international conferences can bring about contacts for successful scholars and supply missing know-how.

Chapter 2

Scientific advancement in the field of business studies and academic promotion system in Hungary

Erzsébet Hetesi[1], *Szabolcs Prónay*[2]

In the first part of our paper we review the brief history of Hungarian doctoral training and the possible degrees of the present Hungarian scientific career. Following that, we describe the place of business education and its weight in the national system, the circumstances of admission, the structure of academic programs and the requirements of degree awarding. Finally, we present some research results and opinions on the assessment of trainings.

2.1. The historical precedents and specificities of Hungarian scientific advancement

In Hungary after the Second World War the Soviet degree awarding system was introduced: universities were debarred the right of awarding major scientific degrees, and these rights were given to politically controlled boards. In the 50s, universities got back the possibility to award doctoral titles; however, these did not qualify as a scientific degree. In Hungary, the first degree that could be obtained after the university degree was **doctor of university** ("small doctorate" as it was commonly called), and *"dr. univ."* from 1984. Neither the title of doctor of university, nor the doctor univ. required participating in organized trainings; it was sufficient to pass a complex comprehensive exam and to defend the dissertation opposed by two opponents. The defenses took place in a small number of universities at that time.

[1] Erzsébet Hetesi, University of Szeged
[2] Szabolcs Prónay, University of Szeged

The title of *dr. univ.* was followed by **Candidate of Science** (CSc), given by the Committee of Scientific Qualifications of the HAS (Hungarian Academy of Sciences). (The HAS is a Hungarian scientific public body, whose main task is to cultivate science, spread the results of science, support research and represent Hungarian science). After that the person with the title of Candidate of Science could obtain the title of **Doctor of Science** (DSc; the so-called "big doctorate"). This qualification system changed gradually after the change of regime.

In Hungary, PhD and DLA (Doctor of Liberal Arts) with the same level were introduced as a scientific degree in 1993 in accordance with the American tradition. After the cessation of the old system, universities could re-qualify a part of their old doctoral degrees to the PhD degree. Few universities took advantage of this possibility; however, Candidate degrees automatically qualify as PhD. The application for gaining a candidate degree was last possible in 1997; the cases in progress were closed in the following one or two years (Nagy 2011). The Doctor of HAS title in the present system corresponds to the former Doctor of Science, whose procedure and requirements for obtaining it correspond with the requirement system of the Doctor of Science, and accordingly it is also awarded by the HAS (n.d.).

In the present system researchers have the possibility to participate in a habilitation procedure and obtain the title of dr. habil. Habilitation is obtaining the title following the PhD scientific degree. In certain Hungarian universities it is a precondition for appointment to the position of associate professor, in others, lecturers with the position of associate professor habilitate. Habilitation is a process in which lecturers with doctoral (PhD) degrees demonstrate their teaching competence and professional and scientific activities, describe the results of their scientific creative work and prove their lecturing skills by giving two public lectures – which they also have to present in a foreign language – in front of an audience including the habilitation committee and university students. Habilitation requirements differ by university and by faculty, but generally a high-standard publication activity is a precondition of habilitation.

The degree following habilitation is the title of Doctor of HAS (Hungarian Academy of Sciences). Gaining the title of the Doctor of HAS is a complicated and lengthy process in Hungary; the requirements are formulated at many levels. In the course of examination the Hungarian Academy of Sciences provides scientometric minimum values, which include the following:

- the number of publications in *peer-reviewed scientific journals* accepted by the scientific committee, regarding the period after obtaining the candidate or the PhD degree, is a minimum of **25** publications, in **20** per cent of which the Candidate was in correspondent position at the publication (or first or last author). The 25 publications do not include congressional proceedings, abstracts ...

- of these, the number of articles published in journals with impact factor is a minimum of **10**, of which a minimum of **5** must be publications in foreign journals with impact factor.
- the independent citedness of all the publications published in qualified (with impact factor and featured in the ranked list) journals, regarding the period after obtaining the candidate or the PhD degree, is a minimum of **40 independent** references, of which **20** must be citations in foreign journals with impact factor. The citations can only be from journals with impact factor or featured in the ranked list (HAS, 2014).

Besides scientific challenging, public criteria also must be met, and the submitted dissertation and theses are evaluated only if these conditions are fulfilled.

The highest rung of the ladder in the Hungarian scientific career is HAS membership. The membership in the Hungarian Academy of Sciences is the highest acknowledgement for Hungarian researchers and cultivators of science. According to the currently valid regulation, the number of academics younger than seventy and having domestic correspondent or regular membership cannot exceed two hundred people. The scholar who has a title of Doctor of Hungarian Academy of Sciences (or a scientific degree legally qualified as equivalent), and achieves results of outstanding standard, can be chosen as a *correspondent member*. In a broader sense, everybody who has obtained a scientific degree can be a member of the Academy – i.e. a young researcher with a PhD degree as well –, namely as a so-called member of public body; however, they do not qualify as academics.

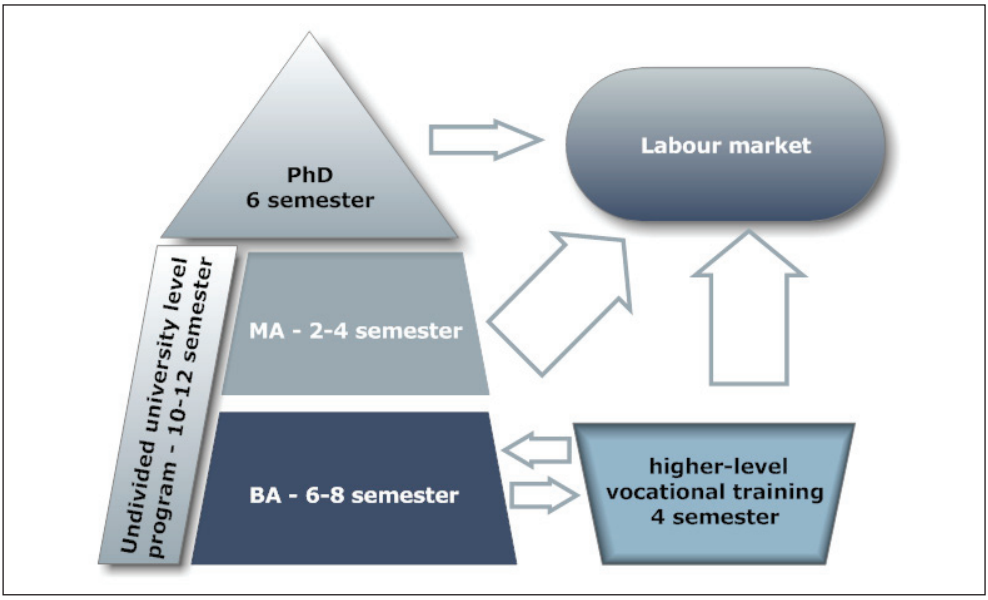
The overall conclusion about the Hungarian system of scientific qualifications is that it is still tripartite and mixes the Anglo-Saxon, German and Soviet scientific qualifications to form a system almost unprecedented in Europe. The fusion of small doctorate and candidate created the PhD, of which they have the most serious expectations of standard in Anglo-Saxon countries – as it is the only scientific degree –; however, in Hungary its standard is usually above small doctorate but below the old candidate degree. The habilitation forming the second element of the system is not necessary in practice only for the persons working in the research institutions of the HAS, since habilitation originally assessed the quality of education, and teaching activity does not take place in research institutions. The third element of the system is the Doctor of HAS, which is identical with the "Doctor of Sciences" degree of the former, Soviet-type system, simply it now qualifies not as a scientific degree, but as a title. This system has been subject to much criticism (which can create paradoxes; for example a researcher who obtained a PhD from the University of Cambridge and has the status of professor at Harvard University theoretically could be appointed as a university professor in none of the Hungarian universities, as he/she did not habilitate and/or does not have a Doctor of HAS title), but currently this system is still in place (Academic_rank, n.d).

2.2. The specificities of today's Hungarian higher educational structure and doctoral trainings

Today in Hungary more than 70 higher educational institutions operate. Besides 29 public and 7 private universities, many public and non-public (private, church) colleges also welcome students. The training levels follow the Bologna system.

The training system, consisting of three interdependent training cycles, creates fewer entries and more possibilities of further training after admission, thereby leaving more time to identify one's own competences. The following figure helps to review the offers of higher educational trainings:

Figure 1. Higher educational trainings in Hungary



Source: http://ttkto.elte.hu/felveteli/tajekoztato3.htm

In Hungary, a doctoral school operates in a total of 27 institutions. Doctoral schools can be mainly established by universities, but this is controversial, because in many universities with several faculties the faculties formerly having college status count as university faculty, and they also often experiment with establishing a doctoral school. The main obstacle to this is the number of researchers with proper scientific qualifications.

Of course, in every institution several schools are active; the number of schools in economics, regional studies and business administration total 23, of which 12 are

business administration – business – schools, whose distribution can be seen in the following table.

Table 1. Doctoral Schools in Business Administration in Hungary

Name of doctoral school	Name of institution
Doctoral School in Business Administration	Corvinus University of Budapest
Doctoral School in Business and Management	Budapest University of Technology and Economics
Károly Doctoral School in Business and Management	University of Debrecen
Doctoral School in Business and Management	University of Kaposvár
Doctoral School of Enterprise Theory and Practice	University of Miskolc
Széchenyi István Doctoral School in Business and Management	University of West Hungary
Doctoral School in Business and Management	Pannon University
Doctoral School in Business Administration	University of Pécs
Doctoral School in Regional Policy and Business Administration	University of Pécs
Doctoral School in Regional Science and Economics	Széchenyi István University
Doctoral School in Business and Management	Szent István University
Doctoral School in Business Information Technology	Corvinus University of Budapest

Source: http://www.doktori.hu/

Based on the database of the HAS, since 1993 the number of domestic defenses has totalled 12,686, of which 732 have occurred in business disciplines. It becomes clear from the number of schools in business administration and defenses that in Hungary business sciences are gaining ground; moreover, business workshops can also be found within certain schools of economics.

2.2.1. The Hungarian PhD system

In Hungary, a government decree defines the establishment of doctoral schools and the awarding of doctoral degrees. The Decree No. 33/2007 (III.7.) on the establishment of doctoral schools and the awarding of doctoral degrees states that:

- Doctoral programs can be completed exclusively in the framework of doctoral schools. The senate of the higher educational institution decides on the establishment of the doctoral school as defined in the doctoral regulations.
- In the case of the establishment of the doctoral school, the discipline or art form in which the doctoral program is to be completed needs to be specified. Defining the intradisciplinary and interdisciplinary research field can identify the professional activity reflecting the operational framework of the doctoral school.

- The establishment of the doctoral school can be initiated by at least seven core members.

One person can be a core member in only one doctoral school concurrently. A core member can be someone who (NDC 2014):

- has a degree of science or arts in the discipline of the doctoral school to be established – with consideration of what is defined in the law on higher education 150. § section (3) –, in addition,
- pursues ongoing, high-level scientific activity in the discipline and research field of the doctoral school, furthermore,
- is a professor or scientific researcher employed full-time as a contracted employee or public servant in the given higher educational institution, who based on the law on higher education section 84. § (5), specified this higher educational institution for defining budget support,
- if the above conditions are fulfilled, a Professor Emeritus can also be a core member with the authorization of the doctoral council in the doctoral school of the higher educational institution where the person was given emeritus status, as well as a scientific consultant or research professor employed full-time as a contracted employee or public servant in the research institute, if the higher educational institution concluded a relevant agreement with the research institute based on the law on higher education 31. § section (1).

The governmental decree indicates that today in Hungary the establishment of doctoral schools has strict conditions. In many universities ensuring the required number of core members causes problems. The schools are regularly evaluated by the committee of accreditation qualifications (MAB – Hungarian Accreditation Committee).

Each doctoral school has admission regulations. There are general conditions (specialist qualification, knowledge of language, etc.), and there is the admission procedure itself. These conditions can differ even within a university by faculty, and the admission requirements of schools in business administration are highly differentiated as well. In particular institutions a professional written entrance examination is also required; elsewhere it is sufficient to participate in a motivational interview besides fulfilling the necessary conditions. In the oral interview, depending on the doctoral school, questions related to the following topics may occur: chosen doctoral research area, scientific scope of interests, scientific results achieved so far, and occasionally exam questions (subjects) chosen by the committee.

The evaluation of the admission requirements also depends on the institution. We present a possible method of calculation according to the University of Szeged Faculty of Economics and Business Administration in what follows:

- about 30% average of degree (MSc, BSc)
- about 30% scientific activity (any kind of scientific publication)
- about 30% oral admission interview
- about 5-10% knowledge of language (language exam apart from that required to obtain the degree).

A small proportion of the successful applicants can receive state grants, but the larger part pay fees for the institution. Unfortunately, due to under-funding, the occasionally demandingly high amounts can also hinder applications. To finance the training the student needs to work and only few can fulfill the requirements alongside their job responsibilities.

2.2.1.1. The usefulness of PhD training in Hungary

The first argument for a doctoral course is that if someone wants to work as a researcher, a PhD degree is a basic requirement. In Hungary obtaining a PhD is the "admission ticket" to building a scientific career. Here it is typical that a doctoral degree opens the way to a university career, but companies do not value this qualification according to its status; therefore only a very few people go into PhD training from business life.

Another consideration in favor of the PhD is the creative and innovative milieu in which a PhD student can work. He/she can continuously keep an eye on professional trends, meet many people, there is constant challenge, and life is varied.

Arguments against participating in a doctoral program can also be formulated. In Hungary the amount of an average doctoral grant is about 350 euros monthly at present, while in Italy and Spain this amount is 1000-1200 euros, and in the Netherlands and Finland a monthly stipend of 2000-3000 euros is not rare. Of course, there is a difference in the costs of living in these countries, but it does not equal the discrepancy in doctoral grants. According to another counter-argument, Hungarian researchers are hardly integrated into European research life (Prekopcsák 2010).

The following opinion, given by an assistant lecturer, summarizes well the pros and cons of the Hungarian PhD system:

"In the PhD student lifestyle a considerably high freedom is coupled with a decent amount of state aid. That is, almost all conditions seem to be provided for a productive creative period – though it is only one side of the coin. At the same time, faculties (among other reasons in order to relieve the teachers in status) are often forced to overly use the energy of PhD students, for example to lead seminars, or to correct the increasing piles of exam papers due to the growing number of students per year.

Thus getting absorbed in scientific work, or following the latest results of field or professional networking, which is possible mostly only in international conferences, are usually pushed into the background, and it very rarely happens that a PhD student can complete and defend the dissertation by the end of the three-year doctoral training. And because only very few of them have the chance to acquire the status of teacher, overnight they can find themselves on the labor market in a way that in the last three years they have only explained the most basic knowledge of their scientific field to smiling BSc student girls with sparkling eyes (and of course to boys with changing enthusiasm) instead of getting real professional practice.

Based on all this I think that nowadays for a graduate university student unfortunately it is not the feeling of being a PhD student that offers the most attractive alternative ..." (Pesthy 2011).

2.2.1.2. The Hungarian specificities of doctoral training

The trainings are launched both in full-time and correspondence courses, and in an exceptional case there is a possibility for a so-called "individual" degree awarding. In the case of the "individual" procedure it is not required that one participate in the organized training; it is sufficient to complete the comprehensive exam and the defense. This option is available for researchers who have considerable educational and research experience and their publication performance is also high-standard.

Similarly to admission procedures, the structures of organized training are also very varied. In most business administration schools several programs are announced, and in each program students must meet different requirements. Occasionally, additional special research workshops operate under the programs. The most common programs are business administration and management studies, regional studies, marketing and management.

In Hungary the doctoral training is 36 months, that is, 6 semesters (in the United States the PhD program is 4-5 years, a general exam has to be taken at the end of the second year and the student receives education in these two years, while in Great Britain the training is 3-4 years, and the student receives education to a lesser extent and concentrates more on research) (Academic_rank, n.d.).

In the framework of the programs of doctoral schools both compulsory and optional subjects are taught. The themes and testing system of subjects taught in schools are approved by the Council of the Doctoral School. Announcing new subjects is possible with the approval of the Council. The completion of educational tasks is assessed based on credit points. By the end of the third year (sixth semester) 180 credits need to be obtained. Credit transfer also depends on the institutions: there

are institutions where the completion of the taught courses dominates; elsewhere the educational, research and publication activities or participation in conferences provide opportunities to collect credits.

In the trainings students are generally required to complete both foundation (compulsory for all students) and specialized (compulsory and alternative), and, if necessary, elective (facultative) courses within a defined period of time.

The faculty members can be core members, supervisors and other lecturers. The *core members* of the school are professionals with considerable scientific and educational history, as well as scientific qualifications, who determine the professional operation and subject areas of the given doctoral school. The core members are accredited collectively at the time of the accreditation of the school, and those who become a core member later are accredited individually.

The professional consultancy of PhD students is carried out by research supervisors. The *supervisors* of the school are also lecturers or researchers with scientific degree, who are entitled to announce research topics which the future PhD students can choose from. The core members are supervisors at the same time. The supervisor

- leads the research work of the PhD student who chooses the topic the supervisor has announced, and is responsible for the professional progress of the PhD student,
- checks the list of doctoral courses which the student must complete with the student,
- helps the student to prepare for the comprehensive doctoral exam through consultation and in other ways,
- helps the PhD student to execute the doctoral research work, publish the results and write the doctoral dissertation through consultation, enabling participation in joint research and involvement in scientific application activities,
- provides help in the preparation for the defense of the dissertation.

The supervisors are accredited by the doctoral council of the doctoral school with a decision. The subsequent core members are usually experienced supervisors.

The *other lecturers* of the school can announce courses in the doctoral school. The school entitles these lecturers to course announcement in the doctoral school with a decision. In Hungary it is typical that acknowledged experts of other universities are requested to teach a particular course. It is frequent that recognized representatives of a given field from outside the university (e.g. institution researchers, scientific leaders of companies and specialized authorities) are also accredited as lecturers.

Credits can be obtained by completing courses and in other ways. In the case of courses representing contact classes (lecture, seminar), the student obtains the credit

by learning and taking an exam (which is given a mark). The exam can be oral or written, and the submission of written term papers is also frequent. Credit can be also collected with independent work. Independent activities may include, for example, individual learning preparation, or individual research work with the supervisor's guidance. Testing is performed in the form of mid-year checking (reports, research plans). Scientific publication activity of a defined standard can also be granted credit.

2.2.1.3. The PhD degree awarding procedure

At the end of the period of study the student obtains pre-degree certificate. The given school (and generally the doctoral program) defines the nature and extent of the activity and course whose completion is required to obtain pre-degree certificate. After the pre-degree certificate the PhD student takes a comprehensive doctoral exam on specified main and subsidiary subjects, then prepares the doctoral dissertation and finally defends it in a public debate. Based on these results following the decision of the doctoral school council the doctoral candidate receives a doctoral degree, on which a certificate is issued and which is entered in the national register.

The basic requirements of degree awarding are also regulated by the Decree No. 33/2007. The most important elements of degree awarding are briefly summarized below:

- **Comprehensive doctoral exam**: The doctoral degree awarding procedure is started based on a request with an application. The doctoral defense can take place after the comprehensive doctoral exam. Passing the comprehensive doctoral exam is a part of the procedure for doctoral degree awarding; a form of testing the knowledge the person participating in the doctoral procedure acquired in his/her discipline in a summarizing, reviewing manner. The comprehensive doctoral exam – at most within two years of the submission of the application – must be taken in public, in the presence of a committee. The result of the comprehensive exam must be announced directly after the exam. Minutes must be taken during the comprehensive doctoral exam.
- **Doctoral dissertation:** The basis of doctoral dissertation is a doctoral topic. The doctoral topic is a research sub-field which is suitable in the process of elaboration for the student – with the supervisor's guidance – to acquire the use of scientific methods, get tangible scientific results and present this in the form of scientific publications, scientific lectures, and finally, a doctoral dissertation.
- **Doctoral evaluation:** Two official opponents, requested by the doctoral committee, prepare a written evaluation of the dissertation within

two months of the submission of the dissertation – falling on term time determined in the doctoral regulations of the higher educational institution – and make a statement whether they propose its assignment to a public defense. If one of the opponents' proposal is negative, the doctoral committee requests an additional, third opponent. The dissertation must be brought to a public debate within two months of the receipt of the two supportive proposals falling on term time. The doctoral candidate receives the evaluations beforehand and responds to them in writing before the defense and orally – in a public debate – during the defense.

- **Doctoral defense, debate:** The doctoral candidate presents the theses of the dissertation in a public debate, and afterwards responds to the comments and questions of the opponents, committee members and attendants. After closing the debate, the committee decides about the acceptance of the dissertation in private session by secret ballot. The chairperson then announces the result in public. In the case of two negative evaluations or an unsuccessful defense a new procedure can be initiated at the earliest after two years, at most on one occasion on the same doctoral topic.
- **Doctoral certificate:** the higher educational institution issues a certificate specifying the field of science, in particular the discipline or art form, about the doctoral degree awarded by the doctoral council based on the decision recorded in the doctoral register, and informs the National Higher Education Information Center about its decision (NDC 2014).

The given doctoral school can specialize the framework provided by the decree according to its own requirements. In particular schools a preliminary thesis draft, and elsewhere workplace defenses, are organized before the public defense.

The qualification of the obtained PhD degrees differs by country. In the Anglo-Saxon system the PhD is not qualified, it has either met the requirements or it has not, and special evaluation does not take place in the case of approved dissertations. In Hungary a three-scale grading applies: *summa cum laude* (the best, excellent), *cum laude* (good and satisfactory), *rite* (pass), and its development is also quite differentiated.

2.2.2. Career opportunities for people with a PhD degree in Hungary

In Hungary two major empirical studies have been conducted among people who obtained a PhD degree. A questionnaire survey was made on a representative sample of 700 persons in 2002, and a sample of 600 persons in 2006/2007. Although these researches are not recent, some conclusions should be highlighted from the findings (Fábri 2010).

Generally it can be stated that domestic doctoral training is positive based on the summary of the graduates' opinions. Those who obtained a PhD degree are more satisfied than the average Hungarian employee both in terms of profession and finances. They can use the knowledge acquired in the training, and the relationships established during the training help their career. The graduates are employed primarily in scientific higher educational areas: more than half of the respondents are employed in university education or research. The second most frequent workplace is the research institute (in 2006 15 per cent), and the proportion of the persons employed here increased compared to the previous survey. The graduates' involvement in the knowledge-intensive or innovative business sector is considerably lower than expected and experienced in international tendencies. (Fábri 2010) One of the reasons for this may be that based on the traditional view the doctoral degree predestines an individual to join the "academic" elite, but it is also true that in Hungary the business sphere does not value the PhD qualification.

In Hungary, obtaining a doctoral degree is not a really attractive perspective. The business world knows almost nothing about the value of the PhD; thus there are only a very few committed persons who undertake this not exactly easy adventure beside their job; moreover, the course is usually fee-paying. The requirements of the training, the completion of research, and writing and defending the dissertation impose burdens on those working in enterprises which do not bring immediate returns. Talented students are welcomed by the business sector, and thus precisely those who would be suited do not apply for PhD training.

In the course of recruiting, primarily those students can be counted on who are committed to scientific research work, and are promised researcher or teacher status in higher education. Unfortunately, because of the level of national funding it is not a really attractive career path in financial terms either. The grant is very small, the expectable salary of assistant lecturer is far below the EU average, and the first years are very demanding for PhD students. Participating in organized training, fulfilling the requirements, and taking exams place stress on the students, and in addition they must meet serious expectations of publication. In certain institutions the conditions of degree awarding include such criteria as participating in international conferences, appearance in national and foreign journals with impact factor and a relevant citation list.

Besides the above requirements, the students are active in education as well: they lead seminars, support the work of scientific students' associations and often do administrative tasks for research leaders and lecturers.

Overall we can conclude that in Hungary a PhD degree has status primarily in the scientific sphere of researchers and lecturers, but in order for the aspirants to achieve success in this career path, they have to work very hard and this hard work is

rewarded by the domestic system only after many years. And even then the incomes are far below those typical of the business sector. Although those who go through this hard path are usually more satisfied with their life, the "price-value ratio" is not right. They can achieve the income level at the age of 50-60 which can be received in the entrepreneurial sphere even at the age of 30.

Of course in the long term this way of life has a good side as well. Beside plenty of work, PhD students can engage in an intellectually challenging life – and not only in an academic sense. Nowadays universities are more and more inclined to seek cooperation with business entities. The so called 'third mission' is becoming a real goal for many universities, and as a result a business-like atmosphere emerges within these institutes. Young scholars and PhD students have the opportunity to take part in business co-operation and projects. Therefore they have a chance to look beyond the academic sphere and gain useful practical experience and enrich their social network with business stakeholders. It is important to note that in Hungary – as a former communist country – there is still a lack of appropriate business knowledge at the majority of Hungarian SME-s, and at numerous large (mostly state-owned) enterprises. In these circumstances young scholars with a business degree can reach high career goals; however the first few steps in the business area are the most crucial and challenging for them. The rising number of university-industry co-initiatives can narrow the gap between these institutes and hopefully can pave the way for more young scholars to enter the business sphere.

Chapter 3

Academic promotion system and scholars' success indicators in Poland

Anna Ligia Wieczorek[1]

3.1. Introduction

The issue of the success of Polish scholars is a very important topic to discuss for several reasons. First of all, in 2011 a new law concerning the transformation of the universities and the system of scholars' promotion was issued and considerable controversy attended it. According to Denek (2013), the main objective of the transformation of the Polish university was to improve the quality of teaching and research done by scholars. The law, therefore, concerned the development of scholars and the organization of the university as a teaching institution. Secondly, the topic is worth exploring due to the fact that today the role of the university is seen as a very important factor in contributing to the development of the so-called knowledge society. In other words, never before have the social-economic and educational expectations of the university been so high, which, in turn, is a challenge for both scholars and institutions. Furthermore, Poland has been globalizing continuously and academia has become international, which forces scholars to define academic success in the new situation. To make matters even more complex, in the nineties many new universities (also private ones) were established in Poland and today Poland is facing an unfavorable demographic situation (Denek, 2013). This has intensified competition between universities, which, in turn, has also intensified competition between scholars as well. For all these reasons, and especially in light of the implementation of the new law concerning academic promotion, the indicators of scholars' success need to be examined.

The paper aims to compare old and new promotional criteria concerning scholars in Poland, investigate the opinions of scholars themselves on the transformation of the system, and provide recommendations for scholars and university authorities.

[1] Anna Ligia Wieczorek, University of Silesia, Katowice

The first part of the paper will be devoted to the comparison between promotional requirements according to the old and new laws. Therefore the research project concerns young scholars, and the main emphasis is on criteria for obtaining such university degrees as doctor and habilitated doctor. The assumption was that a person up to the age of 35 (a so-called young scholar), very rarely has the title of professor[2]. Next, scholars' views on the transformation will be presented. The third part of the paper will consist of recommendations for individual scholars and for universities as organizations, and especially for their authorities.

3.2. The Polish academic promotion system: yesterday and today

As was mentioned earlier, a law concerning university titles and degrees was issued in March 2011 (it came into force from 1st October 2011), and from then on, the promotional requirements for prospective doctors, habilitated doctors (associate professors) and professors (full professors) changed. There was, however, a so-called *vacatio legis* which created an opportunity for those who so wished to proceed according to the old law for the next two years. This section of the paper will be devoted to the comparison of promotional criteria according to the old and new systems. Since the focus is on young scholars, the promotional criteria concerning professors will not be discussed.

The old system was deeply rooted in the academic practice of communist times (Handke, 2010) which did not change dramatically for many years. Taking into consideration the change in the Polish political system 20 years earlier, the establishment of new universities, and the fast-moving European world that Poland currently belongs to, after a heated debate the new law came into force and brought significant changes into the system of academic promotion.

3.2.1. Promotional requirements concerning prospective doctors

In Poland, in order to obtain a PhD degree, a candidate must be, first of all, admitted into a PhD program. For this to happen, one needs to find a supervisor and pass the entrance exam, but when it comes to official admission, certain criteria must be met. According to the old law, in order to be admitted into a PhD program, there

[2] In Poland, there are basically three main stages of the academic career: Doctor (Eng. Assistant Professor), Habilitated Doctor (Eng. Associate Professor) and Professor (Eng. Full Professor).

was no need to publish a paper previously, and according to the new law, a candidate has to publish at least one book/chapter in a monograph/paper in an indexed journal/report from an international conference.

As far as the dissertation supervisor is concerned, according to the old law, only one supervisor was possible, whereas after the transformation, a main supervisor and a helping supervisor are formally eligible.

In the past, the dissertation was to be written in the domestic language (with some exceptions) whereas now, a dissertation may be prepared in another language (after agreement but the Faculty Council of the given university).

When it comes to the form of the dissertation, before the new law took effect, it had to take a form of a manuscript. After March 2011, the dissertation equivalent may be a manuscript of a book, a published book, or a collection of papers in indexed journals that revolve around a similar theme.

The reviewers of the dissertation must now all work at different universities than the candidate and the Faculty Council members, whereas in the past, one of them could work in the same university.

In the past it was also not necessary to publish any information concerning the dissertation and its reviews in the Internet, and from 2011, a summary of the dissertation and its reviews must be published on the website of the university which coordinates the program.

All of the criteria according to both old and new laws are summarized in the table below:

Table 1. Criteria of doctoral promotion – comparison of old and new law.

Criteria	Old law – requirements	Law issued in March 2011 – requirements
Admission into a PhD program – publications	No publications necessary	At least 1 book/chapter in a book/paper in an indexed journal/published report from an international conference attended by the candidate
Supervision	1 supervisor	1 main supervisor and 1 optional(helping) supervisor
Language of the dissertation	Polish language (with rare exceptions)	Any language accepted by the Faculty Council
Dissertation form	A manuscript	A manuscript of a book/a published book/ a collection of papers published in indexed journals, that revolve around similar theme
Reviewers	Only one from the home institution of the candidate and the Faculty Council	No reviewers from the home institution of the candidate and the Faculty Council
Information publication	Not necessary	Reviews and summary published on the university website

Source: Own construction, based on the law concerning university titles and degrees issued in March 2011.

3.2.2. Professional requirements concerning prospective habilitated doctors

Habilitation is a degree not commonly known in English-speaking countries, but is quite popular in Continental countries. It is a postdoctoral degree that must be obtained beforeone is eligible for the title of professor (full professor, Eng). In order to be admitted into this postdoctoral program, a candidate has to apply to a special commission at a national level, which is called the Central Commission (see table 2). This Commission is composed of leading professors specializing in a given field. The candidate suggests which Faculty Council should coordinate the process. It does not need to be the same university that the person works at. If this chosen Faculty Council refuses to coordinate the process (because of, for instance, financial reasons), the Central Commission chooses another Faculty Council at another university and this time the council cannot refuse. In the past, before March 2011, the candidate had to apply to the Faculty Council at the home university and deliver all necessary documents proving his or her professional achievements.

Table 2. Criteria of postdoctoral promotion – comparison of old and new law

Steps	Old law – requirements	Law issued in March 2011 – requirements
To start the process	Application submitted together with he documentation of achievements by the candidate to the Faculty Council at the home university.	Application submitted to the Central Commission with indication which Faculty Council should coordinate the process (in case of refusal, the Central Commission chooses another Faculty Council).
Beginning of the process	The Faculty Council sets two reviewers (usually in accordance with the wish of the candidate) and the Central Commission sets two reviewers.	The Central Commission (within 6 weeks) creates a special commission just for the given process and chooses 4 members – 2 reviewers, 1 head and 1 member. Then the Faculty Council chooses 3 members – 1 member, 1 reviewer and 1 secretary.
Evaluation of achievements	On the basis of dissertation (a published book) or a series of papers revolving around one theme and other publications.	On the basis of research achievements only (but the candidate should indicate which book/series of articles is most important in his achievements. The candidate should also prove his/her activity (productivity)).
Time to prepare reviews	3 months	6 weeks
Setting the final resolution	On the basis of the reviews the faculty Council decides whether to allow the candidate to sit for the postdoctoral examination. During the examination each member can ask questions. The faculty Council then decides (votes) whether the candidate can give the final lecture (the council chooses one of three proposed lectures). Final vote.	On the basis of the reviews and the discussion of the commission created to evaluate the achievements. Resolution set within 21 days after an open vote (it can be closed if the candidate so wishes).
Last step	Final resolution is set and the candidate obtains, or not, the degree of the habilitated doctor.	The commission presents its opinion to the faculty Council and the Council sets the final resolution within a month.

Source: Own construction, based on the law concerning university titles and degrees issued in March 2011.

The next step, according to the new law, is to summon a special commission, just for a given habilitation process. This commission is summoned by the Central Commission within 6 weeks of the beginning of the whole process. The commission is composed of 4 members – two reviewers, one member and one head. The Faculty Council that is set to coordinate the process appoints the other three members of the commission, one of whom must be a reviewer, and one a secretary. According to the old law, the Faculty Council had to appoint two reviewers of the habilitation book (so-called internal reviewers), and the Central Commission another two reviewers). In practice, the candidate could suggest to their Faculty Council whom they wanted to be the reviewer of their book, so only two reviewers chosen by the Central Commission were not chosen by the candidate in the past.

The scientific achievements of the candidate are, according to the new law, the basis for the final evaluation. The candidate has to select his or her main achievement (one of their books/a series of papers revolving around one theme) and to establish their activity connected with publishing papers. According to the old law, the habilitation could have the form of a published book, or a series of papers revolving around one theme and it was evaluated together with other publications.

Next, according to the new law, on the basis of the reviews and discussion during the meeting of the commission, a resolution is set and a degree is given, or not. The commission has 21 days to meet and discuss the reviews and other things connected with the process. Its members vote for or against the resolution by an open vote. If the candidate wishes so, the vote may be closed. According to the old law, on the basis of the reviews of the book/the series of papers, the Faculty Council decided whether the candidate would be allowed to sit for a postdoctoral examination. During the postdoctoral examination all members of the Faculty Council could ask the candidate about anything connected with his/her field. After the examination the Faculty Council members voted in order to allow or not to allow the candidate to present the final lecture (the candidate could prepare three lectures according to his/her choice and then the Faculty Council chose one to be given).

The last step, according to the new law, is for the Central Commission to present the resolution to the Faculty Council responsible for the coordination of the habilitation process. The resolution contains the opinion of the Central Commission, concerning whether or not to give the candidate the postdoctoral degree. Within a month the Faculty Council must make an appropriate resolution. According to the old law, the resolution was made by the Faculty Council only, after the postdoctoral examination and the final lecture. In the case of the candidate not passing the exam, he or she could take it for a second time.

According to the new system, the activity of a scholar is indicated by their national and international publications, grants that he/she has been awarded,

foreign internships and fellowships. When it comes to publications, Impact Factor journals (those that are on the ISI Master Journal List) are highly valued. In the past, before the system transformation, such factors as those connected with grants and international publications or fellowships did not matter so much. The old system was really old – as Handke (2010) indicates, the old law dated back to the beginning of the political transformation in Poland, that is, to the early 1990s. And the truth is that it largely copied a law issued in the USSR in 1952-54, during the years of Stalinism (Handke, 2010). For that reason, there was a need to implement new rules that would fit the needs of and expectations of contemporary Poland, especially taking into consideration the fact that the old system directed Poland to the East, whereas the modern academy is Western-oriented(Stremersch and Verhoeh, 2005).Denek (2013) claims that the lawmakers expect that the new law will ensure a system of higher education well adapted to the international academic context and, at the same time, will boost the internationalization of Polish academia. According to the new law, the success of a scholar means that they publish in international journals with Impact Factor, are awarded fellowships abroad, take part in foreign internships and are able to get grants. The opinions of scholars, however, vary in this matter.

3.3. System transformation from the perspective of Polish academic society – qualitative study results

The law transformation in Poland concerning professional development of scholars raised a heated debate in Polish academia. Scholars in general seem to understand the need for changes, but many claim that the new system is not good because Poles are not prepared for it. A qualitative study was carried out in order to determine how Polish scholars define academic success and what they think about the new law issued in 2011, and especially about the new promotion criteria, and the need to publish in Impact Factor journals.

3.3.1. Respondents' characteristics

Even though the focus of the Visegrad project is on young scholars, in the sample there were also representatives from the older generation, in order to assess whether various generations of Polish academics represent different thinking paradigms when it comes to professional development and the development of the university and of young scholars in particular. There were 18 respondents, 11 of whom were up to the age of 35, whereas 7 were older, the oldest being nearly seventy. The scholars

worked at various Polish universities, all of them in the business field. Among young and "old" scholars there were those who had internationally-understood success (papers published in impact factor journals (IF)) and those, who were domestically-oriented. It is, however, worth noting that among the young scholars more people were internationally-oriented and among the older ones, more were domestically-oriented. Among the younger scholars, there were people holding MA degrees, PhDs and habilitations, whereas among the older scholars there were people holding PhDs, habilitations, and professorships. There were older scholars who held important positionsat their universities like, for instance, vice-dean, dean, and vice-rector. The characteristics of the respondents are presented in detail in Table 3.

Table 3. Respondents' characteristics

Respondent	Age interval	Degree	Position	Orientation	IF publications
R1	30-35	PhD	Assistant professor	International	yes
R2	30-35	PhD	Assistant professor	International	no
R3	23-29	MA	PhD student	International	no
R4	23-29	PhD	Assistant professor	International	yes
R5	30-35	habilitation	Associate professor	International	yes
R6	30-35	PhD	Assistant professor	Domestic	no
R7	30-35	MA	Research assistant	International	no
R8	30-35	PhD	Assistant professor	International	yes
R9	30-35	PhD	Research assistant	Domestic	no
R10	23-29	PhD	Assistant professor	International	no
R11	30-35	habilitation	Associate professor	International	yes
R12	60-67	Full professor	Professor	Domestic	no
R13	36-42	PhD	Assistant professor	International	no
R14	50-57	habilitation	Associate professor	Domestic	no
R15	50-57	habilitation	Associate professor	Domestic	no
R16	36-42	PhD	Assistant professor	Domestic	no
R17	43-49	habilitation	Associate professor	International	no
R18	60-67	Full professor	Professor	International	yes

Source: Own research.

