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СОДЕРЖАНИЕ / CONTENTS

О ЖУРНАЛЕ
ABOUT THE JOURNAL

Уважаемые коллеги!

Журнал «Университетское управление: практика и анализ» создан в 1997 году для публикации материалов исследований и кейсов лучших практик управления университетами в целях обеспечения устойчивого развития вузов стран переходной экономики.

Миссия издания – совершенствование управления университетами в современных условиях на основе популяризации практического опыта успешных управленческих команд; публикация материалов исследований управления в вузах; создание общедоступных информационных ресурсов в сети «Интернет» о модернизации и развитии университетского менеджмента; поддержка научных мероприятий.

Ежегодно выпускается 4 номера общим тиражом около 3000 экз., в том числе с распространением электронной версии. Поддерживаются ключевые рубрики, связанные с реформой высшей школы, в которых принимают участие авторы более чем из 50 российских и зарубежных вузов.

Издание входит в базы научных журналов:

– коллекция лучших российских научных журналов в составе базы данных RSCI (Russian Science Citation Index) на платформе Web of Science;

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– международные базы научных журналов EBSCO Publishing, WorldCat, BASE – Bielefeld Academic Search Engine;

– перечень российских рецензируемых научных журналов, в которых должны быть опубликованы основные научные результаты диссертаций на соискание ученых степеней доктора и кандидата наук, рекомендованных ВАК.

«Университетское управление: практика и анализ» – журнал открытого доступа, размещен на сайте https://www.umj.ru/jour, принимает статьи на русском и английском языках.

Приглашаем к сотрудничеству и надеемся, что наш журнал будет полезен в вашей исследовательской и практической работе.

Главный редактор
Алексей Клюев

Dear colleagues!

The journal «University Management: Practice and Analysis» was created in 1997. Ever since, we have been publishing research materials and cases of best practices of university management in order to ensure the sustainable development of universities in countries with transition economy.

The mission of the journal is to improve university management in modern conditions by means of popularizing the practical experience of successful management teams; to publish management research materials in different universities; to create publicly available information resources on the Internet about the modernization and development of university management; and to support scientific events.

There are published 4 issues of about 3000 copies annually, including the distribution of the electronic version. We welcome key topics related to higher education reforms. Our authors are from more than 50 Russian and foreign universities.

The journal is included in a number of databases:

– The collection of the best Russian journals as a part of the RSCI (Russian Science Citation Index) database on the Web of Science platform;

– The database of Russian scientific journals on the e-library.ru platform;

– The international databases of scientific journals: EBSCO Publishing, WorldCat, BASE – Bielefeld Academic Search Engine;

– The State Commission for Academic Degrees and Titles (VAK) list of leading peer-reviewed academic journals prescribed for the publication of research results for scholars seeking advanced academic degrees.

«University Management: Practice and Analysis» is an open access journal (https://www.umj.ru/jour). Articles written in Russian and in English are welcomed.

We invite you to cooperation and hope that our journal will be useful for your research and practical work.

Editor-in-chief
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Vladimir Briller, release editor

As an Executive Vice President of Higher Education Broad Sector Analysis (H.E.B.S.A.) company, Vladimir Briller applies his more than 25-year experience of teaching and senior administration at the U.S. public and private universities to advise colleges and universities on institutional effectiveness, academic governance and accreditation.

Vladimir Briller received his doctorate from Columbia University in New York in 1995 and had post-doctoral training in program and project evaluation. His consulting work has included more than a hundred U.S. and international projects funded by the U.S. government, European Union, the World Bank, Asian Development Bank and private foundations in more than 20 countries.

In 2005, 2007, 2011, 2016 and 2019 he was awarded Fulbright Specialist grants by the U. S. State Department to advise universities in Kazakhstan, Vietnam, Azerbaijan, Ukraine and Myanmar on strategic planning, educational research and data-based decision-making.

As an Associate Professor, Vladimir Briller has taught graduate courses in Systems Analysis, Strategic Planning, Computer Ethics and Data-Based Decision-Making at the College of New Rochelle and NJIT in the U.S. and Higher School of Economics in Russia; he also has multiple publications and presentations at major international conferences.

In the 21st century, the traditional model of higher education looks disrupted; colleges and universities are experiencing difficulty deciding where to focus their attention and dedicate scarce resources. New learning technologies, cultural shifts, innovation, increased revenue pressures, student engagement challenges, and need to enforce ethical behavior in teaching, learning and research make administrators seek new solutions to support their educational mission.

Another biggest challenge is an argument over whether universities should focus on getting every student accepted to higher education institution, or whether they should place more emphasis on career preparation. Both need to be done – and unfortunately, many universities are not doing either one very well. Higher education serves a wide array of students with differing needs, resources and capacities, and problems and opportunities appear quite different from these various perspectives, and actions and interventions can yield different outcomes across different groups of institutions or across different types of students or faculty.

Ten articles in this issue use qualitative and quantitative research methods to address most of the above problems and raise questions or propose solutions that will be helpful to university administrators in different countries.

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THE ETHICAL UNDERPINNINGS OF WORLD CLASS UNIVERSITIES

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Abstract. The public benefits of higher education have long been recognized. Higher education contributes to the public consensus; it transmits knowledge and attitudes toward the role of the citizen; and it may model good behavior in the face of controversy and sometimes intellectual acrimony. Great universities, perform these functions very well. This is among the reasons why attention has been paid to the characteristics of world class universities [1–3] as well as to the threats to university quality in the form of corruption in higher education. Attention has focused on the definition of corruption, the degree to which corruption occurs, and its economic impact [4–7].

This paper combines these lines of scholarship and explores the degree to which world class universities exhibit ethical qualities. The study defines 'ethics' in the management of a university. This includes mission statements which mention ethical issues, transparency in governance and fiscal affairs, codes of conduct for faculty, administrators and students, procedures for adjudication of infractions, and other elements. It then proposes a rating for the ethical infrastructure elements. Universities have been divided into two groups. First are universities listed on the Times Higher Education Supplement (THES) international ranking. The second are random samples of universities in countries which use English, Korean, Japanese, Georgian, Chinese, and Russian languages as the medium of instruction.

The paper poses three questions. First, how common is it for internationally-ranked universities to exhibit ethical characteristics on their websites? The answer is unambiguous: 98 % of the world class universities have established an ethical infrastructure of some kind. Second, which areas of the world are more likely to have universities which exhibit a depth of ethical infrastructure elements on their websites? In terms of countries, the most comprehensive ethics infrastructure can be found in Britain, the U.S., and Japan. Lastly, what is the relationship between the level of international ranking and the depth of ethical ingredients? The strength of the relationship is weak, suggesting that the depth of ethnical infrastructure is not an important determinant of ranking. However given the fact that virtually all ranked THES universities, across 40 counties, mentioned ethical infrastructure elements, suggests that having an ethical infrastructure is an important ingredient associated with other elements in a university's reputation.

Keywords: higher education, infrastructure, ethics, administration, corruption, university management
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Introduction

Higher education helps contribute to the public good in several ways. It helps provide knowledge about social and legal contracts, what they mean, why they are important. It helps provide behavior which is expected under social contacts, behavior of trust in part through the heterogeneous experiences which the young have while they are students. Higher education also helps provide an understanding of the expected consequences for breaking social contracts [4]. As one specialized group studying the issue put it:

> Educated people clearly have many effects on society: educated people are well positioned to be economic and social entrepreneurs, having a far-reaching impact on the economic and social well being of their communities. They are also vital to creating an environment in which economic development is possible. Good governance, strong institutions, and a development infrastructure are all needed if business is to thrive – and none of these is possible without highly educated people [8, p. 39].

These constitute some of the rationales for public investment in higher education. Excellent universities

perform these functions well. This generates attention to the best of these institutions, defined as 'world class' universities. World class universities can be defined in many ways, but there is general agreement that they exhibit: (i) a concentration of talent from around the world in terms of students, faculty and research interests; (ii) abundant resources from multiple private and public sources, research awards, contracts, endowment and tuition, and (iii) enabling internal governance with supporting regulations, autonomy, academic freedom, and professional management [2, 1]. To this list a new set of characteristics concerning an enabling macro-policy environment have been added. These included: state incentives to improve quality and diversity, independence of licensing and accreditation agencies, open competition for scientific research in which universities participate, exception from taxation, clear title to university property, autonomy from governmental managerial regulation, institutional differentiation in mission, and permission to garner a wide variety of income [3].

On the other hand, it has been noticed that many universities are threatened by problems of corruption. Higher education can be corrupt through the illegal procurement of goods and services; cheating in the provision of normal functions (admissions, grading, graduation, housing); professional misconduct (favoring family members, sexual exploitation, bias in grading, research plagiarism); and cheating in the payment of taxes and the use of university property [4–6]. Student surveys of Bulgaria, Moldova and Serbia have revealed that between 35 and 45 percent believed that the official selection process could be by-passed. Approximately one if five admitted to having bribed a university official; in Moldova the figure was two in five. Within universities a wide variation exists in the propensity to bribe. Disciplines in highest demand – economics, finance and law – have higher compensation for entry, higher tuitions and fees, higher potential for graduate earnings, and hence higher stakes. These disciplines are more likely to be corrupt [7].

Corruption has a negative effect on quality. The university becomes a high-priced, low-quality good if officials admit or give high grades to the less qualified. Instead of increasing international competition, corruption limits it. Since honesty rests on the proof of a lack of violations, a university suspected of being corrupt reduced the power of its graduates in the labor market. With the private sector and particularly with companies that draw from international labor markets, the effect of having a reputation for corruption may be more serious than with local governments and state-owned enterprises.

Corruption negatively affect both private and public social economic returns to investments in education. If students can purchase grades they have less incentive to earn learn. An employer does not know whether the student completed the degree on the basis of academic ability or because he or she bribed university officials. The signaling value of a university degree is reduced. Employers reduced risk by avoiding graduates from suspect institutions and by putting into place testing, internship, and other filtering mechanisms. Graduates need to accept significantly lower salaries until they can demonstrate their economic value through on-the-job experience. Graduates from universities suspected of corruption are not likely to be considered for technical and professional jobs. If they sort into government jobs where the potential for bribes is high (customs, police, etc.) the private income costs of corruption are reduced, but the social costs remain [7, 6].

Key to understanding the pernicious effect of higher education corruption is to understand that, unlike a criminal case, universities are 'guilty' unless they can prove their innocence. Universities which claim to have no problem are not free of the perception of being corrupt, but the opposite. This is why many universities, including my own, require administrators, faculty and students to sign a code of conduct and, in the case of administrators and faculty, to sign a conflict of interest statement annually (Annex one). Incoming students are not only asked to sign a code of conduct, but their names are posted on the wall of the student union displaying their signatures. Students, faculty and administrators are reminded periodically of the need for integrity and what to do when there are infractions (Annex 2). There is a student-run system of honors councils to hear cases of infractions and recommend sanctions. There is a similar faculty-run system to hear cases of faculty infractions. Annual reports from the honors council are publicly available. These reports will list the infractions by category, the decisions and sanctions in each case. Names of accused are kept confidential. Mission statements may include the definition and recognition of 'harmful activity' to the university. This may include fraud, waste or abuse of resources, misuse of grant money, research fraud, violations of athletic or medical regulations, theft or embezzlement, conflicts of interest, procurement fraud, threats to personal safety, discrimination or harassment, academic misconduct, standards of conduct, and violations of data privacy (Annex 2). We were curious if this sort of attention to ethics was common to universities in other countries.

• We began by creating a list of possible ethical elements. These included whether or not a university had:

• A mission statement
• An honor code for students
• An honor code for faculty
• An honor code for administrators
• A system of adjudication in the case of infractions
• A statement of non-bias in hiring
• A statement of the criteria used in faculty promotion
• A statement on fairness in admissions
• Transparency in budgets and accounting
• Adjudication procedures in case of infractions
• Faculty handbook
• Reported ethical infractions\
• Results of ethical infractions
• Other elements uncovered as the project progressed

We also noted whether a university was affiliated with a religious institution, public or private, for profit, its language of instruction, location, and whether in addition to offer a first degree, whether it offered post graduate degrees (Annex three)

Since we had no access to internal documents we decided to base our assessment solely on the basis of a university's public information displayed on its website. Of course a university may have an ethical infrastructure not mentioned on its website, and universities which do mention ethical elements on its website is no guarantee that the university is free of corruption.

We began by gathering and training research assistants capable of working in languages in addition to English (Annex four). We divided the research assistants into country (not language) teams. These included teams to work on Japan, Korea, the Peoples Republic of China, Hong Kong, Taiwan, Armenia, Russia, Georgia, Germany, Britain, the United States, Canada, Australia, and France. The first task of each country team was to locate a complete list of the nation's higher education institutions[1]. Once a country's master list was approved, a random ten percent sample was chosen and the websites of that ten percent sample were analyzed (Annex five). Separately, we used the Times Higher Education Supplement of 400 highly-ranked universities as our source for World Class Universities. http://www.timeshighereducation.co.uk/world-university-rankings/2011–2012/top-400.html From the THES list we took a ten percent random sample and analyzed their websites (Annex six).

Results

Universities differ dramatically in their propensity to mention ethical issues or to describe elements of their ethical infrastructure on their websites. In Kazakhstan, Gabon, Kyrgyzstan and Armenia ethical infrastructures were absent altogether from university websites. In Britain, Canada, Hong Kong, New Zealand, and Korea they were universal, nearly universal in Australia (91%), and very high in Georgia (84%), the U.S. and Germany (79%) (Table 1).

Table 1

Universities with Ethical Infrastructures

Country	(%)	Average number of infrastructure Elements
THES universities*	98	9.2
Britain	100	9.5
Canada	100	8.3
Hong Kong	100	6.0
Japan	100	7.7
Korea	100	6.9
New Zealand	100	3.0
Singapore	100	4.5
Taiwan	100	6.7
Australia	91	7.4
France	91	2.4
China	90**	4.8
U.S.	88	7.6
Georgia	84	5.2
Belarus	80	1.4
Germany	79	0.9
Russia	77	2.8
Armenia***	0	0
Gabon	0	0
Kyrgyzstan	0	0
Kazakhstan	0	0

* Times Higher Education Supplement

** Chinese websites usually cited the general law on corruption across all sectors

*** Many of the better universities in Armenia have documents describing the regulations pertaining to student conduct and ethics. These might include the American University in Armenia and Yerevan State Universities which have student handbooks and codes of ethics. But none of them happened to fall into the sample.

[1] Two year institutions and those with no undergraduate degree programs were eliminated. All accredited institutions were included, public, private and for-profit.

Knowing the portion of university websites mentioning one ethical infrastructure element may not be as revealing as the number of elements mentioned. These ranged from 9.5 in Britain and 8.3 in Canada, 2.8 in Russia and zero in Armenia, Kazkahstan and Kyrgyzstan. Germany has a surprisingly low number of elements mentioned, perhaps on grounds that the internal websites would be more explicit than those open to the public (Figure 1). Both Russia and Belarus had a high percentage of their universities which mentioned an ethical issue on their websites (80 % and 77 %), but neither included much more detail. The average number of infrastructure elements was 1.4 in Belarus and 2.8 in Russia. This suggests that the emphasis on ethics may have been more for *pro forma* reasons than a genuine concern. In terms of languages, the highest number of infrastructure elements can be found in universities using Japanese, English and Korean (Figure 2).

Ranked universities appearing on the Times Higher Education Supplement were situated in over 40 countries. Virtually all of them (97.5 %) mentioned ethical elements on their websites. The typical THES university mentioned 9.2 different elements, higher than any nation's universities save Britain. The correlation between the number of elements mentioned and the level of THES ranking ($r = 0.14$) was neither strong nor statistically significant. This suggests that the number of ethical infrastructure elements is not a factor in the level of ranking. However, the more important question may be whether candor about an ethics infrastructure is associated with attaining any THES ranking. Given the fact that virtually all ranked THES universities, across all 40 counties, mentioned ethical infrastructure suggests that it is an important ingredient associated with other elements in a university's reputation.

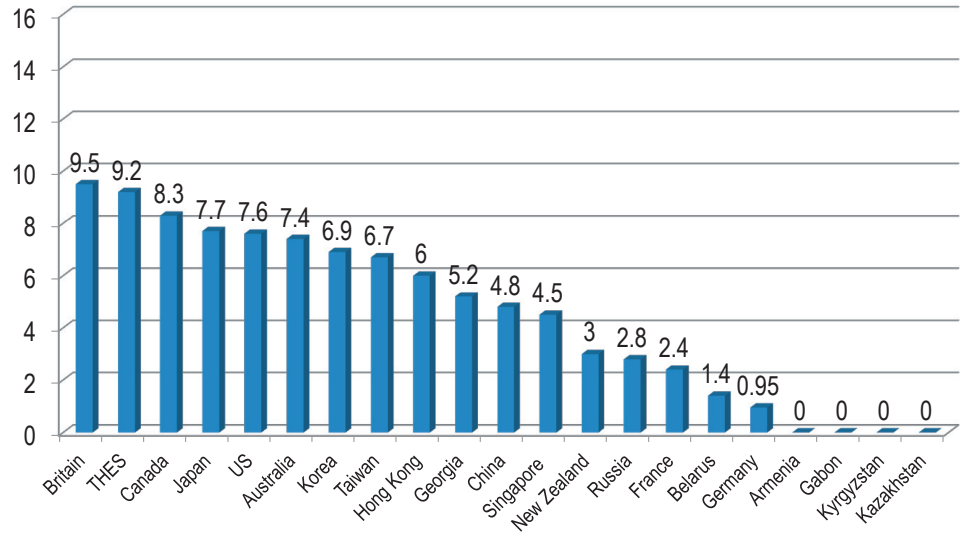

Fig. 1. Average number of ethical infrastructure elements bycountry

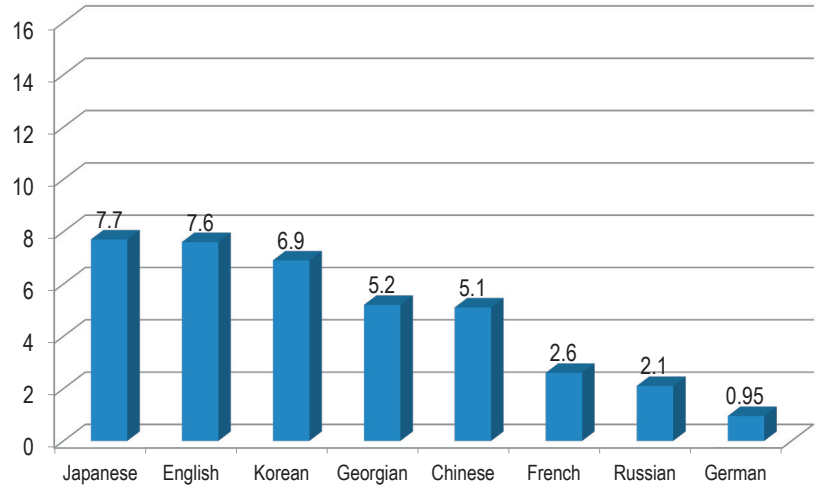

Fig. 2. Average number of ethical infrastructure elements by language

Among THES universities, the most common elements to mention were regulations pertaining to academic integrity and the goals of diversity and equity in enrollment and employment (82.5 %) budgetary transparency and non-bias in hiring (77.5 %), and codes for student conduct and research ethics (75 %). Less common were results of ethical infractions (12.5 %) and portion of ethical infractions found to be justified (10 %) (Figure 3).

Focus on the United States

Of the 205 universities which fell into the 10 % sample from the United States, 49 offered specialized degrees in technology, law or religious studies (Table 2). About one in three of these were for-profit.

institutions. These specialized institutions tended to have a lower number of ethical infrastructural elements (3.7). For-profit colleges stand out among this group and against the general tendency of non-profit higher education institutions. Although vocationally-oriented for-profits had a higher number of ethical infrastructure elements in the medical field, in the arts, law, and especially in technology, they did not. In technology-oriented institutions the average number of ethical infrastructure elements was 5.5 among non-profits and only 0.3 in for-profit institutions. This suggests that for-profit institutions which specialize in technology are particularly divergent from their non-profit rivals in their concern over ethics. In general, for-profit institutions tended to have a very low number of ethical infrastructure elements (3.6) (Table 3).

If one excludes for profit and vocational institutions, the average number of ethical infrastructure elements typical on the websites of American universities (9.6) is higher than any other country in the sample and higher than the average institutions in the THES ranking. This suggests that for-profit institutions are simply not as interested in combating education corruption as non-profit institutions.

Summary

To combat education corruption a university will need to do more than mention ethical behavior

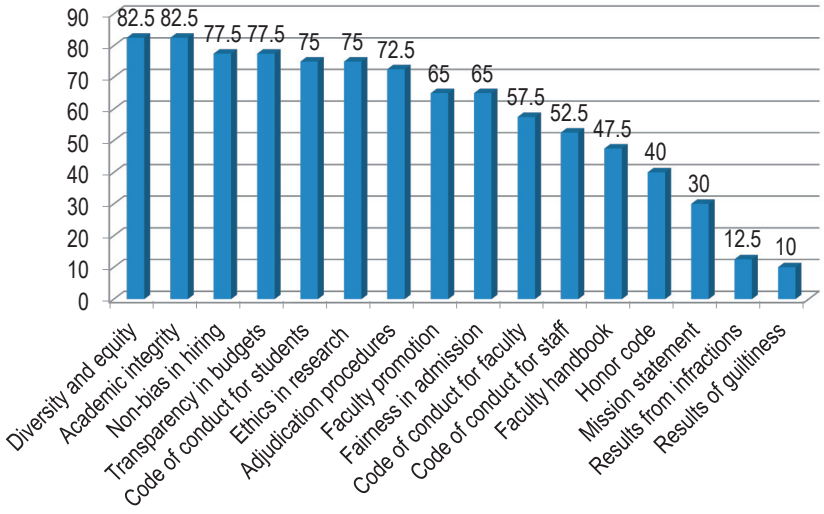

Fig. 3. Presence of ethical infrastructure Elements (THES) (%)

Table 2

American Higher Education Institutions with specialized vocational functions

Type of institutions	Number of institutions			Average number of infrastructure elements		
	All	Non-for-profit	For-profit	All	Non-for-profit	For-profit
Seminary including bible colleges	17	17	.	2.9	**2.9**	**.**
Art-related	11	6	5	4.5	**5.2**	**2.6**
Medical, health-related	12	7	5	4.4	**3.6**	**4.8**
Technology	5	2	3	2.4	**5.5**	**0.3**
Law school including law-related)	4	3	1	4.25	**4.3**	**4**
Total	49	35	14	3.7	**4.0**	**3**

Table 3

American Higher Education: Average Number of Ethical Infrastructural Elements: for profit and non-profit institutions

Type of institutions		Number of institutions	Average number of infrastructures
Non-for-profit	All	169	8.4
	(Excluding vocational institutions)	(134*)	(9.6*)
For-profit		36	3.6
Total		205	7.6

on its website. But university concern for ethics is unlikely to be effective without mentioning the ethics problem on its website. Virtually all highly ranked universities are concerned with ethics; they mention more ethical elements on their websites than other universities, and they are more likely to be transparent as to the annual number and type of ethical infractions.

On the other hand, there are universities situated in sample countries such as Kazakhstan, Kyrgyzstan and Gabon where the typical university mentioned nothing about professional ethics on their websites. What does that suggest about them? Circumstantial evidence would suggest that the universities which are silent on the issue of professional ethics are also universities which are widely perceived to be corrupt. They tend to be situated in countries where education corruption is known to be high [9–11] and where the business climate is characterized by a high degree of corruption. Kazakhstan for instance is ranked 120 and Kyrgyzstan 164 out of 182 countries in the corruption index of Transparency International [12]. These data from our small study would suggest that universities which do not mention professional ethics on their websites are at the highest risk of being corrupt themselves.

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ENHANCING ACCESS TO HIGHER EDUCATION THROUGH UNIVERSITY-GOVERNMENT COOPERATION (THE CASE OF RUSSIAN FAR EAST REGIONS)

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Abstract. This article discusses issues associated with the facilitation of higher education accessibility by intensifying university-government cooperation. Existing approaches to measuring the accessibility of the higher education system as a whole and its specific components were analysed. Various aspects of the problem were investigated using the example of higher education institutions in the Russian Far East. The analysis was based on data retrieved from the Russian Federal Statistics Service and the Unified Information System of the Ministry of Education and Science. It is shown that residents in the Russian Far East receive substantial opportunities for accessing higher education as compared to the residents in other Russian federal districts. Nevertheless, the extremely low *geographical accessibility* of higher education in this part of Russia has a detrimental effect on overall access to higher education. On the basis of the obtained results, a number of recommendations were developed for facilitating cooperation between universities and governmental authorities in order to increase overall accessibility to higher education in this region. It is proposed to compensate for the negative impact of the geographical factor by maximizing the positive effects of other factors, for instance, by increasing the affordability of university education. Thus, students from locations with absent or very few higher education institutions may be reimbursed for their travel expenses, or reimbursement may be offered to those students who are not provided with dormitory accommodation. Universities may keep their tuition fees at the lowest rate as established by the RF legislation.
Keywords: higher education, availability, affordability, geographic accessibility, access to higher education, assessment methodology, regions, university policy, university-government interaction
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Introduction

Contemporary socio-economic development strategies require countries to ensure equal access to higher education for their citizens, resulting in the need for national governments to assign a high priority to the implementation of these policies [1, 2]. In Russia, the legal right to education is enshrined in Paragraph 3 Article 5 of the Federal Law *On Education in the Russian Federation*[1]. This right is also upheld by the state program *Development of Education* for 2013–2020[2], which describes measures aimed at enhancing access to education in the country. The national project *Education*[3] (for the period 2019–2024) comprises a set of institutional mechanisms to expand access to education and create opportunities for individual development within the system of education. It is

[1] On Education in the Russian Federation: Federal Law of 29.12.2012. № 273-FZ. Accessed via the legal reference system 'ConsultantPlus'.

[2] State Program of the Russian Federation 'Development of Education' for 2013–2020: Decree of the Government of the Russian Federation of 15.05.2013 № 792p. Accessed via the legal reference system 'ConsultantPlus'.

[3] Passport of the national project 'Education' approved by the Presidium of the Presidential Council for Strategic Development and National Projects (Minutes of 24 December 2018, № 16). Accessed via the legal reference system 'ConsultantPlus'.

declared that one of the priorities of the state education policy is 'to ensure equal access to education for all Russian citizens regardless of their region of residence'.

Russian regions vary significantly in terms of size, level of economic development, number of universities and other parameters. All these factors affect the level of higher education accessibility in various regions. The Far East is the largest federal district in Russia. In many of its parts, universities or their branches are located only in regional centres, making education less accessible to the inhabitants of small towns and rural areas. In comparison with other federal districts, the Far East is characterized by a low level of economic development, which affects the affordability of higher education. Therefore, a detailed analysis of higher education accessibility and factors determining its level should be carried out in order to develop respective regional and federal strategies. The role of universities in this process cannot be overestimated: working together with government agencies and taking part in decision making and strategy implementation, universities can have a tremendous social and economic impact [3].

Methodological framework

Approaches currently applied to measure access to higher education can be broadly classified into four groups: equal opportunities, compilation, structural and probability-based approaches (Table 1).

Table 1

Approaches to measuring access to higher education

Approaches	Definition of access to higher education	Components of the integral indicator	Integral indicator calculation methods	Authors
Equal opportunities approach	Access to higher education means equal opportunities for prospective students to be enrolled at university	Participation of young people in higher education; youth education attainment level; index of social equality; index of gender parity [4]. Who should access and participate in higher education? Are the university admission practices fair? [5]	Youth participation in higher education*0.25 + youth education attainment level*0.25 + index of social equality*0.4+ index of gender parity* 0.1 [4]	Global Higher Education Rankings project [4], OECD Directorate for Education and Skills [5], A. S. Klyuev [6], T. P. Evseenko [7], V. I. Fursova [8], and Ha Vang Hoang [9]
Compilation approach	Access to higher education is determined by a set of external factors affecting the system of higher education	Matching university's specialization to the priority directions of regional development; the number of educational programs implemented at a university; the share of Master's students in the total number of students enrolled at a university; the share of university graduates working in the fields related to their degrees [10]	Access to higher education is calculated as a sum of constituent indicators [10]	V. I. Sukhochev [11], M. S. Rakhmanova [10]
Structural approach	Access to higher education is determined by a set of internal factors affecting the system of higher education	Equal access to leading universities for all citizens of any socio-economic status; equal opportunities to participate in entrance examinations and educational programs; equal access to intellectual resources [12]	This approach does not offer an integral indicator to measure access to higher education.	E. A. Anikina, E. V. Lazarchuk, V. I. Klyachko [13]
Probability-based approach	Access as the likelihood of a student to attend university and obtain higher education	The number of students enrolled at a university; the number of admission applications	A=SE/AA, where A is access to higher education; SE is the number of students enrolled; and AA is the number of admission applications [14].	Y. M. Roschina [15], S. A. Belyakov [14]

Source: compiled from [4–15].

There is no generally agreed definition as to what exactly constitutes access to higher education. Some definitions fail to make a distinction between access to higher education and higher education attainment; some focus on prospective students rather than on the education system, which raises the question of quantitative measurement. We believe that the definition proposed by S. A. Belyakov is the most appropriate for the purposes of our research: this model defines access to higher education as the likelihood of students to be enrolled at higher education institutions [14].

Russian and international studies use diverse methods to measure access to higher education, which makes the question of their validity particularly relevant.

There are at least two methodologies worthy of attention proposed by international research groups: Canadian researchers from the Global Higher Education Rankings project [4] and the OECD Directorate for Education and Skills [5]. These methodologies are both used for comparative analysis: the former served to develop a ranking of countries according to the affordability and accessibility of higher education based on four indicators with their own weights (Table 1). In our view, however, these indicators reflect only social aspects of the problem (that is, the opportunities of obtaining higher education enjoyed by particular social groups) and fail to provide a wider picture. The latter methodology offers a more general approach to the problem and includes several indicators. Nevertheless, both these methodologies focus exclusively on access to higher education for specific social categories, which makes them rather limited [11, 12, 16].

In Russia, one of the first methodologies was proposed by S. A. Belyakov in the early 2000s [14]. The researcher suggested measuring access to higher education by dividing the number of students enrolled at universities by the number of admission applications, which reflects the likelihood for a student to attain higher education. A certain limitation of this methodology (though not diminishing its practical value) is that students' right to apply to several universities is not taken into account. This means that the results obtained using this approach should be additionally analysed. Therefore, Belyakov's approach is suitable for assessing access to higher education.

In the 2000s, S. A. Rakhmanova [10] developed a methodology for measuring access to higher education services provided by universities engaged in the implementation of developmental programs. Her methodology relies on the indicators used to monitor the efficiency of such universities and the data included in their reports about the progress of these programs. Thus, her methodology is suitable only when the research focus is on studying specific universities rather than the higher education system in large regions or countries.

Access to higher education encompasses several dimensions, in particular availability, affordability, social accessibility, educational (in)equality and inclusion. Let us look at the components and factors determining their status in greater detail.

The majority of Russian and international scholars distinguish the following key components of access to higher education (factors that determine access to higher education or lack thereof):

– geographical accessibility (geographical factor), i. e. access to higher education depending on the distance a prospective student has to travel to reach the university [16–20];

– affordability (economic or financial factor), i. e. the cost of higher education and financial resources available to students and their families [16, 21]

– social accessibility (social factor), that is, access to higher education for specific social groups [22–31];

– admission capacity and state support (organization factor), i. e. the number of enrolled students fully supported by the federal budget, availability of on-campus dormitory accommodation, etc. [11];

– educational (in)equality (education factor), i. e. the achievement gap or disparity in academic outcomes of students with different educational backgrounds, in particular, their Unified State Exam or university entrance exams scores[12, 19];

– inclusion (access to higher education for students with disabilities), i. e. opportunities provided for impaired students to access and participate in higher education [12, 19].

Let us consider the methods that we used to measure the specific aspects of access to higher education based on the data of the Far Eastern regions in Russia. It should be noted that social accessibility of education is not considered in this study, since its quantitative assessment requires large amounts of heterogeneous data, which, in turn, requires large-scale sociological surveys.

Geographical accessibility was estimated by considering the weighted average distance that each potential student has to cover in order to reach any institution of higher education located within the borders of the federal district. The weighted average distance was calculated using data on the distances between regional centres and universities (or their branches) located within the federal district. Thus, the average distance can be calculated both for the federal district as a whole and its regions. In order to take into account the uneven population distribution across the territory, we used the population-weighted average

distance. The population under consideration consisted of young adults aged 18–30 living in a specific region or federal district.

Therefore, the geographical accessibility of higher education services can be calculated using the following formula:

$$GA=Dmax/D,$$

where GA is the geographical accessibility of higher education;

Dmax is the maximum population-weighted average distance from a regional centre to a university in a federal district (by the 'population' here we mean young adults aged 18–30 living in the region);

D is the population-weighted average distance from a regional centre to a university in a federal district (by the 'population' here we mean young adults aged 18–30 living in the region).

In order to avoid uncertainty (division by zero) in cases where a university or its branches are located in a regional centre, we used the indicator of geographical inaccessibility of higher education, the opposite of geographical accessibility:

$$GIA=D/Dmax,$$

where GIA is the geographical inaccessibility of higher education.

According to the above-described formula, the geographical inaccessibility of higher education for the inhabitants of a city with its own university will be 0, while the maximum availability in this case will equal 1. On the contrary, for the inhabitants of remote areas, the inaccessibility and accessibility of higher education will be 1 and 0, respectively. Higher education geographical inaccessibility can vary between 0 and 1. The higher this indicator is, the less access to higher education people in this region will enjoy.

When we applied this methodology to measure the geographical inaccessibility of higher education in the Far East of Russia, we found that the impact of the geographical factor is particularly significant in the Jewish Autonomous District and Chukotka. This situation, to a great extent, results from the trend to concentrate universities in regional capitals, which leads to an increase in the parameter 'population-weighted average distance from a regional centre to a university in the Far Eastern Federal District'. On the contrary, the geographical accessibility is higher for inhabitants of Sakha and Zabaikalye. This can be explained by the concentration of young people in the cities, where universities are located. In other regions, the geographical inaccessibility of higher education remains practically at the same level.

It should be noted that, according to the Higher School of Economics research [16], all Far Eastern regions are characterized by the lowest level of geographical accessibility of higher education (except for Primorye) among other Russian regions. For instance,

Table 2

Geographical inaccessibility of higher education in Far Eastern regions

Regions	Population-weighted average distance from a regional centre to universities, km (D)	Maximum population-weighted average distance from a regional centre to universities, km (Dmax)	Geographical inaccessibility of higher education (GIA)
Republic of Sakha (Yakutia)	65.5	946.9	0.069
Kamchatka	230.3	1809.3	0.127
Primorye	50.6	625.5	0.081
Khabarovsk region	92.7	915.3	0.101
Amur region	71.3	629.6	0.113
Magadan region	378.5	2478.7	0.153
Sakhalin	135.5	1118.8	0.121
Jewish Autonomous District	306.3	810	0.378
Chukotka Autonomous District	503.3	2124.3	0.237
Zabaikalye	74.9	1113.4	0.067
Republic of Buryatia	127.3	1206.8	0.105
Average for the Far Eastern Federal District	185.1	1252.6	0.148

Source: compiled by the authors

6 out of 11 Far Eastern regions ranked at the bottom of the list of 79 Russian regions. While the average level of this indicator for Russia equals 107 km, most Far Eastern regions exceed this value by more than twice.

In order to measure affordability of higher education, we extended the approach proposed by A. D. Gromov, D. P. Platonova, D. S. Semenov and T. L. Pyrova [16]. This methodology distinguishes between the costs of higher education for federally-funded and tuition-paying students.

For tuition-paying students, the costs of higher education was calculated as follows:

$$HEC = TF + RC*OCS + LE,$$

where HEC is the annual cost of higher education;

TF is the average tuition fee per year in the region;

RC is the average rental cost of a single-room apartment per year in the region;

OCS is the share of students living off-campus in the total number of students in need of accommodation;

LE is the average living expenses per year in the region.

For federally-funded students, the following formula was used:

$$HEC = RC*OCS + LE$$

Expenses on higher education among the inhabitants of a certain region were calculated as the average costs of studying in any region of the federal district.

Therefore, let us introduce the indicator of inaffordability of higher education in a region, which can be calculated using the following formula:

$$IHE = HEC/PCI,$$

where IHE is the level of inaffordability of higher education;

PCI is the average annual per capita income in a region;

HEC is the annual cost of higher education.

According to the above-described approach, in case of zero spending on higher education, the inaffordability of higher education will equal zero (the maximum level of affordability) and, vice versa, if the spending on education exceeds the average annual per capita income, the inaffordability will exceed 1.

Theoretically, this indicator of inaffordability of higher education can vary from zero to infinity. The higher the annual per capita income (with equal spending on higher education), the higher is the affordability of education. Vice versa (and quite predictably), the higher the spending (with equal per capita income), the lower the affordability of higher education. Nevertheless, the upper limit for the inaffordability indicator is set by the state system of economic mechanisms, such as subsistence rates, the amount of public funds spent on education; subsidized education loan rates and so on.

Table 3 shows that higher education is not substantially affordable for residents in Zabaikalye, Jewish Autonomous District and Buryatia due to the low level of economic development and per capita income in these locations. It should be noted that the average costs of higher education in Zabaikalye and the Jewish Autonomous District exceed the average annual income level of their populations. Not surprisingly, the high level of higher education affordability in Chukotka correlates with high incomes in the region.

Table 3

Inaffordability of higher education in Far Eastern regions

Regions	Inaffordability of higher education (IHE)	
	federally-funded	tuition-paying
Zabaikalye	0.709	1.065
Jewish Autonomous District	0.695	1.045
Republic of Buryatia	0.659	0.990
Amur region	0.556	0.836
Primorye	0.508	0.764
Far Eastern Federal District	0.481	0.724
Khabarovsk region	0.440	0.662
Republic of Sakha (Yakutia)	0.424	0.636
Kamchatka	0.402	0.604
Sakhalin	0.332	0.500
Magadan region	0.313	0.470
Chukotka Autonomous District	0.258	0.388

Source: compiled by the authors on the basis of Internet data

Similar to the above-described approach used to measure higher education geographical accessibility and affordability, we used the indicator of educational inequality to describe the barriers preventing students from being admitted to the university when their exam scores are lower than the average level in a federal district. This indicator was calculated according to the following formula:

$$IE=EXAMact/EXAMav,$$

where IE is the inequality in the sphere of higher education;

EXAMact is the average score in the Unified State Exam and university entrance exams of applicants to higher education institutions in a specific region;

EXAMav is the average score in the Unified State Exam and university entrance exams in a federal district.

According to this formula, the lower the average Unified State Exam score for students admitted to universities, the higher the education equality (and vice versa).

As Table 4 shows, Sakhalin, Magadan, and Zabaikalye are characterized by low levels of education inequality, which can be partially explained by the fact that these regions feature few universities specializing in arts and sports and, therefore, few universities have the right to organize their own entrance examinations (as a rule, the average admission score in such universities is much higher than the average Unified State Exam score). In Khabarovsk region and Chukotka, the level of education inequality is quite high.

The role of state support and admission capacity in providing access to higher education is mostly described by the number of undergraduate enrolment spots. Every university has its own target admission figures including the number of government-funded students, while the number of tuition-paying students is determined indirectly by other factors such as licensing and accreditation standards. Therefore, a university's admission capacity is a significant factor, which determines its accessibility through a limited number of places (federally funded and tuition-based) allocated to universities (by who?).

The impact of this factor can be measured similarly to that of higher education affordability. For federally-funded students, the following formula was used to measure the lack of access to higher education due to the shortage of federally-funded places:

$$LAC(sf)=A(sf)/N(sf),$$

where LAC(sf) is the lack of access to education determined by a university' admission capacity;

A(sf) is the number of applications for admission to federally-funded places;

N(sf) is the number of available federally-funded places.

For tuition-paying students, the formula takes the following form:

$$LAC(fp)=A(fp)/N(fp),$$

where LA(fp) is the lack of access to education due to the shortage of tuition-paying places;

A(fp) is the number of applications for admission to tuition-paying places;

N(fp) is the number of available tuition-paying places.

When the number of available places exceeds that of applications, access to higher education is considered to be maximal at this university. The less

Table 4

Educational inequality in Far Eastern regions

Regions	Average exam score for admission to universities in the region	Average exam score for admission to universities in the federal district	Educational inequality (IE)
Sakhalin	54.25	58.25	0.931
Zabaikalye	55.92		0.960
Magadan region	56.3		0.967
Primorye	56.7		0.973
Jewish Autonomous District	56.92		0.977
Republic of Buryatia	57.17		0.981
Kamchatka	57.29		0.984
Republic of Sakha (Yakutia)	57.88		0.994
Amur region	58.14		0.998
Far Eastern Federal District	58.63		1
Khabarovsk region	62.88		1.079
Chukotka Autonomous District	67.27		1.155

Source: compiled by the authors on the basis of the data retrieved from https://indicators.miccedu.ru/

applications a university receives, the more available places it has; vice versa, the more applications it receives, the more selective it becomes.

We found that the Khabarovsk and Primorye regions suffer from the most severe shortage of study places, which can be partially explained by the fact that universities in these regions are quite attractive for prospective students from other Russian regions. As a result, the indicator 'number of applications' grows, thus impeding access to higher education. Chukotka shows the highest level in terms of admission capacity, particularly for federally-funded places: almost every second student accepted to university is enrolled in a federally-funded programme. The Kamchatka and Amur regions, as well as the Jewish Autonomous District and Buryatia, demonstrate high levels of higher education accessibility in terms of the availability of undergraduate places for tuition-paying students. In these regions, the number of tuition-paying places exceeds that of applications (see Table 5).

Having documented four components describing access to higher education, let us turn to calculation of an integral indicator.

It would be logical to assume that the above-mentioned factors play different roles in the overall access (or lack thereof) of higher education. Our survey, which covered 400 students in a Far Eastern university during the academic year of 2019–2020, showed the weight of each of these factors. The respondents considered the availability of enrolment places as the most significant factor (0.29), while the geographical access to university was shown to be the least significant (0.2). The affordability and equal opportunities in admissions were deemed almost equally important – 0.26 and 0.25, respectively.

We used the results of the survey to draw the following formula for the integral indicator of the lack of access to higher education (LA):

$$LA= 0.2*GIA+0.26*IHE+0.25*IE+0.29*LAC,$$

where LA is the lack of access to higher education.

Access to higher education is the indicator opposite to the lack of access to higher education. Therefore, it can be calculated using the following formula:

$$A=1/LA,$$

where A is access to higher education.

Integral indicators calculated for the Far Eastern federal district and its regions are shown in Table 6.

Access to higher education in different regions varies depending on the type of funding, i. e., whether the funds come from government subsidies or students' tuition.

In terms of federally-funded places, the lowest results are shown by the three regions – Zabaikalye,

Table 5

Lack of access to higher education in Far Eastern regions due to the shortage of study places

Regions	Number of places		Number of admission applications		Lack of access to higher education due to the shortage of places	
	federally-funded	tuition-paying	federally-funded	tuition-paying	federally-funded	tuition-paying
Republic of Sakha (Yakutia)	2918	2777	15633	6673	5.357	2.403
Kamchatka	380	2340	1444	813	3.800	0.347
Primorye	4020	5984	38849	10837	9.664	1.811
Khabarovsk region	3125	7510	27053	12997	8.657	1.731
Amur region	1672	4407	9145	2632	5.469	0.597
Magadan region	315	703	1789	1127	5.679	1.603
Sakhalin	514	1045	2074	1320	4.035	1.263
Jewish Autonomous District	255	1130	1196	476	4.690	0.421
Chukotka Autonomous District	37	31	73	43	1.973	1.387
Zabaikalye	1648	4657	10049	5684	6.098	1.221
Republic of Buryatia	2275	4325	11308	3864	4.971	0.893
Far Eastern Federal District	17159	34909	118613	46466	6.913	1.331

Source: compiled by the authors

Table 6

Integral indicators of access to higher education in Far Eastern regions

Regions	Access to higher education	
	federally-funded places	tuition-paying places
Chukotka Autonomous District	1.03	1.19
Kamchatka	0.68	1.89
Sakhalin	0.66	1.33
Jewish Autonomous District	0.54	1.40
Republic of Buryatia	0.53	1.28
Republic of Sakha (Yakutia)	0.52	0.89
Amur region	0.50	1.51
Magadan region	0.50	1.16
Zabaikalye	0.45	1.13
Far Eastern Federal District	0.42	1.17
Khabarovsk region	0.34	1.04
Primorye	0.31	1.02

Source: compiled by the authors

Khabarovsk and Primorye, while Chukotka demonstrated the highest value. In all these regions, accessibility to higher education is largely determined by the enrolment capacity of regional universities.

In terms of tuition-paying places, access to higher education is the lowest in the Republic of Sakha (Yakutia), where the application ratio is 2.4 applications per place. High values of this indicator are found in two regions – Amur and Kamchatka, where the number of applications is much smaller than the number of available tuition-paying places.

Concerning the contribution of each component to the overall higher education accessibility, a university's admission capacity and geography demonstrated the highest and smallest impact, respectively (see Fig. 1).

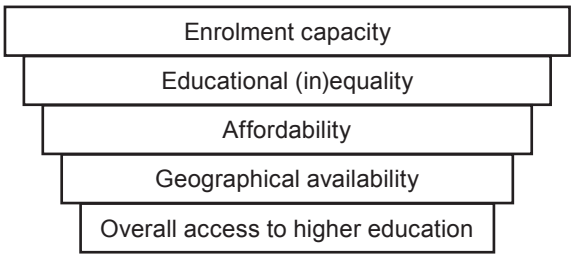

Fig. 1. Contribution of the key components to the overall access to higher education

It should be borne in mind, however, that all of these aspects are mutually interconnected; therefore, stimulation of a region's performance by enhancing only one aspect will have a limited effect. Thus, it becomes obvious that efforts aimed at facilitating access to higher education should target the whole range of components.

It is crucial that universities work together with federal and regional authorities to enhance access to higher education. Our analysis shows that access to higher education is a phenomenon shaped by multiple factors. Therefore, universities in the Russian Far East should apply various recruitment and admission strategies, as well as collaborate with federal and regional authorities to ensure the supply of qualified staff for local industries.

The proposed methodology can be adapted for the purposes of enhancing access to higher education in various regional education institutions, which can design and implement their own developmental policies. In turn, regional authorities can implement targeted social and economic programmes to improve access to higher education for the people from remote and rural areas, who are at a massive disadvantage in comparison with those who live in regional centres.

Our analysis of the geographical accessibility of higher education in the Far East shows that geography is a critically important factor, practically for all regions in this part of Russia (except for Primorye). This is explained by the territory's size and the concentration of universities in regional centres. The low level of geographical accessibility of higher education for inhabitants of the Russian Far East reduces the affordability of education, since families living far from universities and their branches need to cover travel, accommodation and living expenses for their children studying away from home.

Changes in the historically established distribution of universities and population across the territory of Russia and its regions caused the creation of new universities and branches in sparsely populated areas. Therefore, a viable solution may be to compensate for the low level of geographical accessibility of higher education in such areas through financial aid and benefits paid from the regional or university budget, for instance, by compensating students' travel, lodging and meals costs. This will reduce the financial burden on students' families, enhance education affordability and, consequently, improve the overall access to higher education.

Another type of financial aid could be offered to students staying in off-campus housing to cover the cost of renting an apartment. Many Russian universities are facing accommodation shortage problems, which makes education less affordable for students from remote towns and rural areas. Federal grants in the amount corresponding to expenses borne by

universities for maintaining on-campus dormitory accommodation may be provided to students.

Federal and regional authorities need to set quotas regulating the number of federally-funded places for students choosing to study in the location of their family residence. The majority of universities are training specialists for their local industries. Therefore, the allocation of federally-funded places to specific universities and federal districts is determined by a region's perceived needs in certain kinds of specialists. From the standpoint of regional governments, it seems counter-productive to fill federally-funded places (which were allocated to train local specialists of certain expertise) with students from other regions, since such students are likely to return home after graduation.

Tuition policies also need to be revised; for instance, instead of setting the minimum tuition fee rates[4], only their upper limit may be determined in order to increase the affordability of higher education.

Conclusion

Access to higher education is a complex phenomenon determined by a range of factors, such as geography, affordability, admission capacity, as well as the level of educational inequality and inclusivity.

Our analysis demonstrates that people who live in the Russian Far Eastern regions enjoy substantial access to higher education services, particularly in terms of affordability, equality and inclusivity. The geographical factor, however, puts applicants from rural and remote areas located far from regional centres at a disadvantage, and has a detrimental effect on overall access to higher education in the Far East.

The proposed methodology can be used for measuring the level of higher education accessibility for specific universities and regions. Moreover, it can be used to identify problems that need to be tackled through specific measures and policies both at the level of individual universities, and at regional and federal levels.

In this context, it is clear that the joint efforts of universities and governments should be well-grounded and tailored to specific goals and situations. Such efforts will require a thorough quantitative analysis of the key components of higher education accessibility.

[4] For more detailed information on the basic standard costs of public service delivery in the sphere of education, science, youth policy, child custody and guardianship and the corresponding industry coefficients see: Decree of the Ministry of Education and Science of Russia of 20.06.2016 № 884. Accessed via the legal reference system 'ConsultantPlus'.

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TUITION FEES AS A SOURCE OF FUNDING AND A POLICY INSTRUMENT: INTERNATIONAL EXPERIENCE

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Abstract. The article discusses conceptual grounds of tuition fee policies based on literature review and the study of country-specific cases of the USA, France and Russia in order to highlight general trends and identify practices which can be considered for implementation in Russia. The Authors believe that scholarly publications offer contradicting empirical results related to the impact of tuition fee policies on the performance of higher education institutes. Several theoretical frameworks such as human capital, demand and consumer choice theories as well as the concept of new managerialism are used to explain controversial empirical evidence. Moreover, the effects of tuition fee policies are proven to be contingent on multiple factors such as state governance system, dynamics of labor market, organizational design of higher education, maturity of financial assistance system, prestige and uniqueness of specific educational programs. It is concluded that, apart from PhD studies, overall trend is towards wider application and increase in tuition fees combined with high price for foreign students. Doctoral students in most cases do not pay tuition fees, but get salary for work in research projects conducted to develop new knowledge. Both in the USA and France the best education is provided by highly selective expensive private institutions (although in both countries there are high quality public education). In Russia the most attractive, though expensive for those who pay tuition fees, are public universities because they provide high quality education. Potential change in tuition fee policy in Russia should acknowledge that, in general, higher tuition fees are justified for studies providing higher future earnings. Increase in tuition fees should be coupled with more developed financial aid system.

Keywords: tuition fee, higher education institutes, university governance, financial aid, price discrimination, Russia, USA, France

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Introduction

Regulation of tuition fees is an important element of policies at higher education institutions (HEIs). The term «tuition fee» usually refers to a mandatory charge upon a student covering all or some portion of the general cost of education. Tuition fees are the source of income and at the same time a policy instrument aimed at achieving such goals as regional and ethnical diversity of students, recruitment of students with outstanding achievements, international students, etc.

Various studies demonstrate that tuition fees do affect the type of students applying to a university. However, the existing literature on the impact of tuition fees is mostly country-specific and even university-specific. Scholarly studies such as [1, p.13] confirm that the effects of tuition fees largely depend on country specifics, tuition fee level and its dynamics, as well as on the measure under study (for example, introduction or elimination of charges). Still, the effects are usually studied based on cases, within one or several universities, located in one or several countries. The findings of such analyses may be contradictory (for example, in measuring strengths of the effects caused by changes in tuition fees).

Empirical evidence and theoretical background

While summarizing different studies on impact of changes in tuition fee policies, several observations can be made.

First, increased tuition fees make students more responsible and result in improved scores [2]. Furthermore, the case of Spain has proven the increased tuition fees not to lead to dropping out of students [1], while the study conducted in Germany [3, p. 6] has shown that attendance dropped by 1/3rd when financial aid was suspended. The same has been

confirmed by UK case study – increase in fees in 2012 reduced attendance by 1/3rd [4, p. 18] and, in addition, has led to the growing share of students applying for loans [4, p. 6]. Therefore, financial aid is an important policy component that should accompany tuition fees.

Second, rise in tuition fees leads to decreased competition and thus may affect the quality of students, this assumption being confirmed in three separate country studies conducted for different time periods in Canada, USA, and Germany [5–7]. At the same time, other studies found the effect to be non-significant [3]. Definitely there are universities-exceptions in many countries where the competition to get into most expensive universities is quite high.

Third, the experiment with abolishment of tuition fees in Ireland showed that it did not lead to better access to education for students from low socio-economic background since usually these students perform poorly in secondary school [8].

Even though empirical results are controversial, a number of theoretical concepts are linked to them. These concepts, aimed at explaining and even predicting outcomes of tuition fee policies, include human capital theory, theory of demand and consumer choice theory. The demand theory explains the negative relationship between tuition fees and enrollment (empirically confirmed in many studies, even though it is not applicable for top-20 U.S. universities). This assumption is further expanded by human capital theory claiming that students take rational decisions concerning the choice of place of study [9, p. 2]. It is also confirmed by empirical studies, that students weigh expected direct and indirect costs against lifetime monetary and intangible benefits [10]. For example, the case-study conducted in UK has shown applications to programs with weaker employment prospects to be more sensitive to changes in tuition fees [4, p. 2]. Nonetheless upsurge in tuition fees for foreign students may lead to the sharp decline of their number [11]. Therefore, the rational choice is taken based on multi-component decision-making.

Factors influencing the effects of tuition fees policies

Tuition fee and financial assistance policies in many countries depend on major government regulations. External factors influencing the effects of tuition fees may be revealed through comparative analysis of countries with centralized and decentralized decision-making. According to Kemnitz [12], educational quality improves with decentralization. Thus, in the U.S.A., government does not set general norms and the country has the world's best universities. However, the countries with centralized regulations may apply wide variety of approaches (differing by type of HEI, for example). The experimentations with approaches show that there is no magic solution that would improve the quality of education. Therefore centralization and decentralization may coexist. For example, in France and Russia, there are general norms set by the government and a number of exceptions to them.

The political context also implies that governments chose either free education for all students or fee-based education; in latest years however mixed approaches are utilized in growing number of countries. The rationales for free education rely on beliefs that the returns to society from highly educated individuals are substantial and that education is a fundamental right [13, p. 26]. The opposite view is that upfront tuition fees are needed because parents or students should be responsible for coverage of at least some portion of education costs. Often tuition fee policy implies international students to pay higher tuition fees than domestic full-fee paying students [13, p.33].

The balance between free and paid education moves towards widening application and growing diversity of tuition fees. This dramatic shift has happened in recent years in many countries. The cost of tuition is gradually increasing in the countries where higher education is not free (USA, for example); simultaneously, countries with free education started to apply different tuition fee schemes (France, Germany). There are multiple reasons for these developments. One of them is commonly shared opinion that students paying fees demand more accountability. Therefore, universities charging tuition fees are to be more consumer oriented [13, p.27].

The boost in tuition fees was also induced by the concept of new managerialism that has become popular in governance of universities worldwide. According to this concept, universities should be managed as corporations and therefore the volume of attracted external funding is becoming an important indicator of their performance [14].

One of the disputable concerns is that universities in countries with high tuition fees are less accessible than those who charge moderate tuition fees or do not charge tuition. The study based on the analysis of 16 countries [11] has revealed that there is no direct correlation between the level of tuition fees and accessibility. For example, USA and UK – countries characterized with high tuition fees – do not experience difficulties with participation and attainment rates, while other countries even with free education systems, like

Germany, do not have good scores on any of accessibility measures. This result confirms theoretical assumptions about multi-factor choices of students.

A separate politically sensitive issue is the treatment of domestic and foreign students. In many countries, foreign students pay more since it is assumed that higher tuition fees for them are less politically controversial [15]. The common approach is to treat international students as «cash cows» [16, pp. 5–6]. The tuition fee policies towards foreign students underline a conflict between social justice and need for universities to earn money. It is noticeable that universities in countries with less advanced education systems rely not on educational quality for acquisition of international students, but rather on specificity of their countries in political, economic, cultural or geographic aspects [17].