As shown in Table 3, most of the young scholars were internationally oriented, but not all of them could verify such an orientation by, for instance, IF publications. The orientation of scholars was determined after an interview with them connected with what they considered to be an indicator of a scholar's success, whether a scholar should cooperate with foreigners or local scholars, and about their plans for their future development. It was declarative and on this basis the researcher decided what kind of orientation the subjects had. In the case of the older scholars, the same questions were asked and only one scholar had IF publications and was really internationally-oriented. Most of the subjects older than 35 were domestically-oriented and those

who claimed to be internationally-oriented did not have any measurable proofs. All the respondents who held university offices/positions were domestically-oriented.

3.3.2. Respondents' views on the system transformation

All of the respondents were of the opinion that changes were necessary due to the fact that the old system was really old-fashioned. When asked how they defined the success of a scholar, however, most of the older respondents (older than 35) responded that it was reflected mainly in domestic recognisability and the respect of fellow scholars at a university/national level.

"A scholar is successful if he is respected in the local environment. There are some people who aspire to be successful scholars and who are internationally-oriented, but they will always be frowned upon by the environment. We know who is a real scholar, accepted in Poland and respected, and IF or other things will not change it." (Respondent 12, translation mine).

Other older respondents, when asked about their orientation, tended to claim that international orientation was important, but domestic recognisability was more important because they lived and worked in Poland, and not abroad. When asked about IF publications, they usually stated that they did not believe in their significance and value, because "indexed journals pay for the impact factor". Even those older respondents who were deans, vice-deans or vice rectors claimed that domestic recognisability and orientation were more important, which means that Polish universities are still rather domestically-oriented.

"This orientation is like life orientation – you have family, neighbors, some distant relatives and people you just know. You also have your own division, faculty, university, national level, and of course international academia, but you should not forget where you are from. You live here and not abroad." (Respondent 14, translation mine).

On the other hand, there were some exceptions – older scholars not only oriented domestically, but also internationally, who had IF publications and who are recognizable abroad. They claimed that it was important to have similar promotional requirements as in other Western countries because it broadens the mind of scholars and helps them to become a part of academia which is, by nature, international.

"Academia is not national, it is international, so scholars should be open to international networking, joint papers, and broadening their minds. There were times when I was the only person from Poland in my field who attended some conferences, and was part of international teams. Now, fortunately, it is slowly changing. It is a pity,that it is happening so slowly, because our Polish academia needs internationalization." (Respondent 18, translation mine).

Among younger scholars, in turn, pro-international attitudes prevailed, with a few exceptions only. This does not, however, mean, that all younger respondents had IF publications. They were just more aware of the importance of such publications and they claimed to be trying to publish such papers. Those of them who had IF publications stated that they were able to publish in prestigious journals thanks to a high level of internal motivation, good research skills that were usually developed as a result of thorough individual work or foreign internship, and international cooperation. Sadly, none of them mentioned university support or the help of a supervisor/dean, etc. This, together with the views of older scholars, suggests that Polish universities have some problems in implementingin practice the rules of the new law and they are sometimes stuck in the old paradigm. One of the older scholars expressed the opinion that "the new system is bad especially because of the parametrization, which, in itself, is not reliable and means nothing".

As far as Impact Factor (IF) publications are concerned, all the older respondents who did not have such publications claimed that the criterion deciding whether a given journal has an impact factor is purely commercial, and that this factor depends on the amount of money paid. Younger scholars who had IF publications stated that it was very difficult and time-consuming to write papers good enough to be accepted, but they claimed that the reviewing process was really blind and the criteria were objective. The scholars up to age 35 who did not have IF publications in some cases did not exactly know which journals had Impact Factor, but they assured the interviewer that they were trying to publish in them.

"I know that in order to be successful nowadays, I should publish in international journals. Some people mention Impact Factor, but I guess we don't know exactly what this means. Nobody has explained how to check which journasl have it and which do not. Besides, some people say that the deciding body is commercial. I don't know. I think that publishing in any foreign journal is enough. Why should we complicate the matter?" (Respondent 2, translation mine).

Those young scholars who were successful had totally different attitudes towards IF publications; they treated them as an indicator of success and personal development. They usually stressed that writing such papers was time-consuming not only due to their quality, but also due to the fact that it often entails reviewing and rewriting it many times, according to the suggestions of the reviewers. What is more, writing such papers also, according to the respondents, required very good research skills, knowledge of the literature in the field, and good English academic writing skills. For that reason, some of them decided to write with co-authors from abroad, who understood the importance of teamwork and who were more experienced.

"Impact factor publications are the most important indicator of a scholar's success nowadays. We all live in Europe and in more developed countries you don't

exist as a scholar without such publications. If we want to be treated like scholars at international conferences, we must have such publications. This way we prove that we know how to do good research and how to pack it – write about it." (Respondent 5, translation mine).

Younger scholars (especially the successful ones) claimed that habilitation hindered their international progress for the reason that preparing the dissertation (especially according to the old criteria) was time-consuming, and therefore less time could be allocated to IF publications and international activity. They suggested that together with the implementation of the rules of the new promotion system, habilitation should have been abolished.

As results of the qualitative study show, there is a gap between the thinking of younger and older scholars when it comes to the definition of success of scholars, IF publications, and the implementation of the new law. There have always been differences in thinking between various generations of people, but in the case of scholarssuch differences could have a negative influence on their development in the international sense.

3.4. Discussion of the study results and recommendations

As our qualitative study suggested, there are differences between scholars when it comes to their views on definitions of success, attitudes towards the new promotion system in Poland, and other factors connected with success and development. Among Polish authors of papers devoted to those issues, opinions also vary. According to Denek (2013), the reason for the implementation of the new law was the intention of the ministry to improve the quality of teaching and research. The transformation entails the implementation of parametrization procedures and evaluative results of research manifested by indexed citations, Impact Factor and Hirsch index, but, as Denek (ibid) stresses, not enough money is granted to Polish universities each year. Money goes together with development since money is necessary to buy books, pay for access to various databases, and pay for conferences. Sangwal (2011) points out that there are many myths circulating in Polish academia concerning good publications. For instance, some scholars claim that a beginning researcher should start with domestic journals and Polish-language publications and only then proceed to more advanced ones. This supports the claim made after analyzing the results of the qualitative study that some scholars are domestically-oriented and, despite reforms and system transformations, will not change their thinking paradigms. Sangwal (2011) stresses that people advocating such "domestic" views are usually deans, heads of divisions, etc., and, unfortunately, there is a significant correlation

between the research productivity of heads of departments and the research productivity of research assistants and assistant professors (Sangwal, 2011). Jałowiecki (2009), in turn, advocates the view that such publishing standards as the ones dictated by, for instance, the ISI Master Journal List, should not be treated as quality determinant for the reason that it is a very narrow-minded thinking that builds a false image of the level of Polish academia. Jałowiecki (2009),like some of our older respondents, claims that ISI Master Journal List is a commercial agency and not a real body guaranteeing the quality of research. Malaga (2009), in contrast, states that the selection of papers to be published in IF journals is very reliable and guarantees very high standards. Wolański (2011) is of the opinion that habilitation (postdoctoral degree in Poland) is a factor stimulating the development of scholars and guaranteeing reliability and creativity of research. On the other hand, most successful respondents (in international terms) claimed that habilitation is an old-fashioned relict of the past and a factor hindering productivity because in the time needed to prepare it, one could write a good IF paper.

In many Western countries there is no habilitation and the scholars are much more productive than Polish scholars. Lewicka (2009), stresses the importance of publishing in Impact Factor journals and draws our attention to the fact that emphasizing the role of IF publications in the new system was aimed at boosting scholars' productivity. She (ibid) claims that the awareness of the importance of such publications is very faint among scholars from the fields of the social sciences. Rykiel (2009), additionally tackles the issue of English language which is the *lingua franca* of contemporary academia and therefore is the language in which most prestigious journals publish.In order to become a part of the international academic community, Polish scholars must write papers in this language. The need to publish in English may be one of the reasons why older scholars are domestically oriented since they often are not very proficient English users. This situation has its roots in the past of Poland when the country was, for political reasons, Eastward-oriented and Russian was the foreign language taught at schools. Younger scholars, in turn, attended schools after the communist regime was over, they were taught English in school and therefore they now find it easier to write articles in this language. Even though younger scholars are more internationally-oriented than their older colleagues, minister of education Kudrycka (2009), who was the originator of the system change, cites statistics showing that Polish young scholars evince the least mobility of all European scholars when it comes to foreign internships and international projects. In this regard the research potential of the scholars is not fully used. Kudrycka (2013) claims that the new generation of scholars representsa chance for Polish academia to develop, but in view of the opinions of respondents showing that older scholars hinder their progress, the road towards development will probably be long and difficult.

There could be some measures taken, however, to improve the situation. As the study results and the opinions of other authors suggest, views on the new system and the new success determinants vary. Unfortunately, older scholars seem to find it difficult to accept the changes. As they are heads of departments and important figures in academia, they hinder the progress of young scholars. In order to change the current state of affairs, the ministry should take more control of the implementation of the promotion system changes. The scholars who are productive internationally should be awarded special scholarships which would encourage others to follow them. Also, more funds should be allocated to Polish universities since scholars often cannot afford to do good research due to the lack of the necessary equipment, software or access to databases. Older researchers who are very critical in academia can hinder or boost the development of the new generation and for that reason they should be strongly encouraged, not to say forced, to create opportunities for the development of younger scholars; or the ministry should dispose of the funds in such a way that not universities, but individual scholars, would be able to get them straight from the ministry. Of course, such opportunities already exist, since there are grants, even grants for young scholars, but university staff are not helpful when it comes to writing applications, planning the budget, etc., even though the university gets around 30% from each grant. If the ministry cannot force university authorities to help young scholars in writing applications and getting grants, they should, at least, offer some workshops devoted to developing grant-application skills. Furthermore, all scholars, especially those from the fields of the social sciences, should be made aware that it is possible to become a part of the international academic community – information concerning authors who succeeded in publishing in IF journals should be published on university websites. Successful scholars should be invited to share their experience with other scholars since Polish academic society ought to open itself up to the constructive criticism that is often provided by reviewers of prestigious journals. In the case of reviews of Polish papers, they are often based on logrolling (Rykiel, 2009), and getting real reviews, which often entails rewriting a whole paper, may be seen as a slap in the face by some scholars who are not familiar with international publishing practices. If productive scholars are rewarded and if they are allowed to share their experience, and if they are not frowned upon for their achievements by university authorities, the thinking of scholars may begin to change.

3.5. Conclusions

The issuing of the new law was necessary in view of the fact that the old one was very old-fashioned and essentially based on the Soviet model, and therefore Eastward-oriented. Polish academic society, however, seems not to have been well prepared for the change beforehand. On the other hand, nobody is ever prepared for change and significant changes are likely to trigger great stress (Kyriacou, 2000), which may be why some scholars are so set against the new promotion system. The youth of today's older generation of scholars was passed under the communist regime, so they did not have many opportunities to learn English, or come into contact with Western literature or practices of academic development. These people were promoted according to the old criteria and they are now important figures in Polish academia and have great influence on the next generations of scholars. Younger scholars are living and developing, however,under the rule of Western-based models of development and publishing standards (Bland, Center, Finstad, Risbey, & Staples, 2005), so they seem to be tormented by conflicts between functioning at Polish universities governed by the old generation of professors, and the desire to become a part of international academic society. Since the aim of the new system is to promote the mobility of scholars and their international orientation, the ministry should take all possible measures to make sure that the new law is really implemented. It cannot, of course, happen in one year, but the implementation of the new rules should be intensified bysome kind of "advertising" campaign and the presentationof so-called good practices of successful scholars. Issuing the new law without taking care of its practical implementation has resembled driving with GPS into a small village where one only gets to the center, but cannot find a particular house.

Chapter 4

Academic promotion system and academic success indicators in Slovakia

Eva Hvizdová[1]

4.1. Introduction

Advancement of an academic career depends on many factors beyound scholarly output, including research funding, participation in national meetings and organizations, and contributions to the local institutions, but scholarly output seems to be the most heavily debated. Bibliometrics approaches have been proposed to establish an objective means of measuring academic productivity and its impact on promotion of researchers.

Academic promotion follows a long tradition of evaluation of an individual's scholarly accomplishments, and depends on many factors, icluding national and international impact on a field. The number of publications and how often these have been cited play a significant role in academic promotion. There are many links between academic promotion systems and bibliometric indicators (Cariso, 2000; Glänzel, 2003; Stidham, Sauder & Higgins, 2012)

Because research is a central function, the university must evaluate its performance. Data on research performance helps to inform strategic decisions about what areas of research to support or build. It also helps the university leaders understand the institution's position relative to global and domestic standards of research production. Counting, measuring, comparing quantities, analyzing measurements: quantitative analysis is perhaps the main tool of science. Scientific research itself, and recording and communicating research results through publications, has become enormous and complex. It is so complex and specialized that personal knowledge and experience are no longer sufficient tools for understanding trends or for making decisions. Yet the need to be selective, to highlight significant or promising areas of research, and to manage better investments in science is only increasing. Bibliometrics (sometimes

[1] Eva Hvizdová, University of Economics in Bratislava

called Scientometrics) turns the main tool of science, quantitative analysis, on itself. There are various definitions used for bibliometrics. Essentially, bibliometrics is the application of quantitative analysis and statistics to publications such as journal articles and their accompanying citation counts (Glänzel, 2003; Van Raan, 2005). In the 21st century, bibliometrics evolved from a sub-discipline of library and information science to an instrument for the evaluation and benchmarking of academic success. Due to the dynamics in evaluation, the form has shifted away from macro studies towards meso and micro studies of both actors and topics.

A variety of evaluation methodologies are available to assess research. Individual methods have their own strengths and limitations. Evaluating research effectively and efficiently therefore requires considering which methods are most appropriate for a specific evaluation context.

Bibliometric analysis of scientific activity is based on the assumption that carrying out research and communicating the results go hand in hand. Scientific progress is made by researchers getting together to study specific research topics, steered by the previous work of colleagues. The classic input-output model used to describe the scientific research process suggests that publications can be taken to represent the output of science. Publications, most commonly in the form of the refereed article and the scholarly monograph, are regarded as the definitive statements of the results of research projects. This production can be quantified and analyzed to determine the size and nature of the research carried out. Studies can be performed at macro level to measure global, regional, or national trends or at the micro level of institutions or groups (Thomson Reuters, 2011).

The aim of this chapter is describe the academic promotion system in Slovakia and to highlight the significance of measurement of bibliometrics indicators of science in Slovakia. The chapter is divided into two logical parts. The first part is devoted to the university system in Slovakia and the academic promotion system and the second part is focused on bibliometric approaches linked to the level of bibliometric indicators in science. Usually, awarding an academic title is influenced by a certain level of academic bibliometric indicators in publication area and citations. In assessing an academic career, a significant role is played by impact journals and the influence of relative citations. As we can see, bibliometrics is connecting with the scientific careers of researchers and their influence the overall level of bibliometric indicators on national scale, therefore in this chapter we pay significant attention to it.

4.2. Universities in Slovakia – their nature and fundamentals

The mission of universities in Slovakia, which are part of the European Higher Education Area and the European Research Area, is to develop a harmonious personality with knowledge, wisdom, goodness and creativity and to contribute to the development of education, culture and health for the welfare of the whole society, and thus to support to the development of knowledge in society. Fulfilling this mission is the core activity of universities. The main role of fulfilling their mission is to provide higher education and creative scientific research or creative artistic activity.

Universities have the prerogative to provid and organize higher education. Colleges provide, organize and ensure higher education within their accredited study programmes. Study programmes are carried out on three levels. Every college provides, ensures and organizes higher education within the curricula of the bachelor's programme. Universities have the exclusive right to accept applicants for higher education and have the exclusive right to award academic degrees, scientific and educational titles and artistic-educational titles, use the insignia and carry out academic ceremonies.

Universities in Slovakia according to the Law on Higher Education can be divided into these categories (Table 1):

a) public universities;
b) state universities esteblished in the Slovak Republic;
c) private colleges;
d) foreign universities established in a member state of the European Union outside the Slovak Republic, or in a state which is party to the Agreement on the European Economic Area and Switzerland. In Slovakia, there are currently 17 public universities, 4 state colleges, 13 private colleges and 5 foreign universities.

The basic role of higher education in the area of science and technology is to conduct basic research and applied research and development, to utilize the latest knowledge in science and technology in the education of students, and to involve them in creative scientific activities.

Universities under fulfillment of the given criteria are divided into:

a) college or university,
b) vocational high schools.

University provides education in curricula of all three levels and performs basic research and applied research and development. Study programmes are carried out in relation to its activities in science, technology or art and in accordance with the current state and development in these areas. The word „university „ or its derivatives can be used in the name only of a university college, unless stipulated otherwise.

Vocational colleges provide educational study programmes particularly in the first level and perform applied research. Vocational high schools do not provide education in the third degree. The title of vocational college includes the words „vocational college".

Table 1. Categories of higher education institutions in Slovakia

PUBLIC UNIVERSITIES	They are public and municipal institutions that are established and repealed by the law. The Act also provides their name, position and address. If the public university is divided into colleges upon its establishment at the same time there are established the following faculties.
STATE COLLEGES	They are military academies, police academies and medical colleges. Students studying at military colleges also perform military service. Police colleges educate especially professionals for the Police Force, but also students who are not employed there. Medical colleges educate students who are preparing for various categories of health workers.
PRIVATE COLLEGES	Legal entities established in the Slovak Republic or in the territory of the EU Member State or States which are the parties to the Agreement on the European Economic Area and Switzerland, which have been established or founded on education and research and are authorized to operate as a private college on condition that the Slovak government gave them the agreement on behalf of the State.
FOREIGN UNIVERSITIES	Foreign universities provide higher education in the Slovak Republic under the laws of their State of residence for the grant of authorization issued by the Ministry of Education, Science, Research and Sport of the Slovak Republic.The rights and obligations of students of foreign universities are not governed by the Law on Higher Education, but by the law of their country of residence. The equivalence of evidence of formal qualifications with evidence of formal qualifications issued in the Slovak Republic (university degree and state examination certificate, diploma supplement) is determined as in the case of evidence of formal qualifications gained by studying abroad.

Source: Ministry of Education.

The Slovak government issues the agreement to provide higher education to a college. Due to the great number of higher education institutions, there was a large depreciation of the educational process at universities in Slovakia, the quality and reputation of which have long been maintained by the schools with tradition. The result of these trends and fragmentation of resources is the unsatisfactory placement of the Slovak universities in international quality evaluation scales.

Universities have undergone transformation into public institutions in 2002 according to the new Law on Higher Education which allowed the development of multi-source financing. The basis is a subsidy from the state budget, to which are added other resources from standard contracts. According to the Law public universities are defined as legal entities able to recover their intellectual property to some extent. The most successful can obtain approximately 40% of other resources in the form of grants or contracts for work to the basic state subsidies.

Public universities are financed from the state budget in the form of grants, which depends on the performance of a particular school in the previous period. Public universities were financed from the state budget at a level of approximately € 440 million in 2013. This amount includes expenses to cover the cost of education, as well as the needs to secure the research (institutional research funding), social scholarships, housing allowances, and the support of sports and cultural activities of students. In 2012 there were registered 36 universities with 132 colleges, with 131,306 full-time study students in the first and second stage of university studies, and 5,810 students at the third stage of university studies. There were also part-time study students at all levels of university study: 58,035 students in the first and second stage and 4,925 students in the third stage. 10,825 teaching staff taught at all universities. In the school year 2011/12 42,493 students in the I and II stage and 1,343 students of the III stage completed their studies.

According to the field study, in 2012, most candidates applied for Economic Sciences (13,007), Education Sciences (8,454) and teaching in combination with other subjects (7,336). There were 3,658 candidates for Computer Science and Engineering and 3,435 candidates for Engineering and other metal processing productions. The first five places in the number of applications for study programmes and fields of study were teaching with subject combinations (7,336), business management economics (6,422), general medicine (5,078), law (4,710) and social work (4,243). The frequency of students/graduates at universities in Slovakia divided by fields of study or study programmes has been tracked since 1989. These data are relevant for assessing the secondary school graduates' choice of field of study; therefore, it is a mistake that we do not distinguish different kinds of secondary school graduates. Since 2009, there has been a decreasing number of all college students (both in the public and private schools) and this trend is symptomatic in relatively equal measure for all fields of study. The social sciences lead in the number of students (in the examined period they have about 58% of college students). Engineering students are the second in order, but they are less than half the number of social sciences students. Students of natural sciences are a stable 5% of university students. According to surveys of employers, the biggest interest is in graduates of Informatics (72.75%) and construction (42.12%). There is less interest in graduates of technology and natural sciences. Social sciences reached 32.04%, technology 27.89%, engineering 27.71% and natural sciences 26.88%. Despite the interest of employers, the largest share of graduates/job seekers is in social sciences -- more than a half (55%); and in technical sciences – 33%. (Report on the state of education in Slovakia, 2013). At present, the report on higher education is submitted for discussion which has to be the basis for changes and adjustment in higher education in the future. Thus it is necessary to redesign the support system in order to give significant benefit in financing to high-quality universities. The aim is to:

- improve the quality of higher education;
- improve the quality of higher education science and research;
- sort out elite universities with a global reputation;
- promote cooperation with business practice;
- commercialize the results of research-innovation activities.

Colleges not included among university colleges or vocational high schools provide higher education study programmes primarily in the first grade and second grade and carry out basic research and applied research. Full-time study dominates at universities in Slovakia and is the main activity of university students. Part-time study is designed for students who are mostly employed and is aimed at self-study. Individual study is approved by the dean of the faculty and is designed for a student or a group of students, if they cannot attend the course because of long-term health ailments, care of children, or e.g. they are representatives of the Slovak Republic in the field of sport, etc. Forms of higher education are time- and organizationally consuming. The educational process is implemented in them and it is different from the teaching methods in both conditions and performance. The basic forms of teaching full-time study are lectures, seminars, exercises, excursions, professional practice and consultations of students with teachers. Universities are institutions with a mission to perform research and participate in the implementation of projects aimed at the advancement of education. These are the basic attributes of a knowledge society, to which every developed society in the European Union and in the world reports. Education is increasingly proving to be a strategic commodity and power that predetermines a company's ability to face challenges and meet their needs. Education today is global in nature. There is an expanding number of higher education institutions, which is a socially and politically attractive solution.

4.2.1. Academic promotion system in Slovakia

In this part we deal with requirements connected with gaining the titles „PhD.", „associate professor" and „professor."

The doctoral programme as a third degree study programme focuses on the acquisition of knowledge based on the current state of scientific and artistic knowledge and in particular the student's own contribution to it, which is the result of scientific research and independent creative activity in the field of science and technology or independent theoretical and creative activity in arts. Graduates of the doctoral programme receive higher education at the tertiary level. The standard length of study for doctoral programme:

- Full-time study is three or four years; the number of credits, which is a prerequisite for achieving the proper completion of study, for a doctoral programme in full-time study with a standard length of study:
  - three academic years is 180 credits,
  - four academic years is 240 credits.
- Part-time study or external study is four or five academic years; the number of credits, which is a prerequisite for achieving the proper completion of study, for a doctoral programme with a standard length of study :
  - four academic years is 180 credits,
  - five academic years is 240 credits.

A PhD student can obtain credits for the following activities:

1. Study part of doctoral study (e.g. special lectures and seminars, pedagogical activity at the faculty, etc.)
2. Scientific part of doctoral study (independent and team creative scientific activity, publishing activity)
3. Elaboration of PhD dissertation.

The study according to the doctoral programme takes place according to an individual study plan under the guidance of the supervisor. A condition for the proper completion of doctoral study is to perform a dissertation examination, which is one of the national examinations, and to defend a dissertation thesis. The dissertation thesis is the final work.

The function of the supervisor in the given study field can be carried out by the teachers of university or faculty which performs the doctoral study or other professionals after approval by the Scientific Council of the university or faculty, if the doctoral study is carried out at the faculty.

Before starting the admission procedure for PhD study, the college or faculty, if the study programme is to be carried out in a faculty, presents the dissertation topics for which candidates can apply under the admission procedure. There is intended a trainer for each of the topics. Doctoral candidates log on one of the topics. If the study programme is carried out at the faculty, simultaneously with the adoption of the candidate for doctoral study, the university or faculty determines his or her supervisor and selected topic of dissertation.

The college or faculty, if the programme is carried out at the faculty, ranks among the topics of dissertations also the topics along with trainers from an external educational institution; along with the theme there is also stated the name of the contracted external educational institution. The external educational institution may disclose topics separately.

Doctoral study consists of a study part and a scientific part. A study plan is set up by the supervisor and is submitted for approval to the expert committee. The study part of the PhD study consists mainly of lectures, seminars and individual study of the literature needed for the candidate's dissertation thesis. The scientific part of the PhD study consists of the individual or team research work of the doctoral student, which is bound to their dissertation topic. The scientific part of the PhD study is professionally guaranteed by the supervisor.

A further part of full-time PhD study is teaching activity or other professional activities connected with teaching in the range of up to four hours a week on average for the academic year in which the lessons take place.

The study is completed by the defense of the doctoral dissertation. It demonstrates the candidate's ability and readiness for independent scientific and creative activity in the field of research or development, or independent theoretical and creative artistic activity.

The PhD graduates are awarded the academic title "Doctor" ("Philosophiae Doctor", abbreviated "PhD", specifies the name). Arts graduates of the doctoral programme are awarded the academic title "Doctor of Arts" ("artis doctor", abbreviated "ArtD"). A doctoral programme student in full-time study residing in a member state for the standard duration of the study programme they were adopted for, if they did not receive higher education at the tertiary level, is eligible for a scholarship:

a) till the execution of the dissertation exam at least to the 9th grade and the first step under a special regulation;
b) after the dissertation examination at least to the 10th grade and the first step under the special regulation.

In Slovakia, the most visible increase in the number of internal PhD students can be observed in the technical sciences and the social sciences. Conversely, the least interest is in military and security, agro-forestry and veterinary studies. The greatest popularity has been enjoyed by the technical sciences among the full-time students, but the most popular are social sciences in the group of part-time PhD studies.

4.2.2. Scientific – pedagogical titles "associate professor" and "professor"

A university which has got the appropriate rights in given study branch is able to award the scientific-pedagogical titles "associate professor" and "professor" to professionals who work at university and have fulfilled given criteria for these titles. These titles can be gained only at a tertiary institution which offers study programmes

in the second and third level of university study. The prerequisites to gaining the scientific pedagogical title "associate professor" are:

a) university qualification at the third level,
b) elaboration of a habilitation thesis and successful completion of the habilitation process.

The prerequisites to gaining the scientific pedagogical title "professor" are:

a) possessing the title "associate professor",
b) successful graduation of inauguration.

Fulfillment of all criteria is evaluated by the Scientific Council of the university or the faculty based on the given criteria for gaining the title "associate professor" or "professor". The Slovakian Accreditation Committee asseses the fulfillment of these criteria. The criteria are linked to cathegories whose conditions are set by individual institutions according to branch of study and study programmes. The criteria are usually divided into pedagogical activity and scientific activity.

Pedagogical activity can contain these criteria:

- pedagogical activity in a given field of study (number of years),
- supervision of diploma theses (number),
- number of supervised PhD theses,
- to guarantee subjects,
- number of university textbooks and other teaching materials.

Scientific-research and publication activity can be evaluated by:

- scientific monographs (number of pages),
- original scientific works and scientific papers with impact factor (number, minimum value of impact factor is determined for every branch),
- international conferences (number),
- home conferences (number),
- citations (number),
- completed grants and other research task, project (number).

In Slovakia, acquiring a scientific title ("PhD") and scientific-pedagogical titles ("associate professor" and "professor"), habilitation and inauguration procedures are regulated by Law No. 135/2002 on Higher Education and by the internal regulations of universities.

The next part of this chapter is devoted to bibliometrics, which plays an important role in building the career of a scientific worker.

4.3. Bibliometric analysis and evaluation of the quality of college scientific output in Slovakia

The issue of the quality of science is extremely complex. Simply speaking, science itself has not made a satisfactory model for its own assessment. Derek de Solla Price, professor at Yale University, has focused on the history of science and is considered to be „the father of Scientometry" (Eom, 2009). The publication „Little Science, Big Science" (1963) highlighted the need to examine science and scientists on the basis of publications as an indicator of scientific progress. Bibliometrics provides one of the options to objectify evaluation processes. In simple words, bibliometrics can be described as a discipline that by observing the means of written communication, both printed and electronic, maps and analyzes scientific research and its components. It can be defined as a „set of methodological knowledge serving the application of quantitive methods to evaluate the process of creation, communication and use of scientific information" (Carrizo, 2000). According to Krištofičová (1997), bibliometrics monitors scientific discipline, as expressed via written communication. Its target group is therefore science and research, resp. scientific discipline and its image provided by scientific documents as products of scientific and research activities. Bibliometrics is the assessment of the number of publications and their quality. Originally there were determined numbers of scientific publications sorted by authors, scientific disciplines, institutions and countries of origin. Currently, there are used sophisticated multivariate methods based on citations in scientific publications. The resulting citation indexes, and citation and co-citation analyses, are used for a more precise evaluation of the quality of research. The most widely used bibliometric indicators are the number of scientific publications per year (usually normalized per 1,000 of population by country), the number of citations referring to these publications (per 1,000 population), and average number of citations per publication attributable (RCI – relative citation index). The main data source for bibliometric assessment is the Institute for Science Information in the USA.

One of the first bibliometric evaluations took place in the early 1980s in the United Kingdom, which met, however, as did a number after it, with rejection and skepticism, since although the quantitative approach appeared to be objective, it lacked the theoretical background and reliable data. With the development of methodology, but also the information base, many shortcomings were gradually eliminated and bibliometric evaluations began to be commonly used in the evaluation process. Some countries have developed their own institutions for the collection and processing of data; others use commercial or research institutions specializing in bibliometric analyses. The USA, France and the Netherlands were the first to include bibliometric data in their reports on science. In Slovakia, some bibliometric

data were processed in the National Report on Scientific and Technological Policy in 2002 for the first time.

The reason why bibliometric indicators have been more accepted in academic and scientific research communities has been a growing skepticism towards the evaluation of scientific outputs by experts (peer review). Dissatisfaction with the assessment, whether by commissions or individuals, but also the pursuit of an objective basis for making decisions about finances have led to increasing interest in numerical indicators promising greater transparency and objectivity. The number of published works does not reveal anything about their quality, but the number of papers published in the leading scientific journal or citations, although itself a quantitative measure, can also testify to the quality. Numerical indicators used in assessing of performance might not only include figures related to publishing, but also data on participation in conferences, lectures, and so on. In literature, the process related to the collection and manner of presentation of numerical indicators is often included under the common title „metrics".

Despite the indisputable importance of bibliometric and other figures, the practice of evaluating universities or research institutions based only on quantitative indicators is unacceptable. Most often used is a combination of both methods – evaluation by experts and quantitative indicators, especially indicators of publishing activities and citation – which means data obtained through bibliometric methods. Interestingly, the number of ratings comparisons based on bibliometric analysis and evaluation by expert groups showed a high correlation among them. Assessment by experts is sometimes called subjective, while bibliometric evaluation is presented as objective (Butler, 2008).

The fundamental scales of bibliometric research for analysis of scientific production are simple numbers, e.g. number of publications, citations, etc. The term bibliometric indicator (pointer) often occurs in bibliometric analyses. Glänzel (2009) describes bibliometric indicators as more complex measurements that can be obtained as statistical functions defined on the set of bibliometric elements and units. He points out that in the use of bibliometric indicators requirements of validity, repeatability and reliability must be applied. Krištofičová (1997) reported a total of 26 bibliometric indicators, among them, e.g. self-citations, citation factor, graph of co-authors, journal impact factor, co-citation intensity, half-aging literature, rate of self-citations, rate of self-references, etc.

The use of certain indicators depends on the size of the reference object and whether the bibliometric research is carried out at the level of scientific group, institution, country, etc. From the perspective of macro-level evaluation, there are important indicators of activity (AI – Activity Index: the proportion of publications of an institution, region or country in the field of science in the total number of

publications), and relative specialization index (RSI – Relative Specialization Index: indicating whether a country has a relatively high or low share of world publications). The basic unit of bibliometric research is the scientific journal. This may be because scientific journals have a significant long position in scholarly communication, but it is also because they have clearly defined standards for publishing and quality assessment system (peer review), which ensures the originality of the published results of scientific research (Glänzel, 2009).

The communication model in science is characterized by strong ties – almost every new finding is built on previous knowledge. Application of bibliometric methods in assessment of scientific research is, according to Van Raan and Van Leeuwen (Van Raan, Van Leeuwen, 2002), based on the premise that scientific advancement is provided by scientists with local, national, but primarily international characteristics, who investigate the subject of research based on knowledge of previous scientists and their work. This is expressed through references and citations which have become an important measure for the impact of scientific research. On the principle of the relation of published papers and their citations, there can be based a professional-community-recognized indicator of the impact of scientific journals, namely, the impact factor. One of the bibliometric methods – citation analysis -- is based on the frequency of citations.

Citation as a criterion for the quality of scientific publications, resp. research that is described, cannot be accepted without reservation. Criticism of sociologists of science points out that citation behaviour is not so reliable that it is possible on the basis of citation data to evaluate quality. One of the arguments is that citation has different motivations. These could be, for example, reciprocity with the founder of the field of science or department, or negative evaluation of some publication.

Even high-quality work can be little cited, if it is not written in a widely known language, if it is published in a document which is difficult to access (e.g. gray literature), or if the issue is dealt with only by a narrow group of experts. Citation of publication does not clearly reflect the importance or the quality of described research, and it is significantly affected by, e.g. type of work – whether the published work is the original scientific work, a review article or a methodological work (Krištofičová, 1997). On the other hand, citation analysis does not concern one publication or one author, but a large set of publications, which may lead to elimination of some impacts, since there are quotes analyzed by many authors with different citation behaviour (Van Raan, 2005). Nevertheless, it is clear that the results obtained via citation analyses require different treatment and consideration of several aspects.

One of the most important and widely recognized bibliometric indicators is the journal impact factor. The level of this factor in the author's published articles is supposed to predict the quality of the articles. Research shows that this is a not

generally applicable rule. Even in journals with a high impact factor, articles of lower quality and articles that remain unanswered may occur. In journals with low impact factor, articles with important content can occur. Research confirms that journal impact factor depends on the field of science to a great extent (Seglen, 1997). High impact factor is bound up with, e.g .magazines covering large areas of basic research that are rapidly expanding.

E. Garfield (1972), the founder of the Science Citation Index, also pointed to several factors that are significant in relation to the use of citation data for evaluation:

- citation rate reflects the value of the magazine and its use, but undoubtedly there are also many useful magazines not often cited;
- citation frequency is a function of many variables, not only scientific merit; these are, e.g. an author's reputation, a controversial topic, and also the availability of the document (in libraries, through reprints, etc.).

Basic principles for scientific communication are of general application, but in terms of published results there exist certain specifications – whether within disciplines, institutions, or regions – depending on the level of evaluation. Differences in publishing behaviour may occur in the preferred non-periodical publications prior to periodic, low level of co-authorship, „international" co-authorship, low acceptance of electronic publishing, etc.

Significant differences can be observed when comparing, for example, the natural and social sciences. In the social sciences, journal literature and monographic works have a prominent place; the rate of obsolescence of information is sometimes much slower and this is reflected in the development of publishing activity and citations.

The scientific discipline or the type of research have their own impact on productivity in terms of publications. Some types of research produce publishable results after a long period of time. All these phenomena should be taken into account when using bibliometric indicators for evaluating the results of scientific activity.

Standard bibliometric studies are traditionally based on international bibliografic databases. For evaluation purposes the database Web of Science is preferable, because in addition to information on publishing activity it allows one to monitor the response to published papers in the form of citations / references. The amount of published literature confirms that the data from the Web of Science can also not be used for assessment purposes without reservations. It is commonly known that preference is given to natural sciences and there is rather low coverage of social sciences and humanities in this database, a basic orientation toward American research, a number of formal errors (inaccurate presentation of the author's names, affiliates), a preference for English as the language of publication, etc. Given all these (as well as other) limitations we only point out the need for a differentiated approach to evaluation.

Neither the Web of Science, nor its newer „competitor" Scopus, offer a complex overview of published documents and responses thereto, thus in connection with assessment analyses are also suggested the so-called „substandard" bibliometrics – bibliometric analyses drawing information from local databases or other, e.g. internal sources. „Substandard" bibliometrics is permissible especially in assessment of the outcomes from humanities and social sciences as these are not sufficiently covered in these databases. The use of data on the publishing activity of the Slovak Universities concentrated in the Central Register of publications (CERPC) is such a kind of bibliometrics.

Articles in scientific journals are the most common form of publishing academic results. Currently there is a huge number of journals at all different levels. They try to retain their quality and carefully select which papers will be published in them and which not. The selection of articles for publishing by having them reviewed by experts from the field has been practiced for years. The selection of the magazine in which a paper will be published is a part of a scientist's career strategy. Factors influencing selection include the quality of the journal, the field of science, availability, speed of publication, language, etc. It is of course the result of attempts by scientists and magazines to get the greatest response and the greatest number of citations.