Analysis in historical perspective, covering 33 OECD countries for the period of 1995–2015, suggests that approaches to tuition fees may be related to dominant political regimes [18]. Garritzmann identifies four country groups with similar tuition fee policies, relating these policies to political regimes that prevailed in respective countries after the World War II. The author concludes that in countries with partisan composition of government where neither party is leading, there is high tuition fee, but also high public support (USA). In countries with dominant leftwing parties education is free. In contrast, when rightwing parties dominate for a long time, this leads to «elitist», expensive higher education accompanied by low-subsidies regime.

The suggested logic suffers from ignoring of the dynamics in tuition fee policies. It does not acknowledge that countries are moving towards introduction of tuition fees and raise them tremendously in countries where they already were high. A very noticeable is the case of UK where the cost of university degree was subsidized by the government until 1998 [4, p. 2]. Moreover, in the same country various tuition fee policies may co-exist: some universities may charge tuition fees and others are totally or almost tuition-free (France, Germany). In addition, there are countries with dual tuition track system when the same university charges some students while others study at tuition-free basis (Russia).

In the next three sections tuition fee policies are analyzed for USA, France and Russia in more detail.

USA

The American higher education system evolved relatively free from government oversight and regulation. The unique synergy of public and private HEIs made the country a special case [19, p. 108] and crafted a solid basis for research productivity in the country.

Diversity is the main feature of American tuition fee system. It is characteristic of both private and public universities. The size of tuition fees is also determined by demand and supply balance in a particular HEI and differs by discipline.

Public universities receive some funding from the state governments, allowing them to charge students, who have been living in the state where university is located, lower tuition fees. This is applicable to specialties highly demanded by a state, such as agricultural ones. These study fields are usually not attractive to private universities and are less popular among students. This is why *public universities are less prestigious than private ones despite the lower tuition fees*. However, there are noticeable exceptions, such as Berkeley, Georgia Tech, UCLA and a number of other public universities that are very prestigious.

Universities with lowest acceptance rates are the top private HEIs, with long history and large endowments: Stanford University (5.1 % accepted out of 100 % applied), Harvard University (6 %)[1], Yale University (6.3 %) and Columbia University (7 %)[2]. They charge the highest tuition fees: Yale and Columbia Universities have average tuition fees 50,000 USD/year; Princeton University – over 42,000 USD/year[3].

These high tuition fees are balanced by wide variety of funding sources providing full or partial compensation of tuition charges. Financial aid system differs depending on the type of university (private or public) and origin of a student (American-born or foreign). In addition, some categories of students may get more privileges, for example, outstanding athletes or musicians, former military and students from the underrepresented groups of population.

Top private university may offer larger variety of sources for students to cover the cost of education. For example, Caltech provides to MA students in STEM a «menu» of 90 organizations and foundations available for financial aid or educational loan.

PhD level of study is very different from BA and MA degree. Doctoral students often do not pay

[1] The acceptance rate is constantly decreasing in the top American universities. According to latest data, acceptance rate for Harvard University became 4.5 %. Source: Lou M., Griggs B. Acceptance rates at top colleges are dropping, raising pressure on high school students, available at: https://edition.cnn.com/2019/04/03/us/ivy-league-college-admissions-trnd/index.html?no-st=1554452933 (accessed: 10.09.2019).

[2] Top 100 – Colleges with Lowest Acceptance Rates for 2019, available at: https://www.educationcorner.com/colleges-with-lowest-acceptance-rates.html (accessed: 15.09.2019).

[3] Tuition Fees for Master's Degrees in the USA – Average Costs for Popular Subjects, available at: https://www.mastersportal.com/articles/1762/tuition-fees-for-masters-degrees-in-the-usa-average-costs-for-popular-subjects.html (accessed: 21.09.2019).

tuition fees; their study is covered with funds allocated to scientific projects in which PhD students take part. Usually there should be grant money from external organizations, for example, the National Science Foundation or the National Institutes of Health. PhD students may receive teaching assistantship for services provided to professor, however they cannot work full time outside of campus, since the main task of a graduate student is to study and to write a thesis.

Many studies on USA higher education are focused on the effects of increased tuition fees, especially in public universities, as well as on treatment of international students.

In latest years, the highest growth of tuition fees for MA and even PhD students is envisioned at public universities (Fig. 1). At public universities, tuition for foreign students is on average twice as high as for domestic in-state students. Growth of tuition fees in public sector is connected to decrease in government funding for these HEIs. Tuition fees may partially substitute financial losses for a university.

In private universities tuition fees have always been high and there is typically no difference in fees charged to domestic and international students.

The studies have shown that enrollment falls down at public universities when tuition fees increase. The exact estimates vary. In early studies of the beginning of 90s the enrollment was estimated to fall by 0.5–1 % with a 100 USD increase in tuition. Later studies revealed that 100 USD increase in tuition fees leads only to 0.25 % or less decline in enrollment [21]. Along with the effects on enrollment, increased tuition fees lessen diversity of students, including the ethnic one [10, pp. 37–38].

The problem of growing tuition fees is becoming more and more significant. Nowadays it frequently comes as a shock, especially to MA and PhD students [20, p. 630]. For example, at the Louisiana State University student fees more than doubled in 5 years. Growing tuition fees at public universities make it difficult for faculty to recruit new students, especially those with limited financial resources.

France

The case of France is characterized by several specific features. First of all, the tuition fee policy is deeply intertwined with state system framework and current socio-economic policy. These two factors translate into the structure of stakeholders in higher education, the amount and sources of public spending both in public and private HEIs.

France is a partially decentralized state comprised of regions, departments and communes, meaning that public spending is shared among these public bodies and the central government. In addition, other multiple public agencies, such as chambers of commerce and industry, also invest in higher education.

In scholarly articles the public spending is stated to be gradually decreasing [22, 23], however it fluctuated around 81.7 % of total funding since 2013 (Table 1), while overall spending has grown almost by 8 % in 2017 compared to 2013 [24]. Until 2017 the burden of tuition fees on households has not largely changed; the increase in spending has been mainly distributed between «other public entities» and enterprises. The rising share of these organizations is justified by specificity of organizational structure of French higher education.

In terms of tuition fees policies, it is important to distinguish two prevailing forms of organizations – universities and Grandes Ecoles (elite, highly selective

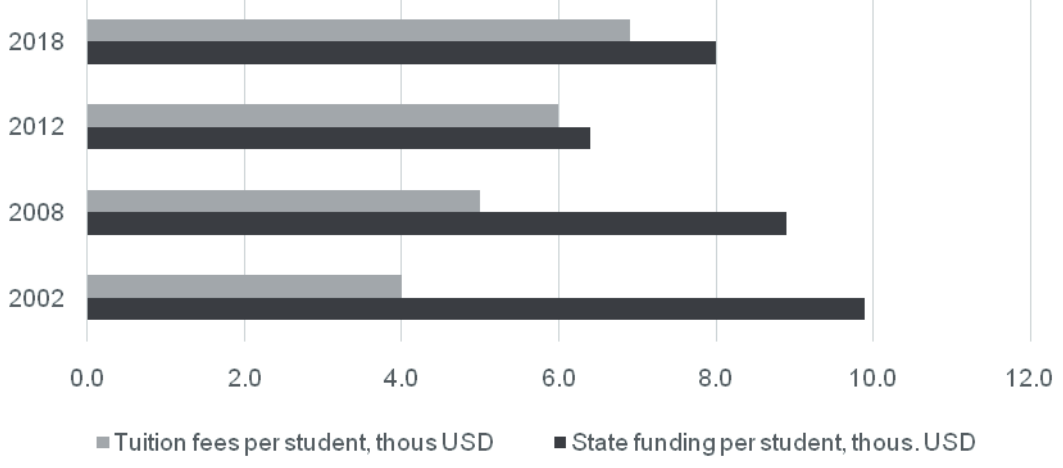

Fig. 1. Growing tuition fees in USA public universities (numbers are adjusted for inflation)
Source: calculated based on data from [20, p. 630]

Table 1

Structure of spending on higher education by types of stakeholders (%)

	2010	2011	2012	2013	2014	2015	2016	2017[p]
Public entities	83.7	83.1	83.0	81.6	81.7	82.7	81.7	81.9
Central government	71.4	70.3	70.2	68.6	67.9	68.4	67.5	67.7
Territorial administrations	10.6	10.7	10.7	11.1	10.6	10.8	10.8	10.7
Other public agencies	1.7	2.1	2.1	1.9	3.2	3.5	3.4	3.5
Enterprises	7.8	8.3	8.4	9.6	8.8	9.0	9.5	9.4
Households	8.5	8.6	8.6	8.8	9.5	8.4	8.7	8.7

Source: [24]

higher education establishments). All universities in France are public, while Grandes Ecoles can be both public and private. Consequently, there are three main tuition fee policy models.

Universities dominate the market of educational services, accounting for 60 % of enrolled students in 2018/2019 academic year [25, p. 153]. Consequently, the prevalent tuition fee policy in France is that characteristic of universities.

Until recently universities have adhered to a «low fee – low aid» educational model. The amount of the annual tuition fee is fixed by the Ministry of Higher Education, Research and Innovation (MESRI) and varies between 170 euros per year for bachelor studies to 380 euros for PhD students. The grants are need-based and entail exemption from paying tuition fees based on family income. Merit-based grants are based on needs and amount just to 900 euros per year [26, p. 49].

«Low fee – low aid» model has been backed by social justice rationale (i. e. inexpensive higher education for low-income families) as one of the state policy pillars. However, the status quo is changing under the pressure of evolving socio-economic situation, namely shortage of resources in the face of higher competition among HEIs and rising number of students enrolled. As a result, spending per student in universities, which rely heavily on central government funding that has not increased accordingly, has decreased by almost 1000 euros since 2013 [24]. To support universities, the government has implemented a differentiated enrollment rate for international students since 2019, increasing tuition fees for BA degree by more than 16 times and for MA – by 15,5 times[4]. Moreover, central authorities silently approve the universities' switching to cost-sharing model, i. e. increase of tuition fees in some specific programs. Usually these are the most prestigious programs with a high future earnings premium. The most prominent case is Université Paris-Dauphine, where some national MA degree programs, for which tuition fees are defined by state, has been transformed into special master's programs, for which the university can set any tuition fees. As a result, tuition fees has become higher for these programs. [27].

Around 18.5 % of students study in public Grandes Ecoles system [25, p. 153]. The tuition fee policy is quite similar to that of universities but the rate is higher[5]. Higher tuition fees are justified by higher per student expense by the state: while average spending per university student in 2017 was 10 330 euros a year, the education of a student in preparatory classes for Grandes Ecoles cost 15 760 euros per year [25, p. 333]. In addition, public Grandes Ecoles also carry out experiments with tuition fee level for their most outstanding programs and have implemented differentiated tuition fee rate for non-EU students.

Finally, private Grandes Ecoles, which are considered the most prestigious, accounted for 18.8 % of students enrolled in HEIs in 2018–2019 academic year [25, p. 153]. Since they guarantee high graduate earnings premium, these HEIs are the most expensive – a year of study can cost more than 20 000 euros and the price is usually higher for foreign students.

Thus, firstly, France incorporates a hybrid tuition fee policy system. Notwithstanding distinctive cases of increase in tuition fees in specific universities, it embodies «low fee–low aid» model in the public sector. On the other hand, more credit is given to highly elite HEIs in private sector, which can set much higher tuition fees. This feature is partially mirroring that of USA, except for much smaller share of private funding in France (Fig. 2) and underdevelopment of financial aid system. Secondly, refuting inferences

[4] Droits d'inscription [Registration fees], available at: http://www.etudiant.gouv.fr/pid33847-cid96721/droits-d-inscription.html (accessed 18.09.2019). (In French).

[5] Le coût des études supérieures en France [The cost of higher education in France], available at: https://www.campusfrance.org/fr/cout-etudes-superieures-france-frais-inscription (accessed 18.09.2019). (In French).

in [18], we acknowledge that tuition fee policy system in France is largely predefined by historical development of labor market which has shaped its institutional diversity and determines low price elasticity on educational programs with outstanding future earnings premium.

As far as PhD studies are concerned, the cost of tuition is low (380 euros per year non-contingent on nationality), however admission to a doctoral program usually requires a candidate to confirm the availability of funding for the entire duration of a thesis research. To this end, PhD candidates can receive financing either under a special employment doctoral contract with MESRI, host research organization, company or in the form of scholarships from the European Union or the country of origin for foreign students. In the case of doctoral contracts, the thesis theme is defined by funding organization, namely by professor or researcher leading the overall study.

In 2017/2018 academic year 73 % of doctoral students enrolled in the first year had their theses financed by another party. The majority of supported PhD students were funded by public entities such as MESRI (34 %). Businesses accounted for almost 11 % of funded thesis research [24].

To summarize, the French tuition fee system, in accord with the American case, is moving towards high-fee model with elevated prices for international students.

Russia

In Russia, the central government sets all major rules regarding higher education despite the fact that it is a federal country. Most of HEIs (over 60 %) report directly to the Ministry of science and higher education. Two other important ministries that supervise HEIs are Ministry of Health and Ministry of Agriculture.

The majority of HEIs are public, and the most prestigious universities are all public. The legislation that came into force in 1992 allowed establishing private universities; at present, the share of private HEIs is about 14 % [28, p.345]. Most of them teach social sciences, business and finance and do not cover STEM, because these are the most costly fields of study to provide.

The same legislation allowed universities to do fundraising, giving start to application of dual tuition track system, when in the same university some students study free of charge while others pay tuition fees (usually up-front). Thus, while the state subsidizes some students as selected, presumably on merit, by individual institutions, it requires the rest of them to provide full compensation for costs incurred [29, p.41].

As a result of legal changes, there are currently three practices related to tuition fees:

– regularly admitted (tuition-free admission) students in public HEIs
– fee-based admissions in public institutions (quasi-private admission) of less than 25 % of total enrolment in high demand fields;
– fee-based admission to private HEIs.

Since 2000, more than 40 % of students enrolled in public universities pay tuition fees [28, p. 346]. The size of tuition fees varies significantly depending on university and discipline. The studies also show correlation between tuition fees level and average annual salary in the region [30, p.73]. That explains why universities located in Moscow charge the highest tuition

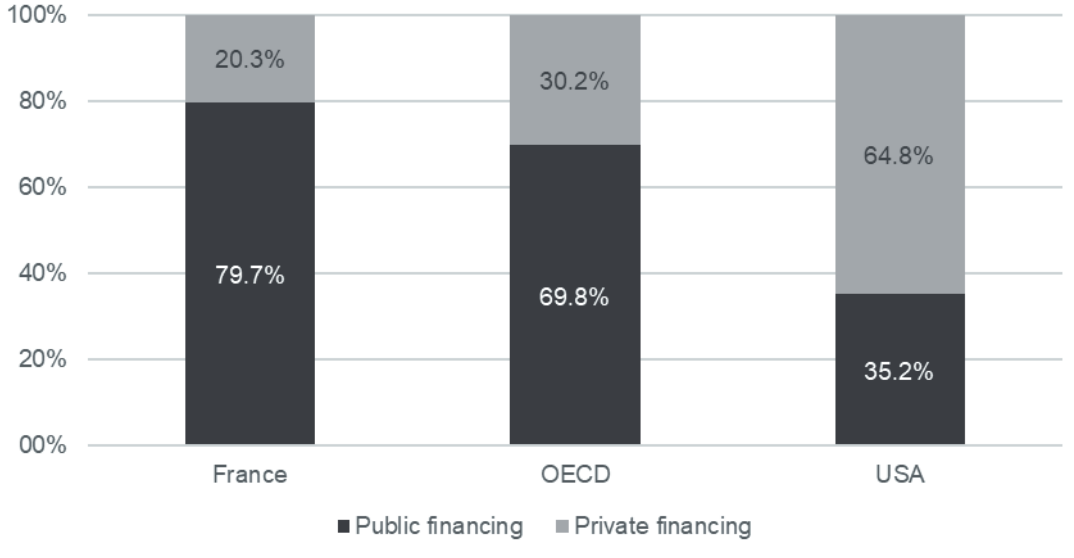

Fig. 2. Relative shares of public and private financing of HEIs in France, OECD and USA, 2015
Source: [24]

fees. The connection between tuition fees and salary is also revealed for Europe and USA but there the coefficient of correlation is lower (0.4 versus 0.8 for Russia).

The fees charged by private institutions are often three to four times lower than those charged by similar programs in top tier public HEIs [29, p. 43]. For applied mathematics, sciences, engineering the tuition charge is set at the lowest level: there are not many applicants in these fields despite the fact that STEM programs in Russia are considered to be of good quality. Also, according to educations.com[6], only four Russian universities offer MA degree in natural sciences and mathematics for international students – Skolkovo institute of science and technology (Skoltech), ITMO, Higher School of Economics, and Moscow Institute of Science and Technology. For some specializations, international students do not pay tuition fees. Otherwise a Master's degree for international students costs from RUB 82,000 (USD 1473) up to RUB 450,000 (USD 8082) per year[7].

The peculiarity of Russian system is that PhD study in English is even more expensive for students than study at MA programs. Graduate school (PhD) in English is a very rare phenomenon, and competition among universities is almost absent; some prospective disciplines are taught in few universities (Table 2). The exception is Skoltech where all PhD programs are in English and tuition-free.

These observations show that in Russia tuition fees are not a selection instrument, because best students study at top tier public universities free of charge. Therefore, tuition fees in public universities are just a source of additional income. Also, the system of financial aid is underdeveloped: tuition fees are not balanced by opportunity to apply for bank loans or to get scholarships from a foundation (public or private), Only students from well-off families can afford tuition-based study. Credit system also benefits those who can pay for education out of pocket. In case the income is unstable, it becomes very difficult to get a loan for education [31, p.116].

International students may become not only a source of income for universities, but also promote their visibility as well as become workforce for research. Foreign MA and especially PhD students may contribute to reaching simultaneously both goals stated by the National Project «Science» – to attract 35 thousand young researchers and to promote internationalization. In addition, attracting students from developed countries with good education background improves the overall quality of graduates and thus benefits all areas of universities' activities – tuition, research, and innovation.

However, as theory and empirical evidence show, students make rational choices and they will choose the place either with low tuition or good political climate, economic prospects, or cultural and geographic richness in the country. At present, Russian universities' competitive advantage is in the ability to charge comparatively modest by world standards tuition fees. English language study is also very important for attracting international students but expanding it in Russia is a difficult task because English language proficiency among teaching staff remains low, and the whole system of teaching English should be modernized. On a positive side, cultural and geographic richness of Russia can be attractive to international students.

Conclusion

International experience demonstrates wide variety of tuition fee policies both backed up or not by the system of compensations and educational bank loans that could decrease the cost of study for a student. The diversity is explained by various internal and external

[6] Science, Master's degree in Russia, available at: https://www.educations.com/search/institutes/masters-degree-science-russia/a63-c42-d1034 (accessed 20.09.2019).

[7] Tuition Fees & Study Costs in Russia, available at: https://www.educations.com/study-guides/europe/study-in-russia/tuition-fees-13341(accessed 20.09.2019).

Table 2

Annual tuition at Russian universities, for PhD studies in English, by select disciplines, USD

Discipline	Minimal cost, USD per year / Name of university	Maximum cost, USD per year / Name of university
Information security	2 645 /Tomsk state university	5 078 /National Research Nuclear University
Material science	3 000 /Siberian federal university	5 078 /National Research Nuclear University
Biological sciences	3 030 /Siberian federal university	5 078 /National Research Nuclear University
Computer engineering	5 078 /National Research Nuclear University	
Photonics, optical systems and technologies	5 078 /National Research Nuclear University	

Source: Data from «Study in Russia». Study in Russia, Official website about higher education in Russia for foreigners, available at: https://studyinrussia.ru/en/ (accessed 12.09.2019).

factors, such as historical legacy, pace of reforms in the higher education sector (France, Russia), political regimes, type of hierarchies in state governance of higher education systems, and some others.

The world trend is in the direction of growing costs of tuition and in introduction of tuition fees in countries with previously tuition-free policies. This trend is partially caused by decreasing government expenditure for higher education, especially after the 2008 economic crisis.

Still, there are two broad assumptions concerning the tuition fee policies: one is based on «social responsibility» of the State and the right of everyone to education; this concept supports free of charge education. Another approach is based on the assumption that parents and students should compensate for at least a part of the education costs, which makes universities more responsible for the quality of services provided.

International practices along with more detailed observations of the tuition fee systems in USA, France and Russia allow defining several important principles that may be taken into consideration in Russia.

First, high tuition fees are possible in cases where a system of loans, grants and subsidies is available for students to offset, at least partially, the cost of study. In the absence of such a system of partial compensation, as in the case of Russia, cost of study should be less expensive than in countries with equal level of educational services (as compared to universities from the same ranking groups, for example). In that case, tuition fee becomes a less profitable source of funding, but it can work as an instrument for attracting better students. Best Russian universities may gradually increase tuition fees, after they improve positions in world ratings and become more recognizable in the international educational market.

Second, high future earning premium of certain educational programs and institutions justifies soaring tuition costs for students. The high tuition fee level in this case does not affect negatively the quality of enrolled students, since the price elasticity is low and competition for acceptance is high. This policy can be tested in some of highly competitive Russian institutions and be proven to be an effective instrument. However, to avoid elitism this policy should be coupled with a comprehensive financial aid system.

Third, foreign students may be a good source both of higher quality students and additional funding for Russian universities. International experience shows that foreign students usually pay more than citizens of the country do. The attractiveness of Russia for foreign students is, in our view, in country's cultural and geographic aspects (assumption based on what?), as well as in quality of training in some disciplines (especially in physics and math). For universities it is important to make international student body geographically, gender-wise, and ethnically diverse. To achieve this goal, universities should conduct proactive academic outreach.

Fourth, in the developed countries, PhD training is often covered not by students but from the grant money because graduate students work with and for professor and thus are employed in a research project. This practice may be useful for Russian universities: instead of charging tuition fees for graduate study, it may be more beneficial to support students from resources allocated to research projects. This approach also makes professors more responsible because selection of best students becomes their core interest.

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UNIVERSITIES' POLICY OF SUPPORTING STUDENTS IN ACADEMICALLY DIVERSE ENVIRONMENT

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Abstract. The aim of this work is to review and analyse the support and development practices for students based on their educational background and academic performance. The increasingly widespread concept of a responsible university involves an opportunity to close or make smaller the gap between academically diversified students. Thus, the purpose is to systematise the practice of working with both low and high-achieving students and assess the possibilities for improving the quality and effectiveness of this work. The analysis regarding existing practices of Russian and international universities is based on the literature review of more than 1600 sources. The review provides identification, comparison and systematisation of common practices used by departments and universities rather than individual teachers. A classification of practices at the stages of identifying, developing and evaluating low and high-achieving students is proposed. Recommendations are formulated for expanding the support and development of students under the conditions of academic diversity and for improving the quality and effectiveness of the educational process.

Keywords: academic diversity, student support, development practices, high-achieving students, low-achieving students, international experience, Russian experience

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Introduction

The increasingly diverse role of universities in recent decades has led to terms such as «conscientious» or «responsible» appearing more often in the speeches of researchers and officials from leading Russian and international universities. Such responsibility involves not only a symbiosis of the main missions or functions of the university, i. e. education, research and engagement to the satisfaction of local needs, but also a conscious restructuring of the activities of the entire university aimed at bringing maximum benefit to society. University thus among other institutions becomes responsible for society, research and the labour market. However, this responsibility certainly does not exclude the university's basic function of educating younger generation; it now has a new component: a responsible university, should be aware of what students are learning in it, and also become more conscious of its interactions with them.

The massification of higher education causes many universities to encounter the phenomenon of academic diversity [1, 2], implying the range of differences in student academic preparation prior to entering the university and their subsequent academic performance. However, unlike other types of student diversity, this phenomenon is not well researched by modern scholars. For example, problems related to ethnic [3, 4] and socio-economic inequality [1, 4, 5, 6] and issues of women in higher education (gender inequality, [3]) are more frequently covered in academic discussions. Relatively often in research, academic diversity is associated with interactions within academic groups, both at basic school level and in higher education. The relationship between the frequency of interaction between teachers and students and academic achievements of the latter is quite well-understood [7]. In turn, academic diversity of the group is associated with the so-called peer-effect which suggests that frequent social interaction between students in such groups influence their learning outcomes; at the same time, not all influence is necessarily positive [8]. However, despite the evidence of academic diversity, its relationship with the functioning of educational institutions remains poorly covered in literature.

In Russia, the particular relevance of studying academic diversity, as well as the practices emerging at university under conditions of such diversity, is important for several reasons. As a consequence of current higher education financing policy, Russian

universities aim at targeting the most talented applicants[1]. However, most Russian universities operate under conditions of high level of students' academic diversity what can be explained by different levels of academic preparation of students admitted in different university's schools, and by academic difference among publicly-funded and fee-paying students[2]. The uneven distribution of admission quotas in the areas of training (namely, the distribution of state-funded admission quotas for disciplines with low admission criteria) and the policy of merging universities with different levels of academic requirements for applicants[3], can also cause high level of students' diversity at Russian universities.

The public policy factors that reinforce diversity are superimposed by demographic factors. Due to demographic trends showing that the number of people aged 17–21 years will continue to increase until 2034[4], the number and diversity of university attendees is also expected to grow. With current policies and mechanisms of control a sharp increase in the number of universities is very unlikely. At the same time, for many universities, expanding student admissions is one of the few and fairly obvious means of increasing their resource base. This means that existing universities will accept more students, which adds to the growing challenge of dealing with academically diversified student population.

At the same time, another element of state policy also ties universities to resources, this time from the point of view of reducing student dropouts. If a certain dropout rate is exceeded, a university runs the risk of having its state funding reduced[5]. This encourages universities to implement instruments for monitoring failure, as well as developing various practices for the support and development of underprepared students.

Thus, the situation of academic diversity complicates the management of the university. In case of low-achieving students, universities are typically faced with the task of «pulling up» or developing such students. At the same time, high-achieving students still require to be taken care of; thus, universities are also faced with the task of maintaining these students' interest in learning and developing their competencies. Additionally, many universities see their better-achieving students as candidates to a role of potential and as representatives maintaining the image of the university outside as a place of quality education. Under such conditions, the diversity of academic preparation and performance underlies the need to use a wide range of practices to support and develop students.

In the context of a responsible university, it is important to expand the boundaries of existing research on what is happening inside one cell of the university – the academic group – to what happens at the university, in general. A responsible university must be responsive to the needs of the least prepared and simultaneously satisfy the requirements of the most prepared students. Both at the academic group level and top management level, the dedicated work of teachers and administrators is required to maximize students' educational results.

However, one cannot state that even the most selective universities escape the academic diversity. Under pressure from public expectations and educational policies, these universities usually selecting the most prepared and talented students, are compelled to take actions leading to an the growth of academic diversity. World leading universities are increasingly creating special programmes to open the doors of the university to students from disadvantaged backgrounds, which also implies lower academic requirements[6]. Accordingly, where such conditions lead to academic diversity, there should be practices to support and develop different groups of students.

This article focuses on the practices and instruments that would be referred to as macro-practices in the field of social work. In social work, macro-practice implies established activities outside the interaction of a social worker with an individual client or a small group of clients. Such practices are distinguished by the use of indirect and organisational leverage in order to improve the state of large population groups. Thus, if social worker and its interaction with clients are replaced with a teacher and teaching groups of students in degree-based educational programme (EP), macro-practices in the context of the

[1] An opportunity to get a higher level of financing for a higher average entrance exam score, as documented in Appendix 9 of the Order of the Ministry of Education and Science of the Russian Federation of July 20, 2016 № 884.

[2] Zagirova F., Romanenko K., Makaryeva A. «And we are so different». Academic heterogeneity of students: analysis, perceptions, practices. *Modern Education Analytics*, 2019, № 4 (25). (In Russ.).

[3] Ibid.

[4] Information from the table «Populations by one-year olds» of the Federal State Statistics Service, available at: http: / /www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/demography/ (accessed: 12.08.2019).

[5] For public universities – Section 46 of the Decree of the Government of the Russian Federation of June 26, 2015, No. 640, available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=312531&fld=134&dst=1000000001,0&rnd=0.26129928182927387#037642312661538857 (accessed: 12.08.2019). The activities of universities of regional importance are regulated by regional legislation.

[6] According to the latest news from BBC News, Oxford university promises to provide 250 places with full coverage of education and living expenses for graduates of public schools from disadvantaged families by 2023, available at: https://www.bbc.com/news/education-48336059 (accessed: 12.08.2019).

current paper are the practices organised at the level of departments or the whole university, aimed at the support and developing certain groups of students. The practices discussed here do not include student-teacher interactions within the EP.

In order to analyse practices for supporting and developing students in conditions of academic diversity, let us consider them in the context of different groups of students, as is often done, for example, in literature on ethnic or racial diversity, when researchers focus their attention on students belonging to certain groups. Thus, for example, many studies have been carried out on the factors leading to academic success of Latin American, Asian and African American students and a comparison of these ethnic groups with each other (for example, in [9]). The instruments and practices used to improve conditions and learning outcomes also fall readily into the pattern of working with certain ethnic or social groups (for example, in [10]). On an analogous basis, the present article also focuses on practices aimed at working with different groups of students, which can be distinguished by the academic criterion: namely, students with high and low levels of achievement and preparation (hereinafter, they will be referred to as high and low achieving students, implying the level of preparation as well).

Then, the aim of this work is to systematise the practices of handling high and low achieving students, as well as to assess the possibilities for improving the quality and effectiveness of this work. For this, both Russian and international practices handling academically diversified students are considered. The search for current practices was limited by the level of undergraduate degrees and full-time form of education.

The article consists of five parts. In the first part, methodology of this study is described. The second part provides information on international practices handling academically diverse students. The third part is devoted to analysis of existing practices in Russian universities, while the fourth one provides a systematisation of all discovered practices. The final part provides conclusions and recommendations on possible areas for the development of Russian practices.

Research methodology

In order to review Russian and international student practices, a large pool of articles and reports available through the HSE library service was analysed. This approach to the study of practices was first widely adopted in evidence-based medicine and later started to be applied in education. Here, the methods and characteristics used for the review should be quite clear and determined from the very beginning so that the results can be traced and repeated.

For this article, the search for literature sources was carried out using the EBSCO Discovery Service available through the HSE electronic library. In order to identify works about Russian institutes of higher education written in Russian, a search was performed using the e-Library electronic resource. The search was limited to 2009–2019, since the purpose of the study is to systematise contemporary practices for the students with different levels of preparation.

The selection of articles was carried out in stages. At the first stage, the titles and abstracts of the papers were checked against the further content analysis of the remaining articles. The review excluded articles that:

– were beyond undergraduate degrees
– were related to distance education
– were related to an analysis of educational policies
– were focused on practices within the academic group, i. e. on interaction between teachers and students
– studied the psychological and pedagogical features of students
– were related to the physical education and health of students
– were written in neither Russian nor English
– were primarily concerned with the practice of working with international students (excluded due to the specificity of this issue)

As keywords for searching in the titles and abstracts of articles through the EBSCO Discovery Service, the following were used: «underprepared students», «talented students», «gifted students», «advanced students» in pairs with words such as «programme», «practice», «service», «support» and «course». A filter was also set to search for related words and relevant topics. A total of 362 and 162 articles were found regarding high and low-achieving students, respectively. After applying the selection criteria, two sets of 20 and 67 articles remained on international practices of working with the first and the second group of students, respectively. An additional 6 articles were found in two languages about practical work with high acieving students in Russia.

In Russian, the search was initially conducted in the e-Library database using similar combinations of Russian translations for the mentioned above terms. However, such a search yielded no results, so it was limited to phrases related to students. A total of 820 articles on high-achieving students and 335 on low-achieving students were found. After analysing the titles and abstracts of the articles that fit the topic of the study, only 47 and 15 works were left

regarding work practices in the first and the second group, respectively.

Due to the low quality of academic literature on the practices used by Russian universities, these data were supplemented by information obtained by the author earlier during a series of interviews with top and middle-level managers of Russian universities. Semi-structured interviews were conducted during December 2018 – April 2019. Initially, it was planned to conduct interviews only with the vice-rectors responsible for the educational activities, however some vice-rectors recommended to contact with head of the structural unit, also involved in organizing educational activities. Thus, interviews with 17 vice-rectors and 2 senior administrators involved in organizing educational activities in universities from 14 regions are included in this work. The range of the unified state exam (USE) scores for the respondents whose tuition was fully paid by the government was between 55 and 92 points; the full-time student enrolment in 2017 at those universities was from 600 to 21,000.

Initially, respondents were asked to attend an interview in person or in video format, however, some administrators offered their own communication options. As a result, the interviews were conducted as follows: 5 – in person, 11 – using video communications provided by Skype and WhatsApp, 1 – through e-mail correspondence, 1 – through correspondence in WhatsApp, and 1 – via telephone conversation. All oral interviews, with the exception of one, were recorded with voice recorder and transcribed with the permission of the respondents. According to one interview, the recording of which was interrupted at the very beginning, an abstract was compiled immediately after the end of the conversation.

Practices of working with academically diversified students: international experience

In global practice, there are several approaches based on different values of educational policies to classify certain groups of students. For example, Scandinavian countries traditionally adhere to the principle of equality, promoting equal educational opportunities for everyone, both at the secondary and higher education levels. No talent preferences are applied and methods for identifying gifted students and their further development are little used. In contrast, the United States, China, as well as most Western European countries, tend to rely on the principles of meritocracy. However, since the massification of higher education does not provide admission of high academic quality in all universities, groups of prepared and unprepared students are distinguished and accordingly, various instruments for working with them are offered. Therefore, the practices described below are more common in the latter countries, although they are also echoed in other contexts.

To begin, let us consider the practices related to the admission, support and development of high-achieving students. Probably, the most popular way to work with high-achieving students abroad is presented by the so-called Honours Programs. For example, in the United States, about 800 colleges and universities are members of the National Collegiate Honors Council[7], although such programmes have been implemented in European countries relatively recently. The practice of their implementation varies not only from country to country, but even within the same university: the target group of students (bachelors, masters or graduate students), the programme content (interdisciplinary or disciplinary, aimed at deepening or expanding knowledge), admission criteria, interrelation with chosen EP, purpose, programme confirmation form and others. However, the main idea remains the same; to provide these students with more challenging education in order to ensure their engagement and development.

Some American universities operate several academic excellence programmes; sometimes separate colleges are created to attract talented students. One such example is the University of Ohio, where at least five academic excellence programmes are administered and one college is formed. At least one programme / college is designed for students of multiple disciplines and interests, while others are aimed at working with students having particular areas of interest[8]. In Patton College of Education alone, students are provided with two academic excellence programmes[9] differing in goals: one is designed to support and increase interest in the teaching profession, while the other is aimed at improving students' skills in implementing specific projects in the field of education.

Another example is Hunter College, one of the largest colleges in City University of New York. At least three programmes of academic excellence are additionally implemented here. One of these, the Catalyst Scholarship Programme[10] is designed specifically for students from families with low socioeconomic status (SES), demonstrating high educational results and studying in STEM-disciplines. The

[7] Available at: https://www.nchchonors.org/ (accessed: 05.08.2019).

[8] Available at: https://www.ohio.edu/scholars/ (accessed: 05.08.2019).

[9] Available at: https://www.ohio.edu/education/academic-programs/honors-programs/index. cfm (accessed: 05.08.2019).

[10] Available at: http://www.hunter.cuny.edu/catalyst/program-goals (accessed: 05.08.2019).

programme includes faculty mentoring of undergraduate students. Students must participate in the general geosciences course and develop their own academic success plan. The programme covers most of the costs of education so that students can devote their time to study rather than finding a job. The choice of the programme components was made for a reason: it was developed based on research into the effectiveness of certain practices and instruments for interacting with students [11].

The University of Auckland in New Zealand also offers academic excellence programmes in various fields of study. An honours degree is awarded for an additional successful year of study on the undergraduate programme; subject to high learning outcomes; this gives students the right to continue on to a Master's programme or even doctoral study[11]. Only those who have studied well in the main undergraduate programme can project their study on the honours track.

In the same university, approaches for working with high-achieving students include the possibility of awarding internships or involving students in teachers' research projects in summer, with a stipend awarded for participation [12]. In Australia, high achieving students are also involved in research. For example, the Talented Students Programme of the University of New South Wales in Sydney[12] sets the involvement of talented students in research as its goal. Students are invited either at the very beginning of training on the basis of admission points or based on current performance. The distinctive point in the implementation of this programme is that the first year of participation implies no academic or research work, – only meetings with senior students participating in the same programme and introduction to university research centres and projects during special presentations. Then, in the second year, students choose a research project of interest and start working in it.

Sometimes universities cooperate to create development programmes for high-achieving students. In this way, the Copenhagen Business School (Denmark), the Chinese University of Hong Kong and the University of Northern California have teamed up to implement the programme for talented undergraduate students called Globe, which includes semester-long studies at each university[13]. Each university selects 18 talented students, forming a group of 54 students studying together for three semesters. This programme is designed for second-year business major bachelor's students.

Support for the low-achieving students in the United States and Australia is also critically important. This is primarily due to the high dropout rate of students themselves from the post-secondary education system. By helping underprepared students, universities seek to retain them and provide opportunities for the successful completion of educational programmes.

A common practice of «pulling up» students to the right level is by providing remedial or developmental education. This usually means having remedial courses for students who suffer from insufficient preparedness for higher education. It can have several forms: the more common option implies students to take developmental courses prior to their EP studies. According to the second option, students are given the opportunity to catch up with their peers while taking regular classes. The remedial courses are usually for fee and provide no educational credits for students.

There is no conclusive evidence of the effectiveness of such courses. On one hand, a number of studies indicate that students choosing the remedial courses demonstrate better results in core courses than those who do not take this opportunity [13]. On the other hand, a number of works indicate such courses to constitute an ineffective instrument for teaching low-achieving students: less than half of those entering corrective courses are able to graduate on time [14]. At the same time, it is also worth noting that this practice has a different effect on students with different levels of lagging behind. Thus, students with a small knowledge gap cope with developmental courses quite well, while significantly underprepared students are more likely to fail [15]. The ambiguous effectiveness of this practice makes politicians and higher education managers look for other ways to solve the problems of low-achieving students and resort to other practices of working with them.

As an alternative to compulsory remedial courses, compulsory counselling for all students who may need it is provided, for example, by the U.S. state of Florida [16]. At the University of Southern Indiana, at-risk students studying STEM programmes are also provided with intrusive advising programme in parallel with corrective courses for the purpose of providing academic support [17]. Fifteen students to one consultant are allocated at the university. For each student from the at-risk group, 5 compulsory individual meetings are held where the student's educational schedule is built, his or her educational progress is discussed and a strategy for preparing for tests and exams is developed.

[11] Available at: e. g. https: // www.auckland.ac.nz/en/study/study-options/find-a-study-option/bachelor-of-science-honours-bschons.html (accessed: 05.08.2019).

[12] Available at: https://www.science.unsw.edu.au/future-students/talented-students- program (accessed: 05.08.2019).

[13] Globe program, available at: https://www.cbs.dk/en/study/bachelor/bsc -in-international-business / globe (accessed: 05.08.2019).

In general, counselling formats may vary. In some cases, counselling is held tête-à-tête, while in other cases, it takes the form of a meeting of an instructor with a group of students. Meetings are not limited to discussing students' academic performance but are also devoted to learning skills and consideration of the cognitive process and problems facing students within the learning process. In the United States, counselling practices prove to be an effective means for retaining students at the university and improving their academic performance; moreover, they represent a financially affordable method of supporting students [18].

In the United States, the practice of supporting low-achieving students is gaining popularity in the form of learning communities. For low-achieving students, this often means that universities try to distribute them within the framework of remedial education so that they intersect at a greater number of meetings and classes [19]; that is, they form what in the Russian context is understood as study groups. The difference is that these groups often mix students with different majors. Studies also confirm that these groups help improve students' academic performance and their sense of belonging to the university community [20].

The combination of the above practices for working with low-achieving students (remedial courses, academic counselling, learning communities, other additional seminars) is a common practice in the United States. However, some universities go even further. For example, as part of its EASE programme for students of the School of Biological Sciences, the University of California[14] also gives students participated at the programme a priority to enrol in the next level courses in biology and chemistry [20].

Bridge programmes constitute another way for supporting underprepared students. Unlike corrective courses, these programmes are most frequently implemented in the interaction of regional universities and colleges. In bringing students' competencies to the required level, such programmes are designed to help students adapt to the requirements and the environment of the educational institution where the transition takes place. Such programmes, for example, are implemented in the University of Toronto (Canada)[15] and in the Auburn University (Montgomery, United States)[16]. These partnership programmes are also being implemented in Kansas institutions: in order to ensure student success, Pittsburgh State University has partnered with Fort Scott Community College [21].

In addition to the above practices, a number of other approaches are taken. For example, career counselling for underprepared students is sometimes viewed as an effective instrument for increasing academic performance and retention: determining students' career path is believed to increase their motivation for learning and desire to obtain the corresponding educational qualifications [22]. Project-based learning is also applied to allow low-achieving students catch up and develop the necessary skills in motivating them to put theory into practice. For example, in South Africa, low-achieving students are involved in real-life projects to solve the problems for the local community [23]. Another tool used by American universities involves the senior student mentorship of the freshmen who have low level of preparation. This practice has demonstrated a positive effect at Louisiana universities, where senior students acted as mentors of students in remedial reading classes[17] [24].

An important aspect of helping underprepared students includes the teacher professional development. There are special teams of professionals who train instructors and teachers to work with low-achieving students [25]. In Texas, the Catch The Next[18] programme is being implemented in order to help local colleges and universities (e. g., University of Texas at Austin, Colleges in the Alamo District and South Texas College) to empower faculty, staff, and institutions to increase the educational attainment of Latinos and other underserved communities in order to close the achievement gap.

The analysis of the practices of working with high and low-achieving students, showed that in many cases both practices include additional mentoring and counselling by teachers. Indeed, according to research, the presence of an effective mentor often appears as a stimulating factor in academic progress. The practice of mentoring helps students gain access to the academic and other resources of the university and adapt to the university culture (for example, [26]).

The peer-effect is also used when working with both high and low-achieving students. Undergraduate mentorship is a fairly common practice. Special programmes (near-peer tutoring) are organised in medical universities in the United States with senior students helping freshmen. Such programmes are demonstrated to cause the greatest effect on the less achieving group of students (for example, [27]), yet the effect for high achievers is also often positive. In other cases,

[14] Available at: https://www.bio.uci.edu/easeprogram/ (accessed: 05.08.2019).

[15] Available at: https://wdw.utoronto.ca/academic-bridging (accessed: 05.08.2019).

[16] Available at: http://www.aum.edu/admissions/admissions-programs/bridge-program (accessed: 05.08.2019).

[17] Available at: https://www.lsu.edu/eng/current/academic-support/peer-mentors. php and (accessed: 05.08.2019). https://firstyear.louisiana.edu/get-involved/peer-mentor-program (accessed: 05.08.2019).

[18] Available at: https://www.catchthenext.org/about-us/our-program/ (accessed: 05.08.2019).

the peer-effect is used in assessing the tasks of classmates by students themselves. A calibrated essay peer-review can serve as an example with its platform created by the University of California, Los Angeles. In this program, teachers train students to evaluate essays based on the given criteria; after that, students evaluate work of their classmates. As the researchers note, such practice leads to a narrowing of the gap between the low and high achievers [28].

Working with academically diverse students: Russian experience

The analysed literature indicates that the high-achieving or talented students are receiving much more attention at Russian universities. According to the results of the interview with university administrators, the authors came to a similar conclusion. This chapter of the article is based on knowledge obtained not only from the analysis of literature and information from the websites of universities, but also from the interviews conducted by one of the authors.

While working with high-achieving students, Russian universities use a wide range of practices, relying on the best practices of the Soviet system combined with new opportunities and experience of foreign countries. Thus, high-achieving students are incentivized financially: this includes not only traditional merit academic scholarships (MAS) approved by the regulatory documents, but also the possibility of students' priority participation in academic mobility, guaranteed room at a university dormitory (Plekhanov Russian State University of Economics, Russian Technological University MIREA, Financial University), priorities in grant support for academic and scholarly research, and tuition discounts for students who pay tuition (HSE, Moscow State Pedagogical University, Ural Federal University).

The involvement of students in research is considered by administrators and teachers as one of the instruments for the development and support of high achievers [29]. With great certainty, the latter is argued to be the main instrument for motivating highly achieving students in Russian higher education. In most cases, research activity means an additional extracurricular workload for students. Students are attracted through various forms. The simplest are the organisation of research study groups in the departments or the involvement of students in grant research under the guidance of teachers. There are some other, more complex research associations: student design bureaus (the MPEI experience is described in article [30]) student research societies, etc.

Following the practice of Western universities, Russian universities are implementing programmes of academic excellence. This practice is still in its infancy and is quite varied in its nature. At some universities, separate units or colleges are created for this purpose, for example, in Far Eastern Federal University and the University of Tyumen, while the Siberian Federal University[19] is even a member of the above-mentioned American national collegial council for academic excellence. At other universities, programmes are implemented within individual faculties or study areas (Kazan Federal University, Siberian State Medical University, Kazan State Medical University). The form of implementation of such programmes also varies greatly, e. g.:

– the strongest applicants are selected in a separate group and their academic program curriculum is modified (Kazan State Medical University);

– programmes of academic excellence exist in the form of degree-based educational programs which are advertised to the most talented and motivated candidates. Students apply directly to this academic programme (University of Tyumen[20]);

– an additional advanced programme is offered along with the degree-based one. Students in this programme are selected based on their achievement in EP and their motivational letters (Far Eastern Federal University, Siberian State Medical University[21]). This model is the most similar to the western ones.

Summer school is another, less frequent, but still common way of working with highly achieving students. These schools are typically aimed at developing various skills and competencies (leadership, research), as well as deepening the disciplinary knowledge.

Another practice, often reflected in the structural changes of the university, is tutoring. At present, tutoring is more popular in Russia than the mentoring practiced at foreign universities. While mentoring involves cooperation in order to transfer experience and stimulate development in a particular field, tutoring is more likely to help students to determine their own educational trajectory. Tomsk State University provides a good example of a strong tutors' team[22]. In the Far Eastern Federal University tutoring has transformed from the practice of supporting and individualising educational trajectories of high-achieving students towards a support instrument for low-achieving students to identify their problems and develop solutions.

[19] Honors College of the Siberian Federal University, available at: https://elibrary.ru/item.asp?id=32829633

[20] Available at: https://sas.utmn.ru/ru/ (accessed: 05.08.2019).

[21] Available at: https://www.ssmu.ru/ru/obrazovanie/elite/ (accessed: 05.08.2019).

[22] Available at: https://vk.com/tutortsu (accessed: 05.08.2019).

Finally, a form of assessing high achievers consists of Olympiads, intellectual games, contests and student conferences. On the one hand, such activities are often targeted at selecting the best students. On the other hand, they aim at student motivation to participate in academic and research life of the university and summarise specific results of their academic, research and / or creative activities (an example here is the Plekhanov Russian State University of Economics in [31]). Participation and victory in such competitions is important for students who want to continue their studies at graduate and postgraduate levels.

Although the peer-effect is not very often consciously used in Russia, some practices can be identified in this connection. Judging from the literature, this happens not within the educational group itself (teachers more often see the negative effects of heterogeneous groups), but rather through some other specific measures, for example, specially created scientific career centres[23], where successful upper-undergraduate students are invited as tutors. In other cases, a group of educational consultants from among senior students is identified; one of this group's responsibilities is to help low-achieving students [32]. Sometimes, such assistance is provided by the student councils, especially if the problem is significant, and this council is active and well functioning[24]. This is perhaps the only case in current Russian experience where the work is conducted with both high and low-achieving students.

It is important to mention that the work with the low-achieving students is quite limited. Literature review shows that although researchers admit the existence of the problem of low-achieving students, yet, there is no much experience in working with this category. In most cases, such experience includes remedial or extracurricular courses, which are offered at schools if there are too many underprepared students. Those courses are as a rule discipline-specific and focused on filling the gaps in basic school education [33].

There are practically no other instrument exists for solving academic problems at the level of departments and universities. Even the task of developing basic skills of intellectual activity such as taking notes lies heavy on university teachers, «it is the responsibility of the teacher to teach students how to take notes, abbreviate, highlight logical relationships, interpret material, etc.» [34, p.66]. At the university level, it has become common practice to manage low-achieving students in manual mode.

There are some other instruments for supporting students, regardless students' academic level helping to handle student support. For example, the institute of curators, although some administrators have recognized it as not always effective. Curators act as a buffer between students and teachers and administrators. They help identify problems of low-achieving students and resolve conflicts with teachers (for example, [35]). Curators advise high-achieving students how they can best realise their potential.

The above review of Russian practices demonstrates that the work with high-achieving students is often more systemic and structural than the work with the low-achieving ones; it turns out that the instruments for identification and development of high-achieving students are much more numerous and better developed. However, it must be noted that most Russian research publications in this area are descriptive and at best instructional in nature; they do not generally rely on any empirical studies of the effectiveness and efficiency of specific practices.

Generalisation of practices

A review of foreign and Russian practices allows to outline a general framework of the work with high and low-achieving students. In general, the practice of supporting these groups of students can be divided into several types as shown in Table 1. Some practices can be applied for both high-achieving and low-achieving students. In this case, the key difference lies in their specific content. In Table 1, a level is identified, where the implementation of a particular practice block is carried out. The following levels were highlighted:

– *structure* involves the creation of separate structural units for the practice;

– *university* assumes organisation and implementation of practices at the university level;

– *unit* involves organisation and implementation of practices at the level of faculties and institutes;

– *teachers* (individual level) is related to practices implemented by teachers in the framework of the EP.

Without claiming to be comprehensive, this table represents the most common practices of working with students, systematising the work conducted by universities in relation to students with different levels of preparedness and academic acheivement. Moreover, the table may allow universities eager to become responsible providers of quality education to find new currently unused niches for supporting students and maximising their academic success.

[23] An example of such a centre is at Sechenov University, Available at: https://www.sechenov.ru/univers/structure/center/ tsentr-nauchnoy-karery / (accessed: 05.08.2019).

[24] An example of such interaction of students is in Ural Federal University, Available at: https://vk.com/repeatitor (accessed: 05.08.2019).

Table 1

Organisational decisions (practice blocks) targeting high and low-achieving students at different stages of interaction

Stage	High-achieving students	Low-achieving students
Identification	Targeted search and retention of talented applicants (*university, unit, structure*) According to the results of the entrance tests (USE) (*unit, university*) Entrance in-course assessment of the readiness at the beginning of the academic year (*teachers*)	According to the results of entrance tests (USE) (*unit, university*) Entrance in-course assessment of the readiness at the beginning of the academic year (*teachers*)
Development	Teaching practices (*teachers*) Adaptation (*individualisation*) of educational programmes (*all levels*) Additional programmes (*unit, university, structure*) Mentoring (*teachers, department, university*) Tutoring (*department, university, structure*) Research activity (*teachers, unit, university*) Financial support (*university*) Structures aimed at supporting and developing students (*university, structure*)	Teaching practices (*teachers*) Adaptation (individualisation) of educational programmes (*all levels*) Additional programmes (*unit, university*) Mentoring (*teachers, unit, university*)
Evaluation	Academic competitions (*unit, university*) Other competitions (*unit, university*) Exhibitions of student work (*unit, university*)	Analysis of academic achievement at the curricular courses (*teachers, unit*)

Speaking of Western countries' experience, the approach to academic support and student development generally appears to be more systematic: additional opportunities for academic support and student development outside the basic curricula provided both at the level of university and academic departments' administration. Most recently, teaching staff and administration have begun creating cross-functional and interdisciplinary groups to develop solutions for various groups of students. A common practice involves the creation of an entire cluster of units responsible for supporting students academically, psychologically, financially and socially. Universities hire specialists to help students with skill development, as well as organising entire programmes apart from the EP and available to all students regardless of their field of study. It is worth mentioning that some Russian universities are moving in the same direction and providing additional opportunities for improving quality of training of their students.

The practices identified in this review vary not only according to the stages of work, the target group of students and the level of implementation of the practices, but also by their complexity. The practices described above in some cases can be referred to as peculiar mega-practices (Honours colleges and academic excellence programmes, many examples of remedial courses in the USA). Such mega-practices include several merged practices, formed from a combination of additional courses, mentoring support from teachers and students, and distinctive teaching practices that we did not cover in this article.

The best case scenario is when the results and the implementation process of the listed practices and mega-practices are researched and evaluated by the university thus allowing to make necessary changes and adjustments to improve teaching and learning and student success.

Conclusions for educational policy and management

The concept of a responsible university means that students have all necessary educational opportunities. At the same time, the availability of such educational opportunities within the curriculum framework is not always sufficient; therefore, students should have support and development opportunities outside their degree-based EP. In order for Russian universities to take more responsibility regarding students, a deep and comprehensive analysis of students' data should be conducted. This should include an analysis of the school grades and national exams scores, individual achievements, and also should be supplemented (especially for the freshmen) with information about current academic performance, the socio-economic status, students' interests, aspirations and hobbies, as well as their learning styles and psychological profile. In order to provide best educational opportunities, the choice of practice, its content, structure and pace should be dictated by the characteristics of the students for whom this practice is created.

The practices presented in this work can help universities address the quality of education, and academic diversity. The current situation, when universities are more likely to work with high achieving students, is more likely to lead to an increase in the academic diversity in the university and, accordingly, to an increase in the educational quality gap among students. Universities need to help their low-achieving students in order to reduce academic diversity.

In spite of that, Russian current practices demonstrated that low-achieving students tend to be left without sufficient attention from universities. Support and development practices for this group are found in literature and are mentioned by administrators much less often than practices for high-achieving students. This looks rather strange, considering that more than 17% of students who enrolled tuition-free and more than 30% tuition-paying students are admitted to Russian universities with an average USE score below 56 (out of 100), which is considered to be low quality level of admission[25]. Universities can expand existing practices of student support through thoughtful adaptation of the instruments described above.

In an interview, some administrators admitted that their university refuses to offer remedial courses due to their unpopularity and inefficiency. Some international universities also report the same negative experience, with low achieving students expressing no desire to use this service provided by universities [36, 37]. In this case, additional or alternative ways can be developed for involving such students, for example, through lowering the price of remedial courses and the use of other practices, for example, online technologies. An additional online support as part of the course on elementary statistics turned out to be quite effective [38].

What is quite obvious in our context is the possibility and even the need for a deeper use of the peer-effect. Apart from cases when senior students are involved as tutors and consultants by university, in Russia, such practices are often carried out by the students themselves either through student councils (communities), or on a completely informal basis. However, in this form, assistance can mainly be provided for students already quite well socialised in their environment. For those who do not adapt well to new conditions, such opportunities remain closed. Therefore, universities should consider the option of formalising and institutionalising forms of educational interaction between students with the increased involvement of senior students as mentors. This can both help low-achieving students, from the point of view of mastering the required skills, knowledge and competencies, socialisation in the university environment. Institutionalising educational interaction will also help high achieving students, providing them with deeper understanding of the issues related to their active life position. Moreover, the practices associated with the peer-effect, if properly organised, can present an effective instrument for reducing academic diversity with a positive effect for both successful and unsuccessful students. However, the formalisation process should not be reduced to establishing the superficial voluntary-compulsory nature of such relations, since this risks to reduce the positive effect of such practices to zero. The sincere mutual involvement of students is one of the key factors for successful student interaction.

The introduction of additional student support instruments should be accompanied by providing opportunities for the professional development of teachers. Working with high and low-achieving students requires different skills and mastery of teaching. At the same time, while a relatively large number of guidelines and manuals, and courses on working with gifted or low-achieving children exist for school-level teachers, teachers at Russian universities have limited access to support instruments.

Quality evaluation of the practice effectiveness is an essential additional element of comprehensive work with students under conditions of academic diversity. Such evaluation will allow administrators, researchers and teachers evaluate the adequacy of the resources they spend and identify the ways of improvement. The comprehensiveness of measures for dealing with academically diverse students should also be ensured by the involvement of both administrators and academic staff. Based on available student data, cross-functional and sometimes interdisciplinary work on evaluating the effectiveness of current practices can serve as a way to provide the best educational opportunities outside the curricula for both the best students and those with academic difficulties.