Research on the use and impact of scientific journals is one of the most commonly used application areas for citation analysis. Despite the fact that there are other indicators in evaluation and comparison of scientific journals, all are related to the number of citations the journal acquired.

Rating of the journal is important for the publishers themselves, but also for the authors, the institutions in which they work, etc. When assessing the scientific outputs, individual publications are often evaluated according to the quality of the journal in which they were published. The longest tradition in evaluation of journals is the Journal Citation Report (JCR), which since 1976 has drawn up statistics on citation data of monitored journals. They register the number of citations in journal per year, number of magazine articles, reference number, age, etc. The most important indicator of the impact and quality of the magazine is the JCR impact factor. At present, there are other resources enabling comparison of magazines. They provide alternatives to the impact factor. They differ not only by the algorithms used in comparing journals, but also by the data they rely on. Some do not use data from the Web of Knowledge, but from Scopus database, or for example from Eigenfactor Score and Scimago Journal Rank Indicator.

Webometric indicators measure a general web impact through web (web citations or web mentions). Altmetric indicators measure more specific impacts by using information such as the number of readers of a publication, tags, bookmarks, comments, tweets, or blogging provided by users to asses the impact of authors

or publications. Google scholar is a free tool that collects citations from scholar publications: published papers, preprints, postprints, technical reports, dissertations, conference articles and others. Google Scholar has wider coverage of citation data than traditional bibliometric databases (e.g., Web of Science, Scopus). Some studies have found strong correlations between Google Scholar and Web of Science citations accross fields, so that the use of Google Scholar can give a wider picture of the scholarly impact of individual researchers (Meho & Yang, 2007)

Bibliometrics has introduced many positives into the objectivisation of evaluation processes, athough it has several drawbacks. Relatively easy access to data on publications and citations, concentrated in international databases, often leads to simplified interpretation of the results obtained. The fundamental problem noted by several well known authors is the use of bibliometric data and indicators without realizing connections and influences, especially without a differentiated view on the various fields of science, their publishing models and practices, citation behaviour, etc. In relation to the use of bibliometrics for evaluation, it is stressed that the problem is not the use of bibliometric indicators themselves, but insufficiently sophisticated procedures (Van Raan, 2005), and it is recommended that bibliometric research should focus on elaborating research indicators of performance that can be directly implemented in practice.

Journal Citation Report is a part of the database Web of Knowledge of Thomson Reuters. It provides annually systematic evaluation and comparison of scientific journals based on citation analysis. Citation data are obtained from more than 11,000 journals from a wide range of disciplines.

Web of Knowledge has become one of the most important, most widely used, but also the most discussed information sources. Its popularity as an information source is often very uncritical. Therefore, it is of interest not only to legitimate users looking for some information, but also for those who wish to disseminate some information. Thus emerged a new type of communication which has many negative as well as positive features. Web of Knowledge as an information source is of interest to professionals in the field of information science. They examine the various aspects related to information flows, structure and content of sources. Interesting, too, are the users who not only use these sources, but also create them. The big challenge is the application of bibliometric methods in a web environment. The subject of bibliometrics is recorded information. Using quantitative methods, it examines information characteristics and uses. Bibliometric studies are mainly focused on scientific documents. These are interconected by bibliographical references and they create a network of linked documents. Thus, there exists a parallel between the net of scientific literature and the Web -- the network of linked hypertext pages.

4.4. Bibliometric evaluation in Slovakia

The most widely used source of information for bibliometric assessment in Slovakia is database ESI (Essential Science Indicators, Thomson Reuters). The most important indicators are the relative number of specialized scientific publications, the relative number of citations and the citation index. Bibliometric indicators in Slovakia cannot be considered satisfactory as shown by the Report on the State of Research and Development (2012). We do not reach a satisfactory level in number of citations per researcher in the European Union. Nevertheless, we recorded relatively high efficiency of expenditures in terms of average amount of costs and the number of publications in the peer-reviewed journals database in 2005-2009.

The indicator of the relative number of professional scientific publications (number of scientific publications per 1,000 inhabitants) reached the value of 0.53 in Slovakia in 2008-2012. The highest values in Europe were achieved by Denmark (2.12), Sweden (2.10), Finland (1.83), the Netherlands (1.83), Slovenia (1.60) and the UK (1.54).

Table 2. Relative number of specialized scientific publications

Average number of specialized scientific publications	Slovak Republic
Average number of publications/year/1000 (2004-2008)	0.43
Average number of publications/year/1000 (2005-2009)	0.46
Average number of publiciations/year/1000 (2006-2010)	0.47
Average number of publications/year/1000 (2007-2011)	0.50
Average number of publications /year/1000 (2008-2012)	0.53

Source: Report on the state of research and development in Slovakia (2013)

The indicator of the relative number of citations (number of citations per 1,000 inhabitants) reached in the given period in Slovakia the value of 1.95. The highest values in this indicator were reached by countries like Denmark (17.04), Sweden (15.35), the Netherlands (14.50), Finland (12.51), the UK (11.56) and Belgium (11.16).

The most commonly used criterion is the relative citation index (citations to the world's database). For the period of 2007-2013, Slovakia reached the value of 61%. During this period, the highest values among European countries were reached by Denmark (138%), the Netherlands (135%), the UK (128%), Sweden (125%) and Belgium (124%). Among leading countries in the world within this indicator the U.S.A. (127%) can also be included.

Table 3. Average number of citations in the Slovak Republic

Average number of citations	Slovakia
Average number of citations/year/1000 (2004-2008)	1.33
Average number of citations/year/1000 (2005-2009)	1.50
Average number of citations/year/1000 (2006-2010)	1.66
Average number of citations/year/1000 (2007-2011)	1.74
Average number of citations/year/1000 (2008-2012)	1.95

Source: Report on the state of research and development in Slovakia (2013)

Table 4. Relative citation index in Slovakia

Relative citation index	Slovak Republic
Relative citation index in % (2004-2008)	58
Relative citation index % (2005-2009)	58
Relative citation index % (2006-2010)	63
Relatívny citation index % (2007-2011)	61
Relative citation index % (2008-2012)	61

Source: Report on the state of research and development in Slovakia (2013)

The following table shows the original scientific works of authors working in the Slovak Republic registered in international scientific journals in 2007-2013 sorted by scientific groups (Table 5). However, we must stress that international scientific journals mean wider set than impact factor journals (ISI).

The listed division is general; however, it allows us to determine the dominant basic research area in which there exists critical mass in Slovakia. From this table it is clear that economic and social sciences lag in publication outputs compared to medicine and natural sciences. Recent evaluation of the research institution Scimago Institutions Rankings showed interesting results of the assessment of the institutions and inspired a number of stimulating discussions. The ranking has been compiled annually since 2009 by Spanish research organization Scimago Research Group. It focuses on the comparison of research institutions worldwide according to several indicators, in particular the volume of publications, scientific merit, thematic specialization or international cooperation. A requirement for inclusion of a research institution in the rating is to have at least 100 registered publications in the database Scopus for the last 5 evaluated years. This year there have been

Table 5. Original scientific works of authors working in Slovakia published in registered international journals in 2007-2013 according to scientific groups (SCOPUS)

Field of science	Number of Works
Agricultural Science	2.676
Biochemistry, Molecular Biology	2,945
Chemical Engineering	744
Chemistry	2.520
Computer Science	706
Earth Science	1.290
Economics	416
Energy	234
Engineering	2.357
Environmental Science	1.210
Immunology, microbiology	873
Material Science	2.447
Mathematics	1.473
Medical Science	4.003
Neurology	439
Pharmacy	707
Physics and Astronomy	3.654
Social Sciences	736

Source: SCOPUS

involved in the assessment 2,744 organizations, including 6 from Slovakia. From the neighbouring Czech Republic, there have been included 44 institutions, though among them are 18 organizations founded by the Czech Academy of Sciences. In total number of publications, which ignores the size of the institutions, the Slovak Academy of Sciences was at 444th place in the world and 13th place in the region of Eastern Europe. For the 5-year period it produced 7,902 publications registered in the database Scopus. The second most productiove institution in Slovakia is Comenius University (789th place in the world, 30th place in region). It is followed by Slovak University of Technology (1,026th place in the world and 50th place in region), Technical University of Košice (1,693th, 107th), Pavol Jozef Šafárik University (1,695th, 108th) and University of Žilina (2,256th place, 218th place in region). The positive news is that for all of our institutions, the number of publications for the five-year reporting period grew. From the rating, however, there can be found other interesting scientific outputs that are not dependent on the size of institution. Below. we will compare Slovak research institutions and compare Slovak Academy of Sciences (SAV) with academies of sciences of other V4 countries.

The first indicator is that of High Quality Publications (Q1). This monitors the percentage of publications that are published by institution in the world's most influential scientific journals. In Slovakia, the Slovak Academy of Sciences, with 32.78% leads in this indicator followed by Comenius University (30.99%) and Pavol

Jozef Šafárik University (23.41%). Within the V4 countries, the SAV was the worst. It was outranked by the Czech Academy of Sciences (46.43%), the Hungarian Academy of Sciences (46.12%), and the Polish Academy of Sciences (39.48%). Another indicator, the so-called Normalized Impact, highlights the rate between the average scientific impact of an institution and average world influence of publications at the time and scientific area. The value 1 means that average influence of institution is on the global level. The best in Slovakia is Comenius University with the parameter at 0.97, which means that the institution is cited by about 3% below the world average. It is followed by the SAV (0.90) and P. J. Šafárik University (0.77). Within V4 countries the best are the Czech and Hungarian Academies of Sciences (1.13 and 1.11). The Polish Academy of Sciences is on a par with the Slovak Academy of Sciences (0.91).

Science-Metrix has been selected as the provider of bibliometric indicators for the European Commission's Directorate-General for Research and Innovation (DG Research), starting in

September 2010 and extending to September 2014. The production profiles are based on a selected set of bibliometric indicators that aim to compare scientific performance across countries and regions. We have dealt with these bibliometrics indicators, which are linked to the the production in Socio-Economy Sciences:

- **Number of publications**: publications are counted based on full counting (FULL),
- **Average of Relative Citations (ARC)**: a field-normalised measure of scientific impact (which also takes into account the publication year and document type of scientific contributions in the normalisation process), based on the citations received by an entity's papers; thus, it is a direct measure of scientific impact,
- **Average of Relative Impact Factors (ARIF)**: a field-normalised measure of the scientific impact of publications produced by a given entity (e.g., the world, a country, a NUTS2 region, an institution), based on the impact factors of the journals in which they were published (also taking the publication year of scientific contributions into account in the normalisation process). As such, the ARIF is an indirect impact metric reflecting the average citation rate of the publication venue instead of the actual publications. As a result this indicator may serve as a proxy for the "quality" of the research performed by a given entity. Indeed, the more cited a journal, the more researchers will seek to publish in it and the more the editors will be in a position to select the best papers,
- **Highly cited publications**: the percentage of papers in the 10% most-cited papers in the reference database (making use of the normalised citation score of individual publications).

Table 6. Visegrad countries and publications in Socio-Economic Sciences, 2000-2011

COUNTRY	PUBS (FULL)	ARC	ARIF	% IN TOP 10% MOST CITED PUBS
SLOVAKIA	1.334	0.43	0.38	2.9%
POLAND	2.769	0.38	0.56	2.3%
HUNGARY	2.247	0.58	0.66	5.3%
CZECH REPUBLIC	3.243	0.45	0.48	2.4%
EU	260.291	1.00	0.96	9.9%
WORLD	773.444	1.00	1.00	10%

Source: European Commission. Country and Regional Scientific Production Profiles (2013).

The total output in the Socio-Economic Sciences of V4 countries (2000-2011) stands at more than 9,500 publications (Slovakia 1,334, Poland 2,769, Hungary 2,247 and Czech Republic 3,243, Table 6). The United Kingdom (100,372), Germany (34,278), France (26,345), Spain (20,057) and Italy (14,564) are the top 5 producers in the European Union. In terms of ARC scores and the percentage of publications in the 10% most-cited publications, the Netherlands (1.43), Denmark (1.25), the UK (1.22), Belgium (1.20), and Finland (1.11) obtain the highest scores, while most other European countries perform at or below the world level (1.00). We can see that the Visegrad countries do not achieve the European average of ARC indicator (1.00) which is considered very important in bibliometric science. The ARIF indicator shows the low levels of scientific impact of the Visegrad countries. The value of this indicator is 0.38 in Slovakia, 0.56 in Poland, 0.66 in Hungary and 0.48 in Czech Republic. The result is not satisfactory for us because the European average of ARIF indicator is 0.96. The best value of ARIF indicator is achieveed by countries such as the United Kingdom (1.11), Sweden (1.10), Belgium (1.08), Denmark (1.11) and Finland (1.00). There is a similar situation with the top 10% most-cited publications. Visegrad countries do not achieve the value of European average (9,9%).

Currently, there are high quality teams with international reputations. Quality scientific results are the prerequisite for entry into the international science and technology cooperation. Quality has, in this way, influenced the low participation of Slovak entities in international cooperation. Activities in research in Slovakia have to be significantly increased. In addition to continuing renewal of the technical infrastructure, there must be improved wage assessment of particularly high-quality and young researchers. The current average hourly earnings for scientific and technical activities in Slovakia do not create adequate incentives in certain competitive areas (ICT services, finance), or conditions that provide competitive foreign companies with top professionals. This requires modification of the relevant legislation and methodological guidelines for the system of funding research in Slovakia in order to permit the creation of competitive and non-discriminatory hourly rate for R&D activities. Human resources are considered to be the driving force of the economy

and the same is valid for the research activity determining the future success of higher education, so we should pay more attention to them.

4.5. Conclusions

The validity of measuring research performance through publication records of a researcher and the number of citations of published papers has long been the focus of considerable discussion and debate in the academic world. Specifically, researchers are concerned about the increasing use of these indicators in academic promotion, appointment and performance evaluation. The use of bibliometrics (e.g. citation index and impact factors) in measuring academic research performances can affect the publication strategy of researchers. Such effects may be particularly potent to young researchers who are at a transitional stage of their academic career.

The advantage of bibliometric data on research documents is that they have great informative value. When authors publish, they tell what they are doing, with whom they did it, when and where it was done. These literature-based measures enable systemic comparisons of scientific performance of institutions, countries and regions across a range of scientific fields.

Books, monographs, reports, theses and papers in serials and periodicals are units of bibliometric analyses. There are many activities and outcomes of research that can be counted. Perhaps the most basic and common is the number of scholarly journal publications, which may be used as a measure of output. Citations are the references researchers append to their papers to explicitly show earlier work on which they have depended to conduct their own investigations. Tracking citations and understanding their trends in context is a key to evaluating the impact and influence of research. Since certain standards are postulated for such units, the scientific paper published in refereed scientific journals has proved to be the unit most suitable for bibliometric studies. Among the common standards, we find the reviewing system, the criterion of originality of research results, the availability of literature and more or less transparent rules. The scientific paper has become the basic unit of bibliometric research (Cronin & Sugimoto, 2014).

Basic measures are simple counts such as publication counts, the number of co-authors, the number of citations received by a set of publications, or the number of given bibliometric units. From the mathematical viewpoint, these measures can be represented by natural counting measures, namely, the cardinality of the intersection or union of bibliometric units. More complex measures can be obtained as statistical functions defined on sets of bibliometric elements and units. These measures are

also called bibliometric indicators. The fundamental demand upon bibliometric indicators is their validity; that is, we have to make sure that we are really measuring what we intend and are assuming to measure. Also reproducibility is one of the basic criteria in scientific research. Under identical conditions research results should be reproducible in bibliometrics, too. The reproducibility of results can only be guaranteed if all sources, procedures and techniques are reliable and properly documented in scientific publications.

The aim of this chapter is to familiarize the reader with the academic promotion system in Slovakia and analyze in detail the bibliometric indicators of Slovak science. In this respect, we can conclude that the quality and development of doctoral studies, and cooperation with leading research institutions and top foreign universities will form the basis for achieving a competitive level in terms of individual scientific indicators, and give incentives for future academic development.

Based on the selected bibliometric indicators, we can conclude that Slovakia and the other Visegrad countries have not achieved the desired level of efficiency in the monitored indicators. The results of bibliometric analysis indicate a lower level of publishing and scientific activity. Emphasis should be put on the successful collaboration of international research teams, the sharing of scientific knowledge and its publication in impact journals.

Research evaluation is important and is increasingly viewed as essential in many countries in which science plays an important role. But evaluation should not be considered as an end in itself. Rather, it should be developed and used more as a pointer to key issues and essential questions that need to be addressed. Research evaluation becomes useful to the extent that it helps in clarifying academic debates and moves decision-making processes forward onto more rational and quantifiable grounds that improve the understanding of all partners involved in such decision-making. In other words, evaluation should be conceived of and used primarily as a marking tool for managing different levels of complexity in science, rather than as a strictinstrument of assessment and judgement, whether positive or negative. The evaluations should provide the basis for better decision making, by highlighting problems and formulating recommendations (Andres, 2009).

More recently, the evaluation of research teams and individual scientists has become a central issue in services based on bibliometric data. There is not one typical individual-level bibliometrics since there are different goals, which range from the individual assesment of a proposal, or the oeuvre of applicants over intra-institutional research coordination, to the comparative evaluation of individuals and the benchmarking of research teams.

Part 2

The young business scholars embedded in Visegrad academia – the perspective of field research

Chapter 5

Factors evoking research productivity of young scholars. Explorative study

Anna Ligia Wieczorek[1]

5.1. Introduction

Scholars all over contemporary Europe are nowadays facing institutional changes in academia. These changes concern their professional development and career opportunities especially. They are a result of the modification of procedures connected with obtaining higher positions at university, and those new procedures, and the criteria that are to be met in order to be promoted, in turn, are more or less similar across Europe. Nowadays, in order to be promoted, a given scholar needs to be successful in several fields, one of which is research productivity, manifested by a number of good publications in prestigious journals. Bergeron & Liang (2007) give, together with research productivity, three other components of scholarly success, which are institutional recognition (salary, rank, tenure, and rate of promotions), teaching effectiveness (e.g. as indicated by student evaluations), and professional visibility (awards, editorial board positions, etc.). The literature suggests that the productivity of scholars is nowadays the focus of the governments of many countries and should be boosted in order to leverage the professional success of scholars (Onder and Onder, 2010; Hicks, 2009). For that reason, the focus of the study is on factors which may evoke such success. Even though there have already been studies carried out which concerned the productivity of scholars, they have been mostly US-oriented or, more generally, related to English language Western countries (e.g. Bland, Center, Finstad, Risbey, & Staples, 2005; Flynn, Feild, & Bedeian, 2011; Lee & Bozeman, 2005). There have been, however, a few studies in this area that were based on research conducted in very different cultural and institutional contexts and their results suggest that there are some important country-specific factors (Cruz-Castro & Sanz-Menéndez, 2010; Hedjazi & Behravan, 2011; Önder & Kasapoğlu-Önder, 2011; Wieczorek & Mitrega 2014), which, in turn, may call into question

[1] Anna Ligia Wieczorek, University of Silesia, Katowice

the internal validity of the prior studies. It was, therefore, found to be worthwhile to investigatethe factors contributing to productivity and career development of scholars from post-communist countries, such as the Visegrad countries, embracing Poland, the Czech Republic, Slovakia and Hungary, which may be specific due to their political past under the influence of the Soviet Union. Furthermore, studies on research productivity have, so far, focused on institutional and non-behavioural antecedents and, as a result, there exists very little research that considers the strategies that individuals employ to improve their personal research productivity (Ito & Brotheridge, 2007). Therefore, this study is explorative in nature and concentrates on scholars' spontaneous cognitions with regard to issues that determine their research productivity, including both individual/behavioral aspects and institutional aspects. Due to the fact that only young scholars are forced to meet the new criteria in order to be promoted (for the reason that their older colleagues have already been promoted), the focus is on young scholars, which means individuals up to the age of 35. There were no comparisons made between scholars from different Visegrad countries and their productivity, for the reason that the sample was not big enough and the proportions between numbers of scholars in each country were not even. Besides, the qualitative research was only an introduction to a quantitative study, where a bigger sample of respondents was selected. For that reason, if there are any comparisons between various scholars, they are only made to show some exceptions, or to make the reader aware that there may be differences between various Visegrad countries, which could be investigated in further research.

5.2. Research approach and respondents' description

The purpose of this study was to find factors that evoke research productivity in young scholars specializing in the business field. The research was qualitative in nature for the reason that talking about one's productivity, success and failure in relation to occupational context and one's own development are rather sensitive issues with strong correlations to social desirability. It required gaining trust of the subjects and, at the same time, taking care to distinguish between truth and lies, which forces the researcher to become really close to the respondents. According to Gibbs (2010) and Konecki (2000), qualitative research methods work very well in such context. The sample was composed of 19 scholars working in the Visegrad countries (Poland, the Czech Republic, Hungary and Slovakia), up to the age of 35. There were 11participants from Poland, and 8 participants from the other Visegrad

countries combined. The assumption of the sample selection was to find rather successful scholars, whose success was manifested by a high Hirsch index and/or a number of publications in prestigious, ISI journals, because it had been previously assumed that they are productive. The sample characteristics are presented in the table below. Sampling procedures were based on snowball sampling techniques and the sample was non-purposive in character.

Table 1. Summary description of research participants

AGE INTERVAL	NUMBER
21-30	6
31-35	13
GENDER	**NUMBER**
Women	5
Men	14
COUNTRY	**NUMBER**
Czech Republic	3
Poland	11
Hungary	3
Slovakia	2
POSITION	**NUMBER**
PhD candidate or Research assistant	4
Assistant professor	14
Associate professor	1
IF PUBLICATION NUMBER INTERVALS	**NUMBER**
0	4
1-5	14
6-10	1
HIRSCH INDEX INTERVALS	**NUMBER**
0	2
1-5	17

Source: Own research.

The research tool chosen was an in-depth, semi-structured interview carried out by the author of this paper. The interviews with Polish researchers were carried out in Polish, while the interviews with scholars from other Visegrad countries were conducted in English. In the interview script the respondents were asked about factors evoking and hindering productivity, national and international cooperation with other scholars (finding partners, initiating, sustaining and breaking off cooperation if necessary), and strategies for publishing in prestigious journals. The interviews were recorded, transcribed and double-coded in order to minimize interviewer's bias (Krippendorf, 2004).

5.3. Factors evoking research productivity of young scholars – explorative study results

The main objective of the study was to determine which factors influence research productivity of young scholars from Visegrad countries. Research productivity can be understood here as a number of good, Impact Factor publications.

As far as the results of the qualitative study are concerned, there emerged some important factors that have an influence on research productivity of young scholars. These factors will be elaborated on below. When asked which factors influence research productivity, the respondents enumerated such factors as research abilities, academic networking, generation clash, academic writing skills, English language skills, the issue of time spent on research, and personal characteristics that can hinder or boost productivity.

5.3.1. Research abilities

The role of research abilities in leveraging research productivity was emphasized by many respondents from the sample. By research abilities, the subjects understood knowledge about research approaches, methods and techniques in their field; and the skills connected with using given methods of interpreting data, collecting and presenting it. What is more, many researchers were of the opinion that it is also important to be able to design feasible research, minimize its biases, and be aware of its limitations. The scholars stated that it was of great importance to be able to do good research in order to get published in good, Impact Factor journals since the expected level of quality is very high there. They claimed that they had to learn how to do it on their own, because their supervisors at the level of doctoral studies were often unable to do it properly. At the level of MA or doctoral studies, they were not taught how to use programs of interpreting data, such as, for instance ANNOVA, and the truth is that quantitative research with big samples and advanced methods of data interpretation is much valued by editors of prestigious journals.

Another issue relating to research abilities is the issue of financing research. Nowadays we observe strong pressure from the side of the university, exerted on the scholar to organize his or her own money on research. Of course, this does not mean that the researcher is expected to finance the research personally. It rather means that more money should be obtained from outside bodies rather than from the parent university. Such tendency can be witnessed throughout Europe, as far as the opinions of the investigated researchers suggested. The subjects claimed to be aware of the situation, but they all claimed that they could not count on the support of

their university when it comes to applying for such funds. By university support, they meant, for instance, some guidance from administration workers while preparing the application form, especially the part connected with the calculation of costs. Unfortunately, when the academics want to apply for some funds, they need to do everything on their own, even though the university then has its share in the money given by an outside body.

"The university should help with the application because they then take 30%, but they do not help. I don't know how I do it, I'm just persistent and motivated and I get grants." (Respondent 16).

The respondents were of the opinion that research skills alone are not enough, because in order to do good research, very often quite expensive tools and software are necessary, and universities in Visegrad countries, unlike, for instance, UK universities, often do not provide such software. Even though the respondents in a majority of cases had not been taught how to do good research, they were able to learn it themselves, using books or finding mentors from Western countries. The issue of money, however, is not to be solved by the scholars themselves since, nowadays, it seems more and more difficult to write successful application forms to get grants. For this reason, the respondents claimed that in case of research abilities, it would be of great help to have somebody to teach them how to apply in a successful way. Of course, a good mentor would also be helpful when it comes to doing good research.

5.3.2. Academic networking

Academic networking is a very broad category, which entails not only the abilities to cooperate with other scholars, but also ways and strategies of identifying the right ones and encouraging them to work together, monitoring the relation and, depending on the needs, gaining as much as possible from the relations, or abandoning them if they do not bring benefits. The investigated scholars all claimed that cooperation with other academics evokes higher research productivity, due to the synergetic effect of this cooperation. One cannot be successful in all fields; some scholars are better at collecting and interpreting data, whereas others know the literature in the field very well, and working together they can be more effective than on their own. The respondents also stated that cooperation, especially with foreigners, broadened their horizons and helped them to develop various skills, from research and language up to personality skills.

"It is easier to write an impact factor paper with co-authors. Nowadays I don't do it by myself. As long as I was doing it only on my own, I was locked in my own world. While teamwork there is a continuous flow of ideas, thoughts. Such papers are treated by

reviewers as papers well thought-of. I'm already a reviewer myself and when I see papers written by one author only, I must admit, it makes me anxious" (Respondent 12).

All respondents at some point in their career had cooperated with other scholars, but they claimed that international cooperation usually is more beneficial because this way they are open globally, and not only locally. At the same time, the scholars cooperated with their domestic colleagues as well. They not only cooperated with fellow academics, but with supervisors and mentors as well. They distinguished between mentor and supervisor: by supervisor they usually meant the supervisor of their doctoral dissertation, while by mentor the meant another, more experienced, scholar who helped them by guidance and advice. Sometimes a mentor and a supervisor can be the same person, if the supervisor is up to date with new research methods, is willing to share their knowledge and has contacts. In majority of cases, however, the subjects admitted that their supervisors were not particularly helpful when it comes to boosting their research productivity because they either were not able to do it or not willing due to, for instance, generational differences.

Mentors were often academics met during conferences, internships, or foreign fellowships (usually in so-called Western, English-language countries). These were people with great experience and high achievements, who were eager not only to pass their knowledge on to their younger colleagues, but also introduce them to their contact networks. After being introduced to a given network, the subjects could do projects and write papers together with other scholars who were productive and success-oriented.

In order to find a mentor, or other people to work with and learn from, the respondents had to make a great effort. First of all, they had to identify the right person. They claimed that going to prestigious conferences was of enormous help in such a case since there they could meet other researchers in the field, introduce themselves, and show that they had appropriate abilities to cooperate (by good presentations they could prove they knew how to do research, that they knew English to communicate with foreigners, or they could show that they were able to come up with interesting research topics to be investigated). The most productive researchers in the sample stated that they usually carefully chose conferences, then checked which recognizable scholars were going to attend them, and then tried to contact them, very often even before the conference, for instance by email. If they emailed them, they invited the experienced scholars to their sessions and encouraged them in the email to take into consideration cooperation in a given project which, of course, should be up-to-date and interesting. Another way was to attend the sessions of the potential partners and ask interesting questions, provide some contribution to the discussion, etc. Next, they usually tried to network with the people they considered important during gala dinners and other conference

events. They usually exchanged business cards and tried to keep in touch by email. If they were successful, and the potential partner was eager to cooperate, they were then introduced to their team and could cooperate.

When asked what to do in order to create a good atmosphere in the team and to gain from the cooperation as much as possible, the respondents stated that it was important to work hard and be clearly told what to do. If their contribution was clear from the beginning, they could put appropriate effort into the project. They then expected the same from their partners. The most active respondents claimed that mutual trust, tolerance and a fair sharing of duties is a key to the success of academic cooperation. When asked if they monitored their cooperation in any way, they stated that they did not do it directly, but rather observed the effects. When, as a result of joint projects, they produced good papers, they were of the opinion that the cooperation was fruitful. When it was not, they avoided starting new projects with that partner, rather than terminating those that might be in progress. The respondents firmly stated that they would not like to stop cooperation if there was not an unethical behavior of the partner witnessed. Only such behavior, as, for instance, plagiarism, could cause them to stop a relation. No respondent had done this. Some of them, however, admitted, that some relations ceased to exist because of the evolving of different research interests, lack of time, or such issues as retirement or death. The respondents were of the opinion that the cessation of some relations was a normal thing, another stage of a career, and people should not fear it but rather treat it as a new opportunity.

Most successful researchers were of the opinion that cooperation with domestic and foreign partners is necessary in order to be productive, whereas those who were not so achievement-oriented claimed that for them it was enough to cooperate at the domestic level. They were, however, not as productive as their colleagues who were more globally oriented. All of the respondents were aware that in order to find new partners one needs to attend conferences, and this, in turn, entails the need to be able to get financing.

5.3.3. Generational clash

Another issue that was raised by many respondents was the issue of generational clash between young and more experienced scholars. Quite a few young scholars stated that there exists a difference between their generation and the older generation of scholars. This opposition is connected with the outlook of given scholars on the academic career development path and routines. Older scholars have already been promoted, or abandoned further career development and, according to some respondents, do not seem to understand what the new criteria of promotion and development are about. These people were advancing academically during a time

when atmosphere and connections within the division were more important than scientific contributions, and they got promoted, according to the respondents, due to nepotism, political functions, or conformist outlooks. At the time when they were young scholars, their contact with the Western world was severely restricted as a result of the Soviet occupation of all the Visegrad countries. The lack of contact with the West caused lack of English language skills, lack of contact with Western literature in the field, and lack of contact with scholars from Western countries. As a result, older scholars often do not speak very good English, do not know the tradition of publishing in Impact Factor journals, and do not have foreign ties which would make it easier for them to publish in English-language journals. That is why, in accordance with the opinion of some respondents, these people are very domestic-oriented and do not understand the eagerness of their younger colleagues to go abroad for internships, conferences, or just to network. Older scholars usually hold some managerial positions or important offices at university and they decide whether to finance other scholars' foreign visits, and, because they do not understand their importance, often refuse to finance them. A few respondents openly suggested that their older colleagues not only do not understand the importance of foreign networking and boosting productivity manifested by IF publications, but are simply jealous, because they are incapable of doing such things themselves, and therefore make it difficult for other academics. What is more, they themselves have been promoted, so they do not seem to care for creating promotional opportunities for other people in the division.

"In my country it is very difficult to be productive, because nowadays to be really productive in this international sense we talked about, one needs to cooperate with scholars from US or UK, go to conference overseas to meet these people and people here… old professors, they are simply disturbing. They are promoted and they don't want other people to become professors. They make it difficult for us to develop and this is not fair" (Respondent 4).

Young scholars accuse some older colleagues of being jealous of the opportunities they have, but, in fact, they (older scholars) may just not be aware of the importance of research productivity understood as IF publications, usually resulting from international teamwork. First of all, they have already been promoted, so they may not take interest in new criteria of promotion; and, secondly, they may still believe that domestic recognition and domestic ties play a more important role. All the same, such a generational clash is a factor that may hinder the research productivity of young scholars.

5.3.4. Academic writing skills

In order to be productive, it is not enough to cooperate in international teams and to be able to do good research; as one of the respondents indicated, *"one should be*

able to pack their research and ideas in a nice way, which means that one should possess academic writing skills" (Respondent 3). Each person learns how to write texts at the level of secondary school, but these texts are not academic. The respondents reported that they were not taught during doctoral studies how to write academic texts. Those who were lucky and were able to find good mentors learnt it from them, while others had to learn through the process of trial and error. The subjects claimed that it is not only necessary to use correct language, but to know the genre and specific forms, such as, for instance, abstracts. Additionally, some prestigious journals have their own requirements when it comes to abstracts and full papers, and scholars need to know these in order to be accepted by them. The knowledge and skills concerning academic writing are acquired either through the guidance of an experienced scholar, or through longer period of self-work and observation of so-called good practices of more experienced academics.

5.3.5. English language skills

As has been mentioned earlier in this paper, most IF journals are English-language journals, so writing for them means writing in English. This means that contemporary young scholars who want to be productive should have a good command of English. Most respondents were of the opinion that their English was good enough to communicate, but they admitted that writing academic papers in English was a different story due to the fact that editors of prestigious journals usually expect a very good knowledge of English and appropriate style, which again refers to academic writing skills but this time specifically to English academic writing skills. Of course, younger scholars have learned English in the course of their schooling and this makes it possible for them to communicate. They have not always, however, learn how to write academic texts in English. Here, again, a good mentor (usually one from an English-speaking country), can help a lot. Additionally, foreign conferences and internships may help because, firstly, they create networking opportunities and secondly, according to the respondents, a scholar may learn how to write English papers through observation and by exchanging ideas with other scholars.

5.3.6. Time allocated to research

Most successful scholars from the sample claimed that producing a good, IF paper was as time-consuming as writing half of a PhD dissertation, which clearly indicates that being productive requires a great input of time. The time allocated to work devoted to research-connected issues (and not, for instance, teaching) determines,

according to the subjects, their research productivity. Subjects from the Visegrad countries stated that they, as opposed to their Western colleagues, had to spend much more time on teaching, due to the fact that their salariesare not as high as they are in more developed countries. This means that they usually hold two positions, with sometimes around 500 contact hours with students each academic year, whereas their colleagues from the UK have only around 200 contact hours, for a comparable salary. For that reason, the time spent on teaching and the busy schedules of young Visegrad scholars can be treated as a factor hindering research productivity. One the other hand, however, the majority of respondents stated that, in spite of the heavy workload, they still could find time for research, and could be productive as a result. Most successful scholars who were investigated (the ones who had more than 2 IF publications) claimed that they had a heavy workload, but due to organizational skills and family support and understanding, were able to be productive.

"I have really many teaching hours per academic year – around 500, but I do whatever possible to publish good articles. I managed to arrange my teaching in such a way, that I do it mostly in winter semester. Then I have summer semester for research and publications. This winter semester is of course very tiring and I have very little time for family and for myself, but this way I can produce IF publications and opt for some internships for 6 spring/summer months, if necessary" (Respondent 1).

As shown above, young scholars, even if they havea heavy workload, are able to organize their work in such a way that they still can devote time to research. It does not, however, obscure the fact that time spent on research is a crucial factor leveraging a scholar's productivity, and that a heavy teaching load can have a negative effect on productivity. In order to stay productive, scholars need to use their organizational skills and sacrifice a part of family life. This means that the ones who are really productive are very motivated and determined.

5.3.7. Personality factors

The last group of factors found to have an influence on the research productivity of scholars is some personality factors that will be elaborated on here. First of all, as mentioned in the previous paragraph, scholars who want to be productive need to devote much time and effort to research and paper writing. This means that they need to be very motivated and determined. When asked which factors leverage research productivity, the scholars enumerated such factors as motivation to develop oneself all the time, motivation to work hard and for long hours, and the determination not to get discouraged easily, for instance because of the need to review and re-review some papers. The motivation also refers to issues connected with academic networking, since scholars need to do this in order to identify the right people to work with,

and to initiate and sustain relationships. Other personality factors mentioned by the respondents also referred to academic networking, which has a vital influence on research productivity, so the personality factors discussed here also refer to research productivity. Apart from motivation, the respondents reported such factors as: openness to other people, high self-esteem (especially in regard to English language skills), low inhibition, intercultural tolerance and good interpersonal skills, as factors having an influence on academic networking, which in turn influences research productivity. All respondents claimed that, in order to initiate relations, scholars need to be open and tolerant, because as a result of cultural differences certain problems may arise. Additionally, because academic networking often means international cooperation, the subjects stated that they need reasonably high levels of self-esteem and low levels of inhibition about their English language skills. There were also respondents who stated that, even if not because of international cooperation and the English language, scholars need self-esteem in order to initiate communication with colleagues who might be, for instance, better researchers. Additionally, many subjects reported that they need high levels of self-esteem and low levels of inhibition when they present their research at conferences, especially in a situation when a person they consider a prospective research partner is watching them. For the sake of maintaining networking relations, scholars need to have good interpersonal skills and be open to other people, cultures, and new ideas.

5.4. Discussion of study results and practical implications

All of the factors contributing to research productivity mentioned by the respondents are interconnected, and influence one another in many ways. Of all of the aforementioned factors, academic networking was discussed most often by all the respondents as the strongest factor evoking research productivity. Such elements as personality factors influence the degree to which people network, whether they want to and are capable of doing it, and whether they can maintain relationships. Personality factors also have a significant bearing on English language skills, which, in turn, strongly influence the ability to network which,being often international, requires a high degree of skill in English. Research skills and academic writing skills are useful not only in order to do good research and write solid papers, but also to attract other scholars to cooperate, so again the connection between networking and other factors is visible. When it comes to generational conflict, this is a factor that can block the networking activities of a young scholar, due to the fact that he or she may not get university funds to go abroad and establish partnerships. On the other hand, a scholar can find partners not only through foreign visits, but also using the

Internet, so the lack of opportunities to go abroad does not necessarily mean the lack of networking opportunities. Besides, academics can network with their domestic colleagues who are also productivity-oriented.

Scholars from all Visegrad countries reported similar factors evoking research productivity, what indicates that the same factors play a role in leveraging research productivity of scholars throughout the Visegrad area and that the scholars from that area all face similar problems. All of these countries were under the influence of the Soviet Union up to the 1990s, and throughout that time scholars' contact with English-language literature and so-called Western countries was restricted. As a result, scholars from this region may seem to be some years behind their Western colleagues when it comes to the ethos of academic work. The whole "Impact Factor world" is English speaking and Western-culture oriented Onder and Onder, 2010; Stremersch and Verhoeh, 2005) and for that reason Visegrad scholars want to make up the years that their older domestic colleagues seem to have lost. The specificity of the Visegrad countries that emerged in relation to research productivity, justifies the claim made by some other scholars (e.g. Cruz-Castro & Sanz-Menéndez, 2010; Hedjazi & Behravan, 2011; Önder & Kasapoğlu-Önder, 2011), that there are country-specific factors that influence the research productivity of scholars. Prior research in the field of productivity, although it has a long tradition, has dealt mainly with English-language Western countries (eg. Bland, Center, Finstad, Risbey, & Staples, 2005; Flynn, Feild, & Bedeian, 2011; Lee & Bozeman, 2005), so this study attempts to fill a gap in the field. What is more, in prior studies, for instance by Bland et al. (2005), the importance of institutional-related and leadership-related issues, such as „research oriented-culture", „research oriented awards" and „participative leadership style" was emphasized, but these issues were rarely mentioned by the scholars from the Visegrad countries. In the case of the Visegrad countries, individual aspects of research productivity seem to dominate over institutional factors, which also fills a gap in the field, since so far most empirical studies have referred to institutional and non-behavioural antecedents.

As far as practical implications are concerned, these apply not only to young scholars from Visegrad countries, but also to university authorities, national bodies responsible for introducing promotional criteria in academia, and other people who manage and administer academic institutions. When it comes to individual scholars, they should invest in their own development of English language skills, academic writing skills, and research skills. Since, according to the respondents, at the stage of writing their doctoral dissertation they cannot count on the mentoring of their supervisors, they should try to find mentors elsewhere (for instance in a Western

country, or in their own institution, or their own country), which is, of course, not easy, but possaible with some effort. Such a mentor can help with developing research skills and introducing young scholars to the right people. It is not easy to persuade more experienced scholars to mentor their younger colleagues, especially if these people cannot attend foreign conferencesfor financial reasons. What young scholars can do is to enroll in some organizations and portals in the field (e.g. GoogleScholar), where one can try to make new "friends" who may be potential mentors or partners. When it comes to English language and academic writing skills, they can either be improved due to the determination of the individual scholar, or people responsible for designing teaching programs for doctoral studies can undertake remedial action. Young scholars who enter academia are often not aware of the importance of some factors that leverage research productivity, so program designers and faculty members should think for them in advance. Supervisors of dissertations and university authorities should take proper care about such issues and create opportunities for young scholars to develop themselves. Such training could be organized through the modification of teaching programs, where more attention might be given to research skills, academic writing skills, English language skills, and interpersonal skills (for instance interacting with foreigners, public speaking, etc.). In today's world academia is international and there is no escape from that, so universities should be open to changes. Young people aiming to become academics should be also trained how to apply for money from outside bodies and should be made aware of the importance of research productivity. University authorities can already witness a dramatic increase in international competition between universities and scholars themselves (Ferris, Ketchen, & Buckley, 2008; Miller, Taylor, & Bedeian, 2011; Valle & Schultz, 2011), especially in the era of the publish-or-perish culture which has become the dominating culture in leading academic institutions; and they need to take action not to stay behind this has a bearing not only on the reputation of the university, but on the funds from the ministry as well. As indicated by some respondents, older scholars (who often are heads of departments, deans, or rectors) are not always fully aware of the importance of research productivity understood as IF publications, so to change the current state of affairs, a special campaign should be launched. This campaign could change the views of scholars from the Visegrad countries on contemporary promotional criteria, the importance of research productivity, and the new definition of academic success, which no longer is domestic recognition solely, but good publications, a high citation index and being a part of an international network. Such projects as the one described in the paper can help in promoting the new paradigm of successful scholarship.

5.5. Limitations of the study and suggestions for further research

The aim of the study was to explore which factors evoke research productivity of young scholars from Visegrad countries. In order to fill a gap in the field, the focus was on the individual researcher, rather than the institution. For that reason, only individual factors were taken into consideration. In the future, the institutional, non-behavioural context of research productivity of scholars from the Visegrad area could be explored further. As indicated earlier, the results show that there are country-specific factors that influence research productivity of academics. It cannot be denied, however, that the results need further validation, for instance through means of quantitative research, on larger samples of respondents. There was not an even proportion between male and female scholars, which can be treated as a weakness of the study, since with more even gender distribution, some interesting differences between male and female scholars and their attitudes towards research productivity could emerge. In general, the explorative study shed some light on the factors evoking research productivity of scholars and prepared the ground for quantitative research.

Chapter 6

Research – related competences and other personal features of young scholars from Visegrad countries

Eva Hvizdová[1], *Marta Pavliková*[2]

6.1. Introduction

In identifying the important skills of scholars, we can focus on their achieved theoretical knowledge and practical skills, as well as on other additional education, skills and abilities. Scholars should possess certain skills which can be divided into two basic groups. We can talk about *general skills*, that are generally applicable and are not dependent on a particular object (such as logical thinking, teamwork, creativity) and on the other hand, there are *specific skills* related to a specific object (the use of specific research methods, data collection, data interpretation and so on). In the current intensifying competitive environment we can also define major key skills needed for the success of scholars, for example language skills, information and communication skills, learning skills, and more. It is very important that scholars be able to learn and cooperate with individuals from different countries. Equally important is to support not only the existence of international research, but also the interdisciplinary research that can be defined as "an approach to advancing scientific knowledge, in which researchers from different disciplines work at the borders of those disciplines in order to address complex questions and problems." (Larson, Landers&Begg, 2012). It is necessary to create conditions, reduce barriers and propose strategies to promote interdisciplinary research within the university or in collaboration with other universities and countries.

According to Conceição (2013) we can include among the most important skills of scholars in the 21st century information management skills, knowledge management skills and publication management skills.

[1] Eva Hvizdová, University of Economics in Bratislava
[2] Marta Pavliková, University of Economics in Bratislava

In this case, *publication management skills* means „the ability to collect and manage information from one or more sources (paper documents, electronic documents, audio, video, graphics, etc.) for storage and distribution through multiple means such as cell phones, tablets, and web interfaces" (Conceição, 2013). Within *knowledge management skills*, we must first distinguish between tacit and explicit knowledge. Tacit knowledge represents internalized knowledge that an individual may not be consciously aware of, such as how he or she accomplishes particular tasks. At the opposite end of the spectrum, explicit knowledge represents knowledge that the individuals hold consciously in mental focus, in a form that can easily be communicated to others (Alavi&Leidner, 1999). It is very difficult to manage knowledge, especially the explicit form. "Knowledge management skills go beyond explicit knowledge, to include tacit knowledge to enhance communication, information transfer, and collaboration" (Al-Hawamdeh, 2002). The last very important set of skills needed for the success of scholars is *publication management skills*. This means that scientists have to work with the domestic and foreign literature: books, scientific journals and articles that can take different forms. Electronic publications and various databases change the dissemination of scholarly work and nature of cooperation in academia (Conceição, 2013).

Strong research skills represent another area. They can include not only previously mentioned necessary skills, but also specific skills related to the methodology, data collection and analysis, statistics and so on. The research study named "Working environment and the research productivity of doctoral students in management"showed that support from the faculty has a significant impact on research productivity. While in the past, creativity of scholars has been less interested in academia than business organizations, today academic organizations are valuable to study due to their inherently creative nature (Kim &Karau, 2010).

The PhD education is about creating individuals who have a capacity to ask interesting, demanding, and difficult questions. It is also about skill development which takes the student beyond cultivating a strong analytical mind. The most important goal of a process that leads to a PhD degree is learning to do independent research (design, implementation, analysis, reporting) at a scientific level which is regarded as acceptable by senior scholars in a field, to be confirmed during a rite of passage (Diez et al., 2006).

All researchers are working and living in a highly competitive, rapidly changing and complex world. It is no longer enough to be a good researcher; to a certain degree, researchers also need to be teamleaders, managers and marketing experts. Consequently, they need communication and presentation skills, and knowledge about leadership and human-resource development, as well as knowledge about administration procedures and finances. An insight into cultural differences and human relations is another prerequisite (Hara et al., 2003; Heimeriks, Hörlesberger&

Van den Besselaar, 2003). The formative years therefore have a double function. They prepare the young scientist for his or her career in academia, but also for a position outside of academia. This double function may lead to "overburdening" of both graduates and their supervisors. Society expects the doctorates but also their supervisors to be multi-skilled persons: researchers, managers and entrepreneurs.

This chapter is based on both literature review and analysis of primary research results. The aim of the chapter is to characterize the attitudes of young scholars of the V4 countries towards their personal and scientific research competences and provide some recommendations that could positively influence their future scientific activities.

6.2. Personal and scientific-research competences of young scholars from the Visegrad countries

In prior studies on scientific-research competences of young scholars, many authors point out the role of the supervisor in the improving of these competences.

We can define the doctoral education as a training and starting position for future scholars. The successful completion of doctoral studies depends on several different factors. McCormack (2005) identified four main categories in this field: the psychological features of the doctoral student, the socio-economic situation of the student, the discipline and type of research, and finally supervision. The supervisor should play a significant role in the process of doctoral studies. The relationship between the PhD student and the supervisor is very important for the success of the student, for the success of the dissertation and for the creation of future researchers. The role of the supervisor is to help the student to create ideas and to recognize ideas that will contribute to new knowledge and have an impact on the field of research (Gallupe, 2007). Seagram, Gould&Pyke (1998) found that according to doctoral students, their supervisors should have certain important characteristics, such as professionalism, a pleasant manner and supportive behavior. Frick (2011) pointed out that "Supervisors of PhD students should create environments that motivate students to become creative, to provide a means for them to be creative, and the opportunity to showcase their creativity". In many cases, the success of a doctoral student and the decision about his or her future in academia depends on the relationship between him or her and the supervisor, on listening skills and professional skills, on supportive arguments, the provision of detailed feedback and the support from the supervisor.

The relationship between a PhD student and an academic supervisor is critical to the success of the learning experience, to the sense of satisfaction of both

participants, to the development of research skills, and to the shaping of successful career trajectories of both the student and the supervisor.The supervisor's role can be defined as a complex, professional one, which requires much more than good will and spare time. It is an intensive form of teaching and guidance, in a much broader sense than just the transfer of information (James & Baldwin, 1999). The role is a supportive one where the supervisor may be a mentor, coach, guide, model and manager, with the goal of preparing graduate students for careers both within and outside academia.

The supervisor's responsibilities include being available to support their doctoral students at every stage, from formulation of the research project, to establishing methodologies and discussing results, to presentation and possible publication of dissertations and research. Supervisors must also ensure that their students' work meets the standards of their university and their academic discipline.

Mouton (2001) differentiates four roles for supervisors: *adviser* (an element of what we have called the coach), *guide* (similar to our expert guide), *quality control* (we have labelled this quality controller as well), and *emotional and psychological support* (he adds the word "pastoral" between brackets; we regard this as part of the role of coach, but a friend can also play such roles). A PhD course of study, being an "apprenticeship degree", means that supervision is crucial, and success often depends on the relationship between the PhD student and the supervisor. Mouton strongly emphasizes the need for a research contract, in which both PhD candidate and supervisor(s), (and their department) agree on all important matters.

Jalote (2013) argues that the ability to conduct research in an area requires deep knowledge in that area, knowledge about related areas, and the experience of working on research problems, i.e. problems whose outcomes are not known.Via these components a PhD candidate should expect the development of the following abilities, which form the foundation of a career in research:

- *Breadth in the discipline* – can be provided through courses
- *Expertise in a vertical area* – developing this expertise requires ability to search for relevant work done in an area, as well as the ability to critically read and understand research papers, reports, and monographs and appreciate the subtle or complex issues that may be involved.
- *Ability to identify research problems* – this ability requires a good knowledge of the recent developments in the area, and the ability to create a bigger picture and see how the different work fit and what might be missing.
- *Ability to actually do the research* – behind every research there is some new idea, some hypothesis, which forms the foundation of the research work. But doing research is much more than getting an idea. The idea has to be developed using the established paradigms of scientific research, through which the researcher shows the value of the idea.

- *Ability to write and present the results* – publishing results of the research has been the time honored tradition and benchmark, and perhaps the only reliable method to subject a research work to scrutiny as well as use by others.

In this case, besides scientific-research competences, human resources and leadership play an important role and are linked to personal competences. Human relations are another area where effective people excel (Drucker, 2001). The personal characteristics and professional skills surrounding this area are communication, teamwork, self-development, and development of others. The key to determining what sets apart effective leaders is the productivity gained by using the aforementioned four areas. Although a productive human relation is a vital component of effective leadership, the characteristic of charisma seem to be discounted (Drucker, 2007). In addition, effective people focus on their own strengths by identifying, improving, and evaluating them. However, effective people also do not ignore their weaknesses. Moreover, effective people know themselves and understand the importance of somewhat paralleled value systems between themselves and the organization. Because effective people are driven by goals and productivity, they are very aware and respectful of time.

The Statement of the UK Research Councils' Training Requirements for Research Students (2011) identified following 10 skills important for doctoral students:

1) communication and interpersonal skills,
2) critical and creative thinking,
3) personal effectiveness,
4) integrity and ethical conduct,
5) teaching competence,
7) leadership,
8) research management,
9) knowledge mobilization and knowledge translation,
10) career management.

We should recognize that while research skills are essential in an academic pursuit, there are many other skills that PhD students can sharpen during this time. During any doctoral programme, PhD students need to be aware that employers will evaluate candidates on the basis of how their diverse skill set can enhance their workplace, and how their personality will complement their new community.

The following table (Table 1) presents the summary of informants' answers to questions concerning given competences of young scholars of V4 countries. Questions 1.1-1.6 dealt with scholars 'personal competences (e.g. personality features). Questions 2.1-2.11 reflect scholars' professional competences. There was applied the 7-points Likert scale (1 means strong disagreement, 7 strong

agreement) in our assessment. Descriptive statistics (mean, standard deviation, extreme values) has been applied to interpret the results of our questionnaire. To assess the importance of mean value we have applied ANOVA test ($p<0.5$; on the basis of ANOVA test performed in SPSS package). The grey shading in the tables indicate that the mean value is important in the given categories of attitudes.

Table 1. General descriptive statistics for questions related to the personal features (personality) and scientific competences

Question specification	N	MIN	MAX	MEAN
1.1.I am always prepared	415	1	7	5.28
1.2 I make a mess of things	415	1	7	3.86
1.3 I get chores done right away	415	1	7	4.70
1.4 I like order	415	1	7	5.40
1.5 I shirk (avoid) my duties	415	1	7	2.19
1.6 I follow a schedule	415	1	7	4.64
2.1 I would describe myself as being internally driven to conduct research.	415	1	7	5.04
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	415	1	7	4.58
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	415	1	7	3.63
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	415	1	7	5.10
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	415	1	7	4.96
2.6 I am able at my university to allocate sufficient time to my research	415	1	7	3.95
2.7 Teaching interferes with my research capabilities and productivity	415	1	7	3.89
2.8 The supervisor of my doctoral dissertation is/was well known in academia at national level	415	1	7	5.17
2.9 The supervisor of my doctoral dissertation is/was well known by foreign scholars	415	1	7	3.86
2.10 In comparison to other scholars at my faculty I have good English speaking skills	415	1	7	4.31
2.11 In comparison to other scholars at my faculty I have good English writing skills	415	1	7	4.26

Source: Own research.

6.3. Country differences

Tables 2 and 3 illustrate personal and scientific-research competences in the case of young business scholars from V4 countries (see „All" in the tables) and the differences with regard to scholars' home countries.

In general, we can state that young scholars from V4 countries consider themselves to be always prepared, do not try to avoid duties, prepare schedules

in advance and prefer order (Table 2; question 1.1, 1.2, 1.4 1.5; see „All"). The influence of the home country is important and is visible in all questions concerning personal competences (questions 1.1-1.6). From the given analysis we cannot adequately specify the characteristics of personal competences of young scholars from the perspective of each individual country but we can find different features which reflect the mean value of a selected country. Polish scholars prefer more to follow the schedule than researchers from the other V4 countries (question 1.6). Hungarian scholars perceive themselves to be always prepared to a greater extent than researches from other countries (question 1.1). Hungarian and Polish scholars prefer to complete chores immediately (question 1.3), reflecting their attitude to planning and order (question 1.4, 1.6).

Table 2. Personal features (personality) by scholars' country

Country		N	Mean	SD	Minimum	Maximum
1.1.I am always prepared	**Poland**	101	5.28	1.335	1	7
	Hungary	100	5.36	.847	3	7
	Czech	109	5.32	1.193	2	7
	Slovakia	105	4.89	1.195	2	7
	All	415	5.21	1.170	1	7
1.2 I make a mess of things	**Poland**	101	3.05	1.693	1	7
	Hungary	100	6.36	.772	4	7
	Czech	109	2.93	1.457	1	6
	Slovakia	105	3.21	1.405	1	7
	All	415	3.86	1.973	1	7
1.3 I get chores done right away	**Poland**	101	4.61	1.456	1	7
	Hungary	100	5.78	1.495	2	7
	Czech	109	4.03	1.494	1	7
	Slovakia	105	4.47	1.144	2	7
	All	415	4.70	1.541	1	7
1.4 I like order	**Poland**	101	5.54	1.578	1	7
	Hungary	100	5.42	1.671	1	7
	Czech	109	5.79	1.395	1	7
	Slovakia	105	4.85	1.446	1	7
	All	415	5.40	1.557	1	7
1.5 I avoid my duties	**Poland**	101	1.71	1.061	1	7
	Hungary	100	1.98	1.035	1	6
	Czech	109	2.31	1.366	1	7
	Slovakia	105	2.70	1.240	1	6
	All	415	2.19	1.240	1	7
1.6 I follow a schedule	**Poland**	101	5.54	1.292	1	7
	Hungary	100	4.00	1.842	1	7
	Czech	109	4.58	1.718	1	7
	Slovakia	105	4.46	1.241	2	7
	All	415	4.64	1.637	1	7

Source: Own research.

Table 3 presents research results with regard to scholars' scientific-research competences in relation to their home country. In general, the young researches from V4 countries consider themselves to be inwardly motivated to perform research which is a positive incentive for their future advancement (question 2.1, see "All"). The scholars have a positive attitude to managing computer skills (question 2.4). Young scholars show that their supervisors are better known in their home country than abroad (question 2.8, 2.9).The reputation of their supervisor on the international level can significantly help advancement in scientific research activities of young scholars. The mean value (4.58) of question 2.2 shows a satisfactory level of scientific-research skills of young researchers.

Table 3. Scientific competences by scholars' country

Country		N	Mean	SD	Minimum	Maximum
2.1 I would describe myself as being internally driven to conduct research.	Poland	101	5.11	1.421	1	7
	Hungary	100	5.72	1.379	1	7
	Czech	109	4.63	1.470	1	7
	Slovakia	105	4.75	4.426	1	7
	All	415	5.04	1.481	1	7
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	Poland	101	4.78	1.433	1	7
	Hungary	100	4.78	1.292	1	7
	Czech	109	4.41	1.467	1	7
	Slovakia	105	4.35	1.143	1	7
	All	415	4.58	1.351	1	7
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	Poland	101	3.63	1.611	1	7
	Hungary	100	3.48	1.425	1	7
	Czech	109	3.65	1.618	1	7
	Slovakia	105	3.74	1.380	1	7
	All	415	3.63	1.511	1	7
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	Poland	101	4.93	1.577	1	7
	Hungary	100	5.56	1.290	2	7
	Czech	109	5.38	1.275	2	7
	Slovakia	105	4.55	1.293	1	7
	All	415	5.10	1.408	1	7
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	Poland	101	5.27	1.411	1	7
	Hungary	100	5.48	1.306	2	7
	Czech	109	4.86	1.443	1	7
	Slovakia	105	4.28	1.444	1	7
	All	415	4.96	1.479	1	7
2.6 I am able at my university to allocate sufficient time to my research	Poland	101	4.25	1.786	1	7
	Hungary	100	3.50	1.778	1	7
	Czech	109	3.61	1.743	1	7
	Slovakia	105	4.45	1.263	2	7
	All	415	3.95	1.698	1	7

Country		N	Mean	SD	Minimum	Maximum
2.7 Teaching interferes with my research capabilities and productivity	Poland	101	3.42	1.981	0	7
	Hungary	100	3.60	2.000	1	7
	Czech	109	4.36	1.697	1	7
	Slovakia	105	4.13	1.256	1	7
	All	415	3.89	1.789	0	7
2.8 The supervisor of my doctoral dissertation is/was well known in academia at national level	Poland	101	5.60	1.563	0	7
	Hungary	100	5.78	1.535	2	7
	Czech	109	4.45	1.596	1	7
	Slovakia	105	4.92	1.207	2	7
	All	415	5.17	1.572	0	7
2.9 The supervisor of my doctoral dissertation is/was well known by foreign scholars	Poland	101	4.45	1.640	1	7
	Hungary	100	4.18	2.066	1	7
	Czech	109	3.18	1.498	1	6
	Slovakia	105	3.68	1.477	1	7
	All	415	3.86	1.744	1	7
2.10 In comparison to other scholars at my faculty I have good English speaking skills	Poland	101	4.44	1.670	1	7
	Hungary	100	4.60	1.809	1	7
	Czech	109	4.50	1.783	1	7
	Slovakia	105	3.70	1.618	1	7
	All	415	4.31	1.753	1	7
2.11 In comparison to other scholars at my faculty I have good English writing skills	Poland	101	4.34	1.633	1	7
	Hungary	100	4.56	1.777	1	7
	Czech	109	4.44	1.833	1	7
	Slovakia	105	3.72	1.690	1	7
	All	415	4.26	1.760	1	7

Source: Own research.

In this case based on ANOVA test there is revealed a significant influence of the scholars' country in relation to all statements concerning scientific-research competences (without relation to ability to gain grants). Slovak and Czech scholars present a more positive attitude to the fact, that their pedagogic activity reflects their research activity than scholars from Poland and Hungary (question 2.7). Polish and Slovak researchers have more positive attitudes to the allocation of their time to research activities (question 2.6).

In the case of Polish scholars, supervisors of dissertation theses are better known abroad than those from other V4 countries (question 2.9). Hungarian researchers (question 2.10, question 2.11) seem to be more developed with regard to their English language capabilities. Within the question 2.5 the mean value shows that Hungarian (5.48) and Polish (5.27) scholars manage a better level of academic writing than Czech and Slovak scholars. Scientific writing follows certain conventions related to format, citation, design, voice, tense, concision and organization that may differ from writing in other contexts, and therefore academic writing is considered to be a more demanding area of research competence.

6.4. Gender differences

In contrast to country-related analyses, the comparison of personal and scientific research with regard to scholars'gender did not reveal many significant differences (Table 4 and Table 5).

Differences in gender do not have an important impact on the personal features of young scholars (personality); however some significant differences were found in this area (Table 4). Male scholars tend to avoid duties a bit more frequently than female scholars (question 1.5). Females agree that they like chores done right away in a more confident manner than males (question 1.3).

Table 4. Personal features (personality) by scholars' gender

Gender		N	Mean	SD	Minimum	Maximum
1.1 I am always prepared	**Woman**	252	5.17	1.181	1	7
	Man	163	5.26	1.154	1	7
	All	415	5.21	1.170	1	7
1.2 I make a mess of things	**Woman**	252	3.75	1.979	1	7
	Man	163	4.01	1.959	1	7
	All	415	3.86	1.973	1	7
1.3 I get chores done right away	**Woman**	252	4.85	1.557	1	7
	Man	163	4.48	1.492	1	7
	All	415	4.70	1.541	1	7
1.4 I like order	**Woman**	252	5.52	1.585	1	7
	Man	163	5.22	1.499	1	6
	All	415	5.40	1.557	1	7
1.5 I avoid my duties	**Woman**	252	2.05	1.231	1	7
	Man	163	2.39	1.229	1	7
	All	415	2.19	1.240	1	7
1.6 I follow a schedule	**Woman**	252	4.70	1.647	1	7
	Man	163	4.55	1.622	1	7
	All	415	4.64	1.637	1	7

Source: Own research.

Table 5 shows that difference in gender does not have significant impact on scientific-research competences of young scholars. The influence of gender differences is visible in three statements relating to grant skills, computer skills and academic writing skills. The results show that in case of the mean value concerning computer skills, males achieve a value of (5.34) and females (4.95), which means that men possess better technologic level of computer skills in research (question 2.4). Men seem also to have better ability to gain grants (question 2.3) and better ability with regard to academic writing (question 2.5).

Table 5. Scientific competences by scholars' gender

Gender		N	Mean	SD	Minimum	Maximum
2.1 I would describe myself as being internally driven to conduct research.	**Woman**	252	5.02	1.478	1	7
	Man	163	5.08	1.491	1	7
	All	415	5.04	1.481	1	7
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	**Woman**	252	4.58	1.338	1	7
	Man	163	4.58	1.374	1	7
	All	415	4.58	1.351	1	7
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	**Woman**	252	3.48	1.384	1	7
	Man	163	3.85	1.668	1	7
	All	415	3.63	1.511	1	7
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	**Woman**	252	4.95	1.415	1	7
	Man	163	5.34	1.367	1	7
	All	415	5.10	1.408	1	7
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	**Woman**	252	4.84	1.549	1	7
	Man	163	5.15	1.345	1	7
	All	415	4.96	1.479	1	7
2.6 I am able at my university to allocate sufficient time to my research	**Woman**	252	3.92	1.638	1	7
	Man	163	3.99	1.792	1	7
	All	415	3.95	1.698	1	7
2.7 Teaching interferes with my research capabilities and productivity	**Woman**	252	3.85	1.716	0	7
	Man	163	3.96	1.900	1	7
	All	415	3.89	1.789	0	7
2.8 The supervisor of my doctoral dissertation is/was well known in academia at national level	**Woman**	252	5.12	1.593	0	7
	man	163	5.25	1.540	1	7
	All	415	5.17	1.572	0	7
2.9 The supervisor of my doctoral dissertation is/was well known by foreign scholars	**woman**	252	3.83	1.797	1	7
	man	163	3.90	1.664	1	7
	All	415	3.86	1.744	1	7
2.10 In comparison to other scholars at my faculty I have good English speaking skills	**woman**	252	4.20	1.821	1	7
	man	163	4.47	1.634	1	7
	All	415	4.31	1.753	1	7
2.11 In comparison to other scholars at my faculty I have good English writing skills	**woman**	252	4.21	1.820	1	7
	man	163	4,35	1.665	1	7
	All	415	4,26	1.760	1	7

Source: Own research.

6.5. Age differences

Tables 6 and 7 provide evidence that age doesn´t have a significant influence on the personal features and scientific-research competencies of young scholars. Table 6 shows that the older researchers have got higher motivation to complete duties (question 1.5). The age factor influences significantly only the issue of avoiding duties.

Table 6. Personal features (personality) by scholars' age

AGE (interval)		N	Mean	SD	Minimum	Maximum
1.1.I am always prepared	**23-26 years**	125	5.15	1.178	2	7
	27-30	180	5.20	1.193	1	7
	over 30	110	5.29	1.128	1	7
	All	415	5.21	1.170	1	7
1.2 I make a mess of things	**23-26 years**	125	3.67	1.655	1	7
	27-30	180	3.93	2.104	1	7
	over 30	110	3.95	2.085	1	7
	All	415	3.86	1.973	1	7
1.3 I get chores done right away	**23-26 years**	125	4.63	1.489	1	7
	27-30	180	4.82	1.558	1	7
	over 30	110	4.59	1.570	1	7
	All	415	4.70	1.541	1	7
1.4 I like order	**23-26 years**	125	5.18	1.492	1	7
	27-30	180	5.54	1.594	1	7
	over 30	110	5.44	1.553	1	7
	All	415	5.40	1.557	1	7
1.5 I avoid my duties	**23-26 years**	125	2.39	1.231	1	5
	27-30	180	2.17	1.268	1	7
	over 30	110	1.97	1.177	1	7
	All	415	2.19	1.240	1	7
1.6 I follow a schedule	**23-26 years**	125	4.63	1.473	1	7
	27-30	180	4.69	1.652	1	7
	over 30	110	4.58	1.794	1	7
	All	415	4.64	1.637	1	7

Source: Own research.

The impact of age differences in relation to scientific-research competences is visible in the case of grant-gaining skills, computers skills, time on research and level of spoken English (Table 7; question 2.3, question 2.4, question 2.6 and question 2.10). Surprisingly, younger researchers (23-26 years) express their attitude concerning computer skills less positively than other age categories (question 2.4). Researchers over 30 years tend to have more problems with allocating their time to research activities in greater measure than younger scholars (question 2.6).Surprisingly, the young scholars of 23-26 years have viewed themselves as managing spoken English at a lower level than other age categories (question 2.10).

Table 7. Scientific competences by scholars' age

AGE (interval)		N	Mean	SD	Minimum	Maximum
2.1 I would describe myself as being internally driven to conduct research.	**23-26 years**	125	4.93	1.381	1	7
	27-30	180	5.12	1.403	1	7
	over 30	110	5.05	1.705	1	7
	All	415	5.04	1.481	1	7
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	**23-26 years**	125	4.41	1.245	1	7
	27-30	180	4.59	1.349	1	7
	over 30	110	4.75	1.455	1	7
	All	415	4.58	1.351	1	7
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	**23-26 years**	125	3.53	1.323	1	7
	27-30	180	3.51	1.504	1	7
	over 30	110	3.94	1.682	1	7
	All	415	3.63	1.511	1	7
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	**23-26 years**	125	4.84	1.304	1	7
	27-30	180	5.21	1.418	1	7
	over 30	110	5.23	1.476	1	7
	All	415	5.10	1.408	1	7
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	**23-26 years**	125	4.74	1.321	1	7
	27-30	180	4.97	1.511	1	7
	over 30	110	5.20	1.567	1	7
	All	415	4.96	1.479	1	7
2.6 I am able at my university to allocate sufficient time to my research	**23-26 years**	125	4.39	1.337	2	7
	27-30	180	4.07	1.805	1	7
	over 30	110	3.25	1.683	1	7
	All	415	3.95	1.698	1	7
2.7 Teaching interferes with my research capabilities and productivity	**23-26 years**	125	3.82	1.494	1	7
	27-30	180	3.79	1.920	0	7
	over 30	110	4.14	1.865	1	7
	All	415	3.89	1.789	0	7
2.8 The supervisor of my doctoral dissertation is/was well known in academia at national level	**23-26 years**	125	5.22	1.319	2	7
	27-30	180	5.20	1.587	0	7
	over 30	110	5.06	1.804	1	7
	All		5.17	1.572	0	7
2.9 The supervisor of my doctoral dissertation is/was well known by foreign scholars	**23-26 years**	125	4.06	1.645	1	7
	27-30	180	3.74	1.709	1	7
	over 30	110	3.81	1.899	1	7
	All	415	3.86	1.744	1	7
2.10 In comparison to other scholars at my faculty I have good English speaking skills	**23-26 years**	125	3.95	1.640	1	7
	27-30	180	4.45	1.728	1	7
	over 30	110	4.47	1.871	1	7
	All	415	4.31	1.753	1	7
2.11 In comparison to other scholars at my faculty I have good English writing skills	**23-26 years**	125	3.96	1.663	1	7
	27-30	180	4.34	1.734	1	7
	over 30	110	4.48	1.876	1	7
	All	415	4.26	1.760	1	7

Source: Own research.

6.6. Position differences

Tables 8 and 9 show the influence of academic position on personality features and scientific-research competences. In the case of academic position in relation to personal competences there is not shown any significant impact on given statements besides the statement "I like order". The result for this statement is considered to be informative as the number of individual respondents in categories of individual positions shows a high measure of differences. In this case associate professors express a more negative attitude to the statement "I like order" than do those in other positions. These results do not have to be considered only negatively with regard to more experienced scholars, because professors' work can be more connected with creativity than systematic efforts(question 1.4).

Table 8. Personal features (personality) vs. academic position

Academic position		N	Mean	SD	Min	Max
1.1. I am always prepared	**PhD student/assistant**	330	5.20	1.169	1	7
	Assistant professor	81	5.27	1.151	1	7
	Associate professor	4	4.50	1.732	3	6
	All	415	5.21	1.170	1	7
1.2 I make a mess of things	**PhD student/assistant**	330	3.92	1.950	1	7
	Assistant professor	81	3.58	2.005	1	7
	Associate professor	4	4.25	3.202	1	7
	All	415	3.86	1.973	1	7
1.3 I get chores done right away	**PhD student/assistant**	330	4.75	1.528	1	7
	Assistant professor	81	4.53	1.582	1	7
	Associate professor	4	4.50	1.915	3	7
	All	415	4.70	1.541	1	7
1.4 I like order	**PhDstudent/assistant**	330	5.40	1.561	1	7
	Assistant professor	81	5.51	1.424	1	7
	Associate professor	4	3.50	2.887	1	6
	All	415	5.40	1.557	1	7
1.5 I shirk (avoid) my duties	**PhD student/assistant**	330	2.22	1.254	1	7
	Assistant professor	81	2.01	1.156	1	6
	Associate professor	4	2.50	1.732	1	4
	All	415	2.19	1.240	1	7
1.6 I follow a schedule	**PhD student/assistant**	330	4.67	1.621	1	7
	Assistant professor	81	4.59	1.634	1	7
	Associate professor	4	3.50	2.887	1	6
	All	415	4.64	1.637	1	7

Source: Own research.

In the case of differences in academic positions there has been shown an impact on scientific-research competences in the six statements concerning research

abilities, grant abilities, academic writing, research capacity and language level (Table 9). The analysis shows that associate professors responding to our questionnaire have better skills with regard to gaining grants (question 2.3). The statements concerning research skills are more optimistic in the group of assistant professors (question 2.2, mean value 4.94 on Likert scale). Associate professors tend to perform better (mean value 7) in the area of academic writing (question 2.5), but they also tend to have more problems with combining research with teaching obligations (question 2.7). Assistant professors and PhD students express a more optimistic attitude about their language skills than so associate professors (questions 2.10, 2.11).

Table 9. Scientific competences vs. academic position

Academic position		N	Mean	SD	Min	Max
2.1 I would describe myself as being internally driven to conduct research.	**PhD student/assistant**	330	5.06	1.444	1	7
	Assistant professor	81	5.04	1.520	1	7
	Associate professor	4	3.75	3.202	1	7
	All	415	5.04	1.481	1	7
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	**PhDstudent/assistant**	330	4.49	1.342	1	7
	Assistant professor	81	4.94	1.187	1	7
	Associate professor	4	4.00	3.464	1	7
	All	415	4.58	1.351	1	7
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	**PhDstudent/assistant**	330	3.46	1.442	1	7
	Assistant professor	81	4.14	1.523	1	7
	Associate professor	4	7.00	0.000	7	7
	All	415	3.63	1.511	1	7
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	**PhDstudent/assistant**	330	5.06	1.370	1	7
	Assistant professor	81	5.31	1.522	1	7
	Associate professor	4	4.75	2.062	3	7
	All	415	5.10	1.408	1	7
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	**PhDstudent/assistant**	330	4.86	1.455	1	7
	Assistant professor	81	5.28	1.502	1	7
	Associate professor	4	7.00	0.000	7	7
	All	415	4.96	1.479	1	7
2.6 I am able at my university to allocate sufficient time to my research	**PhDstudent/assistant**	330	4.00	1.692	1	7
	Assistant professor	81	3.78	1.681	1	7
	Associate professor	4	3.25	2.630	1	6
	All	415	3.95	1.698	1	7
2.7 Teaching interferes with my research capabilities and productivity	**PhDstudent/assistant**	330	3.78	1.816	0	7
	Assistant professor	81	4.28	1.614	1	7
	Associate professor	4	5.25	1.500	4	7
	All	415	3.89	1.789	0	7
2.8 The supervisor of my doctoral dissertation is/was well known in academia at national level	**PhDstudent/assistant**	330	5.21	1.534	0	7
	Assistant professor	81	4.96	1.721	1	7
	Associate professor	4	6.50	.577	6	7
	All	415	5.17	1.572	0	7

Academic position		N	Mean	SD	Min	Max
2.9 The supervisor of my doctoral dissertation is/was well known by foreign scholars	**PhDstudent/assistant**	330	3.93	1.719	1	7
	Assistant professor	81	3.56	1.851	1	7
	Associate professor	4	3.50	1.000	2	4
	All	415	3.86	1.744	1	7
2.10 In comparison to other scholars at my faculty I have good English speaking skills	**PhDstudent/assistant**	330	4.22	1.728	1	7
	Assistant professor	81	4.70	1.764	1	7
	Associate professor	4	3.25	2.630	1	6
	All	415	4.31	1.753	1	7
2.11 In comparison to other scholars at my faculty I have good English writing skills	**PhDstudent/assistant**	330	4.17	1.742	1	7
	Assistant professor	81	4.68	1.724	1	7
	Associate professor	4	3.50	3.000	1	7
	All	415	4.26	1.760	1	7

Source: Own research.