In conclusion we should note that university policies in student support in the Russian context still remain a poorly investigated problem. For the further development of research in this field, it would be helpful to address how current federal policy affects university policy for student support; what incentives and obstacles it sets; how the institutionalization of new practices occurs, what practices are institutionalized, and what contributes to this; how student dropouts and university policies of supporting low-achieving students are connected, and how student support and development are reflected in university programs and strategies. Moreover, the technological

[25] According to the monitoring of admissions quality for 2018.

development reveals new opportunities for universities to work with students, so the study of the effects and possibilities of using online technology and digitalization for comprehensive student support is becoming more relevant than ever.

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UNIVERSITY SOCIAL RESPONSIBILITY – GOOD PRACTICES OF POLISH HIGHER EDUCATION INSTITUTIONS

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Abstract. All organizations, including Higher Education Institutions (HEIs), should be socially responsible. Therefore, the article aims to answer the following research questions: How are the principles of social responsibility implemented by Polish HEIs? Through what good practices are they manifested? What formal national regulations support these activities? To answer those questions, the principles of the Declaration of University Social Responsibility and of good practices implemented by 23 universities, the first signatories of this Declaration, were reviewed. The applied research method has incorporated the analysis of the literature on the subject, documents and websites of the above 23 universities. The study presents the essence of university social responsibility and the special role of universities in promoting and implementing the principles of sustainable development and social responsibility. The activities of the Polish public administration in partnership with the representatives of HEIs, businesses, NGOs which led to the creation of the Declaration of USR were outlined. Examples of good practices applied by the examined universities and the ensuing conclusions were briefly discussed.

Keywords: university social responsibility, higher education institutions, principles for responsible management education, declaration of university social responsibility

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Introduction

All organizations (not just businesses) [1–3], including HEIs [4–5] should be socially responsible, and hence oriented to building relations with their stakeholders. HEIs are supposed to play a special social and civilizational role [6–8]. In their activities, they simultaneously focus on research, education and serving the society (building relations with stakeholders). Thus, they can promote sustainable development based on principles of social responsibility [9] not only in education, but also in management and operation. HEIs are increasingly involved in these activities [10–11], as is confirmed by reports of various international organizations [8]. For example, the world's best universities, such as the University of Cambridge, California Institute of Technology, Stanford University, Massachusetts Institute of Technology, Harvard University and Princeton University, implement sustainable development (SD) strategies based on the 2015 United Nations 17 Sustainable Development Goals (SDGs[1]) [13]. Principles for Responsible Management Education (PRME) is another external initiative document supporting the activity of HEIs [14]. This platform popularizes issues of SD in university business programs around the world based on six principles of responsible managerial education developed in 2007 under the UN Global Compact program. These principles are as follows: purpose, values, method, research, partnership and dialogue [15]. PRME enables students to understand the issues of SD during their studies, so that in the future – as participants in economic life – they could balance its goals with the economic goals of businesses [16].

This article aims to answer the following research questions:

- How are the principles of social responsibility implemented by Polish HEIs;
- Through what good practices are they manifested?
- What formal national regulations support these practices?

[1] These principles involve a multi-dimensional approach to SD. They were included in the Agenda for Sustainable Development 2030 and adopted for use in 2015 by UN Member States, including the EU countries. These principles include: eradication of extreme poverty and hunger, activity for climate and environmental protection, ensuring responsible consumption and production, and the quality of life and peaceful coexistence based on partnership and sustainable patterns [12].

To answer those questions, the principles of the Declaration of University Social Responsibility (USR) and of good practices implemented by 23 universities, the first signatories of this Declaration, were reviewed. The applied research method has incorporated the analysis of the literature on the subject, documents and websites of the above 23 universities.

The study also presents the definition and the essence of USR, and it introduces the special role of universities in promoting and implementing the principles of SD and SR. The activities of the Polish public administration in partnership with the representatives of HEIs, businesses, NGOs which led to the creation of the Declaration of University Social Responsibility were outlined. Examples of good practices applied by the examined universities, the first signatories of the Declaration, were briefly discussed. Based on these practices, benefits and conclusions for the future regarding the implementation of SR in Polish universities were identified.

Definition and Essence of University Social Responsibility

The idea of social responsibility is most often called Corporate Social Responsibility (CSR) and is associated with enterprises. Already P. Drucker stated that it is a relationship between subjects and the broadly understood society, a relationship for which these entities are responsible [17]. The European Commission is of a similar opinion [8]. CSR can be defined as responsible and ethical performance of economic, social, and environmental aspects that can improve the quality of life for different stakeholders, such as employees, suppliers, consumers, government, community, society, etc. Organizations that promote social and environmental initiatives have the power to evoke positive reactions between stakeholders [4]. SR is defined by Norm ISO 26000 as the «responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical organization that: contributes to sustainable development, including health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behavior; is integrated through the organization and practiced in its relationships» [18].

A socially responsible university is a higher education institution whose responsibility towards society concerns preparing graduates to act as knowledge workers and building close relations with the economic practice and local governments [19]. Universities are organizations that create and transfer knowledge and competencies; therefore, being socially responsible, they should take into account their stakeholders' expectations by shaping economic, social and ethical relations with them; operate within the legal framework for higher education; strive to build organizational culture conducive to social innovation and to be a center of transmission and transformation of culture, good practices and civic attitudes [20, 7].

USR primarily means ensuring the appropriate quality of education, transfer of knowledge to the economy to stimulate its growth, education of future elites of society, active social policy towards students and employees, and elimination of social barriers [8]. It should be based on managing the university according to the code of good practices and on shaping socially desirable attitudes among stakeholders, especially students [21].

Therefore, USR is the ability to develop and promote a group of principles and values through responsible management, teaching, research, and community involvement (building relations with stakeholders). These four key areas do not work in isolation but as a whole [22].

Activities of Polish HEIs and the Declaration of University Social Responsibility

Issues of social responsibility at HEIs in Poland are promoted, among others, by offering a subject related to CSR in study programs and by postgraduate studies in this field. Today, HEIs offering postgraduate studies in CSR include: Kozminski University, University of Ecology and Management (Warsaw), Management School of Silesian University (Chorzow), University of Opole, Wroclaw University of Economics, Gdansk University of Technology, Collegium Da Vinci (Poznan), University of Economics in Katowice, Poznan University of Economics, Warsaw University of Life Sciences (SGGW) [23–24].

The development of USR and shaping higher education goals in Poland according to the principles of sustainable development is also based on the PRME platform (universities of economics) and the Declaration of University Social Responsibility.

Among business schools in Poland only five decided to join the PRME initiative. These are Warsaw School of Economics, Poznan University of Economics, Kozminski University, Poznan University College of Business, and the Faculty of Management at University of Warsaw (only the first two – both are

public schools – have submitted the required Sharing Information on Progress Report) [23].

The Declaration is a result of grassroots activity of representatives of academic institutions and government administration supporting such initiatives. In 2009, the Sustainable Development and Corporate Social Responsibility Team was established at the then Ministry of Development. The team created a platform for dialogue, exchange of experience and good practices between public administration, business, trade unions, industry and sector associations, research and academic community as well as non-governmental organizations in the field of sustainable development and CSR [25]. The team is advised by a working group on USR. The Declaration is the result of the group's work and a tool through which it accomplishes its tasks. The declaration was signed on November 16, 2017 by 23 HEIs: Kozminski University, University of Bielsko-Biala, the Center of Postgraduate Medical Education, the Witelon State University of Applied Sciences in Legnica, Gdansk University of Technology, Lodz University of Technology, Wroclaw University of Science and Technology, Powiślańska School in Kwidzyn, SGH Warsaw School of Economics, Vistula School of Hospitality, Medical University of Silesia in Katowice, University of Gdansk, Krakow University of Economics and Business, Poznan University of Economics and Business, Wroclaw University of Economics and Business, University of Silesia in Katowice, Adam Mickiewicz University in Poznan, University of Lodz, University of Agriculture in Krakow, University of Wrocław, WSB University, Humanitas University in Sosnowiec, Warsaw Management University.

The Declaration is based on the SDGs and explains how a socially responsible university can contribute to their achievement [24]. The Declaration is a voluntary commitment of HEIs to promote the idea of SD and SR in educational activities, scientific research, and management and organizational solutions at university in accordance with the twelve principles contained therein. Its purpose is to build broad social awareness of the role of universities in shaping conditions for the countries' sustainable socio-economic development. The Declaration is addressed to all public and private universities.

The Declaration [26] reads: «The special role of universities as places that create and transfer knowledge about the surrounding reality obliges them to include and apply the principles of SR in all areas of activity and to promote these principles among stakeholders. Bearing in mind the good of higher education in Poland, being aware of our role in implementing the principles of sustainable development, ensuring high quality research and education, and ensuring comprehensive development of the academic community, we commit ourselves» to comply with the twelve principles contained in the declaration (Tab. 1). These principles deal with various aspects of the university operation, including teaching and research, dialogue with stakeholders and internal organization. A university joining the initiative pledges to develop a selected area (or several ones) from among the listed in a spirit of social responsibility.

The growing popularity of the USR Declaration in Poland is evidenced by the fact that another sixty HEIs joined it in 2019[2], both public and private ones [27].

Analysis of good practices at selected Polish HEIs
Research methodology

The study analyzed documents and websites of the universities – the first signatories to the SRU Declaration from 2017. Table 1 presents only examples of good practices implemented by those universities that are part of an individual principle of the

[2] Among others, these are the leading Polish universities, such as: AGH University of Science and Technology in Krakow, Medical University of Gdańsk, Warsaw University of Technology, University of Economics in Katowice, Nicolaus Copernicus University in Toruń, Silesian University of Technology, Cracow University of Technology, but also other public and private universities of different profiles, e. g. the Feliks Nowowiejski Academy of Music in Bydgoszcz, Academy of Fine Arts in Gdańsk, the University School of Physical Education in Wrocław, Polish-Japanese Academy of Information Technology, Cardinal Wyszyński University in Warsaw, Medical University of Lodz, WSB University in Gdansk [27].

Table 1

Examples of good practices of selected HEIs in Poland implemented on the basis of the principles of the Declaration of USR

Name of the university	Name of the practice	A brief description of the practice
Principle 1. Cultivate academic values prescribed, among others, in the «Code of Researcher's Ethics», in particular: diligence, objectivity, independence, openness and transparency		
SGH Warsaw School of Economics	Code of Ethics of Employees of Warsaw School of Economics	Representatives of various groups of SGH employees were involved in the participatory development of the Code. It was adopted by the SGH Senate in December 2018 and published on the university's website. It is complemented by a separate SGH Ethics Handbook. It contains examples of ways of conduct and good practices; it may be supplemented by employees.

Name of the university	Name of the practice	A brief description of the practice
University of Silesia in Katowice	Silesian Science Festival (SSF)	During the SSF, scientists share their knowledge, innovative research results, their application in industry and economy; they present inventions and the latest achievements to the public through workshops, lectures and shows adapted to different age groups.
Principle 2. Shape social and civic attitudes of future elites conducive to building community, creativity, openness and communication, as well as social sensitivity and work culture		
University of Bielsko-Biała	Sandals for Gambia	The goal of the Science Club 'Horizon' initiative is to collect and transport sandals for poor children in Gambia. In 2018, the campaign brought together over 320 representatives of education, culture, media, and administration. Over 22,000 sandals went to children in Gambia.
Humanitas University in Sosnowiec	Development of lifelong education	The University of the Third Age thrives at the university, and various projects to activate senior citizens are implemented, e. g. «the Sosnowiec Academy of Citizens' Activity». In various cities of the region, Children's Universities of the Humanitas University are set up to show the youngest (6–12-year-olds) the diversity of the world of science. There is also Youth University popularizing knowledge in the fields of engineering, marketing, management, PR, chemistry, physics, biology, mnemonics and psychology among teenagers (13–17-year-olds).
Medical University of Silesia in Katowice	Culinary and educational workshops «Colorful means healthy»	This is an initiative of Medical University of Silesia in Katowice (Operational Program Knowledge Education Development), in partnership with the municipality of Siemianowice Śląskie. The aim of educational, sensory, culinary workshops in molecular cuisine is to shape or change children's attitudes, beliefs, opinions and practical skills.
Wroclaw University of Economics and Business	Green Days 2019 Wroclaw University of Economics and Business (WUEB) for the Planet and Future Generations	On the occasion of the Earth Day, the Green Team, together with the ENACTUS scientific club, organized two days' (16–17 April 2019) activities devoted to the issues of university responsibility towards the planet and future generations. The program included: workshops, lectures, discussion with representatives of the university administration about the desired «green» and pro-social initiatives at WUEB
Adam Mickiewicz University in Poznan	Academic Days	The main goal of the Academic Days is to popularize knowledge in the field of natural sciences among secondary school students by participating in lectures and in labs, workshops and seminars conducted by the employees of the Faculty of Biology. Students acquire knowledge, skills and social competences in the field of research of the world of nature and biology
Warsaw Management University (WMU)	Academy of Managerial Competence	The key task of the project is to organize free cyclical trainings in responsible management for students and graduates of WMU and for the local community. The trainings are conducted by the top managerial staff of renowned national and international companies.
University of Wrocław (UWr)	Popularization of science	UWr is open to children, youth, and their parents. Faculties prepare lectures on natural and life sciences, STEM, law, social, and philosophical disciplines and humanities. Studium Generale aims to build bridges between specialist field areas in order to allow people to know and understand better the world around us. The University participates in The Lower Silesian Festival of Science. During lectures, workshops, laboratory, classes, researchers present the achievements of science in layman's terms.
Principle 3. Disseminate the ideas of equality, diversity, tolerance and respect, and protect human rights in relation to the entire academic community and its environment		
WSB University	Managing the diversity	About 1,000 students from 65 countries study at WSB University. Supporting diversity through respect for the values, traditions, norms, customs and culture of various countries has made WSB University unique in the region. During matriculation, foreign students appear in national costumes; they speak about traditions, culture and cuisine of their countries during specially organized days, exchange their experience by participating in educational and research projects at the university.

Name of the university	Name of the practice	A brief description of the practice
Medical University of Silesia in Katowice	The project «From kindergarten to senior» co-sponsored by the City of Katowice	Every year, MUSK organizes several free forms of sports (e. g. Nordic walking) and educational activities (workshops, lectures) for the residents of Katowice. The project assumes that health prophylaxis will definitely be more effective if its program reaches entire social structures, from the youngest to the seniors of the City of Katowice.
University of Gdansk (UG)	Immigrant student at school and in the environment – improving intercultural competences	In May 2015, the President of Gdańsk inaugurated the work of the first Polish cross-sectoral and interdisciplinary team for the model of integration of immigrants. Its task was to create an inventory of resources and opportunities to support immigrants in Gdansk, and to identify their most important needs and problems. The Faculty of Social Sciences of the UG participated in the team's activities and developed a program and methods of training for teachers. Its purpose is to develop the knowledge and competences of educators and psychologists in the field of education and support of the development and integration of immigrant students at Polish schools.
Principle 4. Expand curricula to include issues of ethics and CSR, sustainable development and social innovation		
Kozminski University	CSR. Goals of Sustainable Development in the Company's Strategy – postgraduate studies	Postgraduate studies are specialized and are conducted in partnership with Deloitte. The curriculum aims to supplement knowledge about shaping ethical and responsible business strategies using the SDGs of the UN, as well as to equip the participants with skills and competences highly valued on the market for the effective use of various instruments of CSR in a modern organization.
SGH Warsaw School of Economics	Compulsory e-learning subject «Corporate Social Responsibility»	The subject developed as part of extending the SGH curriculum with issues of ethics and SR. Each module contains a theoretical introduction, a case study and opinions of practitioners from organizations who are leaders in a given topic.
Principle 5. Run projects implementing the principles of SR, in particular regarding the management of diversity in the workplace, employee volunteering, promotion of ethics, cross-sectoral cooperation, and socially engaged marketing		
Poznan University of Economics and Business	Volunteer WorkDay at UEP	The idea of the initiative is to introduce the notion of employee volunteer work and to present voluntary activities conducted by business and NGOs and by employees and students of PUEB
University of Gdansk	Academy of Animator – the Promoter of Science	The project implemented by the Faculty of Chemistry consisted of strengthening the dialogue between science and society in the field of experimental sciences, transferring knowledge based on scientific evidence and activity of employee volunteer work. It was associated with the Baltic Festival of Science.
Principle 6. Undertake scientific research and implementation activities which, in partnership with other academic centers from around the world, the enterprise sector, public administration and NGOs, can contribute to solving important social problems		
WSB University	Building long-term relations with the economic environment	WSB University develops effective coope-ration and partnership relations with enti-ties of the social and economic environ-ment, among others, through the Experts' Council of WSB University. As one of the first in Poland, it introduced a dual educa-tion model ensuring graduates' better pre-paration to the needs of the labor market.
Gdansk University of Technology	Knowledge Bridge – a portal with knowledge for you	Bridge of Knowledge is a platform that aims to connect creative scientists with innovative businessmen. Bridge gathers science offers for commercial partnerships. This platform is filled with opportunities which give access to innovative scientists, their projects, laboratories and more. It provides new ways to bring business to the next level.
Principle 7. Develop inter-university, national and international cooperation to enable adaptation and strengthening of the best practices in the field of CSR		
Poznan University of Economics and Business	Conference «Problems of CSR in didactics and scientific research. PRME Prospects» 3–4 April 2017	The conference aimed to discuss the importance of CSR in the modern world. Universities' obligation to prepare students – future employees – to perform professional roles responsibly was discussed, the results of CSR research were presented, and contemporary interpretations of this idea and directions of its development were considered.

Name of the university	Name of the practice	A brief description of the practice
University of Silesia in Katowice	14th Youth Climate Summit before COP24, Conference of Youth (COY)	This project preceded the climate summit in Katowice (December 2–14, 2018) During the meeting, issues of the climate policy in the regional and global dimensions as well as environmental changes were raised. The program included thematic workshops, sessions and panels.
Principle 8. Ensure the organizational order at university, building university management on the foundation of SR, both in strategic documents and the resulting activities in order to comprehensively develop the academic community and to effectively implement the university mission.		
Lodz University of Technology (LUT)	IDEA BOX – scientists and students' ideas for the development of the LUT	This is a regular activity implemented under the LUT task budget aimed at improving conditions of work and study. Employees and students can submit their ideas how to develop the university via a special website. The projects to be implemented are selected by the university authorities after consultation with the academic community.
SGH Warsaw School of Economics	Employee budget at the SGH	The employee budget is a separate amount of financial resources whose allocation is co-decided by employees. A project can be submitted individually or together with other employees. Ideas for implementation are selected by universal voting via the Internet. Ideas cover improving the university infrastructure, improving social conditions and other initiatives supporting professional development, health or increasing the comfort of work.
Gdansk University of Technology (GUT)	Citizens' Budget (CB)	CB is part of the GUT budget allocated in a given calendar year from the reserve available to the rector. Its purpose may be decided by employees, students and doctoral students of the GUT in an open online competition. CB relates to investment and renovation projects that fall within the competence of the university authorities.
Principle 9. Ensure transparency of the university's activities, among others, by evaluating the results, promoting and disseminating the output, and identifying the person or team coordinating these activities		
Lodz University of Technology	Promoting and disseminating research results via the Internet and through the YouTube Channel	The activity aims to popularize science in society by presenting scientific issues in an attractive form, via the Internet and You Tube, and in a way understandable to a wide audience. The cycle is mainly addressed to secondary school students and people interested in scientific explanation of everyday life phenomena.
University of Gdansk	Implementation of the Open Access Policy (OAP) at the University of Gdańsk	The strategic goal of the project is to increase the number of publications of UG employees and doctoral students made available on the basis of free licenses and indexed in research databases as Open Access documents. The activities, initiated in 2017, include: creation of internal legal acts and procedures regulating the issues of depositing and sharing scientific work; preparation of technical facilities; support of faculty research journals (applications to the Ministry of Science and Higher Education)
Principle 10. Minimize the negative impact of the activities of the academic community and its stakeholders on the natural environment in all its dimensions		
Wroclaw University of Science and Technology (WUST)	Monitoring the air quality at the WUST campus	The initiative is implemented by employees and students under the project entitled «The Use of Innovative Sensor Systems to Assess Air Quality at the Wrocław University of Technology Campus.» The impact of the type of building development, transport and the green areas in shaping air quality in this part of Wrocław is studied. Measurements are made in selected parts of the campus, at short intervals, and their results are updated on the project website every 15 minutes.
University of Wrocław	Climate and environmental emergency	The Council of the Faculty of Biological UWr asked the University authorities to immediately proclaim «a climatic and environmental state of emergency» at the University and to set up an interdisciplinary team of scientists who would engage in a social dialogue, audit the environmental costs of the University's operation, and prepare substantive grounds to involve the university in a public debate on the climate and ecological crisis.

Name of the university	Name of the practice	A brief description of the practice
Principle 11 Conduct a dialogue with stakeholders on the priorities of the university social responsibility policy and inform about its results		
WSB University	Involvement in the local development	Being aware of the importance of regional identity and local development, WSB University actively cooperates with local government, associations, and cultural and educational organizations. WSB University employees participate in developing the voivodship development strategy, cities' development strategies, revitalization policies and urban policies; they prepare expert opinions on behalf of public administration bodies.
Poznan University of Economics and Business	Gala of the «Ace of Responsible Business 2018» poll	The goal of the poll was to select and promote socially responsible practices used by large and smaller Greater Poland companies operating only locally. The awards were granted in the categories: fair market practices, labor relations, environmental protection and social involvement.
Principle 12 Be guided by the principles of ethics and responsibility in the process of teaching and conducting scientific research to ensure optimal conditions for stakeholders to use knowledge, intellectual capital and university achievements		
Kozminski University (KU)	Survey among academic teachers related to the HR Excellence in Research Award*	In 2016, KU conducted a survey among academic teachers related to applying for the HR Excellence in Research Award and developed a strategy for Human Resources Management for KU teachers in accordance with the European Charter for Researchers and the Code of Conduct in recruiting researchers.
Other universities that have the HR Excellence in Research Award and HRM strategy and conducted research among their own academic staff are: SGH Warsaw School of Economics, Adam Mickiewicz University in Poznan, Nicolaus Copernicus University in Toruń, Medical University of Lodz, University of Gdansk, Lodz University of Technology, Gdansk University of Technology, Medical University of Silesia in Katowice, Poznan University of Economics and Business, University of Lodz, University of Silesia in Katowice, Vistula University, Wroclaw University of Science and Technology, Wroclaw University of Economics and Business		

Source: own study based on: [24,28–34].

* The distinction of HR Excellence in Research is awarded by the European Commission to the institutions that implement The Human Resources Strategy for Researchers – HRS4R, observing the rules and guidelines contained in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (https://euraxess.ec.europa.eu/jobs/hrs4r).

Declaration. Due to the limited volume of the article, an exhaustive review of all activities undertaken by the studied universities cannot be conducted.

Conclusion

Research goals were achieved through the conducted analysis. It was found that Polish HEIs voluntarily and increasingly more often implement the principles of SR mainly based on the Declaration of USR, less often applying the PRME principles. For HEIs, the Declaration is the basic set of formal national regulations regarding the USR. It is based on the principles of SDGs, adapting them to the specificity of higher education institutions and invoking some of these principles in particular points.

In particular, it refers to principle 4 (quality education) aiming to ensure inclusive, equitable quality education, including education on sustainable development and promoting lifelong learning opportunities for all. It refers to principles aiming to strengthen and develop scientific research supporting technological advances, developing innovation and entrepreneurship (principle 9), to principles promoting inclusive and sustainable economic growth, full and productive employment and decent work (principle 8), to principles counteracting all forms of discrimination in different types of organizations (principle 5), to principles conducive to involving and integrating all social groups, including immigrants (principle 10). It encourages the development of universities themselves as institutions where there is a participatory style of management (principle 16). It invokes rules promoting partnership of different institutions – including HEIs – for the sake of implementing the principles of social responsibility and sustainable development (principle 17) as well as encouraging activities for the benefit of the natural environment and to counteract climate changes (principle 13) [35].

Polish universities implement Declaration's principles in various fields of their activity, i. e. in didactics, science, relations with stakeholders (the environment) and in managing the university. Some of the examined universities – the first signatories of the Declaration – undertake activity related to several principles of the Declaration (e. g. University of Silesia

in Katowice, SGH Warsaw School of Economics, WSB University), others only a selected one (e. g. University of Bielsko-Biala, Warsaw Management University, Humanitas University in Sosnowiec). Some signatories (e. g. the Center of Postgraduate Medical Education, the Witelon State University of Applied Sciences in Legnica) do not report such activity at all (despite signing the Declaration).

As follows from the conducted analysis (Table 1), good practices of the examined HEIs most often refer to principle 2 of the Declaration, i. e. shaping social and civic attitudes as well as building a broadly understood community, communication, and social sensitivity.

The socially responsible activities undertaken by universities concern internal stakeholders, i. e. employees (e. g. codes of ethics, HRM strategies, civic budgets) and students (e. g. competitions, lectures, workshops, training in SR issues and effective implementation of its principles in organizations and events integrating foreign students with the Polish ones). They also address external stakeholders, mainly the local community, but also immigrants, foundations,, children in Africa. They are closely related to the popularization of science as well as climate policy and environmental protection. They also mean offering subjects and postgraduate studies familiarizing future graduates with the issues of social responsibility and sustainable development as well as the principles of their implementation in enterprises and other types of organizations.

It should be emphasized that students are also involved in promoting the SR idea and undertaking the related activities at universities, e. g. through thriving scientific circles (e. g. ENAKTUS).

Implementation of the university social responsibility principles in accordance with the Declaration of USR increases HEIs' openness to cooperation with the business community and develops their didactic offer in terms of shaping competences, pro-social and pro-environmental attitudes of future staff. The implementation of the Declaration additionally strengthens the organizational and management capabilities of the university through more effective management of resources, development of the academic staff and building the university's prestige as a generator of knowledge and a creator of new ideas (Społeczna odpowiedzialność, 2019).

The activities undertaken by the studied universities have brought and continue to bring a number of tangible benefits to their addressees (Table 1). They become a permanent part of the public space promoting the ideas of social responsibility. First of all, they shape students' awareness and commitment to the topical problems of the world, the local community, and the natural environment on the basis of universal values that are the foundation of social responsibility. They thus shape future elites of society, citizens of a globalized world aware of the existing opportunities and threats. They integrate the local community through activities popularizing knowledge and results of scientific research (children, youth, third-age universities, science festivals, conferences), health programs (sports, culinary) targeted at the inhabitants. They shape civil society by developing volunteering among students, programs integrating immigrants with the local and the academic community, or directly addressed to groups in need of support. They promote their own region by popularizing science, but also by cooperation between a university and local authorities and enterprises with a view to its development. They make society and students aware of issues associated with social responsibility by introducing subjects on social responsibility and sustainable development to study programs, by offering postgraduate studies, organizing conferences and workshops on this subject. Through employees, students and doctoral students' participation in participatory budgets and offering them a chance to submit various proposals, HEIs involve them in managing the university. They build their involvement through implementing ethical codes or human resources management strategies.

According to the author, this activity would be much more effective if it were also associated with including socially responsible activities in the mission and development strategy of the university [19]. It is especially vital and justified because the SR activities support HEIs in building their competitive position in the environment and also contribute to deepening loyalty and involvement of the university's employees and students in the affairs of their *Alma Mater*.

The development of SR at HEIs can contribute to the further development of cooperation with the government administration in the process of creating the public policy for sustainable development and practices of university social responsibility, to strengthen cooperation of the academic community in Poland, to promote the SR idea in the broadly understood social awareness and to popularize this idea further. This activity is absolutely necessary and should be continued by Polish universities.

The growing importance and development of social responsibility at Polish universities is manifested by an increasing number of activities they have taken over the past years, as well as an increasing number of universities signing the SOU Declaration, thus by their responsible commitment to engage in popularizing its demands in their own activity.