We can include the current generation of young scholars in "generation Y" which is characterized by people born between the early 1980s and the early 2000s (some authors limit this generation to the years 1985 to 1995). In general, people of "generation Y" want to be a part of a team, but at the same time they desire to be in the spotlight. They also need feedback and guidance. Overall, they are loyal and want to be included and involved. They prefer quick and effective communication. J. Carpenter (2012) concluded that "Generation Y doctoral students are sophisticated information-seekers and users of complex information sources, who are not dazzled by technology and who are acutely aware of critical issues such as authority and authenticity in research and evidence-gathering."People of this generation have no problem working overtime, as long as it is properly valued (financially and non-financially). But this fact is often a problem in the academic environment. For this group of employees, in our case scholars, work-life balance is also very important. Each university should know its doctoral students and young scholars and their specific characteristics, in order to create efficient working conditions and a good environment.

6.7. Conclusion

Regarding changes and developments in science systems, the growing complexity of scientific work is a key issue. Science today is more about accepting uncertainties and unpredictability, and dealing with chaotic models, than before. The growing complexity implies stronger interdisciplinary approaches. At the same time, developments in communication techniques and computer sciences (digitization) are changing the mode of work, allowing, for instance, computer

simulations instead of laboratory work and also cross-border virtual teamwork. Furthermore, the growing complexity leads to a higher demand for interdisciplinary approaches in research and education. Consequently, students need to master a high level of knowledge in various disciplines in order to understand the latest developments in their own discipline. Similarly, cutting-edge research depends increasingly on teamwork between scholars.

Due to the focus on and importance of research at the PhD level (e.g. doctoral studies), it is often believed that creating new knowledge is the main goal of the PhD. Though creating new knowledge is indeed part of the PhD training, the main objective of doing a PhD degree is to become a competent researcher who can conduct independent research in one's chosen area.If we consider the premise that the purpose of a PhD programme is to "deliver" competent researchers, then the research done during PhD studies is primarily for contributing towards this goal. What is important is to learn to properly formulate a research problem and apply suitable techniques to deliver results that further show an understanding of the subject matter. The ability to conduct research in an area requires deep knowledge in that area, knowledge about related areas, and the experience of working on research issues, i.e. problems whose outcomes are not known. To develop these critical abilities, most PhD programmes have three components: some course work to provide the breadth of knowledge, some methods to develop the depth of knowledge in the chosen area of study, and also the provision of some experience of working on research problems.

It is crucial to recognize the importance of research supervision. Weak supervision reproduces weak graduates who will in turn, if they opt for an academic career, reproduce the same weak model of supervision in an endless cycle of mediocrity. A weakly supervised graduate is unlikely to yield high quality research in competitive academic journals, which in turn weakens the entire research enterprise within an institution. Collectively, such practices set limits on national innovation, scholarship and competitiveness within the higher education system as a whole. But it all starts with a single supervisor-supervisee relationship (Mouton, 2001).

The aim of this chapter was to analyze the opinions of young scholars of V4 countries with regard to their personal features (personality factor) and scientific research competences. The literature in this area suggests that the competences of young researchers strongly influence their academic success. Many authors claim that appropriate personal features are more difficult to develop than appropriate scientific skills (Conceição, 2013; Diez et al., 2006; Madhavaram&Laverie, 2010).

In general, young researchers from the V4 countries consider themselves to be responsible and usually well prepared (e.g. in terms of work planning and executing).Young researchers from the V4 countries are also quite optimistic with regard to their research competences, but they see gaps in such areas us

gaining grants and combining research with teaching. It is important to stress that supervisors of young scholars play an important role in the development of these competences, but our research suggests that many of them are known only in their own country, which can restrict access to scientific information from more developed economies. In relation to this fact, it is important to invest in better language skills (written and oral) in the group of young researchers especially in the area of academic English (e.g. to help scholars in team-working on papers).

The doctoral studies include being a student, a researcher and a university teacher. In the case of doctoral students, the question of preparedness and the ability to teach is therefore very important. According to some authors, "it is reasonable to assert that doctoral students, as future counselor educators, must have a strong professional identity in order to provide adequate education to future counselor education students" (Dollarhide, Gibson&Moss, 2013). Despite this, "Many universities have not fully integrated, to any substantive degree, educator training into doctoral student academic programmes" (Griffith, 1997). Butonthe other hand, "Doctoral days are the best time to start work on pedagogical competence (teaching skills)" (Madhavaram&Lavrie, 2010). For these reasons, it is necessary to support the teaching competencies of PhD students for example via seminars, observation, special trainings and coaching. But it is important not to exceed a certain number of hours that should be devoted to teaching by PhD. students, because they should focus primarily on the dissertation and their research activities. This way the universities can shape the next generation of successful young scholars. People's knowledge, skills and experiences are crucial assets for any company which desires expansion and increased profit. They are also crucial for any university that wishes to climb in the university ranking lists, and to whole countries that have the ambition to develop. Those people who possess the most advanced knowledge are seen as the most crucial.

Chapter 7

Organizational issues surrounding activities of young scholars from Visegrad countries

Vojtěch Spáčil[1]

7.1. Introduction

Research on career outcomes has been dominated by three main perspectives – individual, interpersonal and organizational (Judge, Cable, Boudreau & Bretz, 1995; Kirchmeyer, 1998; Nabi, 1999; Callanan, 2003; Kovalenko, Mortelmans, 2014). Organizational issues connected with development of research activities in the academic environment include organizational resources and organizational (departmental) culture.

Scientific achievement is influenced by access to necessary organizational resources (Cargile&Bublitz, 1986). Resources can include human support, information, material inputs and equipment (Bacharach & Bamberger, 1995). Human support may include university personnel, department administrative staff and research and teaching assistants (Bergeron, Bilimoria, Liang, 2007). Information may include databases, official statistics, syndicated research data, software programs and concepts from books and periodicals. Material inputs and equipment may include office space, teaching supplies, classroom space and equipment software, computers and instrumentation. Another resource is financial support because it can be used to buy or gain access to all of the above. Resources are critical to career outcomes (Bergeron, 2007). For example, access to organizational resources is positively related to managerial salary and promotion (Ng, Eby, Sorensen &Feldman, 2005; Seibert et al., 2001). There is also a strong effect of funding on faculty productivity (Wanner et al., 1981; Zuckerman, 1991).

[1] Vojtěch Spáčil, Technical University of Ostrava

A valuable concept from sociology is the idea of the accumulation of advantage. This accumulation is the magnification of initial small differences into later large differences (Merton, 1973). These initial small advantages operate over time and may add up to larger advantages over the course of a career (Long, 1992). Greater access to funding, equipment and resources may provide faculty with advantages in conducting research, thus increasing their scientific productivity. Increased productivity brings higher recognition via more citations (Long, 1992; Rodgers & Maranto, 1989), which can result in more resources and then more productivity, thus continuing the upward cycle.

Organizational (departmental) culture consists of social exchange relationships (interpersonal variable) and justice climate (organizational variable). Scholars work within a faculty environment which shows large differences across the country. Some faculty (department) environments are perceived as very supportive, some as indifferent and some as extremely unsupportive (Blackmore et al., 1997). Faculty academics in a supportive work environment are likely to have higher career outcomes than faculty members in less supportive environments (Bacharach, Bamberger, 1995).

The quality of social exchange relationships includes the reciprocal exchange of ideas, feedback, assistance, information and recognition (Seers, Petty & Cashman, 1995). It is based on the analysis of interpersonal relationships and assessment of the influence on individuals' career outcomes.

Two types of social exchange relationships are leader-member exchange (Dansereau, Graen&Haga, 1975) and team-member exchange (Seers, 1989). Leader-member exchange (LMX) represents the quality of the relationship between a leader and a group member. At the university, this would be the relationship with the head of department. Team-member exchange (TMX) is an individual's perception of the quality of his or her exchange relationship with his or her peer group (Seers, 1989), i.e., colleagues within one's department. It seems that both types of social exchange relationships will influence a faculty member's career outcomes.

The main idea behind LMX theory is that leaders differ in their treatment of subordinates (Liden, Wayne & Sparrowe, 2000), such that they develop different types of relationships (or exchanges) with different members in the group. With some subordinates they have high-quality exchanges, while with other subordinates they have low-quality exchanges. Research does show that high-quality LMX is associated with higher job performance (Kamdar & Van Dyne, 2007).

Beyond the relationship with the department chairperson, the quality of the team-member exchange relationship with one's colleagues also may be important. According to Seers (1989), TMX assesses the effectiveness of the relationship between an individual and the group. It shows the degree to which there is a reciprocal relationship in terms of giving and receiving help, sharing ideas and information,

and providing feedback and recognition. Research shows that co-workers can have a positive impact on an individual's job performance (Liden et al., 2000; Seers, 1989).

One indicator of the quality of the academic environment is how decisions are made and the outcome of those decisions. This is referred to as the "justice climate" (Mossholder, Bennett & Martin, 1998). There are two types of justice. Distributive justice refers to the perceived fairness of outcomes (Deutsch, 1975; 1985), while procedural justice refers to the perceived fairness of the process used to determine those outcomes (Leventhal, 1980; Thibaut & Walker, 1975). A meta-analytic review shows that both types of justice are predictive of a number of important outcomes, including salary (Cohen-Charash& Spector, 2001). Many critical decisions affecting individual career outcomes are made at the department level. Some of these decisions include promotion, tenure and compensation (Darr& Johns, 2004; Pfeffer&Salancik, 1974). Other decisions include appointment of department chair, graduate student admissions (Darr & Johns, 2004) and the hiring of new faculty and doctoral students. Decisions related to courses (e.g., textbooks, curriculum design, rotating responsibility for core or elective courses) may impact ratings of teaching effectiveness. Decisions related to graduate student admissions may affect a faculty member's research productivity. Individuals are likely to have higher career outcomes in departments with a positive justice climate because the justice climate influences how decisions are made.

In a positive justice climate, decisions are more likely to be made on the basis of impersonal rules and procedures (Darr & Johns, 2004). In these instances, the allocation criteria by which decisions are made are more transparent (Hills & Mahoney, 1978). Research shows that when individuals know information will be made public or when they will be publicly identified with the decision, they are more likely to use normative criteria (instead of subjective criteria) to make decisions (Bergeron, Bilimoria & Liang, 2007). Thus, politics become less important in an environment with a positive justice climate. When the justice climate is politicized, decisions are made based on the use of personal or interpersonal criteria rather than impersonal rules and procedures (Darr & Johns, 2004). Uncertainty about how decisions are made is a predictor of political climates (Johns, 1999). When the information used to make decisions remains confidential, power and social influence processes become important (Salancik&Pfeffer, 1978).

Some important components of a supportive work environment include the motivational system (i.e. how scholars are motivated to choose certain behaviour from among the many alternatives open to them) and a proactive environment (i.e. whether the faculty has a proactive climate or a more politicized atmosphere).

7.2. Measured statements

In our study the perceived level of university resources was measured through four statements (see questions 5.1 – 5.4 in the questionnaire available in appendix):

- At my university I have access to adequate resources such as computers, statistical software, library materials, and technical support, to conduct my research.
- My university provides me with, or I have from external sources, adequate support for travel to research-based conferences.
- I have adequate space to conduct my research (e.g. office).
- The skills, expertise, and experience of back office personnel at my university is appropriate for me to conduct my research.

Social exchange relationships (interpersonal relationships) were examined through two statements (see questions 7.4-7.5 in the questionnaire available in appendix):

- I have (or had when I was a junior faculty member) a mentor(s) at the university who provides me with valuable guidance in research.
- I get constructive feedback, guidance, and suggestions from my department colleagues that help me perform at my best.

Perceived level of motivation system was measured through five statements (see questions 7.1-7.3, 7.6., 7.7 in the questionnaire available in appendix):

- My university has systematic and fair mechanisms for non-monetarily recognizing and celebrating scholars' achievements in research (eg. putting in the newsletter, "toasting").
- When money is available, my university has systematic and fair mechanisms for monetarily recognizing and rewarding achievements in research (e.g. bonuses for top-tier publications).
- As compared to others at this university, my compensation (e.g. salary and bonuses) is fair for the research work I do.
- I fully understand the research and teaching expectations for the promotion in the position I hold.
- I have excellent opportunities at this university to pursue my interests in research.

Intensity of environment proactivity towards research work level of motivation system was assessed through five statements (see questions 7.8-7.12 from the questionnaire available in appendix):

- A large portion of my academic department's faculty can be considered to be productive in research (e.g. produce top-tier publications).
- A large portion of my academic department's faculty can be considered to be significant external grant „getters".
- There is a high expectation in my department for the faculty to be productive in research (e.g. top-tier publications).
- There is a high expectation in my department to conduct research that is externally funded.
- Effective recruitment strategies are in place for attracting the best talent in priority areas at my university.

All statements were assessed on seven point scale with poles 1=strongly disagree and 7=strongly agree. The higher score (mean in this case) indicates higher level of agreement with each statement. In general, research results with regard to questions 5.1-5.4 and 7.1-7.12 will be presented through descriptive statistics (mean, standard deviation, extreme values), however we will test if mean values differ significantly with regard to some scholars' characteristics (e.g. home country, gender, age, academic position). Therefore, mean values will be usually presented in cross-tables and grey color will symbolize that mean difference is significant ($p<0.5$; on the basis of ANOVA test performed in SPSS package).

The statements presented in questions 7.1-7.12 were just presented to university employees because they are intensively familiar with faculty (department) environment and they are able assess the quality of social exchange relationships. Therefore the sample size was reduced to the 150 respondents (see Table 1).

Table 1. Scholars' Employment at the University

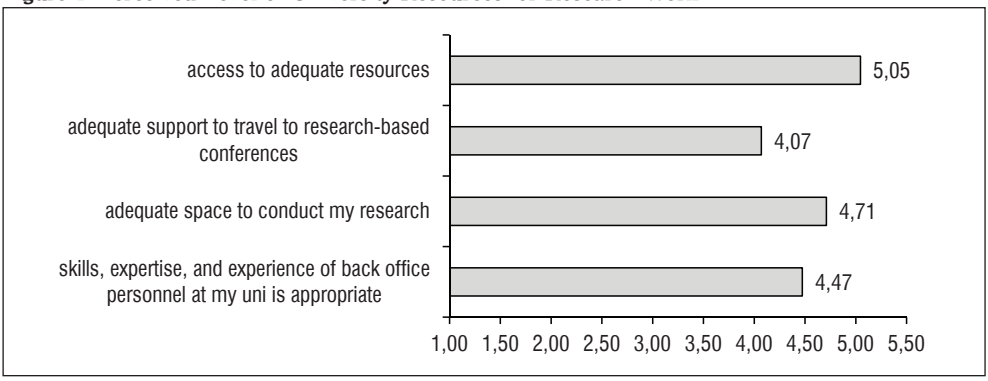
	Abs.frequency	Rel.frequency
Yes	150	36,1%
No	265	63,9%
total	415	100%

Source: Own research.

7.3. General findings

Academics are mainly satisfied with access to adequate resources and adequate space (e.g. office) to conduct research (see Figure 1). Relatively the biggest perceived problem of university resources is connected with funding travel expenses for research-based conferences.

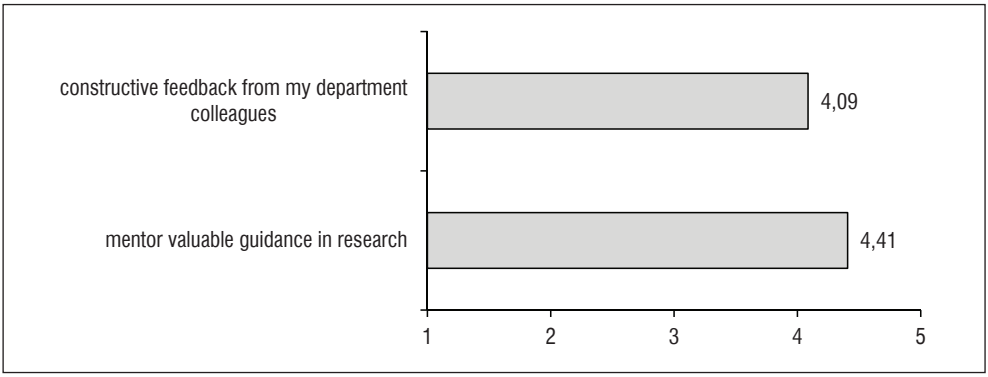
Figure 1. Perceived Level of University Resources for Research Work



Source: Own research.

Junior scholars mainly miss constructive feedback from department colleague (see Figure 2). It can be explained partly by increasing internal competition at universities, partly by time restraints of senior lecturers.

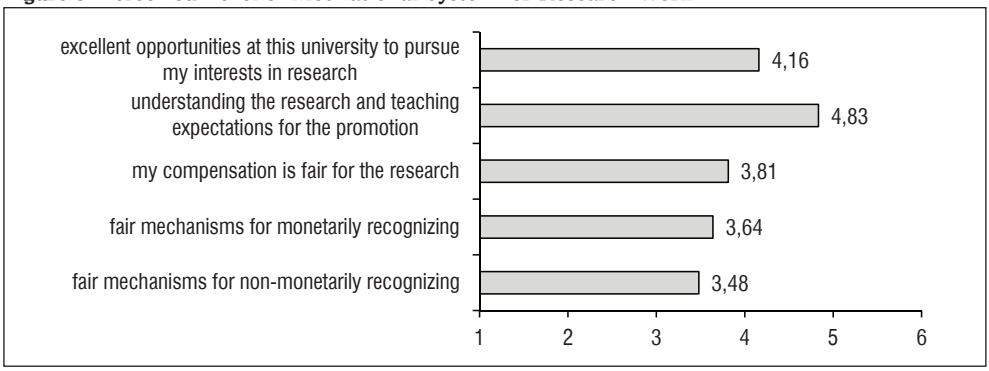
Figure 2. Perceived Level of Social Exchange Relationships



Source: Own research.

The findings of our study show that the motivational system does not work very well (see Figure 3). The score expressing the perception of all statements is relatively low just with the exception of the statement "I fully understand the research and teaching expectations for the promotion in the position I hold." Mechanisms for monetarily and non-monetarily recognizing and rewarding achievements in research are far behind the expectation and need.

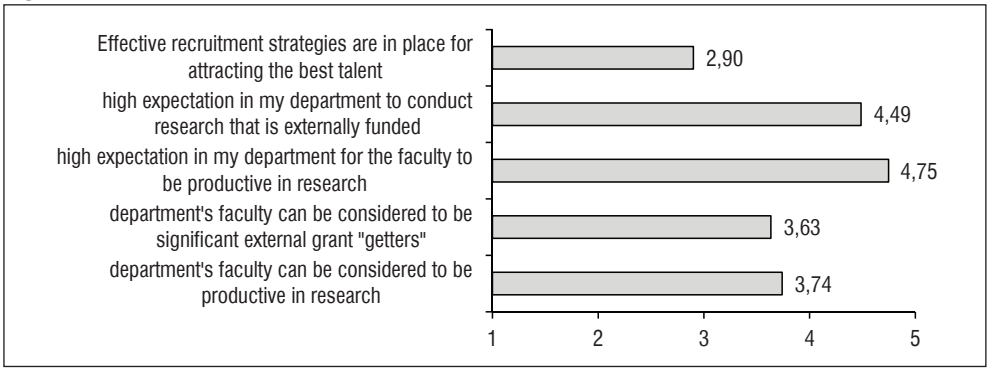
Figure 3. Perceived Level of Motivational System for Research Work



Source: Own research.

No matter that academics think their department's faculty cannot be considered to be productive in research and winning external grants, the expectations for productivity are very high (see Figure 4). In our study we see a big gap between expectation and actual state in research productivity at faculty level. From the long-term perspective the absence of an effective recruitment strategy for attracting the best talent is crucial.

Figure 4. Perceived Level of Proactive Environment for Research Work



Source: Own research.

7.4. Country differences

Table 2 shows substantial impact of country background on perceived level of university resources suitable for research work. Superior conditions are perceived in the Czech Republic. In the case of all four statements Czech scholars assess the

university resources for scientific work as the best among the V4 countries. Relatively low values of standard deviation confirm that there are no significant differences among Czech universities. On the other hand, Polish academics view university resources for research work the least favourably just with the exception of access to such "adequate resources" as computers, statistical software, and library materials. Obviously the strong dispersion (expressed through standard deviation) in perceived level of university resources indicates notable differences at Polish universities. ANOVA tests have confirmed statistical country mean differences in the case of three statements (access to adequate resources, adequate support for travel to research-based conferences, and adequate space to conduct my research).

Table 2. Perceived Level of University Resources by Scholars' Country

		N	Mean	SD
5.1 Access to adequate resources	Poland	101	5.03	1.931
	Hungary	100	4.88	1.486
	Czech	109	5.70	1.450
	Slovakia	105	4.54	1.279
	Total	**415**	**5.05**	**1.603**
5.2 Adequate support for travel to research-based conferences	Poland	101	3.67	2.069
	Hungary	100	3.78	1.983
	Czech	109	4.93	1.693
	Slovakia	105	3.84	1.429
	Total	**415**	**4.07**	**1.871**
5.3 Adequate space to conduct my research	Poland	101	3.33	2.232
	Hungary	100	5.06	2.044
	Czech	109	5.61	1.586
	Slovakia	105	4.77	1.508
	Total	**415**	**4.71**	**2.035**
5.4 Skills, expertise, and experience of back office personnel at my uni is appropriate	Poland	100	4.32	1.780
	Hungary	100	4.58	1.753
	Czech	109	4.71	1.652
	Slovakia	105	4.28	1.267
	Total	**414**	**4.47**	**1.627**

Source: Own research.

Table 3 illustrates perceived level of social exchange relationships and the differences with regard to scholars' home countries. It displays the substantial effect of country background on perceived level of interpersonal relationships. ANOVA significance tests have confirmed statistical country mean differences for both statements.

Favourable organizational climate is especially perceived in Hungary. Social exchange relationships in Hungary are really cooperative on both vertical and horizontal levels. The difference in the perception of social exchange relationships

between Hungarian scholars and Slovak scholars is substantial. The Polish university environment shows the highest deviances (see column with standard deviation in Table 3).

Table 3. Perceived Level of Social Exchange Relationships by Scholars' Country

		N	Mean	SD
7.4 Mentor valuable guidance in research	Poland	24	4.25	2.069
	Hungary	50	5.60	1.738
	Czech	52	3.67	2.007
	Slovakia	24	3.67	1.465
	Total	**150**	**4.41**	**2.030**
7.5 Constructive feedback from my department colleagues	Poland	24	3.96	2.053
	Hungary	50	4.68	1.684
	Czech	52	3.92	1.835
	Slovakia	24	3.33	1.373
	Total	**150**	**4.09**	**1.802**

Source: Own research.

Table 4 illustrates the perceived level of motivational system supporting the active research work and the differences with regard to scholars' home countries. Monetarily and non-monetarily recognizing and rewarding achievements in research is much better assessed in the Czech Republic and Slovakia while Polish and Hungarian scholars think that mechanisms of recognizing and rewarding and compensation of scientific work are rather unfair (see Table 4). Mechanisms for monetarily and non-monetarily recognizing and rewarding achievements in research are perceived as extremely unfair in Hungary.

Table 4. Perceived Level of Motivational System by Scholars' Country

		N	Mean	SD
7.1 Fair mechanisms for non-monetarily recognizing	Poland	24	3,42	1,909
	Hungary	50	3,40	1,807
	Czech	52	3,50	1,651
	Slovakia	24	3,67	1,551
	Total	**150**	**3,48**	**1,717**
7.2 Fair mechanisms for monetarily recognizing	Poland	24	3,38	2,081
	Hungary	50	2,60	1,829
	Czech	52	4,48	1,809
	Slovakia	24	4,25	1,511
	Total	**150**	**3,64**	**1,981**
7.3 My compensation is fair for the research	Poland	24	3,38	1,929
	Hungary	50	3,36	1,893
	Czech	52	4,23	1,722
	Slovakia	24	4,29	1,334
	Total	**150**	**3,81**	**1,800**

		N	Mean	SD
7.6 Understanding the research and teaching expectations for the promotion	Poland	24	4,08	2,041
	Hungary	50	5,12	1,902
	Czech	52	4,98	1,393
	Slovakia	24	4,67	1,341
	Total	**150**	**4,83**	**1,704**
7.7 Excellent opportunities at this university to pursue my interests in research	Poland	24	3,46	1,888
	Hungary	50	4,64	1,367
	Czech	52	4,13	1,495
	Slovakia	24	3,92	1,176
	Total	**150**	**4,16**	**1,520**

Source: Own research.

On the other hand, Hungarian academics fully understand the research and teaching expectations for promotion and also they perceive their opportunities to pursue research interests at the university more optimistically than academics in other countries.

The highest expectations concerning research productivity are perceived by Czech scholars (see Table 5). Because of the relatively low value of standard deviation from mean it seems that there are not substantial differences in expectation across Czech universities and the high expectation for research productivity is demanded by the Czech Ministry of Education. In the Czech academic environment there is also the highest perceived gap between expectation and actual state of research productivity.

Table 5. Perceived Level of Proactive Environment by Scholars' Country

		N	Mean	SD
7.8 Department's faculty can be considered to be productive in research	Poland	24	3.58	2.041
	Hungary	50	3.76	1.768
	Czech	52	3.69	1.336
	Slovakia	24	3.96	1.398
	Total	**150**	**3.74**	**1.611**
7.9 Department's faculty can be considered to be significant external grant „getters"	Poland	24	3.04	1.853
	Hungary	50	3.76	1.519
	Czech	52	3.63	1.358
	Slovakia	24	3.96	1.517
	Total	**150**	**3.63**	**1.534**
7.10 High expectation in my department for the faculty to be productive in research	Poland	24	4.29	1.876
	Hungary	50	4.48	1.594
	Czech	52	5.46	1.461
	Slovakia	24	4.21	1.769
	Total	**150**	**4.75**	**1.696**

7.11. High expectation in my department to conduct research that is externally funded	Poland	24	3.79	2.206
	Hungary	50	4.60	1.641
	Czech	52	4.71	1.673
	Slovakia	24	4.46	1.532
	Total	**150**	**4.49**	**1.748**
7.12 Effective recruitment strategies are in place for attracting the best talent	Poland	24	3.17	1.786
	Hungary	50	2.92	1.759
	Czech	52	2.38	1.430
	Slovakia	24	3.71	1.233
	Total	**150**	**2.90**	**1.629**

Source: Own research.

Although Czech faculties feel themselves under pressure to lead productive research they do not properly use effective recruitment strategies for attracting the best talent according respondents. A similar perception is observed in the case of Hungary (see Table 5).

7.5. Gender differences

Prior research shows that women have less access to funding and research assistance than men (Creamer, 1998; Xie&Shauman, 1998). This disadvantages women because, as Xie and Shauman (1998) found, research funding and resources have a large impact on productivity. The survey has not confirmed these prior results. There were not found to be substantial gender differences in any searched statement. Women and men perceive the provided university resources on a fairly similar level (see Table 6). It can be explained by the background of the respondents'scientific fields (business administration, management, marketing). Those disciplines are not so demanding for funding and supplying material resources as natural sciences or technical fields.

Research also shows consistent findings of sex differences, with women being more disadvantaged than men with regard to networks (Ibarra, 1992; 1997; Gersick et al., 2000; Mehra, Kilduff & Brass, 1998). Because people tend to interact with same-sex others (homophily) (Blau, 1977), men's networks tend to be made up primarily of other men, whereas women have both women and men in their networks (Ibarra, 1992; Gersick et al., 2000). Because men are more likely than women to be in the higher ranks, women have fewer opportunities than men to informally interact with high-status same-sex others (Ibarra, 1992).

Table 6. Perceived Level of University Resources by Scholars' Gender

		N	Mean	Std. Deviation
5.1 Access to adequate resources	woman	252	5.10	1.554
	man	163	4.96	1.677
	Total	**415**	**5.05**	**1.603**
5.2 Adequate support for travel to research-based conferences	woman	252	4.03	1.892
	man	163	4.13	1.841
	Total	**415**	**4.07**	**1.871**
5.3 Adequate space to conduct my research	woman	252	4.77	2.022
	man	163	4.61	2.059
	Total	**415**	**4.71**	**2.035**
5.4 Skills, expertise, and experience of back office personnel at my uni is appropriate	woman	251	4.45	1.623
	man	163	4.51	1.638
	Total	**414**	**4.47**	**1.627**

Source: Own research.

Our study was not primarily interested in the gender structure of teams and sex of mentor. We just analyse the perception of women and men concerning social exchange relationships. This study has not revealed statistically significant differences in that aspect via ANOVA tests (see Table 7).

Table 7. Perceived Level of Social Exchange Relationships by Scholars' Gender

		N	Mean	SD
7.4 Mentor valuable guidance in research	woman	89	4.19	2.099
	man	61	4.72	1.899
	Total	**150**	**4.41**	**2.030**
7.5 Constructive feedback from my department colleagues	woman	89	4.12	1.851
	man	61	4.03	1.741
	Total	**150**	**4.09**	**1.802**

Source: Own research.

There are no statistically significant differences according to gender (see Table 8) also in the case of the perception of motivational system. Women and men perceive the mechanisms for monetarily and non-monetarily recognizing and rewarding achievements in research as suitably fair.

Women are somewhat more sensitive about the character of a proactive research environment for all five statements (see Table 9). They are more positive about research performance at their faculties but at same time they feel more demands to be productive in research and getting grants. In three cases there are statistically significant differences (grey shaded cells) according to gender.

Table 8. Perceived Level of Motivational System by Scholars' Gender

		N	Mean	SD
7.1 Fair mechanisms for non-monetarily recognizing	woman	89	3.67	1.704
	man	61	3.20	1.711
	Total	**150**	**3.48**	**1.717**
7.2 Fair mechanisms for monetarily recognizing	woman	89	3.63	2.030
	man	61	3.66	1.923
	Total	**150**	**3.64**	**1.981**
7.3 My compensation is fair for the research	woman	89	3.75	1.842
	man	61	3.90	1.748
	Total	**150**	**3.81**	**1.800**
7.6 Understanding the research and teaching expectations for the promotion	woman	89	4.94	1.708
	man	61	4.67	1.700
	Total	**150**	**4.83**	**1.704**
7.7 Excellent opportunities at this university to pursue my interests in research	woman	89	4.08	1.546
	man	61	4.28	1.485
	Total	**150**	**4.16**	**1.520**

Source: Own research.

Table 9. Perceived Level of Proactive Environment by Scholars' Gender

		N	Mean	SD
7.8 Department's faculty can be considered to be productive in research	woman	89	4.06	1.647
	man	61	3.28	1.451
	Total	**150**	**3.74**	**1.611**
7.9 Department's faculty can be considered to be significant external grant „getters"	woman	89	3.80	1.561
	man	61	3.39	1.475
	Total	**150**	**3.63**	**1.534**
7.10 High expectation in my department for the faculty to be productive in research	woman	89	5.00	1.567
	man	61	4.38	1.818
	Total	**150**	**4.75**	**1.696**
7.11 High expectation in my department to conduct research that is externally funded	woman	89	4.70	1.715
	man	61	4.18	1.765
	Total	**150**	**4.49**	**1.748**
7.12 Effective recruitment strategies are in place for attracting the best talent	woman	89	3.20	1.611
	man	61	2.46	1.566
	Total	**150**	**2.90**	**1.629**

Source: Own research.

7.6. Age differences

As in the case of gender, age also does not play a significant role in terms of perception of university resources for scientific work. Table 10 provides evidence that just in the case of the statement "I have adequate space to conduct my research"

can we find statistically significant differences among age cohorts (grey shaded part of Table 10). The question is whether the differences in perceptions of the level of resources for research are determined by age or academic position or employment at the university. The mean for middle age cohort (27-30 years) is notably lower than for edge age cohorts (23-26 years, 31+ years). As we can see in Table 11, the employment of scholars increasingly changes with age cohorts. Scholars in the youngest category (23-26 years) are mostly full time Ph.D. students who are not so demanding in regards of the space as the older category (27-30 years) which is substantially represented by employees.

Table 10. Perceived Level of University Resources by Scholars' Age

		N	Mean	SD
5.1 Access to adequate resources	23-26 years	125	5.00	1.391
	27-30 years	180	4.96	1.764
	31+ years	110	5.24	1.550
	Total	**415**	**5.05**	**1.603**
5.2 Adequate support for travel to research-based conferences	23-26 years	125	3.98	1.816
	27-30 years	180	3.99	1.956
	31+ years	110	4.30	1.784
	Total	**415**	**4.07**	**1.871**
5.3 Adequate space to conduct my research	23-26 years	125	4.89	1.906
	27-30 years	180	4.34	2.187
	31+ years	110	5.12	1.821
	Total	**415**	**4.71**	**2.035**
5.4 Skills, expertise, and experience of back office personnel at my uni is appropriate	23-26 years	124	4.72	1.463
	27-30 years	180	4.41	1.727
	31+ years	110	4.30	1.617
	Total	**414**	**4.47**	**1.627**

Source: Own research.

Table 11. Scholars' Employment at the University by Age Cohorts

	23-26 years	27-30 years	31+ years	Total
Yes	4.8%	30.6%	80.9%	**36.1%**
No	95.2%	69.4%	19.1%	**63.9%**

Source: Own research.

The older the scholars are, the less supportive feedback they get from mentors and department colleagues. In the second case (question 7.5) that conclusion is statistically confirmed via ANOVA test (see Table 12). There are two reasons for this phenomenon. Firstly, the more experienced scholars become, the less support they need. Secondly, after graduating from Ph.D. study academics find themselves in a very competitive environment and their senior colleagues often view them as competitors.

Table 12. Perceived Level of Social Exchange Relationships by Scholars' Age

		N	Mean	SD
7.4 Mentor valuable guidance in research	23-26 years	6	5.50	2.074
	27-30 years	55	4.45	2.071
	31+ years	89	4.30	2.002
	Total	**150**	**4.41**	**2.030**
7.5 Constructive feedback from my department colleagues	23-26 years	6	6.00	1.673
	27-30 years	55	4.31	1.904
	31+ years	89	3.82	1.662
	Total	**150**	**4.09**	**1.802**

Source: Own research.

As in the case of gender, generally scholars´ age does not play a significant role concerning perception level of motivational system for scientific work (see Table 13). The oldest age cohort (31+ years) of the survey views mechanisms for monetarily recognizing and compensating for the research as less fair than does the youngest cohort. It could be explained by more intensive demands as a result of increasing experience.

Table 13. Perceived Level of Motivational System by Scholars' Age

		N	Mean	SD
7.1 Fair mechanisms for non-monetarily recognizing	23-26 years	6	4.00	2.683
	27-30 years	55	3.38	1.716
	31+ years	89	3.51	1.659
	Total	**150**	**3.48**	**1.717**
7.2 Fair mechanisms for monetarily recognizing	23-26 years	6	3.83	0.753
	27-30 years	55	3.84	2.167
	31+ years	89	3.51	1.920
	Total	**150**	**3.64**	**1.981**
7.3 My compensation is fair for the research	23-26 years	6	3.33	1.033
	27-30 years	55	3.96	1.875
	31+ years	89	3.75	1.798
	Total	**150**	**3.81**	**1.800**
7.6 Understanding the research and teaching expectations for the promotion	23-26 years	6	6.17	0.983
	27-30 years	55	5.02	1.800
	31+ years	89	4.63	1.640
	Total	**150**	**4.83**	**1.704**
7.7 Excellent opportunities at this university to pursue my interests in research	23-26 years	6	4.33	1.633
	27-30 years	55	4.31	1.665
	31+ years	89	4.06	1.425
	Total	**150**	**4.16**	**1.520**

Source: Own research.

Age does not significantly affect the perception of proactive research environment (see Table 14). The oldest age cohort observed in our study (31+ years) is more aware of the expectations concerning the need to be productive in research and to conduct research that is externally funded. The difference in expectations is not statistically significant via ANOVA test.

Table 14. Perceived Level of Proactive Environment by Scholars' Age

		N	Mean	SD
7.8 Department's faculty can be considered to be productive in research	23-26 years	6	5.17	2.229
	27-30 years	55	3.69	1.426
	31+ years	89	3.67	1.650
	Total	**150**	**3.74**	**1.611**
7.9 Department's faculty can be considered to be significant external grant „getters"	23-26 years	6	4.67	2.251
	27-30 years	55	3.71	1.474
	31+ years	89	3.52	1.508
	Total	**150**	**3.63**	**1.534**
7.10 High expectation in my department for the faculty to be productive in research	23-26 years	6	5.00	2.366
	27-30 years	55	4.55	1.597
	31+ years	89	4.85	1.716
	Total	**150**	**4.75**	**1.696**
7.11 High expectation in my department to conduct research that is externally funded	23-26 years	6	4.83	2.229
	27-30 years	55	4.38	1.800
	31+ years	89	4.53	1.700
	Total	**150**	**4.49**	**1.748**
7.12 Effective recruitment strategies are in place for attracting the best talent	23-26 years	6	4.17	2.714
	27-30 years	55	2.62	1.446
	31+ years	89	2.99	1.620
	Total	**150**	**2.90**	**1.629**

Source: Own research.

7.7. Academic position differences

The results concerning academic position are very close to findings for age cohorts. Only the statement "I have adequate space to conduct my research" is statistically dependent on position according to the ANOVA significance test (see Table 15). Ph.D. students and associate professors assess differently the adequacy of support for travel to research-based conferences but that difference is not statistically significant.

Both statements concerning perceived level of social exchange relationships are statistically significant (see Table 16). The opinions of associate professors are not relevant due to limited sample size.

Table 15. Perceived Level of University Resources by Academic Position

		N	Mean	Std. Deviation
5.1 Access to adequate resources	Ph.D. student	330	5.01	1.596
	Assistant professor	81	5.23	1.630
	Associate professor	4	4.50	1.732
	Total	**415**	**5.05**	**1.603**
5.2 Adequate support for travel to research-based conferences	Ph.D. student	330	3.97	1.886
	Assistant professor	81	4.51	1.704
	Associate professor	4	3.50	3.000
	Total	**415**	**4.07**	**1.871**
5.3 Adequate space to conduct my research	Ph.D. student	330	4.51	2.082
	Assistant professor	81	5.49	1.590
	Associate professor	4	5.75	2.500
	Total	**415**	**4.71**	**2.035**
5.4 Skills, expertise, and experience of back office personnel at my uni is appropriate	Ph.D. student	329	4.50	1.593
	Assistant professor	81	4.44	1.761
	Associate professor	4	3.25	1.500
	Total	**414**	**4.47**	**1.627**

Source: Own research.

Table 16. Perceived Level of Social Exchange Relationships by Scholars' Academic Position

		N	Mean	SD
7.4 Mentor valuable guidance in research	Ph.D. student	67	4.82	2.052
	Assistant professor	79	4.00	1.974
	Associate professor	4	5.50	1.000
	Total	**150**	**4.41**	**2.030**
7.5 Constructive feedback from my department colleagues	Ph.D. student	67	4.69	1.819
	Assistant professor	79	3.58	1.669
	Associate professor	4	4.00	1.155
	Total	**150**	**4.09**	**1.802**

Source: Own research.

Academic position strongly affects monetary reward of the results in scientific work. Assistant professors (post-docs) are substantially more satisfied with monetary rewards than Ph.D. students (see Table 17). Generally the respondents are more satisfied with compensation for research than with the fairness of the mechanism for monetarily recognizing and rewarding with the exception of Czech scholars (see Table 18). Czech Ph.D. students perceive a low level of compensation (salary and bonuses) for research work.

Table 17. Perceived Level of Motivational System by Scholars' Academic Position

		N	Mean	SD
7.1 Fair mechanisms for non-monetarily recognizing	Ph.D. student	67	3.34	1.763
	Assistant professor	79	3.67	1.662
	Associate professor	4	2.00	1.414
	Total	**150**	**3.48**	**1.717**
7.2 Fair mechanisms for monetarily recognizing	Ph.D. student	67	3.16	2.049
	Assistant professor	79	4.00	1.881
	Associate professor	4	4.50	1.000
	Total	**150**	**3.64**	**1.981**
7.3 My compensation is fair for the research	Ph.D. student	67	3.39	1.732
	Assistant professor	79	4.19	1.798
	Associate professor	4	3.50	1.732
	Total	**150**	**3.81**	**1.800**
7.6 Understanding the research and teaching expectations for the promotion	Ph.D. student	67	4.96	1.804
	Assistant professor	79	4.82	1.517
	Associate professor	4	3.00	2.828
	Total	**150**	**4.83**	**1.704**
7.7 Excellent opportunities at this university to pursue my interests in research	Ph.D. student	67	4.15	1.520
	Assistant professor	79	4.23	1.535
	Associate professor	4	3.00	0.816
	Total	**150**	**4.16**	**1.520**

Source: Own research.

Table 18. Perception Level of Monetary Reward by Academic Position and Country

	Ph.D. student				Assistant professor				
	Poland	Hungary	Czech	**Total**	Poland	Hungary	Czech	Slovakia	**Total**
7.4 Fair mechanisms for monetarily recognizing	3.15	2.50	4.14	**3.16**	3.60	2.63	4.73	4.17	**4.00**
7.5 My compensation is fair for the research	3.38	3.25	3.59	**3.39**	3.60	3.50	4.70	4.26	**4.19**

Source: Own research.

Academic position does not have the statistically significant impact on the perception of proactive research environment, with the sole exception of the statement "A large portion of my academic department's faculty can be considered to be significant external grant getters" (see Table 19). However, Ph.D. students more optimistically assess research productivity of the faculty and its achievements in getting external grants. They also feel more sensitively the expectations concerning the demand to be productive and to conduct research that is externally funded.

Table 19. Perceived Level of Proactive Environment vs. Scholars' Academic Position

		N	Mean	SD
7.8 Department's faculty can be considered to be productive in research	Ph.D. student	67	3.99	1.701
	Assistant professor	79	3.59	1.498
	Associate professor	4	2.50	1.732
	Total	**150**	**3.74**	**1.611**
7.9 Department's faculty can be considered to be significant external grant „getters"	Ph.D. student	67	3.97	1.507
	Assistant professor	79	3.38	1.453
	Associate professor	4	3.00	2.708
	Total	**150**	**3.63**	**1.534**
7.10 High expectation in my department for the faculty to be productive in research	Ph.D. student	67	4.94	1.575
	Assistant professor	79	4.67	1.700
	Associate professor	4	3.00	2.828
	Total	**150**	**4.75**	**1.696**
7.11 High expectation in my department to conduct research that is externally funded	Ph.D. student	67	4.73	1.763
	Assistant professor	79	4.35	1.657
	Associate professor	4	3.00	2.708
	Total	**150**	**4.49**	**1.748**
7.12 Effective recruitment strategies are in place for attracting the best talent	Ph.D. student	67	2.76	1.697
	Assistant professor	79	3.01	1.581
	Associate professor	4	3.00	1.633
	Total	**150**	**2.90**	**1.629**

Source: Own research.

7.8. Employment differences

Scholars were asked whether they are employed at the university. As is shown in Table 20, 36.1% of the sample are university employees. Employment at the university depends on age (see Table 11) and academic position (see Table 20). Ph.D. students who are employed at the university belong actually to the category of assistant professor but they have not defended their dissertation work yet.

Table 20 Scholars' Employment at the University by Academic Position

	Ph.D. student	Assistant professor	Associate professor	Total
Yes	20.3%	97.5%	100.0%	**36.1%**
No	79.7%	2.5%		**63.9%**

Source: Own research.

Employment profile better correlates with perceived level of university resources for research work than scholars' age and academic position (see Table 21). Respondents who are employed at the university feel that they have access to adequate resources, adequate support for travel to research-based conferences

and adequate space to conduct research on a higher level than those respondents who are not employed at the university. This conclusion is statistically confirmed by ANOVA tests for these three statements (shaded cells). Only in the case of skills and experience of back office personnel were university employees more critical. This can be explained by more frequent involvement of employees in managerial positions in research (mentor, supervisor, project coordinator, applicant for a grant) resulting in the need to solve administrative problems with back office personnel.

Table 21. Perceived Level of University Resources by Employment

		N	Mean	SD
5.1 Access to adequate resources	Yes	150	5.28	1.647
	No	265	4.91	1.565
	Total	**415**	**5.05**	**1.603**
5.2 Adequate support for travel to research-based conferences	Yes	150	4.33	1.797
	No	265	3.92	1.898
	Total	**415**	**4.07**	**1.871**
5.3 Adequate space to conduct my research	Yes	150	5.37	1.615
	No	265	4.34	2.154
	Total	**415**	**4.71**	**2.035**
5.4 Skills, expertise, and experience of back office personnel at my uni is appropriate	Yes	150	4.33	1.665
	No	264	4.56	1.602
	Total	**414**	**4.47**	**1.627**

Source: Own research.

Employment differences are highlighted across V4 countries (see Table 22). Overall trends are not followed in Poland, where the differences between those who are employed at the university and those who are not are much higher than in the other countries. The gap in the perception of adequate space to conduct research between Czech and Polish scholars who are not employed at the university is extreme. Poland is also the only country in which university employees feel less favourable access to adequate resources.

Table 22. Perceived Level of University Resources by Country and Employment (mean)

	Poland		Hungary		Czech		Slovakia		Total	
	employment		employment		employment		employment		employment	
	yes	no	yes	no	yes	no	yes	no	yes	no
5.1 Access to adequate resources	4.83	5.09	5.00	4.76	5.88	5.53	5.00	4.41	5.28	4.91
5.2 Adequate support for travel to research-based conferences	4.04	3.56	3.88	3.68	4.87	4.98	4.42	3.67	4.33	3.92
5.3 Adequate space to conduct my research	4.50	2.96	5.44	4.68	5.79	5.46	5.17	4.65	5.37	4.34
5.4 Skills, expertise, and experience of back office personnel	3.83	4.47	4.40	4.76	4.48	4.91	4.33	4.26	4.33	4.56

Source: Own research.

7.9. Differences in publication in ISI journals

In Table 23 we analyse whether authors who are successful in publishing in ISI journals are satisfied with the fairness of mechanisms for monetarily recognizing and rewarding and with compensation for the research. Research findings show that the more publications the scholars have, the more they are satisfied with the fairness. This relationship is statistically confirmed just in the first case (fair mechanisms for monetarily recognizing).

Table 23. Perceived Level of Rewarding Fairness by Number of Publications in ISI Journals

		N	Mean	SD
7.2 Fair mechanisms for monetarily recognizing	0	111	3.41	2.051
	1	18	4.11	1.451
	2+	21	4.48	1.750
	Total	**150**	**3.64**	**1.981**
7.3 My compensation is fair for the research	0	111	3.63	1.834
	1	18	4.06	1.731
	2+	21	4.57	1.502
	Total	**150**	**3.81**	**1.800**

Source: Own research.

Van Dalen and Henkens (2012) researched the relationship between publishing activity and perception of a proactive environment. They found that the publication record of respondents (measured by the number of publications in ISI journals) and their evaluation of the publication pressure in their own organization are positively related. In our study that type of relationship was also observed (see Table 24) but it cannot be statistically confirmed. Those scholars who have published at least two publications in ISI journals perceive the most intensive expectations concerning research productivity and getting external grants.

Table 24. Perceived Level of Expectations by Number of Publications in ISI Journals

		N	Mean	SD
7.10 High expectation in my department for the faculty to be productive in research	0	111	4.71	1.739
	1	18	4.56	1.423
	2+	21	5.10	1.700
	Total	**150**	**4.75**	**1.696**
7.11 High expectation in my department to conduct research that is externally funded	0	111	4.39	1.774
	1	18	4.44	1.653
	2+	21	5.05	1.658
	Total	**150**	**4.49**	**1.748**

Source: Own research.

The positive relationship between publishing activity and expectations to be productive in research is valid in the Czech Republic and Slovakia, while we see the reverse pattern in Poland (see Table 25).

Table 25. Perceived Level of Expectations vs. Number of publication in ISI journals vs. Country

	Poland				Hungry				Czech				Slovakia			
	journals				journals				journals				journals			
	0	1	2+	Total	0	1	2+	Total	0	1	2+	Total	0	1	2+	Total
High expectation in my department for the faculty to be productive in research	4.87	3.80	2.75	4.29	4.40	4.33	5.50	4.48	5.33	6.00	6.67	5.46	3.09	4.33	5.40	4.21
High expectation in my department to conduct research that is externally funded	4.60	2.60	2.25	3.79	4.45	5.00	5.50	4.60	4.53	5.50	6.33	4.71	3.27	5.00	5.60	4.46

Source: Own research.

7.10. Research results discussion and implications

In this chapter we have discussed the impact of organizational (department) issues on research activities in the university environment. We analysed the resources of organization for research work, social exchange relationships at universities, research motivational system and university climate (proactive environment for doing science and research).

Faculty (university) resources are one of three main types of facilitating processes together with social networks and protected research time. Facilitating processes mediate the relationship between antecedent variables (individual difference variables, interpersonal variables, organizational variables) and faculty career outcomes (job performance, job outcomes) (Bergeron, Bilimoria, Liang, 2007).

Of the three facilitating processes, faculty resources seem to be qualitatively different from the other two processes. Thus, it may be that faculty resources moderate the relationship between social networks and career outcomes, and between protected research time and career outcomes. That is, both social networks and protected research time will have more of an effect on career outcomes under conditions of high resources than under those of low resources (Bergeron, Bilimoria, Liang, 2007).

Thus, having more access to resources interacts with protected research time to result in higher career outcomes than would result from a joint additive effect. In contrast, when resources are low, faculty members may have to spend their protected

research time on activities that would be better outsourced to others. Job tasks take more time and energy than they should which can result in role overload and stress, and thus lower job performance (Bacharach & Bamberger, 1995).

Resources provide opportunities to expand existing social networks as well as to gain access to new networks. The benefits of social networks are known and extensive (e.g.,Forret & Dougherty, 2004). Colleagues within one's social network are important for many reasons. They are sources of information about data, resources, grants and other opportunities (de Janasz & Sullivan, 2004) as well as about career advice and social support (Gersick, Bartunek & Dutton, 2000). This network expansion can happen by traveling to conferences orworking with more co-authors. Therefore, it is problematic that the perceived level of "adequate support for travel to research-based conferences" found in our study is relatively low in comparison with the other university sources (see Figure 1). This concerns all V4 countries with the exception of the Czech Republic (see Table 2).

Faculty resources, in the form of support personnel, can influence the ability to engage in service activities by taking on other faculty tasks and offsetting the impact of the time required to engage in service. This type of resource can be also instrumental in investigating and writing grants and managing administrative matters. Faculties do not actually realize the importance of support personnel because the response to the statement that the "skills, expertise, and experience of back office personnel at my university are appropriate" is not very high (see Figure 1). There are no statistically significant country differences according to the ANOVA significance test (see Table 9).

On the other hand, faculties (universities) do not underestimate the role of material resources such as computers, statistical software, library materials, technical support. The perceived level of access to adequate material sources is the highest among all the assessed statements (see Figure 1) with the exception of Slovakia. It seems to be a problem of governmental budget constraints in Slovakia because standard deviation of mean is relatively low (see Table 1). This reveals that there are no substantial differences in perceived levels in that category among Slovak universities. Material resources have an impact on protected research time. For instance it may be possible to buy a data set rather than collect data (thus saving time and possibly resulting in greater productivity).

Table 26 informs us about the impact of segmentation variables on the perceived level of four researched statements. Grey shading indicates the results where the mean difference is significant ($p<0.5$; on the basis of ANOVA test performed in SPSS package). Country is the strongest factor which affects the opinion on level of resource adequacy. Employment by the university more precisely explains the differences in opinions on research resources than age and academic position, no matter that age completion of Ph.D. study is a prerequisite of university employment.

Gender differences are subtle and without statistical significance. This means there is not observed gender discrimination.

Table 26. Significance Levels for Statements and Segmentation Variables

	country	age	gender	position	employment
access to adequate resources	**.000**	.341	.399	.410	**.025**
adequate support for travel to research-based conferences	**.000**	.322	.569	.057	**.031**
adequate space to conduct my research	**.000**	**.003**	.434	**.000**	**.000**
skills, expertise, and experience of back office personnel	.165	.116	.719	.310	.167

Source: Own research.

Based on research findings the universities (faculties) should concentrate on support for travelling to research-based conferences and developing back office personnel. These strategic actions can facilitate research processes and bring about enhanced research outcomes.

Development of social exchange relationships as an element of organizational culture is crucial for building a proactive academic environment. High leader-member exchange (LMX) relationships may result in more advice about career advancement strategies and the willingness to argue one's case before promotion and tenure committees. Thus, department chairs are responsible for a number of areas which may impact an individual faculty member's career outcomes (Blackmore, Switzer, DiLorio & Fairchild, 1997).

Mentors can make contacts with others to obtain assistance (e.g. lobbying for a job or funds), give information regarding opportunities and provide access to formal and informal networks of communication (de Janasz & Sullivan, 2004; Eddleston, Baldridge & Veiga, 2004). In addition, an individual's own network is expanded via contacts with the mentor's network (Higgins, 2000; Higgins & Kram, 2001).

Team-member exchange (TMX) is also important for activating research work. For example, faculty members with high TMX may be more likely to co-author grants or papers with department colleagues and to get advice and feedback on manuscripts. Social support can help individuals stay motivated when dealing with high journal rejection rates. With regard to job outcomes, it seems that faculty members with higher TMX have a better chance of being promoted and tenured. Faculty members with high TMX are also likely to have more equitable salaries because of greater information exchange (Pfeffer & Langton, 1988). High-quality TMX is associated with higher job satisfaction and organizational commitment (Liden et al., 2000; Major, Kozlowski, Chao & Gardner, 1995; Seers,1989).

In our study, leader-member exchange and team-member exchange is perceived to be on a very low level in all countries with the exception of Hungary (see Table 3). It

reveals that interpersonal relationships in the faculty (department) are not supportive and inspiring. This could be one of the main reasons why scholars from the Visegrad Countries are not so successful in top reviewed journals.

Table 27 displays the impact of segmentation variables on perceived level of interpersonal relationships. Country and academy position are the most important factors affecting opinion on the level of social exchange relationships.

Table 27. Significance Levels for Statements and Segmentation Variables

	country	age	gender	position
mentor valuable guidance in research	.000	.370	.116	.027
constructive feedback from my department colleagues	.016	.008	.763	.001

Source: Own research.

In addition to social exchange relationships the organizational culture consists of motivational system and proactive environment. In the competitive environment of scientifically advanced countries, academics are encouraged to compete against one another to become specialists in their field, and they concentrate all of their efforts toward gaining promotion and increasing salaries (Roberts, 2007). Low-productivity scholars move to institutes or universities that do not put too much pressure on them, whereas highly productive scholars move to higher ranked universities where productivity standards are also higher (van Dalen & Henkens, 2012). The proactive environment supporting publications in ISI journals and getting external grants is the only way how to maintain one's career in conditions of strong academic competition.

In our study we have found that expectations to be productive in research and to conduct externally granted research are relatively high, especially in the Czech Republic and Hungary (see Table 5). However, the perceived gap between expectations and actual research achievements is also high. The level of this gap depends on expectations because the perceived actual state in research achievements (publications, grants) is nearly the same in all the V4 countries.

Academic pressure on having publications in ISI journals brings positive results. Those scholars who report a demanding environment are more successful in publication in ICI journals. This conclusion is observed in all countries with the exception of Poland.

High expectations concerning research productivity are not supported by effective recruitment strategy to attract the best talents. Scholars feel the absence of effective recruitment strategies very intensely. The paradox is that the absence of an effective recruitment strategy is most strongly perceived in the country with the highest expectations in research productivity (Czech Republic).

A highly-demanding academic environment should apply an efficient and fair motivational system. We have confirmed that those scholars with publication in ISI journals are more satisfied with fairness of rewarding mechanism and compensation for the research (see Table 4). Also we found the different approach in applying the motivation system in two highly demanding countries (Czech Republic, Hungary) concerning research productivity. While Czech scholars perceive the mechanism for monetarily recognizing and compensation for research acceptably fair, Hungarian academics mostly do not. On the other hand Hungarian scholars see "excellent opportunities at this university to pursue their interests in research".

The country is the most obvious segmentation variable for both sets of statements (motivational system, proactive environment) (see Tables 28 and 29). We have found substantial intercultural differences. Our study also has shown some gender differences concerning the perception of a proactive environment. Women are more sensitive about this. Finally, academic position has an impact on the perception of monetary recognition and compensation fairness.

Table 28. Significance Levels for Statements and Segmentation Variables

	country	age	gender	position
fair mechanisms for non-monetarily recognizing	.935	.690	.095	.112
fair mechanisms for monetarily recognizing	.000	.607	.936	.026
my compensation is fair for the research	.027	.637	.621	.025
understanding the research and teaching expectations for the promotion	.081	.060	.339	.082
excellent opportunities at this university to pursue my interests in research	.012	.603	.430	.290

Source: Own research.

Table 29. Significance Levels for Statements and Segmentation Variables

	country	age	gender	position
department's faculty can be considered to be productive in research	.871	.085	.003	.102
department's faculty can be considered to be significant external grant „getters"	.173	.186	.113	.047
high expectation in my department for the faculty to be productive in research	.002	.534	.027	.071
high expectation in my department to conduct research that is externally funded	.182	.787	.076	.097
Effective recruitment strategies are in place for attracting the best talent	.007	.062	.006	.647

Source: Own research.

Our study has confirmed that department (faculty) variables (motivational system, proactive environment) have impacts on research outcomes. High expectations concerning research productivity, supported by an efficient and fair motivational system, can result in the sought-for research achievements (publications, external grants).

Chapter 8

The participation of young Visegrad scholars in academic networking

Maciej Mitrega[1]

8.1. Introduction

According to Ito & Brotheridge (2007), there exists very little research that considers concrete actions and behavioral strategies that individual scholars employ to improve their research productivity. Such behaviors are very wide in scope, ranging from improving grant getting skills, through presenting research results at conferences, to exploiting some research niches based on in-depth literature review. On the general level, we may distinguish two strategic paths that young scholars may follow. Firstly, they may focus rather on individual work (e.g. literature review and conducting research), reducing their academic ties to collaboration with their supervisor. Secondly, they may consciously employ various efforts to engage in ongoing research collaboration with various actors, e.g. supervisors, the supervisor's friends, peers, or established scholars met through conferences or social media. This chapter is fully devoted to this latter strategy or, in other words, the participation of young V4 scholars in academic networking.

We assume that academic networking comprises all actions employed by a scholar to initiate and manage ties with other scholars and collaborate as a team in research projects and publishing. Prior research into the area of scholar productivity has rather not concentrated on these aspects of productivity; however, some authors have stated that these aspects may be very important. The general link between publishing with co-authors (rather than as single authors) and publication rate is well documented (Maske, Durden, & Gaynor, 2003; Megel, Langston, & Creswell, 1988). Bergeron & Liang (2007) suggested that social networks mediate the link between individual differences (e.g. personality, research skills) and career outcomes in academia. Bland et al. (2005) found an empirical link between having a well-developed network of academic colleagues and individual research productivity,

[1] Maciej Mitrega, University of Economics in Katowice

but, interestingly, this link appeared to be positive only with regard to an "external network" (other departments, other universities) and was found to be negative with regard to the "internal network" (scholars from the same department at the faculty). The study by Lee & Bozeman (2005) suggested that academic collaboration is an important predictor of research productivity; however, their study suggests that the collaboration strategy may be more important than just an increase in the number of personal academic ties. Specifically, implementing the so-called "tactician strategy", based on selecting partners with complementary skills, has a meaningful impact on research productivity. In the same spirit, Melin's study (2000) illustrates that successful academic teamwork takes many forms but is rather based on pragmatism than collegiality or supervisor-student relations.

Even if the above studies were conducted in the context of so-called highly developed Western countries (e.g. US, UK, Sweden), the pressure to publish in top-tier journals is spreading around the globe and it is reasonable to assume that academic networking may have a major influence on the research productivity of scholars working in other countries. The recent study conducted among universities in Turkey (Önder & Kasapoğlu-Önder, 2011) illustrates that those Turkish universities that employ many researchers trained in North American or UK universities have the best publishing results in indexed journals. The partners' knowledge exchange is well documented in various business contexts, e.g. supply chain management or joint product development (Dyer & Hatch, 2006; Mesquita, Anand, & Brush, 2008). This is also the fundamental aspect of the social learning theory (Bandura & McClelland, 1977; Checkel, 2001), where new patterns of behavior can be acquired by individuals through direct experience or by observing the behavior of others. In sum, we assume that academic networking, and especially collaboration with scholars from more developed countries, work as a training mechanism and in turn as productivity leverage for young scholars from the V4 area. Therefore, in this chapter we will present the results of the part of the V4 international survey that is devoted to academic networking. Specifically, the survey provides information on the extent to which young scholars collaborate with academic partners and the extent to which the level of networking is dependent on country differences and personal characteristics (e.g. gender, age, academic rank).

8.2. Networking of young V4 scholars in the light of the survey results

Altogether there were 11 detailed questions focusing in the questionnaire directly on networking. The questions numbered 3.1-3.7 were Likert-type and measured

informants' perception of various aspects of networking, such as cooperation with other scholars at school, country and international level (see Table 1). Questions 4.1-4.4 (see Table 1) were constructed in a different way – they asked informants to report concrete numbers of scholars and schools with whom they cooperated. Thus, it may be assumed that questions 3.1-3.7 measured the perceptual quality of network ties and questions 4.1-4.4 measured the size of a given scholar's network.

Table 1. General descriptive statistics for networking-related questions

Question specification	N	Min	Max	Mean
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	415	0	12	1.39
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	415	0	7	1.00
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	415	0	12	.86
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing.	415	0	7	.65
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects.	415	1	7	3.51
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing.	415	1	7	4.04
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing.	415	1	7	2.60
3.4 I maintain close personal relationships with group of scholars from other unis in my country.	415	1	7	2.79
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	415	1	7	2.14
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	415	1	7	2.02
3.7 I maintain close personal relationships with group of foreign scholars from more developed countries	415	1	7	2.10

Source: Own research.

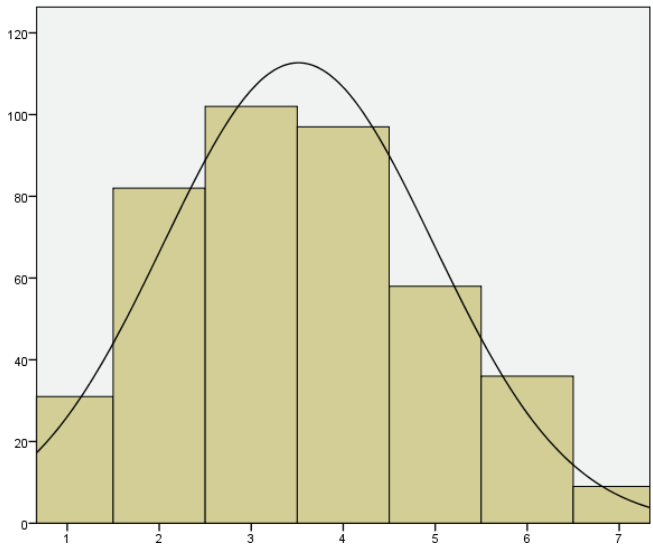
In general, research results with regard to questions 3.1-4.4 will be presented through descriptive statistics (mean, standard deviation, extreme values); however we will test if mean values differ significantly with regard to some scholars' characteristics (e.g. home country, gender, age). Therefore, mean values will usually be presented in cross-tables and grey shading will indicate that the mean difference is significant ($p<0.5$; on the basis of ANOVA test performed in SPSS package).

Considering descriptive statistics for all questions referring to networking (Table 1), one may conclude that both networking size and networking quality are underdeveloped. For example, the average young business scholar in the sample reported having only 1.39 external academic relationships (with scholars from the same country but from other schools, see question 4.1.) and only 0.86 relationships with scholars from more developed countries (see question 4.3. in the table 1).

These numbers are quite informative, but their interpretation becomes clearer if we consider the way that young scholars assessed these small academic networks (see answers to questions 3.1-3.7 in Table 1). Taking into consideration that these networks were assessed on a 7-point scale (from 1-strongly disagree to 7-strongly agree), the informants' assessments of their academic networks were definitely negative. Only in the case of so-called "local networks", limited to the home university (questions 3.1 and 3.2), were young scholars quite positive in their assessments (with mean scores of 3.51 and 4.04). However, they were quite negative in assessing their domestic external networks (see answers to questions 3.3 and 3.4) and they were quite strongly negative about their international networks (see answers to questions 3.5, 3.6 and 3.7).

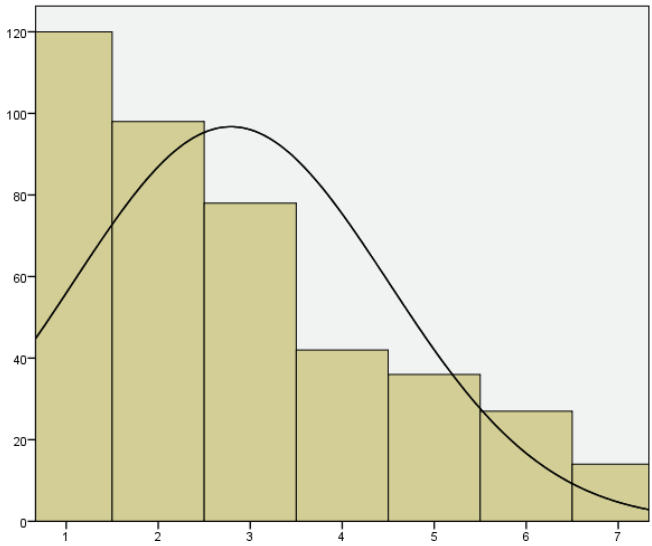
The following Figures 1, 2 and 3 illustrate the distribution of answers with regard to selected questions (3.1, 3.3 and 3.6) emphasizing the gap between local, nationwide and international networking activities. Clearly, these distributions are far from the normal distribution pattern and the distribution skewedness increases along with the increase of network range that informants referred to. For example, the majority of all informants (Figure 3) did not agree at all with the statement, "I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing". This can mean that for the majority of young business scholars in the V4 area, even if they have some contacts with scholars from more developed countries, these contacts are very superficial, e.g. they do not work as mechanisms for joint publishing in indexed journals or joint research designing.

Figure 1. The answer distribution with regard to local network quality (question 3.1)



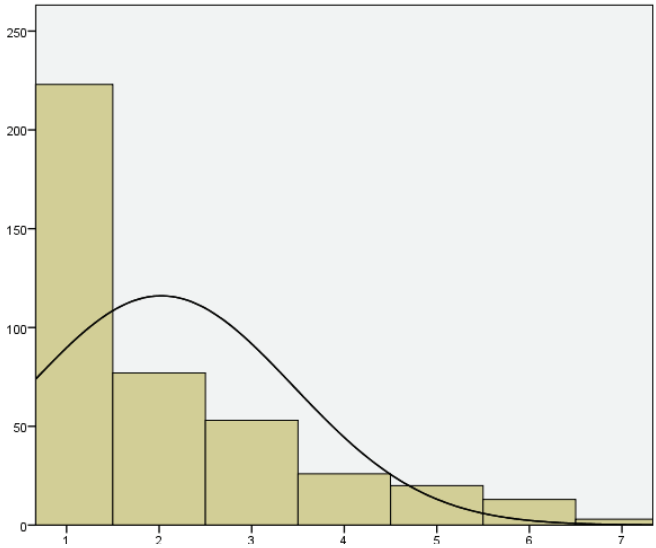
Source: Own research.

Figure 2. The answers distribution with regard to country network quality (question 3.3)



Source: Own research.

Figure 3. The answers distribution with regard to foreign network quality (question 3.6)



Source: Own research.

In general, the networking actions of young business scholars seem to be very local and, in consequence, very supervisor-centered. Additionally, if young scholars' networks are supervisor-centered, they are probably also quite formal and power-based, rather than characterized by partnership and flexible information flow.

8.2.1. Country differences

Tables 2 and 3 illustrate networking level of young business scholars from V4 countries (see "All" in the tables) and the differences with regard to scholars' home countries. In general, Table 2 suggests that scholars' networking is not too advanced in any of the V4 countries. Young scholars network mainly within their home universities, e.g. with supervisors, older faculty members and university peers. Networking is much less developed with regard to scholars from other universities in the same country and it is visibly least advanced with regard to scholars from other, more developed countries. When it comes to the network size, the majority of questions show significant differences (Table 2). Young scholars from Hungary built on the average the largest academic networks at country level, but Slovakian scholars built the largest networks at the international level (with scholars/universities from more developed countries). In general, young Polish and Czech scholars reported relatively the smallest academic networks.

Table 2. Scholars' network size by scholars' country

	Country	N	Mean	SD	Minimum	Maksimum
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	Poland	101	1.30	1.494	0	6
	Hungary	100	1.79	2.090	0	10
	Czech	109	1.14	1.729	0	12
	Slovakia	105	1.36	1.612	0	10
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	Poland	101	1.08	1.294	0	7
	Hungary	100	1.18	1.298	0	5
	Czech	109	.73	.987	0	5
	Slovakia	105	1.02	1.009	0	4
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	Poland	101	.67	1.457	0	10
	Hungary	100	.98	2.020	0	12
	Czech	109	.74	1.272	0	6
	Slovakia	105	1.04	1.372	0	7
	All	415	.86	1.552	0	12

	Country	N	Mean	SD	Minimum	Maksimum
4.4. Specify the number of universities in foreign countries with which you directly cooperate in res earch and publishing	Poland	101	.45	.889	0	5
	Hungary	100	.68	1.384	0	7
	Czech	109	.54	1.067	0	5
	Slovakia	105	.94	1.108	0	6
	All	415	.65	1.136	0	7

Source: Own research.

The perceived network quality results with regard to country profile are similar and in majority of cases, significant (see Table 3). In comparison to other nationalities Hungarian scholars seem to be more happy with networks they have developed at country level (questions 3.1 and 3.2) and Slovakian scholars assessed in a visibly better way their network cooperation on the international level (question 3.5, 3.6). Hungarian scholars also assessed their personal relationships with scholars from other domestic universities in a significantly better way than scholars from the other Visegrad countries (question 3.4).

Table 3. Scholars' network quality by scholars' country

Questions		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	Poland	101	3.10	1.540	1	7
	Hungary	100	3.76	1.498	1	7
	Czech	109	3.71	1.565	1	7
	Slovakia	105	3.48	1.169	1	6
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	Poland	101	3.37	1.701	1	7
	Hungary	100	4.86	1.939	1	7
	Czech	109	4.13	1.806	1	7
	Slovakia	105	3.81	1.394	2	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	Poland	101	2.50	1.501	1	6
	Hungary	100	2.82	1.714	1	7
	Czech	109	2.36	1.364	1	7
	Slovakia	105	2.74	1.387	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	Poland	101	2.48	1.641	1	7
	Hungary	100	3.28	1.918	1	7
	Czech	109	2.68	1.779	1	7
	Slovakia	105	2.74	1.394	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	Poland	101	2.21	1.596	1	7
	Hungary	100	1.88	1.444	1	6
	Czech	109	1.94	1.393	1	6
	Slovakia	105	2.53	1.366	1	7
	All	415	2.14	1.468	1	7

Questions		N	Mean	SD	Min	Max
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	Poland	101	2.13	1.508	1	7
	Hungary	100	1.72	1.422	1	6
	Czech	109	1.80	1.325	1	7
	Slovakia	105	2.44	1.358	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	Poland	101	2.08	1.617	1	7
	Hungary	100	1.88	1.616	1	6
	Czech	109	2.06	1.615	1	6
	Slovakia	105	2.36	1.309	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.2. Gender differences

In contrast to country-related analysis, the comparison of networking activities with regard to scholars' gender did not reveal many significant differences (Tables 3 and 4). When it comes to concrete network size, the only significant difference was found with regard to the number of scholars from other universities in the same country with whom the scholars directly cooperated (question 4.1, Table 3). It seems that young male scholars from the V4 area have bigger inter-faculty networks in their own countries than young female scholars.

Table 4. Scholars' network size by scholars' gender

9.4 Gender		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	woman	252	1.20	1.384	0	6
	man	163	1.68	2.179	0	12
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	woman	252	.96	1.134	0	7
	man	163	1.05	1.201	0	5
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	woman	252	.80	1.361	0	10
	man	163	.95	1.808	0	12
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing	woman	252	.63	1.046	0	5
	man	163	.69	1.265	0	7
	All	415	.65	1.136	0	7

Source: Own research.

This result corresponded well with answers provided by respondents for questions 3.1-3.7. The only significant gender difference is found in response to question 3.3, which was about research/publishing cooperation with scholars from other

universities in the same country. Again, male scholars reported more optimistically on such cooperation than female ones. However, taking into consideration that most differences were not significant, we conclude that gender is not a factor that explains academic networking in the V4 area.

Table 5. Scholars' network quality by scholars' gender

9.4 Gender		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	woman	252	3.49	1.443	1	7
	man	163	3.55	1.512	1	7
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	woman	252	4.04	1.854	1	7
	man	163	4.03	1.708	1	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	woman	252	2.46	1.389	1	7
	man	163	2.83	1.635	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	woman	252	2.69	1.617	1	7
	man	163	2.95	1.842	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	woman	252	2.13	1.433	1	7
	man	163	2.15	1.526	1	7
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	woman	252	2.02	1.371	1	7
	man	163	2.03	1.513	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	woman	252	2.12	1.563	1	7
	man	163	2.06	1.529	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.3. Age differences

Tables 6 and 7 provide evidence that scholars' age has a significant influence on scholars' networking. As an example, scholars at the age of 23-26 reported on the average 0.51 ties with foreign scholars and scholars over the age of 30 reported on the average 1.41 ties with foreign scholars (question 4.3, Table 6).

The age-related differences with regard to perceived network quality (Table 7) were not as substantial as with regard to network size, but these differences remained statistically significant. Therefore, one may conclude that the older the scholar is, the better his or her network quality is. However, this connection can be biased by another factor, which is "number of years of work at the university". Tables 8 and 9 will elaborate on that issue.

Table 6. Scholars' network size by scholars' age

9.5b Age (interval)		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	23-26 years	125	.84	1.167	0	5
	27-30	180	1.19	1.564	0	10
	over 30	110	2.35	2.186	0	12
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	23-26 years	125	.67	.905	0	3
	27-30	180	.83	1.061	0	7
	over 30	110	1.65	1.317	0	5
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	23-26 years	125	.51	.895	0	3
	27-30	180	.76	1.715	0	12
	over 30	110	1.41	1.715	0	7
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing.	23-26 years	125	.41	.697	0	3
	27-30	180	.57	1.119	0	7
	over 30	110	1.07	1.425	0	6
	All	415	.65	1.136	0	7

Source: Own research.

Table 7. Scholars' network quality by scholars' age

9.5b Age (interval)		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects.	23-26 years	125	3.62	1.390	1	7
	27-30	180	3.29	1.440	1	7
	over 30	110	3.76	1.562	1	7
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	23-26 years	125	3.90	1.698	1	7
	27-30	180	3.99	1.878	1	7
	over 30	110	4.27	1.760	1	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	23-26 years	125	2.30	1.239	1	6
	27-30	180	2.47	1.462	1	7
	over 30	110	3.15	1.687	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	23-26 years	125	2.58	1.562	1	7
	27-30	180	2.55	1.597	1	7
	over 30	110	3.43	1.899	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	23-26 years	125	2.10	1.349	1	6
	27-30	180	1.83	1.236	1	7
	over 30	110	2.70	1.769	1	7
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	23-26 years	125	1.89	1.290	1	6
	27-30	180	1.83	1.272	1	7
	over 30	110	2.49	1.696	1	7
	All	415	2.02	1.427	1	7

9.5b Age (interval)		N	Mean	SD	Min	Max
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	23-26 years	125	1.90	1.325	1	7
	27-30	180	1.88	1.352	1	6
	over 30	110	2.68	1.906	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.4. Position differences

Mean comparison with regard to scholars' academic position is very informative. Table 8 shows clearly that the higher the academic position is, the larger the academic network is. These differences are sometimes very substantial. For example, the average scholar with the lowest rank (PhD student or Research assistant) reported having 1.18 academic ties at country level and the average scholar with the highest rank (Associate professor) reported having 6.50 country ties (question 4.1). The average difference between scholars at the analogous positions with regard to foreign academic ties was also strong: 0.66 and 2.50. (see Table 7, question 4.3).