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SOCIAL PARTICIPATION OF RUSSIAN AND POLISH STUDENTS IN URBAN DEVELOPMENT

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Abstract. This paper is devoted to the problem of engaging youth in the formation of sustainable urban environment. A particular focus is on the role of universities as research and educational centres in this process. The problem was analyzed from two perspectives. On the one hand, an analysis was carried out to assess the activity of students as the actors contributing to the formation of urban environment, as well as the level of their involvement in constructive social practices and readiness for social and cultural participation in urban life. On the other hand, specific institutional and socio-cultural features of urban environment, which determine the social activity of youth, were investigated. Russia and Poland were selected as the objects of analysis, mainly because these countries share a common socio-cultural, ideological and historical heritage. The research methodology involved a secondary analysis of published data and a survey among Russian and Polish university students. The respondents were selected using the method of targeted sampling and included 465 and 248 respondents from Russia and Poland, respectively. As a result, a number of differences between the countries were identified. In Poland, a shift towards non-formalised social practices and non-institutionalised forms of participation is evident. Russia, however, shows the opposite trend, which involves formalisation and bureaucratisation of youth social participation through centralisation of programmes and projects, as well as unification of approaches used to encourage youth activity. Polish youth demonstrates a higher social activity and a higher level of trust in NPOs, as well as orientation towards democratic values. For Russian students, a submissive position with respect to the city authorities as the main subject of urban development was found to be more typical. Although, in general, Russian and Polish students demonstrate similar patterns of participation in urban development, the former are more focused on its collective forms, while the latter are oriented at individualisation. The obtained results provide for a deeper understanding of the nature of youth participation in the socio-cultural development of cities. Our findings can be used in practice for the development of university strategies aimed at promotion of student social engagement.

Keywords: social participation, social engagement, student volunteering, social partnership, third mission of universities, urban cultural policy, urban development

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Introduction

Urban environment is increasingly becoming an experimental site, where young citizens realise their new projects and activities. Rapid changes require urban governance institutions to adequately respond in a timely manner. However, Russian city administration tends to solve the problems relying on the support of the private companies rather than involving its citizens. As a result, the huge potential of socially active youths to be drivers of change remains underestimated and underemployed.

According to M. Bochanov and E. Chernukhina [1, p. 74], the readiness of young people to engage in the activities of public and political organisations, to work as volunteers, as well as

to join street rallies and actions, is rapidly increasing in a number of post-Soviet countries. Youths are actively participating in the development of their hometowns. Thus, as E. Omelchenko [2] showed, the past twenty years in Russia have witnessed the formation of a youth space, which is characterised by a wide social and cultural involvement of young people in urban life, as well as by the diversity, marginalisation and peripheralisation of subcultural groups and youth communities. The desire to act by changing the life of the country and the hometown is increasingly becoming the basis for the social participation of young citizens.

Universities play a decisive role in attracting young people to projects aimed at developing urban areas. Students, as a rule, are motivated for creativity and criticism of current events, having the desire and constructive intentions to change the world here and now. Universities as scientific and educational centres perform the function of organising youth initiatives and creating appropriate social and educational environment for constructive transformation of urban space [3].

Universities provide students with the opportunity to participate in socially significant projects and to gain valuable experience of civic engagement [3, 4]. Such skills will help students to become socially responsible and active citizens in their future urban communities. World's leading universities implement institutional initiatives to facilitate the development of students' social behaviour patterns and support their volunteering initiatives. Attention is being increasingly focused on the role of students as volunteers making significant contribution to the community and the urban environment where they live and work [4, p. 171–178].

It should be noted that the type of social engagement practices in a particular society is determined by the society's historical traditions, culture of charity and specifics of the education system. In Russia, the process of social participation formation is just beginning to take shape. For comparison, youth work in Eastern European countries was intensified at the end of the 20th century following the political agenda of the European Union [5, 6]. The experience of EU countries provides some important results, particularly in regard to the problems and difficulties determining the characteristics of youth social participation in such former socialist countries as Poland.

In this research, the social participation of students in the development of urban areas is considered from two perspectives. On the one hand, the subjects of such participation (students) are analysed in order to reveal their potential of engaging in constructive social participation practices, i. e. in various forms of urban volunteering. On the other hand, the specifics of the institutional and socio-cultural urban environment is examined in order to understand, how the interaction between the institutions of civil society, government and education contribute to the formation of a certain institutional infrastructure, social practices and patterns of youth behaviour in the compared countries.

This article aims to identify the features specific to the student social participation in Russia and Poland as countries with a common socio-cultural, ideological and historical heritage and the role of universities in the formation and promotion of a culture of social participation among urban youth.

Student social participation

Cross-country comparative studies devoted to the problem of youth have been gaining higher popularity all over the world [7]. Those studies are focused on the issues of youth mobility [8] associated with macro-level social processes creating infrastructural and cultural environment for the formation of youth discourse in various cities and countries. According to sociologists, a transition to comparative research and spatial sociology of youth is becoming increasingly relevant. The studies are particularly sensitive to processes occurring in different societies and permit a deeper understanding of the conditions and circumstances, in which young people live, study, work and make decisions [9]. Another research trend is to investigate local practices of youth response to social change [10].

European researchers investigate the potential of volunteering activities as a tool for promoting patterns of social engagement among young people in EU countries and forming pan-European identity. As mechanisms for implementing these ideas, youth exchange programmes aimed at social integration [3, 11] and solving the problems of social exclusion of disadvantaged people [12] are broadly applied. In addition, the effects of non-formal youth education are being studied [13]. According to researchers, international volunteer programmes for young people serve as an instrument of insight, making the participants go beyond initial expectations in their positive assessments of the consequences of social participation [14].

In recent years, comparative sociological studies have been carried out to assess the course of development of a single pan-European youth policy. A particular focus is on the initiatives aimed at enhancing the social participation of young people in post-socialist European countries, which experience political

and economic difficulties in transition to democratic principles due to weak civil society institutions [5, 15].

The questions of youth citizenship and the empowerment of young people through their personal contribution to various aspects of civil society are widely discussed. The types of social engagement are investigated by comparing the activity of European youth in countries with different levels of democratisation and sociocultural traditions of participation [16]. Thus, various aspects of youth social wellbeing, their preferences and perceptions of integration processes in post- socialist countries are analysed [17–19].

Almost all contemporary studies examine the problems of the student youth in the context of creating opportunities for their self-realisation in higher education, civic education and integration into the social and political life of local communities, cities and countries. The role of young people in the socio-cultural development of small settlements and provincial regional centres remains to be the topic of acute interest. Among the most significant issues are those associated with unleashing the potential of urban youth communities in the development of depressed territories, models of their social participation and cultural practices ensuring the effectiveness of urban innovations contributing to the formation of cultural policies at the municipal level.

Methods

A secondary analysis of the data obtained from the World Values Survey wave 6 (WVS) and the Charities Aid Foundation (CAF) was carried out to assess civic and social student activity in post-socialist countries, to analyse existing approaches to the effective implementation of youth policy and to compare the culture of youth social participation in Russia and Poland[1].

In addition, the empirical data obtained during a survey among students in Russian cities situated in a large region (Sverdlovsk Oblast) and Polish cities situated in the Greater Poland, Masovian and Lubusz voivodships were analysed. The survey was conducted using an online questionnaire in 2019. An invitation to answer the questionnaire was posted on youth thematic social networking groups aiming to bring together students from different cities and universities. The targeted sampling method was used to select 465 and 248 respondents from Russia and Poland, respectively.

[1] Data from the website of the CAF Charity Fund for the Development of Philanthropy, available at: http://www.cafrussia.ru/page/mirovoi_reiting_blagotvoritelnosti_1 (accessed 09.10.2019).

Data of the 6th wave in research of the World Values Survey (World Values Survey Wave) 2010–2014, available at: http://www.worldvaluessurvey.org/WVSOnline.jsp (accessed 09.05.2019).

The choice of regions for analysis was determined by the following reasons. First, Russia and Poland are the countries sharing a common cultural and historical background, largely due to the socialist past. Secondly, the universities, whose students were surveyed, are located in large cities comparable in terms of size. These cities can be considered as the centres of attraction for young people from small and medium-sized nearby towns. The sample of Russian students included young males and females from 47 Ural towns studying in the cities of Ekaterinburg and Nizhny Tagil. Polish respondents were from 32 towns studying in Warsaw, Poznan and Zielona Gora universities.

The questionnaire was aimed at assessing the respondents' experience of social participation, as well as their readiness to act as «direct» actors or be involved in various practices (from informed to volunteering participation in the life of the city, where they study, and in the city, where they were born).

The respondents' readiness for constructive social participation in the development of their cities was assessed using the following questions: «Are you ready to join groups of citizens participating in community work days, city celebrations and social events?», «Are you ready to help organise exhibitions, fairs, public events, where the citizens and city guests can spend their time responsibly?» and «Are you ready to participate in social projects on urban topics, for example, to tell children and teenagers about the culture, history and architecture of your city?» The respondents answered the questions using a 5-point Likert scale ranging from «disagree» to «completely agree».

A two-stage cluster analysis was used to construct an empirical typology of student social participation in urban development for the countries under study. To this end, in both sub-groups of respondents (Russian and Polish), two clusters were formed, i. e. students demonstrating either a greater or lesser willingness to participate in socially significant projects. The statistical significance of the differences between the clusters was evaluated using non-parametric estimation methods (Pearson's chi-square and Cramer's V tests). The described approach allowed us to characterize Russian and Polish student groups in terms of the social participation degree.

Institutional environment for youth social participation in the development of Russian and Polish regional cities

The quality and nature of the institutional environment is an important condition determining the formation of a culture of youth social participation. In

this section, the institutional environment will be considered by comparing the activity of civil society institutions (in particular, the development of the non-profit sector) in Polish and Russian cities. Further, the national specifics of the youth policies, as well as the culture of charity and its changes in the youth environment in both countries will be described.

Let us analyse specific features of the non-profit sector, which is considered as the foundation of civil society and a basis for the implementation of youth social participation [20]. According to a number of researchers, the present-day Poland has developed a civil society characterised by a high level of organisational consolidation and ideological plurality, with all major interests and identities of social actors being represented [21]. In 2016, the number of active non-profit organisations (NPOs) in Poland amounted to 91.8 thousand [22]. By 2017, this number increased to 92.7 thousand, including associations, social funds, social and faith-based entities, organisations of economic and professional self-governance. This number increased by 12.6 % compared to 2010[2]. In 2018, Poland registered 117 thousand associations and 26 thousand funds, covering a total of 143 thousand organisations. However, according to the portal of Poland non-governmental organisations, only 65 % of these organisations are active[3].

In the past decade, Polish researchers have observed a turn towards non-formalised (informal) social activity in various cities of the country. Throughout the country, lower non-institutionalised and non-formalised initiatives aimed at transforming urban areas have been taking place. Such forms of urban activism developed as a response to the «professionalisation» of NPO activities, ignoring (thus far) the whole range of possible forms of collective organisation [23]. In their studies, D. Polanska and G. Chimiak showed that institutionalisation is not always the goal of collective action; thus, the Polish civil society has recently gone «beyond the scope of NPO-visation» and turn to «non-formalisation» [6]. It was shown that the expansion of social participation of Polish citizens is focused on self-organisation and restoration of local communities. Urban non-formalised practices of social participation represented a reaction to the loss of social cohesion in cities as a result of the state's refusal to provide public goods and the fact that «capitalist urbanisation is constantly striving to destroy the city as a public, political and liveable heritage» [23]. As a result, citizens are actively forming communities that value spontaneity, flexibility and voluntary membership/participation, and are focusing on local issues.

Since 2005, in Russia, new structures of civil society – institutions of public control – aimed at providing communication between the state and civil society have begun to appear. These structures are organised centrally from the top. Around the same time, the government intensified the support of NPOs through state funding [24] and the development of all-Russian network social movements, thus forming an organisational infrastructure for the social participation of Russian citizens. At the beginning of November 2017, more than 223 thousand NPOs were listed in the register of the RF Ministry of Justice[4].

The development of the third sector in Russia and Poland was determined by two important factors. The first was the complex context of the relationship between the state and the civil society. The second one was due to a decreased involvement of foreign institutions that supported NPOs and determined their independent status from governmental institutions. As a result, excessive bureaucratisation and professionalisation of NPOs, their orientation towards public services, along with financial dependence on the state, led to the widespread interpretation of civil society as the NPO sector, excluding other types and forms of population activity from the discourse [25].

Let us turn to analysing the national specifics of youth policy in Russia and Poland. In accordance with the principle of EU subsidiarity, ensuring youth work and non-formal education in the non-profit sector remains to be mainly a matter of national or local importance. Poland as an EU country tends to synchronize its national youth policy with the directions of development in other EU countries, including improved access to higher education, problems of youth employment, expanding volunteering opportunities and developing youth work practices [26]. The signs of centralisation in the development and implementation of youth policy are absent in public administration of modern Poland. Among the government ministries of Poland, there is no department substantively responsible for youth policy. This leads to the lack of common conceptual and strategic framework determining youth policy, including in the non-profit sector. Nevertheless, according to studies [20, 23], the country as a whole possesses a strong and varied experience of working with youth at local and organisational

[2] Website data of the Main Statistical Office of the Republic of Poland (Cooperation of non-prot organizations with other entities in 2017. Statistics Poland, Warszawa, Kraków, 2019, pp. 21), available at: https://stat.gov.pl/obszary-tematyczne/gospodarka-spoleczna-wolontariat/gospodarka-spoleczna-trzeci-sektor/wspolpraca-organizacji-non-profit-z-innymi-podmiotami-w-2017-roku,17,1.html (accessed: 20.09.2019).

[3] Data from the portal of non-governmental organisations in Poland (NGOs in Poland. Research report 2018), available at: https://fakty.ngo.pl/raporty (accessed: 20.09.2019).

[4] Report of the Public Chamber of the Russian Federation, 2018.

levels. Youth organisations claiming to be institutions for acquiring new competencies or skills are financed on a project basis, which requires justification of achieved results in accordance with the stated goals [27].

In contemporary Russia, the practice of youth organisations with mass membership, inherited from the Soviet period, has received a new round of development since mid-1990s. The key role in this model belongs to networking movements and state youth organisations. Non-governmental organisations are practically excluded from state assistance, except for a small number of pro-state structures entrusted with the task of educating young people [28]. The conceptual foundations of youth policy are documented in a national directive covering the period up to 2025[5]. Youth policy, organisations and initiatives are funded centrally along three main directions: development of the youth's awareness of the possibilities of self-development and various research, creative and socio-political activities; support of talented and proactive youth; civic education and patriotic education [29].

Such a centralised approach fails to account for the diversity of youth groups and take into consideration regional and local youth problems [30]. At the moment, youth policy in Russia is realised under the auspices of the *Education* national project. This project has been initiated from the top and is largely aimed at involving youth in the activities of public associations, which are formed in schools, colleges and universities. The key goal is to involve young people in national and regional projects, as well as in mass volunteer movement[6]. Created in 2018, the autonomous non-profit organisation «Russia – the Land of Opportunities» consists of 17 centrally organised projects aimed at engaging talented youth in social networking and educational events[7].

Another research issue was the development of the culture of charity in the Poland and Russia. According to researchers, citizens in almost all post-socialist countries were limited in their desire and ability to be included in constructive charity practices, namely in the activities of non-profit organisations, voluntary associations and charity projects [14, 28]. It is evident that the situation is slowly changing. In this respect, Russia and Poland demonstrate a number of similarities and differences. According to a 2018 CAF Foundation study, Poland and Russia ranked 112th and 110th in the World Giving Index, respectively. Thus, in Poland, 34 % of the population helped strangers free of charge, 24 % donated money to charity and 15 % worked in NPOs as volunteers. In Russia, 44 % helped strangers free of charge, 21 % donated money and 11 %[8] spent their time working in NPOs.

However, according to the World Values Survey, Polish young people aged 15–29 demonstrate some specific features concerning charity practices. For example, the level of trust in charitable foundations and socially-oriented NPOs among young Poles appears to be much higher than among Russians (see Table 1).

Table 1

Distribution of answers to the question: «How much do you trust charitable foundations and NPOs providing humanitarian assistance?» (% of respondents in the age group under 29 years old)*

Trust level	Poland, 2012 n=200	Russia, 2011 n=629
I trust completely	12 %	6 %
I trust	53 %	35 %
I do not quite trust	23 %	25 %
I do not trust	4 %	13 %
I do not know, no answer	8 %	21 %
Total	100 %	100 %

* Compiled according to the data of the 6th wave of research of the World Values Survey (WorldValuesSurveyWave) 2010–2014, available at: http://www.worldvaluessurvey. org/WVSOnline. jsp (accessed: 05.09.2019).

The indices of youth involvement in various public organisations and associations also differ in Russia and Poland. In Poland, these values tend to be significantly higher (see Table 2).

The data show that the institutional environment supporting youth social engagement has different characteristics in Poland and Russia and the gap is quite significant. The post-socialist past, while continuing to affect the practices of social participation in the form of reduced social activity and lack of basic participation values, is gradually levelled out through legal regulations, providing more democratic freedoms for Polish youth and limiting the possibility of real impact on cultural policy for Russians.

[5] Order of the Government of the Russian Federation November 29, 2014 No. 2403-r «Fundamentals of the state youth policy of the Russian Federation for the period until 2025», available at: http://static.government.ru/media/files/ceFXleNUqOU.pdf (accessed: 20.09.2019).

[6] National projects: targets and key results, available at: http://static.government.ru/media/files/p7nn2CS 0pVhvQ98OOwAt2dzCIAietQih.pdf (accessed: 20.09.2019).

[7] Website of the projects «Russia – the Land of Opportunities», available at: https://rsv.ru/project/list/ (accessed: 20.09.2019).

[8] Data from the website of the CAF Charity Fund for the Development of Philanthropy, available at: http://www.cafrussia.ru/page/mirovoi_reiting_blagotvoritelnosti_1 (accessed: 05.09.2019).

Table 2

Youth membership in public organisations and associations, Russia and Poland*

(% of respondents in the age group under 29 years old)

Answer options	Poland, 2012 n=200	Russia, 2011 n=629
Membership in sports and leisure organisations		
Passive members	13.4%	7.5%
Active members	15.5%	5.5%
Membership in organisations of culture, education, art		
Passive members	11.7%	2.8%
Active members	17.5%	1.9%
Membership in environmental organisations		
Passive members	7.8%	1.1%
Active members	2.9%	0.7%
Membership in charity organisations and socially-oriented non-profit organisations		
Passive members	7.6%	0.8%
Active members	6.4%	1.6%

* Compiled according to the data of the 6th wave of research of the World Values Survey (WorldValuesSurveyWave) 2010–2014, available at: http://www.worldvaluessurvey. org/WVSOnline. jsp (accessed: 05.09.2019).

Social participation of Russian and Polish students in urban development

This section describes Russian and Polish practices of student social participation in the development of urban areas from the standpoint of the respondents' self-assessment.

A two-stage cluster analysis was carried out using Russian and Polish sub-samples. A typology of student social participation was created on the basis of 3 indicators measuring:

1. respondents' readiness to participate in urban educational projects (culture, city history);
2. respondents' readiness to participate in urban cultural and leisure projects (organisation of free time for citizens);
3. respondents' readiness to participate in urban social orientation projects (community work days and other city events).

In either of sub-samples, two clusters were formed consisting of students demonstrating more or less willingness to participate in social projects aimed at developing their cities.

The Russian sub-sample. Cluster sizes: «passive» students – 66.2 %, «active» students – 33.8 %; the cluster size ratio – 1.96. The quality of the clusters is average.

The Polish sub-sample. Cluster sizes: «passive» students – 58.2 %; «active» students – 42.0 %; the cluster size ratio – 1.38. The quality of the clusters is average.

The importance of predictors dividing student youths into clusters varies between Russia and Poland. For Russia, the greatest impact is exerted by the indicator of readiness to participate in urban social projects (community work days and other urban events) with the importance equal to 1. Significantly lower levels for the indicator of participation in cultural and leisure (0.25) or educational (0.19) type projects were observed. In Poland, participation in educational projects on urban topics (importance equal to 1) takes the first place, followed by indicators of participation in social (0.84), cultural and leisure projects (0.66). The difference between the countries is not only in the order of importance for the predictors, but also in the structure of their influence (Fig. 1).

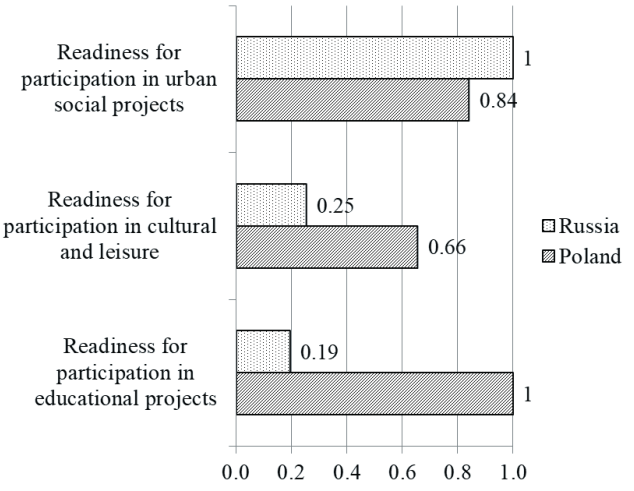

Fig. 1. Importance of predictors determining student distribution into clusters in terms of their readiness to participate in social projects aimed at the development of regional cities

It is quite logical that the readiness to participate in various kinds of city development projects differs between clusters; however, this difference is less pronounced in Russia (Table 3). This indicates that civil culture in Russia has not formed yet. Although students in Russia demonstrate readiness to participate in individual city projects, no clear trend of social participation has thus far been observed.

In general, the structure of cluster distribution for Russian and Polish students tends to be similar. Nevertheless, by modelling this typology authors were able to identify a number of cross-country differences.

The first feature involves quantitative differences. Thus, the cluster of conditionally «active» students

Table 3

Respondents' readiness for participation* (% of cluster size)

	Russia		Poland	
	Active cluster	Passive cluster	Active cluster	Passive cluster
Readiness to participate in urban educational projects	73%	42%	91%	11%
Readiness to participate in urban cultural and leisure projects	85%	50%	98%	36%
Readiness to participate in urban social projects	100%	62%	100%	45%

* The answers «yes» and «rather yes» were combined.

in Poland (42%) outnumbers that in Russia (33.8%). In addition, the level of Polish respondents' readiness to participate in various types of urban projects is significantly higher (see Table 3). It can be assumed that Polish students are more «mature» in terms of social participation practices, while the process of forming a participation culture among students in Russia is still underway. Moreover, Russian youth appear to be not only generally less active, but also less differentiated into conditionally "*active*" and "passive" participants.

The second feature involves differences in the perception of Russian and Polish students concerning the main subjects of the socio-cultural urban development.

Table 4 presents the perception of Russian students about who should take the lead in the transformation of cultural and historical urban places. The obtained data indicate the submissive position of Russian youth in relation to city authorities as the main actor of urban development. In general, this position characterises both socially active and socially passive students.

In general, Russian students are ready to recognise the citizens of the city as full and effective actors of its development. According to more than half of socially active students, the participation of citizens in urban development is almost as significant as the activities of municipal officials. The differences between active and passive student clusters in terms of assessing the role of urban activists, volunteers and cultural intelligentsia are statistically significant. Active students recognise their role in the improvement of cultural and historical urban areas. However, the participation culture of passive students is based on more traditionalist ideas. It should be noted that, in contrast to Polish students, Russians do not consider the business community and philanthropists as the main actors in the city development process.

Perceptions of Polish students concerning the actors of change differ significantly from the Russian sample. Thus, socially active students recognise the fundamental role of citizens in the city development (67%), rather than city officials (51%) and the business community (46%). Compared to Russians, Polish socially active students gave more importance to the representatives of the business community and cultural intelligentsia (see Table 5).

The above-presented information additionally confirms that a well-formed participation culture based on democratic and libertarian values

Table 4

Who should initiate and implement urban transformations: perception of Russian students (% of the cluster size)*

	Russia		
	Active cluster	Passive cluster	In total
City administration	60%	58%	59%
All citizens	54%	43%	47%
*City activists and volunteers***	*29%*	*20%*	*23%*
*Cultural intelligentsia and specialists****	*29%*	*16%*	*20%*
Business community	17%	18%	18%
Patrons and philanthropists	15%	13%	14%

* Сумма ответов больше 100%, поскольку допускался выбор нескольких вариантов ответов респондентом.

** Pearson Chi-Square = 7.880, Asymp. Sig. (2-sided) = 0.005; Cramer's V = 0.150

*** Pearson Chi-Square = 4.157, Asymp. Sig. (2-sided) = 0.041; Cramer's V = 0.109

Table 5

Perceptions of Polish students concerning who should initiate and implement urban transformations (in % of cluster size)*

	Poland		
	Active cluster	Passive cluster	In total
*All citizens***	67%	47%	55%
City administration	51%	59%	55%
Business community	46%	33%	39%
Cultural intelligentsia and specialists	38%	29%	33%
City activists and volunteers	37%	32%	34%
Patrons and philanthropists	25%	20%	22%

* Сумма ответов больше 100%, поскольку допускался выбор нескольких вариантов ответов респондентом.

** Pearson Chi-Square = 5.645, Asymp. Sig. (2-sided) = 0.018; Cramer's V = 0.194

is characteristic of Polish socially active students. A comparison of the Russian and Polish socially passive clusters showed that these students are similar in terms of being submissive to authorities. Both Russian and Polish passive students consider municipal authorities to be the main factor in the socio-cultural development of the city.

The third feature of the social activity of Russian and Polish youth is represented by the activities that students are ready to undertake for the development of their cities.

Table 6 compares the forms of social participation typical of Russian and Polish students.

In general, the participation structure of Russian and Polish students tends to be similar, which is confirmed by the rankings of their preferred activities aimed at developing the urban environment. Moreover, the character of social participation for Russian students is characterised by a number of differences due to certain institutional and socio-cultural peculiarities. Thus, the participation is seriously limited by the youth's disbelief in the possibility to significantly affect the situation associated with solving urban problems through the institutional mechanisms of public activities (for example, by signing petitions) (see Table 6). This is explained by the fact that such a form of citizens' collective appeal to authorities as petition is not regulated by the federal legislation. Petitions perform «decorative» functions, rather than act as a real tool of the population's social participation in decision-making processes.

Russian youth is characterised by collective, rather than individual, forms of social participation implemented with the direct organisational engagement of municipal authorities (assistance in organising city celebrations, cleaning parks, planting flowers, etc.). This indicates, on the one hand, the increased activity of the municipal government in encouraging the participation of young people in urban development and, on the other hand, excessive regulation limiting the freedom to choose those forms of participation adequate to the needs of young people.

Table 6

Types of social activity undertaken by Russian and Polish students (% of respondents having answered the question)*

	Survey Country			
	Russia	Rank	Poland	Rank
I am ready to sign a petition in defence of monuments or natural sites in my city	40%	1	71%	1
I am ready to donate my time to cleaning parks and planting flowers	30%	4	35%	4
I am ready to donate money to the restoration of a church	13%	6	19%	5
I am ready to help in organising a city celebration	33%	3	37%	3
I am ready to tell the city guests about its history	18%	5	23%	6
I am ready to show visitors the city sights	34%	2	45%	2

* Сумма ответов больше 100%, поскольку допускался выбор нескольких вариантов ответов респондентом

In general, the readiness to take part in various activities related to the city development is evidently lower among Russian students (see Tables 7, 8).

Table 7

Types of social participation preferred by Russian students (% of cluster size)

Types of activity	Russia	
	Active cluster	Passive cluster
*I am ready to donate my time to cleaning parks and planting flowers**	51%	20%
*I am ready to help in organising a city celebration***	47%	30%
I am ready to sign a petition in defence of monuments or natural sites in my city	46%	37%
I am ready to show visitors the city sights	34%	37%
I am ready to tell the city guests about its history	20%	18%
I am ready to donate money to the restoration of a church	14%	13%

* Pearson Chi-Square = 35.114, Asymp. Sig. (2-sided) = 0.000; Cramer's V = 0.319

** Pearson Chi-Square = 9.931, Asymp. Sig. (2-sided) = 0.002; Cramer's V = 0.169

Table 8

Types of social participation preferred by Polish students (% of cluster size)

Types of activity	Poland	
	Active cluster	Passive cluster
I am ready to sign a petition in defence of monuments or natural sites in my city	70%	70%
I am ready to show visitors the city sights*	68%	31%
I am ready to help in organising a city celebration**	64%	21%
I am ready to donate my time to cleaning parks and planting flowers***	48%	25%
I am ready to tell the city guests about its history****	41%	13%
I am ready to donate money for the restoration of a church	19%	19%

* Pearson Chi-Square = 20.338, Asymp. Sig. (2-sided) = 0.000; Cramer's V = 0.368

** Pearson Chi-Square = 28.227, Asymp. Sig. (2-sided) = 0.000; Cramer's V = 0.434

*** Pearson Chi-Square = 8.046, Asymp. Sig. (2-sided) = 0.005; Cramer's V = 0.232

**** Pearson Chi-Square = 16.114, Asymp. Sig. (2-sided) = 0.000; Cramer's V = 0.328

For Polish students, the principles of direct democracy are implemented through signing petitions. This trend refers to the entire student community, regardless of the character of their social participation (see Table 8).