Table 8. Scholars' network size by academic position

9.2 Academic position		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	Phd student/assistant	330	1.18	1.648	0	12
	Assistant professor	81	2.01	1.616	0	7
	Associate professor	4	6.50	2.517	4	10
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	Phd student/assistant	330	.88	1.119	0	7
	Assistant professor	81	1.43	1.214	0	5
	Associate professor	4	2.25	.500	2	3
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	Phd student/assistant	330	.66	1.375	0	12
	Assistant professor	81	1.58	1.877	0	10
	Associate professor	4	2.50	3.000	0	6
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing	Phd student/assistant	330	.49	.981	0	7
	Assistant professor	81	1.27	1.432	0	6
	Associate professor	4	1.50	1.915	0	4
	All	415	.65	1.136	0	7

Source: Own research.

Interestingly, the position-related differences with regard to network quality perception (Table 9) were also significant but not as strong as in case of network size (Table 8). In the case of almost all questions from 3.1 to 3.7 scholars with higher positions reported significantly better developed networks. However, considering

question 3.1 the mean values suggest that the average PhD student has actually a more highly developed research network (3.39) than the average Associate professor (2.75). Such a result may be connected with the process of getting so-called "academic independence" at the home faculty, which goes in hand with academic promotion, especially when the scholar becomes "Associate professor" in one of Visegrad vountries. Considering the results from questions 4.1-4.4 one may conclude that as soon as scholars become "independent" , they minimize networking actions at their home faculties and switch to building new external partnerships, especially at country level (e.g. with other "independent scholars"), but also at international level (e.g. at foreign conferences or through visiting positions).

Table 9. Scholars' network quality by academic position

9.2 Academic position		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	Phd student/assistant	330	3.39	1.426	1	7
	Assistant professor	81	4.04	1.561	1	7
	Associate professor	4	2.75	.500	2	3
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	Phd student/assistant	330	3.88	1.778	1	7
	Assistant professor	81	4.68	1.745	1	7
	Associate professor	4	4.50	1.732	3	6
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	Phd student/assistant	330	2.38	1.339	1	7
	Assistant professor	81	3.42	1.753	1	7
	Associate professor	4	4.50	1.915	3	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	Phd student/assistant	330	2.58	1.577	1	7
	Assistant professor	81	3.58	1.968	1	7
	Associate professor	4	3.75	2.363	2	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	Phd student/assistant	330	1.99	1.357	1	7
	Assistant professor	81	2.73	1.696	1	7
	Associate professor	4	3.00	2.449	1	6
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	Phd student/assistant	330	1.85	1.263	1	7
	Assistant professor	81	2.67	1.746	1	7
	Associate professor	4	3.25	2.872	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	Phd student/assistant	330	1.93	1.398	1	7
	Assistant professor	81	2.74	1.896	1	7
	Associate professor	4	2.75	2.363	1	6
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.5. Salary differences

Tables 10 and 11 provide evidence for a significant connection between scholar's networking actions and the salary that the scholar receives at the university. For example, an average scholar who receives no salary at all (e.g. a PhD student with no teaching obligations) reported 1.01 domestic relationships, while the average scholar who earned more than 1000 Euro monthly reported 3,44 domestic relationships (question 4.1, Table 10). Such differences with regard to salary intervals were visible also with regard to international network size (see questions 4.3, 4.4, Table 10). We should take into consideration that most likely these salary intervals mirror the variation of academic positions.

Table 10. Scholars' network quality by scholars' salary

9.14 Salary		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	no salary	222	1.01	1.292	0	6
	less than 500 Eur	77	1.23	1.842	0	10
	501-1000 Eur	98	1.99	1.785	0	7
	more than 1000 Eur	18	3.44	3.365	0	12
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	no salary	222	.82	.959	0	5
	less than 500 Eur	77	.90	1.252	0	7
	501-1000 Eur	98	1.33	1.353	0	5
	more than 1000 Eur	18	1.89	1.183	0	5
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	no salary	222	.58	1.328	0	12
	less than 500 Eur	77	.74	1.409	0	6
	501-1000 Eur	98	1.38	1.842	0	10
	more than 1000 Eur	18	1.94	1.893	0	6
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with whicht you directly cooperate in research and publishing	no salary	222	.45	.915	0	7
	less than 500 Eur	77	.58	1.068	0	5
	501-1000 Eur	98	1.00	1.370	0	6
	more than 1000 Eur	18	1.50	1.654	0	5
	All	415	.65	1.136	0	7

Source: Own research.

The mean comparison of questions referring to perceived network quality (Table 11) revealed significant differences with regard to salary variation; however these differences were not as strong as the differences found in Table 10 (with regard to network size). On the average, young scholars with no salary at all perceived their local network in quite a similar (pessimistic) way as did scholars with monthly earnings of more than 1000 Eur (see question 3.1, Table 11). The network quality

differences were more visible with regard to external networks (e.g. inter-faculty and international ones). For example, the Likert-scale mean score in question 3.7 equaled 1,93 for scholars with no salary and 3,28 for scholars with the highest earnings (Table 11). Nevertheless, it should be emphasized that even in the case of scholars with the highest earnings, their perception of external network quality was negative, so networking effects such as joint publications with foreign scholars were rare in the case of all scholars from the V4 area.

Table 11. Scholars' network quality by scholars' salary

9.14 Salary		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	no salary	222	3.29	1.421	1	7
	less than 500 Eur	77	3.64	1.450	1	7
	501-1000 Eur	98	3.79	1.521	1	7
	more than 1000 Eur	18	4.22	1.437	2	6
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	no salary	222	3.59	1.680	1	7
	less than 500 Eur	77	4.57	1.788	1	7
	501-1000 Eur	98	4.59	1.844	1	7
	more than 1000 Eur	18	4.33	1.534	2	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	no salary	222	2.28	1.252	1	6
	less than 500 Eur	77	2.66	1.527	1	7
	501-1000 Eur	98	3.02	1.705	1	7
	more than 1000 Eur	18	4.06	1.662	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	no salary	222	2.41	1.426	1	7
	less than 500 Eur	77	3.16	1.940	1	7
	501-1000 Eur	98	3.17	1.872	1	7
	more than 1000 Eur	18	3.83	1.886	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	no salary	222	2.03	1.370	1	7
	less than 500 Eur	77	1.88	1.357	1	6
	501-1000 Eur	98	2.40	1.636	1	7
	more than 1000 Eur	18	3.22	1.592	1	6
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	no salary	222	1.91	1.266	1	6
	less than 500 Eur	77	1.87	1.399	1	7
	501-1000 Eur	98	2.24	1.619	1	7
	more than 1000 Eur	18	2.83	1.948	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	no salary	222	1.93	1.313	1	7
	less than 500 Eur	77	2.00	1.614	1	6
	501-1000 Eur	98	2.34	1.758	1	7
	more than 1000 Eur	18	3.28	2.109	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.6. Teaching differences (course number)

Table 12 presents the connection between scholars' network size and the number of courses taught by scholars. This connection is not only significant but also positive with regard to all relevant questions (4.1-4.4). For example, young scholars who do not teach at all ("0 courses") reported on the average 0.58 foreign relations, and young scholars who teach many courses ("6 or more") reported on the average 1.07 foreign relations (question 4.3, Table 12). This positive relationship is less visible with regard to the domestic network, however it is also positive and significant.

Table 12. Scholars' network size by number of academic courses taught

9.6b Course number (interval)		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	0	52	.69	1.197	0	5
	1-2	115	1.08	1.712	0	10
	3-5	148	1.46	1.849	0	12
	6 or more	100	2.01	1.703	0	7
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	0	52	.62	.771	0	4
	1-2	115	.79	1.022	0	4
	3-5	148	1.03	1.231	0	7
	6 or more	100	1.38	1.262	0	5
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	0	52	.58	2.163	0	12
	1-2	115	.42	.973	0	5
	3-5	148	1.01	1.491	0	10
	6 or more	100	1.29	1.665	0	7
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing	0	52	.37	1.372	0	7
	1-2	115	.30	.713	0	4
	3-5	148	.75	1.049	0	5
	6 or more	100	1.07	1.350	0	6
	All	415	.65	1.136	0	7

Source: Own research.

Table 13 shows that from the perspective of scholars themselves there is a positive relations between the number of courses they teach and the quality of the academic network they are embedded in. This connection is less clear with regard to local networks within the home university (questions 3.1-3.2); however, it becomes substantial when informants refer to external networks at either country level or international level (questions 3.3-3.7). For instance, scholars without teaching obligations were pessimistic while referring to their country-level ties (mean equaled 2.06, see question 3.3), but scholars with at least 6 courses were rather optimistic while assessing these ties (mean amounted to 3.24).

Table 13. Scholars' network quality by number of academic courses taught

9.6b Course number (interval)		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	0	52	3.12	1.308	1	6
	1-2	115	3.37	1.580	1	7
	3-5	148	3.56	1.356	1	7
	6 or more	100	3.82	1.527	1	7
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	0	52	3.46	1.798	1	6
	1-2	115	3.70	1.817	1	7
	3-5	148	4.09	1.647	1	7
	6 or more	100	4.65	1.817	1	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	0	52	2.06	1.145	1	5
	1-2	115	2.17	1.434	1	7
	3-5	148	2.70	1.354	1	7
	6 or more	100	3.24	1.688	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	0	52	2.13	1.372	1	6
	1-2	115	2.32	1.625	1	7
	3-5	148	2.86	1.650	1	7
	6 or more	100	3.57	1.760	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	0	52	1.65	1.219	1	6
	1-2	115	1.77	1.202	1	6
	3-5	148	2.28	1.497	1	7
	6 or more	100	2.63	1.643	1	7
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	0	52	1.63	1.314	1	6
	1-2	115	1.66	1.123	1	6
	3-5	148	2.09	1.387	1	7
	6 or more	100	2.53	1.678	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	0	52	1.63	1.189	1	6
	1-2	115	1.77	1.345	1	6
	3-5	148	2.12	1.470	1	7
	6 or more	100	2.67	1.853	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.2.7. Teaching differences (teaching hours)

To validate above positive association, we tested the association between scholars' networking and teaching hours that scholars were responsible for in an academic year. The research results presented in Table 14 do not create a clear picture, because only some associations received support for the significance in ANOVA test (see rows shaded grey). Network size appears to be positively correllated with teaching hours

in the case of the native country network of scholars (question 4.1, Table 14) and in the case of the international network if we consider the number of foreign universities rather than the number of foreign scholars in the network (question 4.3, Table 13).

Table 14. Scholars' network size by annual teaching hours

9.7b Teaching hours (interval)		N	Mean	SD	Min	Max
4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	0	51	.71	1.205	0	5
	1-50	78	1.45	1.945	0	10
	51-100	82	1.23	1.814	0	12
	101-200	113	1.50	1.738	0	10
	201 or more	91	1.74	1.718	0	6
	All	415	1.39	1.753	0	12
4.2. Specify the number of universities in your country with which you directly cooperate in research and publishing	0	51	.59	.753	0	4
	1-50	78	1.03	1.195	0	5
	51-100	82	1.04	1.328	0	7
	101-200	113	1.00	1.134	0	5
	201 or more	91	1.16	1.157	0	5
	All	415	1.00	1.160	0	7
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	0	51	.59	2.183	0	12
	1-50	78	.64	1.279	0	5
	51-100	82	.78	1.343	0	6
	101-200	113	.96	1.284	0	6
	201 or more	91	1.14	1.780	0	10
	All	415	.86	1.552	0	12
4.4. Specify the number of universities in foreign countries with which you directly cooperate in research and publishing	0	51	.35	1.383	0	7
	1-50	78	.49	.922	0	5
	51-100	82	.54	1.009	0	5
	101-200	113	.73	.975	0	5
	201 or more	91	.98	1.358	0	6
	All	415	.65	1.136	0	7

Source: Own research.

By comparing Table 14 with Table 15, we receive additional justification for the thesis that there is a positive association between scholars' networking and scholars' teaching involvement. Indeed, in the case of all the questions referring to networking quality (3.1-3.7, Table 15), the more teaching hours a scholar has, the better his or her perception of the academic network is. This association appeared to hold in all types of academic networks: local, country-wide and international. For example, young scholars without teaching obligations ("0" teaching hours) were rather uncertain about the quality of their local networks (mean value of 3.51, question 3.2) and young scholars heavily involved in teaching (at least 201 teaching hours) assessed their local networks in a positive way (mean value of 4.64). The dependence of such differences on teaching involvement are smaller with regard to external networks, however they remain significant ones (see all shaded rows in Table 15).

Table 15. Scholars' network quality by annual teaching hours

9.7b Teaching hours (interval)		N	Mean	SD	Min	Max
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects	0	51	3.12	1.291	1	6
	1-50	78	3.10	1.401	1	7
	51-100	82	3.78	1.432	1	7
	101-200	113	3.65	1.426	1	7
	201 or more	91	3.68	1.612	1	7
	All	415	3.51	1.469	1	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing	0	51	3.51	1.782	1	6
	1-50	78	3.65	1.966	1	7
	51-100	82	3.98	1.571	1	7
	101-200	113	4.11	1.682	1	7
	201 or more	91	4.64	1.835	1	7
	All	415	4.04	1.796	1	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing	0	51	2.10	1.136	1	5
	1-50	78	2.42	1.671	1	7
	51-100	82	2.38	1.151	1	6
	101-200	113	2.74	1.425	1	7
	201 or more	91	3.07	1.750	1	7
	All	415	2.60	1.500	1	7
3.4 I maintain close personal relationships with a group of scholars from other unis in my country	0	51	2.18	1.367	1	6
	1-50	78	2.59	1.798	1	7
	51-100	82	2.62	1.463	1	6
	101-200	113	2.90	1.631	1	7
	201 or more	91	3.32	1.966	1	7
	All	415	2.79	1.712	1	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	0	51	1.67	1.227	1	6
	1-50	78	1.87	1.303	1	5
	51-100	82	2.11	1.333	1	6
	101-200	113	2.37	1.495	1	7
	201 or more	91	2.38	1.711	1	7
	All	415	2.14	1.468	1	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	0	51	1.65	1.324	1	6
	1-50	78	1.73	1.255	1	6
	51-100	82	2.12	1.391	1	7
	101-200	113	2.12	1.324	1	6
	201 or more	91	2.26	1.699	1	7
	All	415	2.02	1.427	1	7
3.7 I maintain close personal relationships with a group of foreign scholars from more developed countries	0	51	1.65	1.197	1	6
	1-50	78	1.82	1.430	1	6
	51-100	82	2.21	1.537	1	6
	101-200	113	2.23	1.500	1	7
	201 or more	91	2.32	1.813	1	7
	All	415	2.10	1.548	1	7

Source: Own research.

8.3. Research results discussion and implications

In this chapter we elaborated on networking by young scholars in V4 countries as a factor contributing to scholars' productivity emphasized in the literature (Lee & Bozeman, 2005; Bergeron & Liang, 2007). Our empirical study, conducted among 415 young business scholars (up to 35) from all V4 countries, suggests that networking by young Visegrad scholars is very limited in both size and quality. Our research suggests that the typical research network of a young V4 scholar comprises just a bit more than one domestic scholar and "half" of a foreign scholar (from more developed countries). Thus, it may be assumed that young scholars from Visegrad countries do not benefit from arm's-length ties in social networks, which are very useful in getting access to important information (Uzzi, 1996). Moreover, the rather poor quality of the academic networks (as reported by scholars themselves) suggests that even in the small networks that exist, the relational closeness is low with a rather marginal likelihood for co-producing top level research and publications. Thus, one may conclude that, in general, young business scholars from the V4 area do not exploit the potential of so-called social embeddedness: neither through network size nor through network closeness (Burt, 2001; Granovetter, 1973). Additionally, our research illustrates that the networking of young scholars is especially weak on the international level, so the academic networks in which many young V4 scholars are embedded are probably very dependent on one dominant actor (e.g. their supervisor), which in turn may limit information access and innovativeness within such networks in the same spirit as in the case of business networks (Ford, Gadde, Hakansson, & Snehota, 2003; Mitrega, 2012). Such very limited networking by young scholars may restrict their career opportunities, because it will definitely limit their post-doctoral visiting positions, which in turn will impact negatively on their future research productivity and promotion (Horta, 2009).

Our research provides evidence for several factors that stimulate young scholars' networking. Some of these factors may be exploited as managerial tools, e.g. by governmental bodies coordinating in-country research or in universities' HR strategies in Visegrad countries. Among these factors are scholars' age, scholars' position, scholars' salary, courses being taught and teaching hours. All of these factors influence academic networking, usually in terms of both its extent and its quality; thus we assume that they all improve young scholars' social embeddedness. In general, we believe that these results should encourage university managers to design tools and make more efforts for stronger involvement of young scholars within daily university operations and create the opportunities for career development. The positive relationship between teaching involvement and academic networking is not so surprising if we take into consideration that young business scholars without any teaching obligations have usually quite distant relations with their home faculties and their own supervisors. This is because teaching involvement brings some earning opportunities in the V4

area and without such opportunities in academia, many young scholars take at least part-time jobs in business. This limits their affective involvement in and time spent on academic activities (e.g. research, networking with peers). Of course, such larger involvement of a young scholar in academic life may be very challenging in Visegrad countries, because the academic labor market is very competitive there (e.g. positions' rotation is not too high, and vacancies are rare). To illustrate, one may consider the specific situation of doctoral students in Poland described by Michalak (2013): in the course of 10 years (from 2001 to 2011) the number of research assistant positions decreased from 18,166 to 12,374 and at the same time number of doctoral students increased from 28,345 to 40,263. Considering that young scholars in Poland usually do not receive any financial remuneration for their research work (only 20% of doctoral students received a research scholarship in 2011 according to Central Statistical Office in Poland), young people may feel easily demotivated to engage in any kind of research activities, including academic networks. Therefore, governmental bodies should consider implementing some additional tools to help young scholars with their career development, e.g. by higher spending on research fellowships and initiating special programs for visiting positions and scientific exchange. Additionally, supervisors and home faculties might be very helpful for young scholars, as they could support them in applying for some EU-related funds, such as the Marie Curie Framework. Such external research financing may have both direct benefits (covering the monthly expenses of young scholars) and indirect benefits (stimulating international networking, because many such programs are based on visiting positions).

Our networking-related research has some limitations that open avenues for further research in this area. Firstly, we only investigated selected aspects of networking (network size/scope and perceived quality), so in the future one might wish to focus on different aspects such as position of scholar within network (e.g. structural holes), partners' selection and attracting strategies, partner's diversity (e.g. partners' position, partners' home country, partners' institution image or/and rank) and actions used by partners to monitor and control their academic networks. Secondly, our sample consisted of only young scholars (up to age 35) which was justified due to their specific situation in the labor market, but further research can be based on samples of scholars in all age intervals. A more representative sample could validate some conclusions from this research (e.g. if positive relationship between age and networking is universal). Moreover, such a future study based on representative sample would allow for capturing stronger variation of networking-related phenomena, which would useful in hypotheses testing. Thirdly, our research was fully based on scholars' own declarations collected via anonymous survey, so future research might validate our results using other data sources. For example, future research could take the form of analyzing scholars' papers in indexed journals and identifying some authorship patterns, e.g. number of authors, authors' countries, authors' positions, etc.

Chapter 9

Scientific activities and performance of young business scholars in Visegrad countries

Erzsébet Hetesi[1], *Szabolcs Prónay*[2]

Nowadays in connection with university researchers it is typical that their work is considered as an intellectual activity, to which independence, low-level control, and so-called „scientific freedom" is necessary. This is especially true regarding the institutions of Eastern Europe, where universities were mostly isolated and criticism of the activities of highly-regarded researchers was almost unimaginable.

Today, however, the higher education and academic spheres have changed, and researchers have to adapt to a new organisational culture which is more business-like in general. On the institutional level this means that the concept of the entrepreneurial university is even more widely spread, while on the individual level it means that the business-like measurement of performance in the sector is getting even more popular in the institution of the university.

Our study fits into this framework. One of the main purposes of this study is to examine the scientific activities and performance of young scholars in the field of business studies. In the previous chapters we reviewed the attitudes and opinion of young scholars in detail regarding their various skills, behavioural routines and the professional environment in which they are embedded. Hereinafter we analyse the factual scientific results.

9.1. Overview of scientific performance

One of the most basic measures of scientific performance is publications. In the survey we asked our respondents, how many peer-reviewed publications they

[1] Erzsébet Hetesi, University of Szeged
[2] Szabolcs Prónay, University of Szeged

possess. This included publications in journals, books, book chapters and conference proceedings, so we were interested in their total scientific performance. The aggregated results can be found in Table 1.

Table 1. Total number of scientific publications (peer reviewed), including journal papers, conference papers, books and book chapters

Number of publications	Frequency	Percent
0	28	6.7
1	49	11.8
2-5	141	34.0
6-10	80	19.3
11-20	69	16.6
21+	48	11.6
Total	415	100.0

Source: Own survey.

From the table, you may see that the respondents in general are present on the map of publications.All in all 7% do not possess any publications; however more than one quarter of the respondents possess more than 10 publications. The majority are located between these two extremes, as every third respondent possesses between 2 and 5 publications, and every fifth respondent possesses between 6 and 10.

The Chi-Square test implies that regarding countries there is significant difference between publication activity (sig=0,00). It is worth mentioning that the Hungarian and Czech researchers were most productive, while Slovakians were the least productive (see Table 2).

Table 2. Number of publications according to country

Number of publications	Country				Total
	POL	*HUN*	*CZE*	*SVK*	
None	16	4	8	0	28
1	9	18	10	12	49
2-5	22	26	30	63	141
6-10	23	18	28	11	80
11-20	21	16	25	7	69
21+	10	18	8	12	48
Total	101	100	109	105	415

Source: Own construct.

According to Chi-Square test there is no significant difference (sig=0,740) according to gender.

There is however significant difference according to academic rank (Pearson Chi-square sig=0,000) and age (Pearson Chi-square, sig=0,000) regarding the number of publications. Table 3 demonstrates the differences of publication performance according to academic rank.

Table 3. Number of publications according to academic rank/position

Academic rank		Number of publications						Total
		0	*1*	*2-5*	*6-10*	*11-20*	*21+*	
PhD student/ Research Assistant	Count	27	49	128	68	45	13	330
	% within	8.2%	14.8%	38.8%	20.6%	13.6%	3.9%	100.0%
Assistant Professor	Count	1	0	13	12	24	31	81
	% within	1.2%	0.0%	16.0%	14.8%	29.6%	38.3%	100.0%
Associate Professor	Count	0	0	0	0	0	4	4
	% within	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	Count	28	49	141	80	69	48	415
	% within	6.7%	11.8%	34.0%	19.3%	16.6%	11.6%	100.0%

Source: Own construct.

In the case of associate professors, all 4 respondents possessed more than 21 publications, while this was only true of 4% of the PhD students/Research Assistants. Two thirds of the assistant professors possessed at least 11 publications.

It is clear that there is an obvious correlation between the position on the scientific ladder and the publication performance. It is noteworthy that 27 PhD students/ Research Assistants do not have any publications, and 49 others possess only one. Presumably, these people are in an early stage of their education; however the fact that every fourth young scholar has such a low publication performance is thought-provoking, especially when considering that previous publication performance from the MA educational level has significance at the stage of preliminary exams of some PhD Schools.

Interestingly, the publication performance did not show significant correlation with any variable that measured the supporting system and environment at the university, so neither dotation, nor even the role of the mentor, seem to be crucial factors in publication performance. Furthermore there was no correlation between questions regarding behaviour (e.g. „I am always prepared"; „I get chores done right away", etc.) and publication performance, hence it seems that both inside and outside motivations are not determinative in this area. Table 4 indicates this, where there is significant correlation regarding all answers.

Table 4. Spearman's correlations with the question: Specify the total number of your scientific publications (peer reviewed), including journal papers, conference papers, books and book chapters

Question	Spearman's Correlation
I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	0,274*
I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	0,287*
Specify the number of universities in your country with which you directly cooperate in research and publishing	0,287*
Specify the number of universities in foreign countries with which you directly cooperate in research and publishing.	0,303*
I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	0,308*
I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing.	0,311*
I maintain close personal relationships with a group of scholars from other unis in my country.	0,316*
Specify the number of foreign scholars from more developed countrieswith whom you directly cooperate in research and publishing	0,320*
I have relationships with scholars at my uni with whom I cooperate directly in research and publishing.	0,348*
Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	0,376*
I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	0,387*

* Correlation is significant at the 0,01 level (two tailed)
Source: Own construct.

From Table 4 it is clear that cooperation, scientific collaboration and publication performance correlate. Certainly the extended publication performance affects the creation of scientific relationships, but presumably this influence is dominant in reverse, namely the extended scientific relationships have a positive effect on the publication performance of young scholars.

This is one of the most important research results, according to which the scientific collaborations and relationships are more related to the individual's scientific performance, than the inner motivation and behaviour of the individual, or even the university incentive system. Moreover the influence of the researcher's mentor is exceeded by the influence of co-researchers.

Alongside quantity, scientific activity can be measured also by the quality of the publications. We requested respondents to specify the number of books or monographs ever published by them (only scientifically reviewed ones), excluding book chapters (Table 5).

From this table it is clear that their scientific activity extends mainly to conference proceedings and articles; young researchers tend to publish books and monographs less often. Three quarter of the respondents had not published a book, and only 4,5% of them have more than two published books. This is understandable, as a monographs

is one of the most significant outputs of scientific performance, thus it tends to be achieved after a certain level of experience.

Table 5. Number of books or monographs ever published by the young scholars

Number of books	Frequency	Percent
0	314	75,7
1	59	14,2
2	23	5,5
3	10	2,4
4	6	1,4
8	1	,2
9	1	,2
12	1	,2
Total	415	100,0

Source: Own construct.

Regarding countries there is difference between the publication of books and monographs according to the ANOVA (sig=0,000, Table 6).

Table 6. The number of books or monographs ever published by the scholars (only scientifically reviewed ones), excluding book chapters – by country

Country	N	Mean	Std. Dev.
Poland	101	0,82	1,899
Hungary	100	0,22	,579
Czech	109	0,20	,505
Slovakia	105	0,58	,938
Total	415	0,45	1,143

Source: Own construct.

From the table it appears that in Poland the rate of authorship of books and monographs is significantly higher than in the other countries. However it is notable that the value of standard deviation is relatively high, so some active authors raise the mean value. Actually we have three surpassing values (noting 8, 9 and 12 books). The other interesting fact is that on average the Polish sample contains the greatest number of PhD student/Research Assistants (90%) and the three surpassing values can be connected to these academic ranks. This means that there is no distortion regarding the supposed elevation of the mean value due to the activity of Assistant Professors or Associate Professors. In Slovakia the rate of book publishers is above average. The Hungarian and Czech statistical population has a quite low rate of book publication.

Regarding gender, there was no significant difference in the case of book and monograph publications (sig=0,213): men attained relatively higher mean values (0,54) than women (0,4); however the standard deviation is quite high among men (1,371). So we can say that regarding the most active authors we can find more men, and this raises the publication mean value of the group.

As we previously hinted, academic rank has a significant effect in general on publication performance. This is also true with regard to the publication of books and monographs, as we can see in Table 7 and the related ANOVA (sig=0,000).

Table 7. The number of books or monographs ever published by the scholars (only scientifically reviewed ones), excluding book chapters – by position

Academic rank / position	N	Mean	Std. Deviation
PhD student / Research Assistant	330	0.33	1.126
Assistant Professor / Adjunct	81	0.84	1.042
Associate Professor / University Professor	4	2.50	1.000
Total	415	0.45	1.143

Source: Own construct.

The results are not surprising; the respondents with a higher academic rank possess more published books.

In the case of books and monographs we aimed to reveal background motivations and correlations, so we used correlation analysis to examine what factors correlate with publication performance. The results were similar to those regarding the average publication performance. Namely, the number of books and monographs was independent of dotation, university motivational systems and the personal attitude, morale and professional abilities of the individual. However, there was a significant correlation between the number of published books and monographs and the scientific network of the individual. It is notable that in this case the publication performance did have high correlation with all the variables of scientific relations (unlike in the case of general publication performance); that is, it mostly correlated with variables of extended relations (connections with other universities' researchers and foreign researchers).

The extended network suggests an advanced research routine and commitment, and this can also provide significant assistance during the process of the writing and publication of a book, which may be an explanation regarding the success of young scholars regarding this topic.

Table 8. Pearson's correlation with the question: Specify the total number of your scientific publications (peer reviewed), including journal papers, conference papers, books and book chapters

Question	Pearson's Correlation
I maintain close personal relationships with group of scholars from other unis in my country.	0.149*
Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	0.173*
Specify the number of universities in foreign countries with which you directly cooperate in research and publishing.	0.173*
I maintain close personal relationships with group of foreign scholars from more developed countries	0.181*
Specify the number of universities in your country with which you directly cooperate in research and publishing	0.209*
Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	0.233*
I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing.	0.250*
I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	0.255*
I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	0.265*

* Correlation is significant at the 0,01 level (two tailed)
Source: Own construct.

9.2. Publications in scientific journals

The general method of scientific performance disclosure is the publication of papers or articles in journals. In certain ways, the publication of articles is a less difficult task than the publication of a monograph, as an article is much shorter in length and needs narrower knowledge of certain topics. On the other hand, because of stricter blind review instructions, it is a more regulated and more highly-critiqued genre than the publication of a book.

In our research we wished to reveal the quantity and rate of publication of articles by young scholars in journals. We now present these results in detail.We asked how many articles they had published during the period of their scientific work. The results are shown in Table 9.

We can see that one fifth of the respondents do not have any articles published. In practical terms this means that every fifth young scholar is actually „invisible" for the scientific public. This rate is relatively high compared to the fact that previously 6,7% of the respondents answered that they do not possess any publications. This also supports the fact that for young scholars often conference papers serve as a basis of scientific publications.

Table 9. Number of papers in scientific journals (domestic or international) ever published by the scholar

Number of journal publications	N	Percent
0	90	21.6
1	62	14.9
2-4	156	37.6
5-7	50	12.0
8-10	25	6.0
11+	32	7.7
Total	415	100.0

Source: Own construct.

According to the value of the Pearson Chi-square test (sig=0,003) there are significant differences between countries. Table 10 indicates the data regarding this topic.

Table 10. Number of journal publications – according to countries

Country		Number of journal publications						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
POL	Count	29	14	23	14	6	15	101
	% within POL	28.7%	13.9%	22.8%	13.9%	5.9%	14.9%	100.0%
HUN	Count	20	12	42	16	8	2	100
	% within HUN	20.0%	12.0%	42.0%	16.0%	8.0%	2.0%	100.0%
CZE	Count	25	18	39	13	4	10	109
	% within CZE	22.9%	16.5%	35.8%	11.9%	3.7%	9.2%	100.0%
SVK	Count	16	18	52	7	7	5	105
	% within SVK	15.2%	17.1%	49.5%	6.7%	6.7%	4.8%	100.0%
Total	Count	90	62	156	50	25	32	415
	% within	21.7%	14.9%	37.6%	12.0%	6.0%	7.7%	100.0%

Source: Own construct.

It is visible that in Poland the situation is quite polarized:in one hand,28,7% of the respondents do not possess any publications in journals, on the other hand almost 15% of the polish respondents has more than 11 publication. Both of these numbers are significantly higher than the averages of the whole sample (21,7% and 7,7%). Slovakia and Hungary has similar situation: in both countries we can see that most young scholars are „visible" on the map of publications, that is, they have published articles. In both countries the rate of individuals possessing more than 10 article publications is low. In the Czech Republic, the distribution is the most even regarding aggregated means of article publication. However we can find a significantly high number of individuals (10) with outstanding publication performance, as they possess more than 10 publications in journals.

Regarding gender, there is no significant difference (Pearson Chi Square sig=0,572) in the case of publications in journals; however there is significant difference regarding academic position (Pearson Chi Square sig=0,000) as seen in Table 11.

Table11. Number of journal publications – according to academic rank

Academic rank		Number of Journal publications						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
PhD student/ Research Assistant	Count	85	57	138	28	10	12	330
	% within rank	25.8%	17.3%	41.8%	8.5%	3.0%	3.6%	100.0%
Assistant Professor	Count	5	5	18	22	13	18	81
	% within rank	6.2%	6.2%	22.2%	27.2%	16.0%	22.2%	100.0%
Associate Professor	Count	0	0	0	0	2	2	4
	% within rank	0%	0%	0%	0%	50.0%	50.0%	100.0%
Total	Count	90	62	156	50	25	32	415
	% within rank	21.7%	14.9%	37.6%	12.0%	6.0%	7.7%	100.0%

Source: Own construct.

The results are not surprising. All associate professors have more than 8 publications in journals, while the same is true regarding the 38% of assistant professors. 43% of the PhD students/research assistants have 1 publication in journals and this group includes almost all (85 out of 90) of the respondents who do not have any published articles. Their values are understandable, as scientific promotion strongly depends on publications in journals, so individuals with higher academic ranks need articles to be published.

However, not only academic promotion, but age also affects the publication performance in journals, which is indicated by the Pearson Chi-square test (sig=0,000, Table 12).

Table12. Number of journal publications – according to age

Age group (years)		Number of journal publications						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
23-26	Count	43	29	46	4	2	1	125
	% within 23-26	34.4%	23.2%	36.8%	3.2%	1.6%	.8%	100.0%
27-30	Count	33	23	79	24	9	12	180
	% within 27-30	18.3%	12.8%	43.9%	13.3%	5.0%	6.7%	100.0%
31-35	Count	14	10	31	22	14	19	110
	% within 30-35	12.7%	9.1%	28.2%	20.0%	12.7%	17.3%	100.0%
Total	Count	90	62	156	50	25	32	415
	% within	21.7%	14.9%	37.6%	12.0%	6.0%	7.7%	100.0%

Source: Own construct.

Age and scientific rank evidently correlate with each other; thus similarly to previous results we can make certain conclusions by the analysis of this table. With the exception of 1 individual, all respondents of the 23-26 age category are in the group of PhD student/research assistant, hence we can see the same results as earlier, only more clearly. Without exception, individuals younger than 26 years possess a maximum of 4 publications in journals; however we need to note that there are 3 outstanding researchers (of which 2 are Polish and 1 is Slovakian), who in spite of their young age possess at least 8 publications in journals. The young scholars who are older than 30 years have at least written 5 articles, so they have real publication performance, but we need to point out that 22% of them have 1 or no publications.

9.2.1. Publications in ISI Journals

If we state that publications in journals are the entry ticket to academic life, then ISI journals publications mean the entry to international academic life. By ISI journals we mean journals that possess an impact factor according to the Thomson Routers ranking. Unfortunately it is true in general that in business studies, it is not common in the Visegrad Group to publish in these journals; furthermore it is a great challenge to be included in this elite circle. This is proven by the low rate of individuals possessing ISI journal publications among the Visegrad Group countries (Table 13).

Table 13. Total number of ISI journal publications

Number of ISI journal publications	Frequency	Percent
0	355	85.5
1	32	7.7
2	12	2.9
3	6	1.4
4	4	1.0
5	2	.5
6	4	1.0
Total	415	100.0

Source: Own construct.

It can be seen that there is a huge number of respondents who are not present on the international scientific map. 85,5% have no ISI publications and only 16 respondents possess at least 3 publications. In this case it is not the quantity of the ISI publications that is significant, but their existence. Individuals who possess publications in ISI journals can be located on international levels of science.

ANOVA indicates that there is no significant difference between countries regarding ISI journal publications (sig=0,309); however, academic rank and age is determining in this case.

With higher academic rank comes even more significant research experience, so there is higher publication performance in this case.

Table 14. Number of ISI publications – according to academic rank

Academic rank	N	Mean	Std. Deviation
PhD student / Research Assistant	330	.13	.515
Assistant Professor	81	.86	1.490
Associate Professor	4	2.75	3.202
Total	415	.30	.926

Source: Own construct.

We can see from Table 14 that the ISI publication performance of PhD students/ research assistants is exiguous. While assistant professors have 1 publication on average, the 4 associate professors have nearly 3 ISI publications per person. However this cannot be generalised due to the high value of standard deviation. In summary none of the groups can be said to have significant international roles in this case. But we can be optimistic, because the mean rate of 0,86 regarding assistants professors (considering high value of standard deviation) indicates that some of them are on the international scientific map with at least one important publication. Regarding the results of the associate professors we have to moderate our anticipation, because it is not evident that more publications will be issue after the first success. From a generational point of view, an explanation can be that most assistant professors were socialized under a more internationally open atmosphere and they had better English language education at school than older associate professors.

Besides academic ranking, age also significantly determines scientific success (ANOVA sig=0,000).

Table 15. Number of ISI publications – according to age group

Age group	N	Mean	Std. Deviation
23-26	125	0,02	0,154
27-30	180	0,22	0,703
31-35	110	0,75	1,455
Total	415	0,30	0,926

Source: Own construct.