In Poland, active students are more inclined to participate in social city development projects (assistance in organising city celebrations, working with visitors, cleaning parks, planting flowers). Interestingly, there is practically no difference between the clusters of active and passive students in the areas of social activity requiring insignificant effort and time (signing a petition, donating money). In Russia, active students are more involved in collective forms of participation (community work days, cleaning up the territory, organising city celebrations). However, no statistically significant difference is observed between the clusters of active and passive Russian students in terms of individual activity (showing visitors the sights, telling about the history of the city).

Therefore, it can be concluded that Polish students are more focused on individual forms of social participation, such as showing the city sights to visitors, participating in organising celebrations and cleaning city parks.

Discussion and conclusions

Our analysis of the institutional environment supporting social engagement of young people in Russia and Poland showed that the forms of civic activity in these two countries are characterised by different trends. In Poland, a shift towards non-formalised social practices and non-institutionalised forms of social participation is clearly seen. This trend is manifested in youth social activities aimed at changing urban areas. In Russia, the opposite trend is observed, i. e. formalisation and bureaucratisation of youth social engagement by means of centralisation of targeted programmes and projects, as well as the «channelling» youth activity into mass social movements and associations.

The role of educational institutions, including universities, in the aforementioned processes also varies. In present-day Poland, in compliance with youth policies, universities act as equal partners with civil society institutions in implementing projects and programmes of non-formal education, urban transformation and integration of different youth groups in the social life of communities. In Russia, universities have become the key actors performing the function of organising mass youth activity, which entails the risks of losing the diversity and variability of social participation practices.

The described trends are related to the specifics of youth policies in both countries. Public administration in contemporary Poland is characterised by the absence of centralisation in the development and

implementation of youth policies. For example, none of the Polish ministries has a specialised department on youth policies. As a result, youth practices at local and regional levels show a high level of variability. In Russia, a centralised approach to the formation of youth policies prevails, regulating the variability of youth initiatives and communities in solving regional and local social problems.

The culture of youth participation in Russia and Poland is similar in many respects. The differences exist in the degree of social participation and the level of trust in non-profit organisations. Compared to Russians, Polish students demonstrate higher scores on both of these indicators.

Polish students are also more active in the support of urban development initiatives. Their perceptions of socio-cultural urban development are based on democratic values, compared to Russian students, who share a submissive position with respect to city authorities as the main subject of urban development.

The structure of the types of social participation in urban development was found to be similar for Russian and Polish students; however, Russian students are more focused on collective forms of participation.

Both Russian (66 %) and Polish (58 %) socially «passive» students constitute more than half of all students. In general, these groups are similar in terms of their social participation preferences. These students should be considered as the potential that can become a factor in the development of urban areas. The potential of this student group can be unleashed through competent management of youth policies implemented by municipal authorities, public organisations, educational institutions, etc.

Universities play a significant role in the development of a culture of social participation not only through the process of educational activity, but also through active collaboration with regional companies, cultural sector and municipal government. It is at universities where young people gain valuable volunteering experience. The majority (61 % and 63 % in Russia and Poland, respectively) of young people having volunteer experience reported receiving it through participation in campaigns and projects initiated by their educational institutions. At the same time, managerial goals should be focused on creating a culture of youth participation, which is based on democratic values and institutional norms ensuring the diverse, proactive and mature character of social participation, as well as its adequacy to present-day realities.

Future research should consider the development of university strategies facilitating the formation of a culture of student social participation and the integration of these strategies with state youth policies, thus contributing to the institutional structure of civil society and establishing a sustainable dialogue with the municipal and regional governance system.

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ENTREPRENEURSHIP EDUCATION IN RUSSIA: INFLUENCE OF REGIONAL STAKEHOLDERS

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Abstract. Entrepreneurship education is one of the "youngest" segments in Russian higher education. a lack of history and established practices in the development of educational programmes for entrepreneurs negatively affects the quality of entrepreneurship education at universities; therefore, the role of internal and external stakeholders in the development and improvement of entrepreneurship curriculum is growing.

This article analyses the practices of Russian universities in the development of educational programmes for entrepreneurs. Key research foci include the structure of competencies specified in those programmes and their alignment with regional entrepreneurship development.

A number of research hypotheses were formulated, including those concerning the transformation of entrepreneurship curriculum under the pressure of stakeholders' demand for soft skills, heterogeneity of entrepreneurship curriculum as the result of differences between regional entrepreneurial ecosystems, and involvement of internal and external stakeholders in the creation of entrepreneurship curriculum.

The data presented in the article were obtained from open sources, such as the websites of universities implementing courses of entrepreneurship education.

The main results of the study include:

1) An integrated model of soft skills structure as a methodological platform for research in the sphere of entrepreneurship education.

2) Identification of regional differences in entrepreneurship curriculum.

3) Testing the hypothesis concerning the impact of entrepreneurial ecosystem factors on the state of entrepreneurship education.

4) Identify problems for future research with regard to interaction between all the actors and institutions of regional entrepreneurship ecosystems.

Keywords: entrepreneurship education, cognitive skills, social skills, action-oriented skills, stakeholder, entrepreneurship curriculum, syllabus, entrepreneurial ecosystems, regional development.

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Introduction

Russian entrepreneurship began its development relatively recently, in 1990s. Presently, this social group includes roughly 5.8 million people[1] and accounts for 19.7 % of the gross national income[2].

Today, the educational needs of entrepreneurs are satisfied by various sectors of education, including universities. During the shaping of entrepreneurial ecosystems, such training was largely ensured by the system of non-formalized education providing short-term programmes and courses. However, the growth of innovative economy sectors increased the popularity of university entrepreneurship education. This resulted in the generation of new educational programmes, and their number has considerably increased over the past 15 years; however, the development of high-quality programmes in this field is significantly hampered by the following reasons:

– Limited number of university staff having entrepreneurship experience;

– Weak ties between universities and stakeholders from the entrepreneurial community;

– Reluctance of universities to be involved in the development of regional entrepreneurial ecosystems;

[1] Edinyui reestr subektov malogo i srednego predprinimatelstva [Single register of small and medium-sized enterprises], available at: https://rmsp.nalog.ru/index.html (accessed 01.11.2019).

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– Outdated approaches to the development of entrepreneurship curriculum, which largely ignore the growing role of soft skills in contemporary society [1].

All of the aforementioned reasons led to entrepreneurs' widespread dissatisfaction with the quality of education, especially with insufficient attention to the development of soft skills [2]. At the same time, universities were reluctant to change their entrepreneurship programs. This discrepancy between entrepreneurs' requirements and existing university training programmes has stimulated research interest to the problem of bridging a gap.

Therefore, in this research, we aim to study the structure of competencies forming the basis of current entrepreneurship curriculum in Russia.

Literature Review

A number of studies conducted during the 2016–2018 period had analysed various programmes realized during entrepreneurship education in Russian universities in terms of a balance between hard skills and soft skills. a particular focus was to elucidate how this balance affects the overall quality of entrepreneurship education. Issues involved with the regional specifics of entrepreneurial programmes were also discussed.

To date, the structure of hard skills has been extensively studied by D. Autor, F. Levy and R. Murnane [1], as well as by one of the leading theoreticians in entrepreneurship education B. Johannisson [2]. However, the role and structure of *soft* competencies in higher education curricula have not been well defined. a new theoretical approach to the understanding of those competencies is required; that will help develop better curriculum for entrepreneurship training.

According to the work "Skills of an Effective Administrator" published in 1974 by American social and organizational psychologist Robert Katz [3], the three basic types of management skills include technical, conceptual and human or interpersonal skills. **Technical skills** involve skills that give the managers the ability and the knowledge to use a variety of techniques to achieve their objectives. **Conceptual skills** involve the skills managers present in terms of the knowledge and ability for abstract thinking and formulating ideas. The manager is able to see an entire concept, analyze and diagnose a problem, and find creative solutions. The **human or the interpersonal** (*soft skills – authors*) are the skills that present the managers' ability to interact, work or relate effectively with people. These skills enable the managers to make use of human potential in the company and motivate the employees for better results.

The very first studies devoted to the balance between hard and soft skills in the field of management and business argued that the latter only complement the former. According to D. Kirby [4], hard skills were supposed to be major abilities that any professional engineer, manager or businessperson should possess. However, an experimental study undertaken in 2008 [5] provided evidence that, although employers primarily appreciated well-developed hard skills, employees mentioned the lack of soft skills as impediment to be effective in their workplace. At the moment, this situation is rapidly changing. It is widely accepted today that soft skills are the key competencies for success in such fields as management and entrepreneurship. Hard skills are believed to complement soft skills in the shaping of an effective manager or entrepreneur.

From the middle of 1950s onwards, the concept of soft skills has been under constant evolution. Present-day discussions are mainly focused on the issue of the versatility of soft skills. Some researches argue that practically any person, irrespective of their psychophysiological or personal qualities, can develop a basic set of soft skills [6]. However, the opposite point of view implies that psychophysiological and personal features play an essential role in the development and application of soft skills [7, 8]. The latter approach is often used to justify entrepreneurial abilities as inborn personal qualities. Some researches, e. g. T. Kantorowitz [9], argued that the degree of soft skills performance can vary significantly throughout a person's life – either improve or degrade – due to accumulated experience, obtained education, etc. We believe that this is the most suitable approach for addressing challenges faced by universities in the creation and development of entrepreneurship curriculum. Hence, this theoretical prerequisite forms the methodological basis of our study.

There is no agreement among researchers concerning the structure of soft skills that a modern professional should possess. According to the results of a multi-country study, the most significant soft skills sought by European employers [10] include:

1. Capacity to "navigate the world of work", including such skills as goal-setting, learning ability, adaptability and flexibility, motivation, recognition of corporate values, respect for hierarchal levels, readiness to take responsibility, time management and digital skills.

2. Social skills, which include stress management, team working, leadership, conflict management, cross-cultural awareness and the ability to manage communication.

3. Ability to achieve results, i. e. decision making, problem solving, creativity, focus on innovation, critical thinking.

In their "Recommendations on key competences for lifelong learning" [11], the European Parliament and the Council set forth the following most important soft skills:

1. Communication in the mother tongue.
2. Communication in foreign languages.
3. Mathematical competence and basic competences in science and technology.
4. Digital competence.
5. Learning to learn.
6. Social and civic competences.
7. Sense of initiative and entrepreneurship.
8. Cultural awareness and expression [11].

It is considered that core competences are those, which all individuals need to master for personal fulfilment and development, active citizenship, social inclusion and employment in a changing knowledge society [11]. It is notable that entrepreneurship is one of such key competences.

Another important research task is to specify which soft skills are particularly important for an entrepreneur. The Partnership for the 21st Century Learning, an organization under the aegis of UNICEF, suggests the following structure of soft skills underpinning successful entrepreneurship [12]:

1. Life and career skills – adaptability and flexibility, initiative, leadership, responsibility, self-direction, interaction, empathy, social skills, team work.
2. Learning and innovation skills – capability to see opportunities, creative and innovative thinking, creative resource using, critical thinking, communication, perspective thinking.

One can see that the categories of soft skills described above largely overlap, which has also been confirmed by numerous research studies [13, 14, 15]. Soft skills play an increasingly important role in entrepreneurship, being the key to creation and development of entrepreneurial networks and entire ecosystems. It should be noted that success in the entrepreneurial sphere is determined by the readiness to act, work in a high-risk environment, make prompt decisions and bear responsibility. M. Frese [15] described entrepreneurship as a conscious process of goal setting, planning to achieve a goal, monitoring and achieving success as a reward for a timely recognized opportunity. Focus on entrepreneurial actions also assumes initiative, self-regulation and self-management, self-efficacy and personal responsibility [15].

Following the assumption that the most important skills for entrepreneurs are those enabling them to act and make decisions under the conditions of high uncertainty and risk, we reviewed the studies considered to be important by most authors in the field of identification, typology and classification of competencies intrinsic to entrepreneurs. Thus, we analysed both classical works, e. g. by R. L. Katz [3] and contemporary research studies into the structure of entrepreneurial soft skills, e. g. by M. Frese [15], G. D. Markman [16], E. Chell and R. Athayde [17]. Fig. 1 generalizes the obtained data with a particular focus on entrepreneurial action. This structure was subsequently used as a guide for studying entrepreneurial skills included in entrepreneurship curriculum of Russian universities.

The suggested typology does not pretend to be comprehensive in terms of covering all entrepreneurial soft skills; rather, it sets out to outline those competencies that should be focused on by modern entrepreneurship curriculum.

Cognitive skills	Social skills	Action-oriented skills
• Critical and analytical thinking; • Opportunity recognition and appraisal; • Problem solving; • Decision making; • Creative and innovative thinking	• Oral and written communication; • Teamwork; • Leadership; • Collaboration; • Network work	• Initiative; • Goal-setting and monitoring; • Self-management; • Self-efficacy

Fig. 1. Structure of Entrepreneurial Soft Skills Developed by Entrepreneurship curriculum [3, 15, 16, 17]

In the following section, we will use the developed conceptual approach for creating a structural model of soft skills, which takes into account skills' levels of development and allows the balance between them to be estimated in the context of a given entrepreneurial ecosystem.

J. Moore, an American economist, was the first to use of the notion of an "ecosystem" in business and management to describe competitive processes. The ecosystem was understood as a complex network of suppliers, sales channels and consumers of goods and services. The distinguishing features of such networks included complexity, dynamic nature, openness, evolution, symbiosis, diversity, cooperation, competition and flexibility [18].

Using the institutional approach, C. Mason and R. Brown significantly expanded the ecosystem framework by proposing to consider not only entrepreneurs and their businesses, but also different institutions, as well as the processes of entrepreneurial activities (e. g., dynamics of appearing and disappearing companies, level of entrepreneurial aspirations) [19]. Actors form an entrepreneurial ecosystem directly or indirectly, thus determining its effectiveness. One of the well-known researchers of

this issue – D. Isenberg – considered entrepreneurial ecosystems as a complex conglomeration of various interconnected institutional elements and links between them determining both the development of entrepreneurial ecosystems and the effectiveness of the entrepreneurship sector in economy [20]. Moreover, D. Isenberg outlined the necessity to use and transfer successful entrepreneurial experience in support of first-time entrepreneurs, along with the essential factors ensuring resilience of entrepreneurial ecosystems. Apart from the above-mentioned researchers, R. Adner, B. Mercan, D. Goktas and S. Durst [21, 22, 23] also studied the issues of shaping and development of entrepreneurial ecosystems. It was established that the components of an ecosystem favourable for entrepreneurs include both statutory regulation of business environment, which promotes equal rights and opportunities for all the entities of an entrepreneurial society; effective systems and technologies at all levels providing equal educational opportunities both for entrepreneurs and their employees; availability of funds and financing; supporting culture ensuring an adequate evaluation of the significance of entrepreneurship [24].

The definition of the entrepreneurial ecosystem proposed by C. Mason and R. Brown [19] has found wide application. The entrepreneurial ecosystem is a set of interconnected entrepreneurial actors (potential and existing), entrepreneurial enterprises (companies, investors, business-angels, banks), institutions (universities, public services, and financial authorities) and entrepreneurial processes (number of forged businesses, number of high growth firms, number of serial entrepreneurs, level of entrepreneurial ambitions), which merge formally or informally, mediate and regulate the performance within the local entrepreneurial environment [19].

Research into entrepreneurial ecosystems in Russia began only about 15 years ago, on the basis of foreign publications in this field. Thus, N. M. Smirnova and E. A. Mironova suggested a classification of institutional factors determining the shaping and development of entrepreneurial ecosystems highly similar to that proposed by C. Mason and R. Brown [25]. The components of the entrepreneurial ecosystem were grouped as follows: favourable culture (acceptance of risk and errors, positive social status of an entrepreneur); social leaders and policy assistance; allocated funding (support of business-angels, venture capital, micro loans); appropriate human capital (qualified and non-qualified workforce, serial entrepreneurs, entrepreneurship training programmes); sales market (early followers, clients) and a wide range of institutional and infrastructure support (legal and accounting consulting, telecommunications and transport infrastructure, entrepreneurship promotion associations) [19].

It should be noted that Russian studies are mainly focused on studying either regional entrepreneurial ecosystems or specific aspects of business activities, such as youth entrepreneurship or innovative ventures.

The ecosystem approach is broadly used by researchers investigating entrepreneurship both in Russia and abroad. The interdisciplinary character of the entrepreneurial ecosystem concept predetermines application of diverse methodological approaches, including evolutionary, institutional, contextual and sociocultural ones. This diversity prevents from having a single view on the essence and structure of an "entrepreneurial ecosystem" [25].

In our research, we used the institutional approach to the analysis of entrepreneurial ecosystems. This approach allows an entrepreneurial ecosystem to be treated as a dynamic process of interaction between the actors, which affects the shaping and development of the ecosystem institutions, including entrepreneurship education.

The review of international and Russian research has shown that entrepreneurship education is a key factor in the successful development of entrepreneurial ecosystems. Subsequently, entrepreneurial ecosystems should also influence the state of entrepreneurship education through the following factors:

– The entrepreneurial ecosystem's degree of development. a highly-developed entrepreneurial sector in a region, which accounts for a considerable share of the gross regional product, will form a strong demand for a high-quality education system.

– Complexity of an entrepreneurial ecosystem. The complex entrepreneurial ecosystems are characterized by the vast variety of businesses from different sectors of economy; thus demanding much more variety of majors from its universities.

Entrepreneurial systems characterized by a high level of diversity, i. e. consisting of numerous enterprises working in various economic directions, will require a wide spectrum of unique specialists. Alternatively, entrepreneurial monosystems (e. g. when the majority of companies are engaged in trade and service or in just one type of manufacturing) will require specialists with standard (routine) qualifications.

– Specificity of an entrepreneurial ecosystem. The level of production diversification in a region determines the specificity of its entrepreneurial ecosystem. The predominance of innovative trade and service companies or social entrepreneurship will create a demand for specialists with highly specific skills.

For example, the development of innovative entrepreneurial projects in a region will require entrepreneurs to have knowledge in venture capital management and, therefore, specific cognitive skills.

– A degree of integration with the education system in a region. a high level of integration between the entrepreneurial ecosystem and the education system indicates that universities maintain a permanent contact with the entrepreneurial environment, monitoring its demand for specialists. On the other hand, the entrepreneurial ecosystem sets its own demands for specialists to the educational system. Ideally, entrepreneurship educational programmes are the result of collective actions of all stakeholders. In this process, three main groups of stakeholders can be defined: the university implementing entrepreneurship curriculum represented both the developers of such programmes and the academic staff; the regional entrepreneurial ecosystem (entrepreneurial community); and the consumers of educational services, i. e. students.

Each of the abovementioned stakeholder groups has an effect of the quality of entrepreneurship curriculum, thus determining the ultimate result, i. e. the shaping of an entrepreneur with the required set of skills. The developers and the academic staff are responsible for the structure and content of educational programmes. In this respect, two important aspects should be mentioned. First, university programmes in Russia are developed based on the requirements of the RF State Educational Standards determining the set of developed competencies; however, there is no RF State Educational Standard regarding entrepreneurship education. Entrepreneurship programmes are typically developed on the basis of other training programmes (e. g. "Economics" or "Management"), which in most cases are missing competencies required by entrepreneurs. Second, entrepreneurship programmes are developed as a rule by academic staff lacking either practical experience or academic training in the field of entrepreneurship. As a result, the patterns traditional for such subjects as economics, management or business are automatically transferred to entrepreneurial programmes. These reasons explain why there are very few high-quality programmes in the field of entrepreneurship at Russian universities and why the majority of Russian entrepreneurship curricula are imitative by nature.

The task of entrepreneurial communities consists of forming and voicing a demand for particular entrepreneurial skills (both hard and soft). The system of higher education should take into account the requirements of the entrepreneurial ecosystem and strive to meet them by developing appropriate entrepreneurship curriculum.

According to the data by the "Global University Entrepreneurial Spirit Students' Survey" [26], 74 % of Russian students expect to be employed after graduation, compared to only 9 % who plan to start their own business. On the one hand, this numbers are consistent with the international ones. On the other hand, it can be assumed that no more than 10 % of students are capable of clearly formulating the requirements concerning specific entrepreneurial skills they would need in the future.

Hence, out of the three main stakeholder groups contributing to entrepreneurship education, one is external to the university (entrepreneurial ecosystems) and two (academic staff and students) – are internal. It can also be assumed that, in reality, universities implementing educational programmes in the field of entrepreneurship should respond to the needs of all three main stakeholder groups. Therefore, the structure, content and quality of entrepreneurship programmes in every particular case should depend on the balance of such requirements.

As a rule, stakeholders' requirements are fully taken into account in universities preparing to get (or having already received) international accreditation. Essential criteria for international accreditation in the field of higher education is to demonstrate that a university addresses successfully the needs of labour market and students, and that the academic staff is actively engaged in modernization of educational environment and curricula.

Universities in different countries have accumulated a lot of experience in engaging stakeholders in designing entrepreneurial programmes. However, as it was mentioned above, Russian universities presently demonstrate weak dynamics in the development of this type of programmes. This, in our opinion, creates a gap between the demand for contemporary entrepreneurship curriculum, in which the soft and hard skills are well balanced, and the supply coming from regional universities. In order to address this issue, we set the following objectives:

1. Identify a structure of soft skills that should be developed in entrepreneurship education.

2. Identify regional differences in entrepreneurial programmes regarding soft skills.

3. Identify the influence of entrepreneurial ecosystem factors on the balance of soft skills in entrepreneurial programmes.

4. Define measures of bridging the gap between demand and supply in entrepreneurship education.

The following research hypotheses were formulated:

1. The structure of soft skills in entrepreneurship education should have a dynamic pattern and undergo

transformation in the context of stakeholders' changing demand. The structure of soft skills is assumed to be heterogeneous. The proposed distinction between cognitive skills, social skills and action-oriented skills has a dynamic character and reflects transformations in the field of entrepreneurial activities. Since the problem of soft skills in entrepreneurial programmes was not discussed earlier, an analysis should be carried out to investigate the current status and to identify factors of external environment affecting the existing structure of soft skills.

2. Regional ecosystems form a demand for skills in the context of their regional development specifics. It is hypothesized that regions differ in terms of demand for soft skills as a result of historical division of labour, specialization, the structure of economy, existing norms, customs and traditions. In this work, we aim to identify regional differences in the structure of entrepreneurial skills and to provide assumptions regarding their origin.

3. Regional entrepreneurial ecosystems affect the structure and content of entrepreneurship education. It is assumed that some factors of ecosystems can be treated as more important or neutral in term of shaping a demand for soft skills. In this work, we set out to identify the most essential elements of entrepreneurial ecosystems having an effect on the structure of competencies by analysing their connection with the key indicators specific to these ecosystems.

Data and Methods

The methodological framework for our study was the theory of action as the key concept in the understanding of entrepreneurship and entrepreneurs as active actors of the market environment. a review of research linked to this concept allowed us to identify 3 groups of soft competencies, i. e. cognitive skills, social skills and action-oriented skills. The subject matter of our study was the development of these skills during the implementation of the entrepreneurship curriculum. The development of soft skills was considered to be the result of cooperation between universities and regional entrepreneurial ecosystems. From the standpoint of institutional theory, the entrepreneurial ecosystem is a space for interaction between various actors and the links between them.

Empirical data were extracted from open sources, such as the websites of Russian universities implementing entrepreneurship curriculum. According to the disclosure policy, the website of any higher education institution in Russia must present exhaustive information about educational programmes it implements, including their detailed curriculum and syllabi for all subjects, as well as a detailed description of developed competencies. The total amount of analysed data included:

– 44 curricula of entrepreneurial programmes implemented by universities in various regions (6 Federal districts);
– 2,359 syllabi of disciplines and the same number of the sets of competencies.

Table 1 shows the distribution of the analysed programmes across RF Federal districts.

Table 1

Number of programmes analysed in different Russian regions

Region	Total number of programmes
Central Federal District	9
Volga Federal District	13
Southern Federal District	3
Ural Federal District	6
Siberian Federal District	9
Far Eastern Federal District	4
Total	44

We analysed the sets of competencies (skills) included in all the researched programmes. Every competency was referred to one of the following groups: cognitive, social and action-oriented ones.

Along with the analysis of the ratio between various competencies in the programmes, we also studied their regional differences. The next step was a correlation analysis between the entrepreneurial soft skills declared in the programmes and the specifics of entrepreneurial ecosystems in the regions.

An analysis of regional entrepreneurial ecosystems was carried out using the official statistics of the Federal State Statistic Service describing the innovation sector in Russian regions[3]. Although the indicators of the innovation sector characterize only one aspect of regional entrepreneurial ecosystem development, they have the advantage of reliability and availability. Indeed, these data are collected based on the annual Federal statistical monitoring procedure No.4-Innovation "Data about innovative activities of organizations".

For our analysis, we used the following indicators of the innovation sector in RF Federal Districts:

1. Volume of innovative products and services (1 indicator);

[3] Data about the innovation activities of the organization https://www.gks.ru/free_doc/new_site/business/nauka/4-innov.htm (accessed 01.11.2019).

2. Share of innovative products and services in the overall volume of goods, works and services (2 indicators);

3. Expenditures on technological innovations: the total amount and per every innovation (11 indicators);

4. Use of intellectual property objects per their types (6 indicators).

Overall, 20 statistical indicators were used to assess the state of regional ecosystems.

The collected data were analysed using the following statistical methods:

l) Methods of descriptive statistics (calculation of the averages, median values, shares, minimum and maximum values) for the analysis of entrepreneurship curriculum;

2) Kendall's and Spearman's rank correlation coefficients for the analysis of correlations between the indicators of entrepreneurship educational programmes and the state of regional innovation sectors. The choice of non-parametric instruments was determined by a small size of the statistical population and the absence of normalization in the distribution of initial data.

The main focus on the indicators of innovation is explained by the self-imposed limitation: to assess the performance of Russian universities based on innovative entrepreneurship as the most significant segment of the economy.

Results and Discussion

The obtained data allowed to evaluate the above-formulated hypotheses.

The hypothesis about the complex and dynamic structure of soft skills developed by entrepreneurship education was generally confirmed. The structure of the researched curricula is the following: the majority of the curricula feature the disciplines which are developing cognitive skills (50 %–96.8 % of the total number of disciplines). Disciplines developing social skills are included in the curriculum less frequently (20 %–60 % of the total number of disciplines). The least common are the disciplines focused on the development of action-oriented skills; only 7 %–20 % of the total number of disciplines. Since our analysis is the first of its kind, we can only make preliminary conclusions on the variability of soft competencies in the entrepreneurial programmes of Russian regional universities. Future research should identify factors of internal and external environment determining the balance of soft skills. At the moment, the identified orientation towards the development of cognitive skills cannot be considered problematic; however, the questions of how this balance is formed, due to which factors, how it correlates with the demand for competencies from the business community – all these issues require a detailed analysis. Therefore, it can be said that our first hypothesis, rather than providing exhaustive answers has formed a basis for further investigation. The proposed methodological approach to the analysis of soft skills has shown its research potential for the future studies.

The second hypothesis claimed that regional entrepreneurial ecosystems form their own specific demand for competencies, which is underscored by the region's specialization and institutions. Our regions' analysis showed that there are certain quantitative differences in shares of disciplines with a particular type of skills, in spite of the fact that the structure of soft competencies in educational programmes is sufficiently similar among the analysed regions,. Since the number of groups of programmes in the context of regions is rather small, we used the median value of these shares. Table 2 presents minimum and maximum shares of disciplines with different types of skills in Russian regions.

One can see that the share of social skills and action-oriented skills in the researched programmes differs significantly. With respect to the social skills share, universities in the Ural Federal District stand out. Fig. 1 shows a diagram with the median share of these disciplines in curricula.