Here we can see a clear relatedness, as while in the case of young scholars we cannot speak of publication performance, the age group of individuals older than 30 year has a mean value of 0,75 ISI paper. It seems that the age of 30 is a milestone, as the ISI publication performance of the age group of 31-35 years is 3,5 times greater than the performance of the segment of 27-30 years.

Regarding international publication performance, there is a significant gender difference according to the ANOVA (sig=0,047). The 252 women participating in the research possesses a mean of 0,23 ISI journal publications per capita, while in case of the 163 male respondents, this value is twice as great (0,41). We cannot draw evident conclusions from this, as the number of respondents who have ISI journal publicationsis low, so in this case only a few individuals are enough to generate significant differences. The higher value from the answers of men is affected by the fact that from the 4 respondents who declared 6 ISI publications, all were men. Furthermore there is twice as many women with 0 publications as men with 0 publications. In the other categories, the rates of men and women were similar.

We managed to reveal the background of the publication performance, as we put an emphasis on identifying skills and abilities that make a researcher suitable for publication in ISI journals. Interestingly the ISI publication indicators correlated poorly or not at all with questions mapping research attitude, abilities, university infrastructure and motivational systems. In the case of personal indicators, only command of English (0,128), research skills (0,138), and a sense of duty (0,158) were determining, while among institutional terms only the availability of money (0,182) correlated slightly with ISI publication performance. As we can see in Table 16, the above factors have significant but lower correlation with the examined variable (ISI publications), while notable correlation was only present regarding questions mapping cooperation.

We can see from table 16 that successful international publications correlate with relatively many factors; however factors regarding (mainly international) cooperation emerge even more notably. This means that young scholars who are more successful in the case of ISI journal publications have a wider network of relations. It is clear that this connection is interdependent, as an international network of relations is important regarding publications, but at the same time international publications contribute to the broadening of the international network. Furthermore, we can assume background drivers, meaning individuals who are more active as researchers tend to have outstanding publication activity and also a wider network of relations.

We can summarize that regarding ISI journal publications, the area of the most authoritative field of international scientific activity, the role of openness, cooperation and networks is crucial. If we want to enhance the relatively poor international

journal publication activity of the young scholars of the Visegrad Group, we should urge international networking activities.

Table 16. Correlation with the number of ISI journal publications

Question	Pearson's Correlation
In comparison to other scholars at my faculty I have good English speaking skills	0.128*
I have all appropriate research skills (e.g. statistics, research methodology, data collection)	0.138*
Specify the number of universities in your country with which you directly cooperate in research and publishing	0.154*
I maintain close personal relationships with group of scholars from other universities in my country	0.157*
I shirk (avoid) my duties	-0.158*
I maintain close personal relationships with groups of foreign scholars from more developed countries	0.167*
I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	0.169*
I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	0.178*
When money is available, my university has systematic and fair mechanisms for monetarily recognizing and rewarding achievements in research (e.g. bonuses for top-tier publications)	0.182*
I have relationships with scholars from other universities in my country with whom I cooperate directly in research projects and publishing	0.190*
I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	0.193*
Specify the number of universities in foreign countries with which you directly cooperate in research and publishing	0.211*
Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	0.235*
Specify the number of scholars from other universities in your country with whom you directly cooperate in research and publishing	0.321*

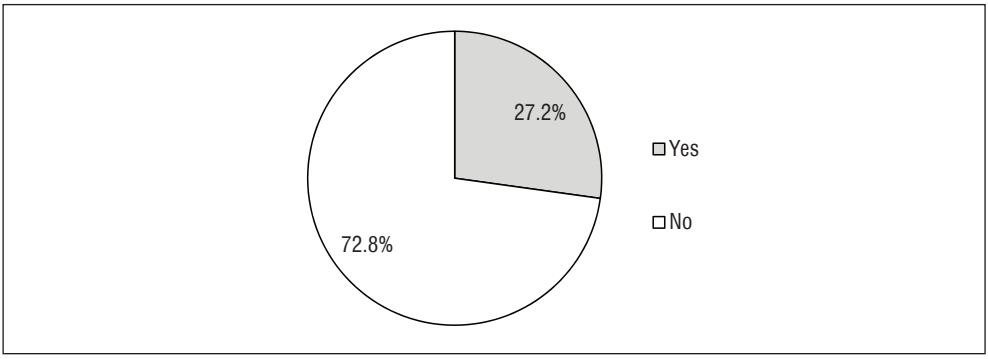
* Correlation is significant at the 0,01 level (two-tailed)
Source: Own construct.

9.2.2. Intentions regarding international publication activity

As we have previously discussed, it is a challenge for the researchers of the Visegrad Group to publish in international ISI journals, hence we can find out more about the young scholars' publication motivation if we examine the initiative of publication rather than only the quantity of international publications. To reveal this we asked if our respondents have ever tried to publish in any ISI journals. The results are presented in Figure 1.

As we can see, the attempt to publish is more frequent than the number of successful publications. This was expected; however the difference is surprising. While comparing it to previous results, where the 14,5% of respondents had ISI publications, the rate of initiatives (27,2%) is double that of successful results (14,5%). On the other hand it is interesting that three quarters of the respondents

Figure 1. Have you ever tried to publish in any ISI journals (Thomson ISI list with impact factor) by submitting a paper to such journals?



Source: Own construct.

did not even try to publish in international ISI journals. This indicates that it is not a requirement and not strictly part of academic progress in the Visegrad Group to publish in internationally relevant journals.We should however check the significant differences between the Visegrad Group (Chi-Square sig=0,010, see table 17).

Table 17. Trying to publish in ISI journals – according to countries

Country		Have you ever tried to publish in any ISI journals?		Total
		Yes	*No*	
POL	Count	15	86	101
	% within POL	14.9%	85.1%	100.0%
HUN	Count	28	72	100
	% within HUN	28.0%	72.0%	100.0%
CZE	Count	37	72	109
	% within CZE	33.9%	66.1%	100.0%
SVK	Count	33	72	105
	% within SVK	31.4%	68.6%	100.0%
Total	Count	113	302	415
	% within	27.2%	72.8%	100.0%

Source: Own construct.

Table 17 shows that Polish researchers have the lowest rate of people trying to publish (15%), approximately half that of the other countries'. If we compare this result with the fact that Poland has the most polarized publication performance, we can see that among the young Polish scholars we can find some really ambitious individuals and also a large number of comparatively passive people. The results of the other three countries are similar to each other, but the results of the Czech researchers are a bit above those of Slovakian and Hungarian respondents.

Academic rank has significant influence on these ambitions (Chi-square sig=0,000). While among PhD students/research assistants every fifth respondent tried to publish in ISI journals, 59% of assistant professors tried the same. The results for associate professors are not authoritative due to the small number of associate professors (4 individuals) in the sample; however it is notable that 2 of them never sought international publication.

We can summarize that the motivation of seeking international publication is not strong enough among the researchers from the Visegrad Group, especially in Poland. The moderate or low motivation is parallel with the low success rate, because only every second individual who tried international publication was successful.

9.3. Publications in the past 2 years

It is worth examining how publication rates appear if we only consider the performance of the last 2 years. This was important for us to ask, because the quantity of publications of more experienced individuals could be high not because of their higher level of productivity, but simply because they spent more years in the academic sphere, so they had more time to publish than younger scholars. With this analysis the aim was to point out how active the respondents had been in the past 2 years.In Table 18 we can see that one quarter of the respondents (107 people) were not so active in the past 2 years, as they published only one scientific publication. This is 30 people more than the number of those who declared to have a maximum of 1 scientific publication, so there are 30 individuals in the sample who had publications, but who were passive in the past 2 years. This is 7% of the sample, which needs to be considered a high rate, because we are speaking of young scholars. Nowadays researchers cannot afford to be passive for 2 years. It is encouraging, however, that almost 20% were very active in the past 2 years and published an annual value of 4 publications per year.

Table 18. Total number of scientific publications in the last 2 years

Number of scientific publications in the last 2 years	Frequency	Percent
0	56	13.5
1	51	12.3
2-4	148	35.7
5-7	83	20.0
8-10	34	8.2
11+	43	10.4
Total	415	100.0

Source: Own construct.

There was significant difference between countries (Pearson Chi Square sig=0,004) regarding the past 2 years' publication performance.The results are quite similar to those regarding publication activity in general. Polish responses are relatively polarized, because comparing it to the average value (13,5%) we can find a high number (22,8%) of individuals who did not publish in the last year, but the number of people publishing more than 10 publications is also above average. We should note that 2% of Slovakian respondents (2 people) declared that they did not publish in the last 2 years. This is a very low rate compared to the average (13,5%). This may imply that Slovakian researchers were productive in scientific areas. This cannot be said about Hungarian respondents, as 16% of them did not publish in the same period. Young Czech scholars managed a balanced publication performance, with a publication rate above average.

Table 19. Number of scientific publications in the last 2 years – according to countries

Country		Number of scientific publications in the last 2 years						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
POL	Count	23	11	28	20	4	15	101
	% within POL	22.8%	10.9%	27.7%	19.8%	4.0%	14.9%	100.0%
HUN	Count	16	8	40	18	10	8	100
	% within HUN	16.0%	8.0%	40.0%	18.0%	10.0%	8.0%	100.0%
CZE	Count	15	13	34	24	11	12	109
	% within CZE	13.8%	11.9%	31.2%	22.0%	10.1%	11.0%	100.0%
SVK	Count	2	19	46	21	9	8	105
	% within SVK	1.9%	18.1%	43.8%	20.0%	8.6%	7.6%	100.0%
Total	Count	56	51	148	83	34	43	415
	% within count.	13.5%	12.3%	35.7%	20.0%	8.2%	10.4%	100.0%

Source: Own construct.

The gender of the respondents was not significant in this regard (Pearson Chi Square sig= 0,998);however, academic rank (Pearson Chi Square sig= 0,000) and age(Pearson Chi Square sig= 0,000) were significant factors in connection with the publication rate of the past 2 years.

In the case of academic rank, the higher the rank, the higher the publication performance in general. However if we focus only on the last 2 years, we do not get such a definite connection (Table 20).

In general it is true that higher academic rank means higher publication performance; however we can see that among associate professors we can find individuals who published 2-4 publications in the last 2 years, and the deficit among PhD students/research assistants is much lower than in case of journal articles. While 15% of the latter had more than 5 journal articles, 65% of assistant professors had the same value (see Table 11). Considering publications of just the last 2 years,

32% of PhD students/research assistants had more than 5 publications, while in the case of assistant professors, this rate remins 65%. This implies that it is more difficult to publish in journals as a young scholar; on the other hand, in case of PhD students/research assistants, academic standing(or the lack thereof) plays a significant role in the deficit.

Table 20. Number of scientific publications in the last 2 years – according to academic rank

Academic rank		Number of Journal publications						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
PhDstudent Research Assistant	Count	50	48	126	62	21	23	330
	% within rank	15.2%	14.5%	38.2%	18.8%	6.4%	7.0%	100.0%
Assistant Professor	Count	6	3	20	21	12	19	81
	% within rank	7.4%	3.7%	24.7%	25.9%	14.8%	23.5%	100.0%
Associate Professor	Count	0	0	2	0	1	1	4
	% within rank	0%	0%	50.0%	0%	25.0%	25.0%	100.0%
Total	Count	56	51	148	83	34	43	415
	% within rank	13.5%	12.3%	35.7%	20.0%	8.2%	10.4%	100.0%

Source: Own construct.

We also analysed the aggregated performance of the last 2 years according to age group, and the results are shown in Table 21.

Table 21. Number of scientific publications in the last 2 years – according to age group

Age group (years)		Number of journal publications						Total
		0	*1*	*2-4*	*5-7*	*8-10*	*11+*	
23-26	Count	17	25	53	21	4	5	125
	% within 23-26	13.6%	20.0%	42.4%	16.8%	3.2%	4.0%	100.0%
27-30	Count	26	15	63	36	21	19	180
	% within 27-30	14.4%	8.3%	35.0%	20.0%	11.7%	10.6%	100.0%
31-35	Count	13	11	32	26	9	19	110
	% within 30-35	11.8%	10.0%	29.1%	23.6%	8.2%	17.3%	100.0%
Total	Count	56	51	148	83	34	43	415
	% within	13.5%	12.3%	35.7%	20.0%	8.2%	10.4%	100.0%

Source: Own construct.

We get similar results as in the case of our general analysis of journal publications regarding age groups; however, results and differences are not so great between segments. It is clear that people over 30 were the most active in the past 2 years. Every fourth individual from this age group published an average of 4 publications per year. It is true that by aggregating all journal publications, the publication performance of older individuals is lower in the last 2 years. It is interesting that the highest rate for people who did not publish in the last 2 years can be found in the age group 27-30

(14,4%). This is a surprising result, as these young scholars should be expected to provide the most active attitude regarding publication performance, as usually this is the period during which one writes the doctoral dissertation, doing significant research, and being under pressure of publishing.

On the whole we can see that the publication performance of the last 2 years holds similar results to publication performance in general. The difference is the lower deficit of younger people and individuals with lower academic rank.

9.4. Government grants

In our research project we assume that research activity is a difficult task in the Visegrad Group, and universities can only offer limited financial support to researchers. This is why research scholarships have considerable importance, as they can fill in financial gaps and are able to motivate scholars by making a research career more appealing.

Respondents were asked, how many times they received government grants. Results are shown in Table 22.

Table 22. Total number of received governmental grants

Number of received governmental grants	Frequency	Percent
0	274	66.0
1	97	23.4
2	28	6.7
3	9	2.2
4	6	1.4
5	1	0.2
Total	415	100.0

Source: Own construct.

It can be seen that one third of young scholars received government grants. This is a relatively high rate, as we can assume that young scholars who are at a very early stage of their career have a slim chance of winning a scholarship.

To confirm this suggestion, we should examine the correlation of age and received grants. According to the ANOVA (sig=0,000), they correlate, however differently, as we would assume.

Table 23. Number of governmental grants received – according to age group

Age group	N	Mean	Std. Dev.
23-26	125	0,38	0,669
27-30	180	0,39	0,772
31-35	110	0,83	1,082
Total	415	0,50	0,859

Source: Own construct

In Table 23 it turns out that individuals in the age groups 23-26 and 27-30 received government grants at about the same rates. Here we can also confirm that age 30 is a dividing line regarding young scholars, as individuals in the age group 31-35 received government grants at twice the rate of those who are younger.We can assume that not age, but research experience, is the determining factor regarding the awarding of government grants, so it is noteworthy to examine the correlation of the academic position and scholarships granted. There is significant correlation according to ANOVA (sig=0,000). The 4 associate professors have significant research experience, so it is not surprising that they have outstanding values regarding grants received (with a mean of 1,5). However it is more unexpected that the gap between assistant professors and PhD students/research assistants is also quite large. The former group has been granted 0,98 scholarships, while this value regarding the latter is only 0,38. This implies that assistant professors are more active in this area, and try to bolster their research career by government grants.

There is significant difference between countries regarding the granted scholarships (ANOVA sig=0,000). As we can see from Table 24, Hungarian researchers were granted a larger number of scholarships (0,78); however, due to the high rate of standard deviation, it is clear that some outstanding researchers raise the mean rate. On the other hand in the Czech Republic and in Poland, the rate of receiving government grants is quite low.

Table 24. Number of governmental grants received – according to country

Country	N	Mean	Std. Dev.
Poland	101	0.27	.706
Hungary	100	0.78	1.097
Czech	109	0.39	.757
Slovakia	105	0.59	.756
Total	415	0.50	.859

Source: Own construct.

In the past few years in Hungary, the financial support of higher education has been reduced and the wages of university teachers have been frozen for 6years now (!); thus remaining the same in nominal value, so the young individuals who want to stay in this field of profession tend to harness the advantages of increasingly significant government grants, so this high value is present due to opportunities and financial pressure.

Not only the government, but the European Union and private enterprises can also provide scholarships; however these are less popular among young scholars than government grants.

Table 25. Total number of received business and EU grants

Number of grants received	Business grants		EU grants	
	N	Percent	N	Percent
0	354	85.3	350	84.3
1	33	8.0	47	11.3
2	13	3.1	13	3.1
3	7	1.7	2	0.5
4	2	0.5	1	0.2
5	4	1.0	1	0.2
8	1	0.2	1	0.2
9	1	0.2	0	0.0

Source: Own construct.

Table 25 shows that young scholars received private and EU-funded scholarships in a quite similar rate, and these rates are much less than the rate of government grants. One third of individuals received government grants in the sample, while only 15% of individuals received privately- and EU-funded scholarships. The reason behind this may be the fact that government grants are much more widely available and better known.

According to ANOVA, there is difference between EU-funded (sig=0,19) and private (sig=0,45) scholarships according to countries.

Table 26. Number of received business and EU grants – according to country

Country	Business grants			EU grants		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
POL	101	0.42	1.395	101	0.17	0.511
HUN	100	0.39	0.920	100	0.41	0.767
CZE	109	0.33	0.933	109	0.13	0.387
SVK	105	0.08	0.267	105	0.23	0.953
Total	415	0.30	0.967	415	0.23	0.695

Source: Own construct.

We can see from Table 26 that Hungarian researchers are effective applicants regarding EU-funded and private scholarships. Interestingly, Polish researchers tend to win private scholarships at a much higher rate than government or EU-funded grants, compared to scholars from the other countries. There is an outlier value regarding Slovakian researchers where the rate of government grants is relatively high, their performance is average regarding EU-funded scholarships and there are almost no private scholarships available. In the Czech Republic, the situation is the opposite. There we can find a moderate amount of government and EU-funded grants and a much more significant private scholarship system.

According to ANOVA we can confirm that academic rank influences the chance of winning government grants (sig=0,000), private- (sig=0,001) and EU-funded (sig=0,000) scholarships (Table 27).

Table 27. Number of grants received – according to academic rank

Academic rank	Governmental grants			Business grants			EU grants		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
PhD stud./Res. Assist.	330	0.38	0.683	330	0.26	0.913	330	0.14	0.433
Assistant Professor	81	0.98	1.193	81	0.37	0.813	81	0.58	1.234
Associate Professor	4	1.50	1.915	4	2.00	4.000	4	0.75	0.957
Total	415	0.50	0.859	415	0.30	0.967	415	0.23	0.695

Source: Own construct.

Table 27 shows that experienced researchers can compete effectively regarding outside sources and grants. The correlation between the academic ranks and grants won is relatively proportional. In case of government grants and EU-funded scholarships there is a greater gap between PhD students/research assistants and assistant professors. In connection with entrepreneurial scholarships, the 4 associate professors distort the overall picture, while PhD students/research assistants and assistant professors have difficulties winning funds from these types of sources.

All in all we can say that in the field of business sciences, among research scholarships, government grants have greater significance, as only every seventh respondent can report EU-funded or private scholarships. In general Hungarian researchers are most successful overall regarding the awarding of grants, while Slovakian researchers can mostly harness government grants, and Polish researchers can better harness private scholarships.

9.5. Membership in journal editorial boards

Public scientific activity can be measured with publications, but on the other hand, participation in scientific communities is also an important indicator. One of the most widely spread forms of community participation is membership in journal editorial boards. Young scholars were asked how much they contribute to scientific life: do they have any role as reviewers and are they member of any journal's editorial board? From Table 28 we can see that young scholars' community participation in such activities is low.

Table 28. Journal editorial role

	N	Percent
Member of editorial board	20	4,8
Member of ISI editorial board	5	1,2
Blind reviewed for ISI journals	21	5,1

Source: Own construct.

Approximately 5,0% of respondents are members of an editorial board, and an equal procent have blind reviewed for ISI journals. From the 415 respondents, only 5 individuals (4 Polish and 1 Slovakian) are members of an ISI editorial board, which is about 1% of the sample. Interestingly, of these 5 individuals, 1 is an associate professor, 3 are assistant professors and only 1 is PhD student/research assistant – the latter fact needs to be considered.

There is no significant difference among countries regarding the existence of the blind reviewer role (Chi-Square sig=0,176), but there is significant difference regarding academic status (Chi-Square sig=0,000).

Table 29. Journal editorial role – according to academic positon

	PhD stud./Res. Assist.		*Assistant Professor*		*Associate Professor*	
	N	Percent	N	Percent	N	Percent
Member of editorial board	9	2,7%	9	11,1%	2	50%
Member of ISI editorial board	1	0,3%	3	3,7%	1	20%
Blind reviewed for ISI journals	5	1,5%	14	17,3%	2	50%

Source: Own construct.

According to Table 29 we should point out that from the small segment of associate professors only two individuals are active in scientific public life. Assistant professors make up the most of the individuals doing editorial activities – however it is notable that they are not so active either; only the rate of 17,3% of blind reviewer roles is

considered adequate. Among the PhD students/research assistants we can find only a few individuals who participate in editorial activities, however this is not unexpected.

All in all we can say that the young business scholars of the Visegrad Group participate at a sadly low rate in editorial activities of journals and they are completely absent from the editorial board of international journals. The only exception is a certain number of blind reviewer activities; however this level too is far from adequate. Of course we must accept that membership on an editorial board requires a large amount of scientific experience and wide network relations; thus the ISI journal editorial board membership is the topmost step of international scientific activity. Altogether, if we consider that among the 415 respondents under age 35 of the Visegrad Group, only 5 individuals had achieved the topmost step, we should admit that we have deficiencies in this area.

9.6. Summary – The scientific activities of young scholars of the Visegrad Group

The research results show a negative picture of research productivity; however, there are also some positive signs. In general the rate of scientific activity greatly depends on academic rank, which is not so surprising, as researchers learn the necessary research knowledge during academic promotions while their network broadens, too. This can contribute to their rate of publication. In the case of PhD students/research assistants the main publication activity consists of conference presentations – publications in journals or publication of books is rare. It is notable, however, that there are some outstandingly active authors who have numerous publications in journals and also international journal papers. This indicates that the lower level of academic rank can be considered as a barrier but it is a conquerable obstacle.

Publication of books and monographs is at a low rate not only among PhD students/research assistants, but in general – the only exception is the Polish researchers, among whom the rate was higher. Publications in journals are more frequent; however young scholars tend to possess only 1-2 articles even here. The overall picture was still more negative when examining publications in international journals. Only every seventh respondent had an article published in ISI journals, and furthermore only 27% of them had even tried to publish in these basic platforms of international scientific exposure. The largest deficit was identified regarding involvement in scientific journal activities. Only a limited number of respondents are member of the editorial board of any journal, and there are only 5 individuals who have ISI-journal-related connections. In summary we have to accept that the young

scholars of the Visegrad Group have only a marginal role regarding the international general public of business studies.

We examined the publication performance of the last 2 years, however we could not identify significant differences comparing it with general publication performance. The deficit of young scholars of lower academic rank was slightly less significant if we took only the last 2 years into consideration. It seems that assistant professors and associate professors are more productive than PhD students/research assistants in the dimensions of both total performance and time-based performance.

Besides publication performance we analysed the obtaining of research scholarships, because these are also determinants of scientific performance and they are important tools in a scientific career. This dimension included the largest differences regarding countries. In general, Hungarian researchers obtained government scholarships successfully, while Polish and Czech researchers performed well regarding private scholarships. Slovakia almost wholly lacks entrepreneurial scholarships; however governmental and EU-based scholarships were much more popular. In summary we can say that in the field of grant winning we can experience a moderate performance, which obviously can be enhanced, but it also points to the fact that really ambitious and talented researchers have the financial opportunities to improve their research activities.

What is the difference between scientifically successful individuals and the less successful ones? Interestingly not research attitude, nor skills,nor university infrastructure nor support systems seem to have significant correlation with publication performance. There were differences between countries regarding researcher performance; however these were not unitary – so nationality is not the differentiating factor in that regard either. The significance of academic rank has been mentioned previously. And we may also note that in general, scientific performance correlates with age. It is interesting to point out that the age of 30 was considered a milestone in many cases, as the performance of researchers within the age group of 31-35 rapidly increased compared to other age groups. This implies that after 5-8 years of research, abilities solidify and a certain amount of experience is gathered, that may contribute significantly to scientific research. Besides skills and experience we must highlight another factor that improves with age and that is considered crucial when measuring scientific performance. This factor is the structure and extent of the individual's network of professional contacts.

The most important result of our research is that among the large number of variables – in almost all cases – a specific narrow group of indicators correlated with scientific performance and productivity, namely the group of factors peculiar to international networks. The degree of domestic cooperation was shown to be significant, however the largest effect was due to international networks of

contacts. The most successful researchers possessed professional and international network relations.This is important to emphasise, because if we would like to enhance the scientific career of the Visegrad Group young scholars, we should not focus so heavily on their abilities or motivation, nor the university infrastructure of dotation systems, but on the contribution to their management and enrichment of international professional relations.

We find it especially encouraging that in the frame of the programme in which this research was realized, there is an international networking event planned, which has been confirmed by this research to be the best means to support the young scholars of the Visegrad Group.

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Annex

Survey on Working Conditions in Academia

Dear Sir/Madam, this questionnaire is devoted to various factors that may correlate with the research success of young scholars in business discipline and is a part of a research project conducted jointly by 4 universities from all Visegrad countries (Poland, Slovakia, Czech Republic and Hungary). We cordially ask you to answer all the questions honestly and we assure you that the results of this survey will be only used for scientific purposes (no access of "third person", e.g. university authorities, to the personal data).

If you fill the questionnaire you can optionally apply for participation in international conference for young scholars (22-23 Sept 2014, Katowice, www.lebs.ue.katowice.pl) that will be financed by Visegrad Fund, including conference fee and accommodation free of charge for you. You can contact project coordinator (at national level) via: EMAIL (…).

1. Please specify the extent to which you agree with the following statements describing your character:

Statement	Strongly disagree						Strongly agree
1.1 I am always prepared	1	2	3	4	5	6	7
1.2 I make a mess of things	1	2	3	4	5	6	7
1.3 I get chores done right away	1	2	3	4	5	6	7
1.4 I like order	1	2	3	4	5	6	7
1.5 I shirk (avoid) my duties	1	2	3	4	5	6	7
1.6 I follow a schedule	1	2	3	4	5	6	7

2. Please specify the extent to which you agree with following statements describing you as the scholar:

Statement	Strongly disagree						Strongly agree
2.1 I would describe myself as being internally driven to conduct research.	1	2	3	4	5	6	7
2.2 I have all appropriate research skills (e.g. statistics, research methodology, data collection)	1	2	3	4	5	6	7
2.3 I have appropriate grant-getting skills (e.g. identifying funding sources, preparing applications)	1	2	3	4	5	6	7
2.4 I have appropriate computer skills (e.g. data analysis software, presentation software)	1	2	3	4	5	6	7
2.5 I have appropriate academic writing skills (e.g. persuasive text, scientific style, abstract design)	1	2	3	4	5	6	7
2.6 I am able at my university to allocate sufficient time to my research	1	2	3	4	5	6	7
2.7 Teaching interferes with my research capabilities and productivity	1	2	3	4	5	6	7

2.8 The supervisor of my doctoral dissertation is /was well known in academia at country level	1	2	3	4	5	6	7
2.9 The supervisor of my doctoral dissertation is /was well known by foreign scholars	1	2	3	4	5	6	7
2.10 In comparison to other scholars at my faculty I have good English speaking skills	1	2	3	4	5	6	7
2.11 In comparison to other scholars at my faculty I have good English writing skills	1	2	3	4	5	6	7

3. Please specify extent to which you agree with below statements describing your professional relations:

Statement	Strongly disagree						Strongly agree
3.1 I have a well-developed network of scholars at my uni with whom I discuss research projects.	1	2	3	4	5	6	7
3.2 I have relationships with scholars at my uni with whom I cooperate directly in research and publishing.	1	2	3	4	5	6	7
3.3 I have relationships with scholars from other unis in my country with whom I cooperate directly in research projects and publishing.	1	2	3	4	5	6	7
3.4 I maintain close personal relationships with group of scholars from other unis in my country.	1	2	3	4	5	6	7
3.5 I have a well-developed network of foreign scholars from more developed countries with whom I discuss research projects	1	2	3	4	5	6	7
3.6 I have relationships with foreign scholars from more developed countries with whom I cooperate directly in research and publishing	1	2	3	4	5	6	7
3.7 I maintain close personal relationships with group of foreign scholars from more developed countries	1	2	3	4	5	6	7

4. Please specify the extent to which you cooperate with other scholars or universities:

4.1. Specify the number of scholars from other unis in your country with whom you directly cooperate in research and publishing	...
4.2. Specify the number of universities in your country with that you directly cooperate in research and publishing	...
4.3. Specify the number of foreign scholars from more developed countries with whom you directly cooperate in research and publishing	...
4.4. Specify the number of universities in foreign countries with that you directly cooperate in research and publishing.	...

5. Please specify extent to which you agree with below statements describing situation at your university:

Statement	Strongly disagree						Strongly agree
5.1. At my university I have access to adequate resources such as; computers, statistical software, library materials, technical support, to conduct my research	1	2	3	4	5	6	7
5.2. My university provides me with, or I have from external sources, adequate support to travel to research-based conferences	1	2	3	4	5	6	7
5.3. I have adequate space to conduct my research (e.g. office)	1	2	3	4	5	6	7
5.4. The skills, expertise, and experience of back office personnel at my uni is appropriate for me to conduct my research	1	2	3	4	5	6	7

6. Are you employed at the university?

a) yes b) no (i.e. just a PhD student)

If you are not employed at the university, please go directly to the table 8, if you are employed, please go first to table 7.

7. Please specify extent to which you agree with below statements describing situation at your university:

Statement	Strongly disagree						Strongly agree
7.1. My university has systematic and fair mechanisms for non-monetarily recognizing and celebrating scholars' achievements in research (eg. putting in the newsletter, „toasting")	1	2	3	4	5	6	7
7.2.When money is available, my university has systematic and fair mechanisms for monetarily recognizing and rewarding achievements in research (e.g. bonuses for top-tier publications)	1	2	3	4	5	6	7
7.3. As compared to others at this university, my compensation (e.g. salary and bonuses) is fair for the research work I do.	1	2	3	4	5	6	7
7.4. I have (or had when I was a junior faculty member) a mentor(s) at the university who provides me with valuable guidance in research.	1	2	3	4	5	6	7
7.5. I get constructive feedback, guidance, and suggestions from my department colleagues that help me perform at my best.	1	2	3	4	5	6	7
7.6. I fully understand the research and teaching expectations for the promotion in the position I hold.	1	2	3	4	5	6	7
7.7. I have excellent opportunities at this university to pursue my interests in research	1	2	3	4	5	6	7

7.8. A large portion of my academic department's faculty can be considered to be productive in research (e.g. produce top-tier publications)	1	2	3	4	5	6	7
7.9. A large portion of my academic department's faculty can be considered to be significant external grant „getters"	1	2	3	4	5	6	7
7.10. There is a high expectation in my department for the faculty to be productive in research (e.g. top-tier publications)	1	2	3	4	5	6	7
7.11. There is a high expectation in my department to conduct research that is externally funded	1	2	3	4	5	6	7
7.12. Effective recruitment strategies are in place for attracting the best talent in priority areas at my university	1	2	3	4	5	6	7

8. Please specify the extent to which you agree with below statements describing results of your research works:

8.1. Specify the total number of your scientific publications (peer reviewed), including journal papers, conference papers, books and book chapters	1) none 2) 1 3) 2 -5 4) 6-10 5) 11-20 6) 21 or more
8.2. Specify the number of books or monographs ever published by you (only scientifically reviewed ones), excluding book chapters	...
8.3. Specify the number of papers in scientific journals (domestic or international) ever published by you	1) none 2) 1 3) 2 -4 4) 5-7 5) 8-10 6) more than 10
8.4. Specify the number of papers in ISI journals (Thomson master journals with impact factor) published by you during your whole career	...
8.5. Specify the number of all scientific publications (peer reviewed), including journal papers, conference papers, books and book chapters published by you in the last 2 years	1) none 2) 1 3) 2 -4 4) 5-7 5) 8-10 6) more than 10
8.6. Specify the number of external funding (research grants) you got from the government (country level) during your whole career	...
8.7. Specify the number of external funding (research grants) you got from the foreign governmental institutions during your whole career (eg. EU, Visegrad Fund).	...
8.8. Specify the number of external funding you got from business or industry for your work during your whole career at university	...

9. FINAL QUESTIONS

9.1. Are you tenured?	1) yes 2) no
9.2. What is your current academic rank/position?	1) PhD student / Research Assistant 2) Assistant Professor / Adjunct 3) Associate Professor / University Professor 4) Full Professor
9.3. Your university is	1) public 2) private
9.4. Gender	1) woman 2) man
9.5. Age (in full years)	.....
9.6. Indicate the typical number of student courses you teach in one academic year (including your all academic appointments)	.....
9.7. Indicate the typical number of teaching hours you have in one academic year (including your all academic appointments)	
9.8. Specify how many years you work at your current university	.....
9.9. Specify how many years you work in academia (including doctoral studies)	.....
9.10. Have you ever tried to publish in any ISI journals (Thomson ISI list with impact factor) by submitting the paper to such journals?	1) yes 2) no
9.11. Are you a member of the editorial board in any scientific journals (domestic or foreign)?	1) yes 2) no
9.12. Are you a member of the editorial board in any ISI journals (Thomson ISI list with impact factor)?	1) yes 2) no
9.13. Have you ever blind reviewed papers submitted to any ISI journals (Thomson ISI list with impact factor)?	1) yes 2) no
9.14. Specify your monthly salary interval (gross) at the mother university (excluding external appointments)	1) no salary at all (eg. PhD student) 2) less than 500 Eur 3) 501 - 1000 Eur 4) more than 1000 Eur

Many thanks for participating in the survey.

Basic information about the authors

Erzsébet Hetesi is a Professor of Marketing at the University of Szeged, Faculty of Economics and Business Administration, Hungary, where she has been teaching sociology and marketing. In 2005 she was elected to be Dean of the Faculty. She is a business and management graduate from the University of Pécs. Her PhD was earned from the Pécs University on customer satisfaction. Her field of interest is services marketing, market research and sociology. At present, she is working on a comprehensive research project on customer satisfaction and customer loyalty in the utility industries. She has published several book chapters, teaching materials, and around 200 journal articles and conference contributions in Hungary and abroad, as well. She is a member of different international and local scientific bodies.

Eva Hvizdová – PhD, Assistant Professor at the University of Economics in Bratislava. She is an expert on the area of human resources management, human capital, knowledge management and management of business firms. Despite her young age she has successfully conducted several research projects, participated at other research projects in the role of investigator, published scientific monographs, articles in scientific journals and numerous other outputs. She published research paper in the prestigious journal with impact factor – Journal of Economics (2012). She was awarded by the Dean of the Faculty of Commerce at the University of Economics in Bratislava for academic productivity (2013).

Maciej Mitręga – PhD, Professor of Marketing Research at the University of Economics in Katowice. His research mainly focuses on relationship marketing, dynamic networking capabilities and academic productivity. In 2010 he was Marie Curie Research Fellow at Manchester Business School and then he became the Honorary Research Fellow there. He was awarded by the Ministry of Science in Poland for outstanding doctoral thesis (2005) and for outstanding research (2014-2015). He is the member of the editorial board in Industrial Marketing and Management. He has published in several established international journals, including Industrial Marketing Management, Journal of Business and Industrial Marketing and Transformations in Business & Economics.

Marta Pavliková – PhD. student in the field of study "Branch and Cross-Sectional Economics" at the Faculty of Commerce, University of Economics in Bratislava. She focuses in her educational and research activity on marketing, European marketing and management of business firms. Her research deals mainly with the examination and comparison of management systems and marketing strategies of European retail companies in the conditions of intensifying globalization of trade. She is involved in two domestic research projects and she has published articles in several domestic and international conference proceedings.

Szabolcs Prónay – PhD, an assistant professor at the Institute of Business Studies of the Faculty of Economics and Business Administration at University of Szeged. Dr. Prónay also holds the position of marketing manager at the Directorate for Research Administration and Technology Transfer. He works as a marketing consultant for several business and management consulting firms. He is a founding member of Innovation Club at the University. His research interests includes consumer behaviour, knowledge management and Science to Business (S2B) marketing.

Vojtěch Spáčil – Associate Professor of Marketing Management and Business Marketing at the Faculty of Economics, Technical University of Ostrava. Since 2005 he is a head of Marketing and Business department. His research mainly focuses on customer satisfaction measurement, customer typology and customer loyalty. He was awarded diploma NIMA (Netherland Institute of Marketing). He is a member of ESOMAR (European society for market research and public opinion). He is also a co-editor of journal Economic Revue – Central European Review for Economic Issues.

Anna Ligia Wieczorek – holds a PhD degree in applied linguistics and is a qualitative researcher. Currently works at University of Silesia, Katowice, Poland. Her main research interests revolve around affective variables and their role in the development of an educator; academic writing skills and soft skills, and their impact on an international career of a scholar; Business English.

About International Visegrad Fund

The **International Visegrad Fund** is an international donor organization established and funded by the governments of the Visegrad Group (V4) countries (the **Czech Republic, Hungary, Poland,** and **Slovakia**).

Through funding of joint grant projects and individual mobility programs, the fund promotes the development of civil society and fosters closer ties and improves understanding. It does so not only among people in the V4 region, but also in other countries and regions, particularly the **Western Balkans** and the EU's **Eastern Partnership** countries.

The fund is based in Bratislava, Slovakia, and operates several **grant programs, scholarships, fellowships,** and **artist residencies,** with an annual budget of €8 million. By the end of 2014, nearly 4,500 grant projects and over 2,500 mobility programs will have been funded, in total worth exceeding €60 million.

Non-governmental organizations (NGOs), **civil society organizations** (CSOs), **municipalities and local or regional governments, schools and universities, but also private companies and individual citizens** are eligible for grant support, provided that their projects have a distinct focus on Visegrad region and further develop cooperation among project partners based in the region.

The fund was established in 2000; 2015 marks the 15th anniversary of its existence.