Table 2

Minimum and maximum regional median shares of disciplines in curricula by groups of skills

Skill Group	Median Share of Disciplines in Curricula with a Group of Skills for a Region,%		Maximum to Minimum Ratio
	Minimum	Maximum	
Cognitive Skills	78.7 (Ural Federal District)	86.3 (Volga Federal District)	1.10
Social Skills	26.8 (The Southern Federal District)	56.9 (Ural Federal District)	2.12
Action-Oriented Skills	11.0 (The Southern Federal District)	26.3 (The Central Federal District)	2.39

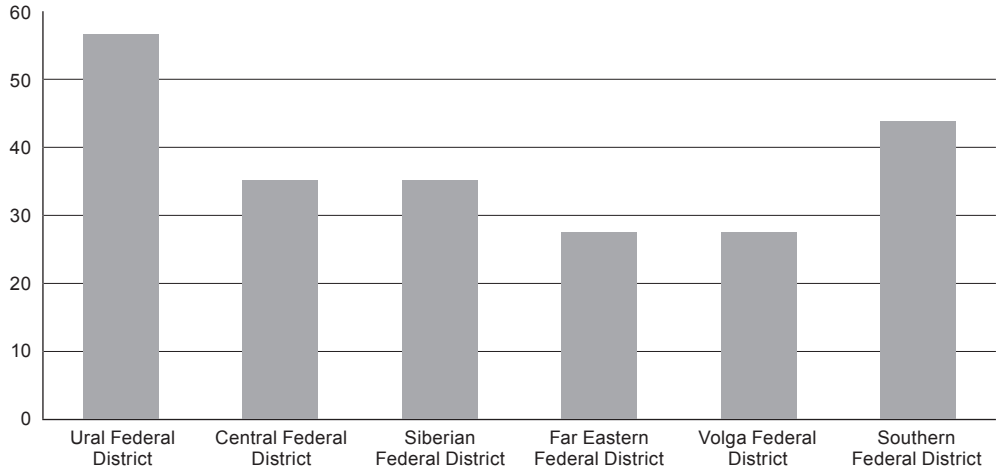

Fig. 2. Median share of disciplines focused on social skills development, by Russian regions

Regarding the disciplines developing action-oriented skills, two groups of regions were distinguished, i. e. those with the highest and the lowest share of such disciplines in entrepreneurship curriculum.

The analysis found statistically significant differences between the regions in their approaches to the shaping of soft competencies during implementation of entrepreneurship curriculum. In general, this confirms our hypothesis about regional specificity. The collected data show that these differences are not accidental and can hardly be explained by the subjectivity of programme developers. The discovered differences are most likely to reflect the regions' sociocultural specifics. The results have raised the following questions:

– How does the regional specifics of human capital in a particular region impact the demand for training entrepreneurs?
– What mechanisms and interactions between the entrepreneurial ecosystem actors ensure the identification of the demand for entrepreneurship education and its transfer to universities?
– How will be the soft skills in entrepreneurial programmes transformed in the process of the entrepreneurial ecosystem development?
– What factors and specific features of a region's entrepreneurial environment and culture have major influence on the demand for soft competencies?

All these questions will be explored in our future research. Such work requires significant efforts involving searching, processing and analysing information about the patterns of the development of entrepreneurial ecosystems; factors and specific features of entrepreneurial ecosystems, and particular aspects of the development of human capital in Russian regions. In addition, the interaction between the entrepreneurial environment and universities during the formation and transfer of demand for effective entrepreneurship curriculum remains to be further researched.

Our analysis showed almost no correlation (in 95 % of cases) between the set of skills in the entrepreneurship curriculum and innovation sector status in Russian regions. However, a number of statistically significant correlations were identified. Thus, the share of disciplines featuring Cognitive Skills in the regions has a positive correlation with the expenditures on technological innovations related to design ($r_s = 0.867$), meaning that the Federal districts, which offer more cognitive skills' disciplines, spend more resources on design technological innovations. However, no significant correlation was revealed concerning expenditures on other types of technological innovations.

Table 3

Groups of regions with different shares of disciplines developing action-oriented skills in curricula

Group 1	Range of the median share of disciplines focused on the development of action-oriented skills	Group 2	Range of the median share of disciplines focused on the development of action-oriented skills
Central Federal District	25.0–26.3	Volga Federal District	11.0–17.9
Ural Federal District		Southern Federal District	
Far Eastern Federal District		Siberian Federal District	

Interestingly, a negative correlation was observed between the share of action-oriented skills in a discipline and a relative share of innovative products and services in the total volume of products shipped and services performed (r_s = –0.943), as well as with a relative share of innovative products and services in the total volume of industrial production (r_s = –0.886). The more action-oriented skills are taught in university curricula, the lower the innovative component share is in the total volume of products and services. However, no such correlations were observed concerning other types of skills. Another negative correlation was found between the share of only social skills' disciplines within entrepreneurship curriculum and the expenditures on technological innovations (r_s = –0.812) in a region. The share of disciplines with action-oriented skills demonstrates a positive correlation with the use of intellectual property objects (intellectual micro-scheme topologies) in regions (r_s = 0.941).

It can concluded that our hypothesis about the correlation between the development of soft skills during entrepreneurship education and the characteristic features of the entrepreneurial ecosystem in a region has been partially confirmed. More reliable results can be obtained by analysing correlations between the soft skills developed during entrepreneurship training and the level of development of key institutions and actors in an entrepreneurial ecosystem, rather than by analysing statistical indicators reflecting their activity. Therefore, improved research instruments are needed to establish the relationship between the elements and factors of entrepreneurial ecosystems and the structure of required entrepreneurial skills.

In addition, the syllabi of entrepreneurship curriculum were analysed based on the set of competencies specified by RF State Educational Standards and each skill was referred to cognitive, social or action-oriented. However, quite frequently, one discipline can address a number of skills belonging to different groups.

Another important fact is that practically all the studied entrepreneurship curricula, regardless of the training field for which they were created, comprise a very similar set of subjects aimed at developing professional competencies. These are mainly subjects related to either economics ("Fundamentals of Economics", "Economics of Organization", "Economic Theory", etc.) or management ("Strategic Management", "Project Management", "Corporate Management", etc.). Interestingly, the lists of competencies specified by RF Federal State Educational Standards does not include competencies directly related to the development of entrepreneurial skills and expertise. It can, therefore, be concluded that the entrepreneurship curricula replicate the curricula of other fields without focusing on the development of entrepreneurial competencies.

A significant feature of all higher education programmes in Russia, including those for entrepreneurs, is their strict compliance with RF Federal State Educational Standards. These Standards regulate both the structure of educational programmes and the list of competencies that students should develop. Although a university is free to complement the basic programmes with subjects aimed at forming some specific competencies, the list of competencies and the content of competencies cannot be changed.

However, in order to develop a well-balanced and effective model of soft skills formed during entrepreneurship education, universities should continue seeking new forms of interaction between all the involved stakeholders and investigate the sociocultural features of entrepreneurial ecosystems.

Conclusion

The analysis of practices aimed at developing entrepreneurship curriculum at Russian regional universities allowed us to identify a number of issues, which should be addressed in order to improve the current state of entrepreneurial ecosystems in Russia.

First, the development of entrepreneurship curriculum in Russian higher education institution is characterized by a very slow dynamics, which does not correspond to either the global trends in the field or the growing share of the entrepreneurial sector in economy.

Second, the transition of Russian universities to the competency-based model of training, which began about a decade ago, is not supported by comprehensive studies of the structure of competencies and their transformation mechanisms. In addition, there is a lack of approaches to designing such competency-based models that would take into account stakeholders' interests, particular aspects of the entrepreneurial environment and regional sociocultural factors.

Third, the analysis of the structure of soft competencies, which are being developed by the current entrepreneurship curriculum, has shown its dynamic structure subjected to the influence of a region's entrepreneurial ecosystem. Since no similar studies have been conducted before, we aimed to verify the most general hypotheses concerning the internal links in the structure of soft skills and the as effects of the regional context and the entrepreneurial ecosystem. The obtained results allowed us to formulate a number of research questions for future analysis.

Fourth, the revealed correlations between the content of entrepreneurship curriculum, regional factors and entrepreneurial ecosystem indicators raise the question of managerial decisions that could ensure the adequacy of university educational programmes to the requirements of entrepreneurial communities.

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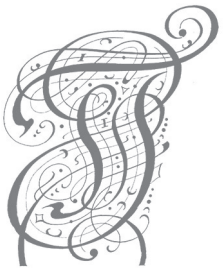

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MEASURING UNIVERSITY ENGAGEMENT

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Abstract. This article presents a model for the evaluation of scientific research output from the standpoint of university engagement with the socio-economic environment based on a scientometric analysis of topical areas. The primary aim was to examine various interrelations between conventional and alternative scientometric indicators that most clearly reflect the relationship between universities, industry and society. Three countries and five topical research areas were chosen as the object of the study. A comparative analysis showed that conventional scientometric indicators correlate quite well with the indicators of social and commercial relevance of scientific research. However, since this relationship was not observed in the case of Brazil, an assumption was made about the influence of the national and disciplinary context. The evaluation of university engagement cannot be performed based exclusively on quantitative indicators, thus requiring qualitative assessment, e. g. peer review.

Keywords: university engagement, engaged university, third mission, community engagement, scientometric indicators, peer review

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Introduction

Until recently, universities have enjoyed great academic freedom. The liberal governance model implied autonomy (delegation) based on trust [1]. Since the 19th century, governments and private sponsors have been allocating significant resources for the development of universities without requiring much accountability in response. At that time, there was no clear link between the progress of science and economic growth in public consciousness.

The Second World War convincingly demonstrated the ample possibilities of science. In addition, the post-war fertility boom stimulated expenditures on higher education [2]. The increased spending led to a demand for greater accountability, as the society became interested in how its tax money was spent. People required that knowledge gained by pure science be practically useful. Industry that directly or indirectly (through the tax system) funded science also wanted to maximize outcome for their money spent.

Towards the end of the 20th century, the concept of knowledge economy became the mainstream development paradigm. Within the framework of neoliberalism, science is increasingly being considered as a production process with its input and output parameters. The university has become a principal actor in the socio-economic system. Undeniably, the ties between the university, government, and business have existed long before. The theory of innovation, the backbone of which was laid by Schumpeter [3], can be distinguished into the following distinct areas:

– product design – *diffusion of innovation* [4];
– evolutionary – *triple helix* [5–9];
– organizational or strategic – *open innovation* [10–17], *agile innovations* [18];
– political – *national and regional innovation systems* [19–22].

The Triple Helix model proposed a new role for the university in the economy. The triple helix is applicable when overlapping of institutional spheres occurs. It is in the places of overlap that the phenomenon of the endless frontier of new knowledge generation arises, which is a prerequisite for the evolutionary development of systems [9].

The demand for greater science accountability raised the problem of new indicators for research productivity measurement. Until the 90s, research performance had been primarily assessed using such qualitative instruments, as peer review. However, the rapid development of information technologies coupled with growing scholarly output resulted in dominance of *scientometric (quantitative)* indicators over qualitative ones.

Do the results of peer review and scientometric indicators coincide? The results of a few studies thus far conducted have produced conflicting results. Thus, Mryglod et al. [23] found a strong correlation between quality and impact, although normalized per head indicators showed a rather weak correlation. It was argued that scientometric indicators are not suitable for assessment of research productivity in social sciences and humanities. At the same time, Harzing [24] found a strong link between the results of peer review carried out at British universities in the framework of REF (Research Excellence Framework) and the citation data retrieved from Microsoft Academic (MA). A recent study established that consistency between metrics and peer review is observed at the institutional level (rather than at the publication level), at least in the fields of physics, clinical medicine, public health, health services & primary care [25]. Nevertheless, it should be accepted that the entire evaluation procedure is becoming more impersonal.

At almost the same time, at the turn of the century, the first university rankings began to appear[1]. To a certain extent, they were designed to give a quantitative answer to the question of what should be done "in order to become Harvard". This presumption determined their bibliometric-based character; moreover, expert voting is also an impersonal procedure by nature. University rankings are a convenient quantitative tool, but their design presupposes their weaknesses. University rankings are rather a marketing tool for attracting resources (human and financial); their value for improving research performance remains unclear [26]. Most university rankings have a strong organizational profile of an American university inside; therefore, it does not come as surprise that most of the first places are occupied by American universities [27]. Rankings create "weak expertise," which is a compromise between the interests of key stakeholders and the robustness of methodology [28]. The ranking of the *Three University Missions* from Moscow State University[2] stands apart. It is one of the first large-scale attempts to assess the engagement of universities in the solution of societal problems. In this context, *U-Multirank*[3], which includes the indicators of regional engagement and knowledge transfer, should be mentioned.

Thus, the discussion around topics of measuring of university engagement in socio-economic processes is continuing. Bibliometric methods have limitations; at the same time, even ardent supporters of the peer review approach recognize the impossibility of using exclusively expert methods under the conditions of rapidly increasing information flows. In this study, we aim to show the applicability of alternative indicators for research performance evaluation. To this end, we set out to investigate those research areas in the technological frontier zone, where maximum commercial and socially relevant results can be expected.

The rest of the article is organized as follows: the following section presents a scientometric analysis of the recent research in the field of university engagement; further, we describe the applied methodology; the Results section summarizes the analysis of traditional and alternative scientometric indicators, as well as the correlation analysis. In the Discussion and Conclusion section, we provide interpretation of the results, present the examples of university cases and also discuss the results of the *Three University Missions* ranking for 2019.

Recent Research

An analysis of recent literature was carried out using *VOSviewer*[4]. In addition to citation and co-authorship analysis, this software product possesses text mining functionality [29, 30]. At the first stage, we performed a topical search in the Scopus[5] and

[1] Strictly speaking, U. S. News ranking began in 1983 but it was aimed primarily at an American audience. The major globally recognized rankings appeared in 2000 beginning with Times Higher Education–QS World University Rankings in 2004.

[2] Available at: https://mosiur.org/ (accessed: 05.11.2019).
[3] Available at: https://www.umultirank.org/ (accessed: 05.11.2019).
[4] Available at: http://www.vosviewer.com/ (accessed: 08.12.2018).
[5] Available at: https://www.scopus.com (accessed: 08.12.2018).

Web of Science[6] databases. Documents were taken for five years 2014–2018. We identified terms that had occurred in combinations at least five times. Table 1 presents a comparative analysis of the results.

Table 1

Results of literature search*

Database	Scopus	Web of Science
Search query	university* W/1 engage*	university* NEAR/1 engage*
Number of documents	996	618
2014–2018	476	360
Article, review, article in press**	348	290
Number of terms	66	46

* Source: authors' own analysis based on Scopus and Web of Science data.

** This type of document is available only in Scopus.

Subsequently, we opted for better coverage, i. e., Scopus database. At the next stage, we merged single-root words and synonyms and also eliminated the words not carrying the thematic load (e. g., articles), denoting research methods (e. g., questionnaire, interview, etc.) or denoting a specific location (e. g., the United Kingdom, United States). As a result, we received a scientometric map of 54 terms (Fig. 1).

[6] Available at: http://apps.webofknowledge.com (accessed: 08.12.2018).

The red cluster is a topic core. Note that most of *"research"* refers to university relations with society [31–37]; *"innovation"* [38] and *"third mission"* [39, 40] point to connections with industry. The blue cluster contains documents related to the educational foundations of university processes, such as *"learning"* and *"curriculum"* [41–44]. It also includes the organizational aspects of the university processes: *"organization and management"* and *"public relations"* [45]. The green cluster represents the psychological foundations of higher education, with the centre of this class being formed by the identity of a student [46, 47]. A small yellow cluster combines *"academic engagement"* with *"academic achievement"* and *"academic performance."* Academic engagement, including academic entrepreneurship, is often considered at the individual level [44]. Interestingly, the connecting term between the red and blue clusters is *"public health"* [48, 49], which indicates the focus of modern economic, social, political and educational systems on maintaining human health and wellbeing. At the same time, *"social justice"* is the unifying term for all 4 clusters [50].

A complete list of terms is given in Appendix 1. Each link has its own *strength*, represented by a positive numerical value. The higher this value, the stronger the link. The *total link strength* attribute indicates the total strength of the co-occurrence links of a given term with other terms. The average normalized citation score is a relative indicator. The mean value normalizes the values; thus, the mean value always equals 1 [51].

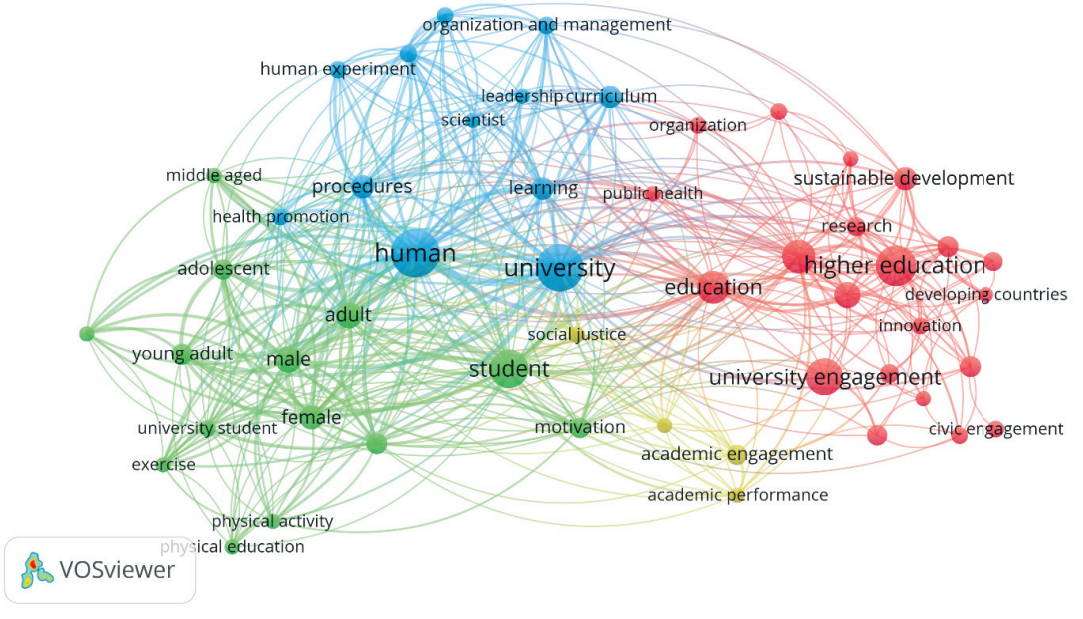

Fig. 1. Scientometric map of recent studies in university engagement. Source: authors' own analysis using VOSviewer

Methodology

The data was retrieved from the Scopus database for the period between 2014 and 2017[7]. This period can be considered sufficient for the evaluation of research processes. Three countries were selected for analysis: the Netherlands, Brazil and Russia. The Netherlands represents a country with a developed economy. At the same time, the Netherlands features a developed university system, which not only produces high-quality research results, but also has successfully commercialized its research. Brazil is a country with an emerging economy and a reasonably stable higher education system with a large share of the private sector. Russia, on the contrary, is characterized by the lion's share of public universities and large-scale attempts to improve the global competitiveness of its higher education system. For the analysis purposes, five areas were chosen, where commercially and socially relevant results can be expected:

– Biochemistry;
– Computer Science;
– Energy;
– Engineering;
– Medicine.

At the first stage, we analysed the values of conventional scientometric indicators for the indicated countries and research domains:

– The scholarly output is an indicator of the relative strength of a research area for a given object of analysis.
– Citation is an indicator of research impact. Citations were taken as normalized per paper.

Further, we analysed two alternative indicators that show the link between scientific research and industry:

– Share of industry co-authored papers, i. e., at least one author with a university affiliation and one author with an industry affiliation. It is an apparent link between university research and the economy. The advantage of this metric is real-time availability.
– Scholarly output cited by patents. This indicator is available with a time lag (2 years minimum).

Finally, we introduced the indicator of the number of mentions in the media as an indicator of the social relevance of research. To this end, we had to go down to the level of analysis below, because mentions in the media usually refer to the university (author), rather than to the country or the research area as a whole.

We identified 30 universities with the most significant number of publications for each country and research area. We used correlation analysis to search for possible relationships. In this case, we proceeded from the following hypotheses:

1. The number of publications in collaboration with industry positively correlates with the total scholarly output.
2. The number of mentions in the media is related to the total number of publications and/or citations.
3. The number of citations of scientific publications in patents positively correlates with the total number of citations of scientific publications of a university.
4. The number of publications co-authored by industry positively correlates with the number of citations of university publications in patents.

The citation indicator was taken as an absolute value, since the indicator of references in the media cannot be normalized to the article.

Results

The results of a comparative analysis of conventional scientometric indicators and indicators of the commercialization of research are presented in Figure 2.

Russia has an advantage in engineering and energy; these areas are based on the foundation laid down back in the Soviet times. At the same time, in medicine, the supreme position of the Netherlands is evident; Russia's lag in this area is particularly significant. The Netherlands is leading in terms of scientific impact in almost all analysed domains. A similar picture can be observed concerning the share of industry co-authored articles and the number of citations in patents. This similarity suggests the existence of a correlation between these indicators. For the correlation analysis, we selected 30 universities with the highest number of publications for each subject area and country. Tables 2–6 represent the results of the correlation analysis.

Table 2

Publications vs. Mass Media*

Subject area/ Country	Biochemistry	Computer Science	Energy	Engineering	Medicine
Brazil	0.14	0.21	0.23	-0.04	-0.10
Netherlands	0.86	0.70	0.04	0.62	0.92
Russia	0.93	0.90	0.83	0.89	0.43
Total	0.68	0.63	0.08	0.60	0.05

* Source: authors' own analysis. Data source: SciVal by Elsevier.

There is an average correlation between the number of publications and media references in the field

[7] The dataset is available at: https://data.mendeley.com/datasets/c3snzdszm4/1

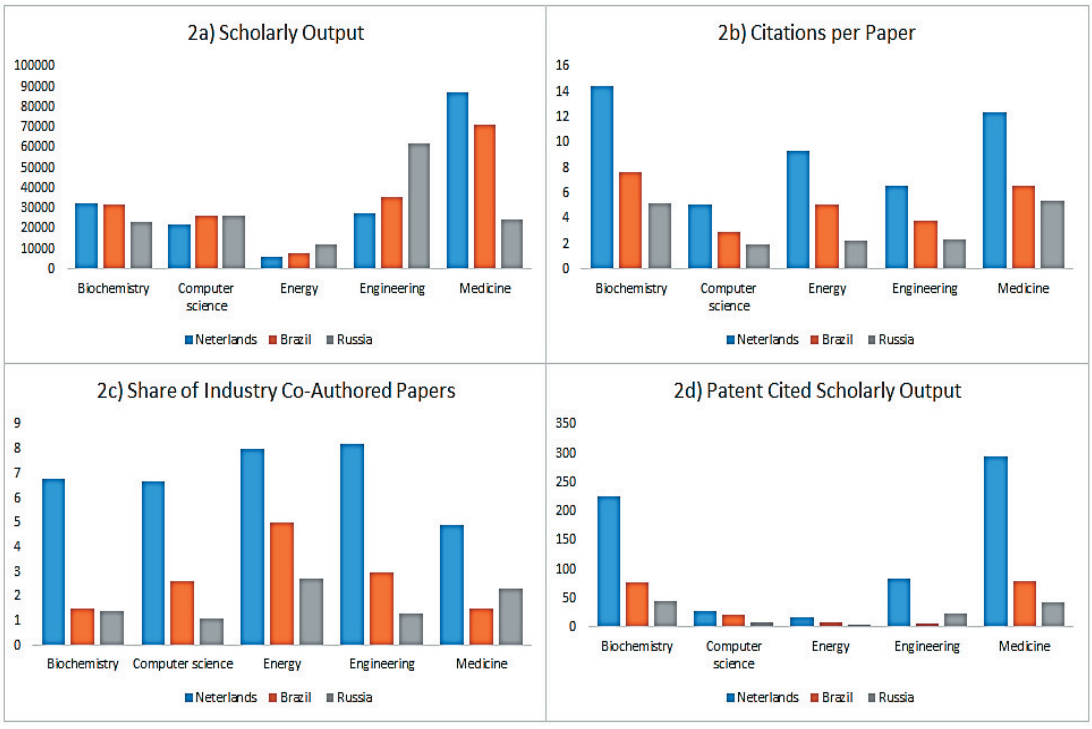

Fig. 2. Comparative analysis of conventional and alternative scientometric indicators
Source: authors' own analysis. Data source: SciVal by Elsevier.

of biochemistry, computer science and engineering. At the same time, Russia demonstrates a pronounced correlation between these indicators in all areas except medicine. In Brazil, however, these figures are not correlated with each other.

Table 3

Publications vs. Academic-Corporate Collaboration*

Subject area/ Country	Biochemistry	Computer Science	Energy	Engineering	Medicine
Brazil	0.95	0.84	0.44	0.31	0.17
Netherlands	0.83	0.46	0.63	0.50	0.99
Russia	0.89	0.86	0.55	0.89	0.84
Total	0.61	0.37	0.44	0.34	0.68

*Source: authors' own analysis. Data source: SciVal by Elsevier.

We found a moderate correlation between the number of publications in general and the number of publications in collaboration with industry. Again, in Russia, these indicators correlate in almost all areas.

The results of the correlation analysis of citations and media are very similar to those presented in Table 2. Therefore, a reasonable assumption can be made about the correlation between the number of publications and the number of citations.

Table 4

Citations vs. Mass Media*

Subject area/ Country	Biochemistry	Computer Science	Energy	Engineering	Medicine
Brazil	0.04	0.23	0.02	-0.09	0.10
Netherlands	0.87	0.75	0.02	0.67	0.91
Russia	0.92	0.84	0.82	0.85	0.48
Total	0.83	0.72	0.08	0.65	0.12

* Source: authors' own analysis. Data source: SciVal by Elsevier.

Citations correlate with the patent-citation count in almost all areas for Russia and the Netherlands; however, this relationship is not observed for Brazil. Thus, conventional scientometric indicators and indicators of social engagement correlate almost everywhere for Russia and moderately for the Netherlands. In Brazil, this relationship is absent in most cases. In addition, we analysed the relationship between the number of publications in collaboration with industry and the number of citations of university publications in patents.

We observed a very high correlation coefficient in the field of medicine for all the countries under study. Thus, the participation of practitioners in the preparation of a medical article is an essential condition for its use in a patent application.

Table 5

Citations vs. Patent-Citations Count*

Subject area/ Country	Bio-chemis-try	Com-puter Science	Energy	Engi-neering	Medi-cine
Brazil	0.77	0.31	0.19	0.46	0.34
Netherlands	0.84	0.67	0.70	0.85	0.89
Russia	0.92	0.73	0.55	0.80	0.82
Total	0.86	0.65	0.61	0.74	0.70

*Source: authors' own analysis. Data source: SciVal by Elsevier.

Table 6

Academic-Corporate Collaboration vs. Patent-Citations Count*

Subject area/ Country	Bio-chemis-try	Com-puter Science	Energy	Engi-neering	Medi-cine
Brazil	0.69	0.37	0.42	0.14	0.99
Netherlands	0.72	0.51	0.55	0.67	0.88
Russia	0.82	0.68	0.28	0.75	0.83
Total	0.78	0.53	0.43	0.68	0.95

*Source: authors' own analysis. Data source: SciVal by Elsevier.

Discussion and Conclusion

The results of the correlation analysis partially support the hypothesis about the relationship between conventional scientometric indicators and indicators of social and commercial relevance of research. In Russia, these indicators correlate in almost all the analysed areas; in the Netherlands, we also observed a correlation, but not in all areas. In Brazil, the relationship between the indicators in most cases is absent. We also found a relatively strong correlation between the number of publications in collaboration with industry and the number of citations of scholarly output in patents. This relationship is most strongly expressed in the field of medicine.

On the basis of the obtained results, we argue that national and disciplinary contexts significantly influence the evaluation of university engagement. In each research domain, established traditions affect the number of publications, citations, industrial partnerships and knowledge transfer. At the same time, the activities of a university are influenced by the national economic, political and cultural context. Our results do not support the *global university – local university* dichotomy. We can only talk about the *matrix of* a university's *strategic choice* (Fig. 3). In this Figure, the horizontal focus is on research vs. education, while the vertical orientation is global vs. local markets.

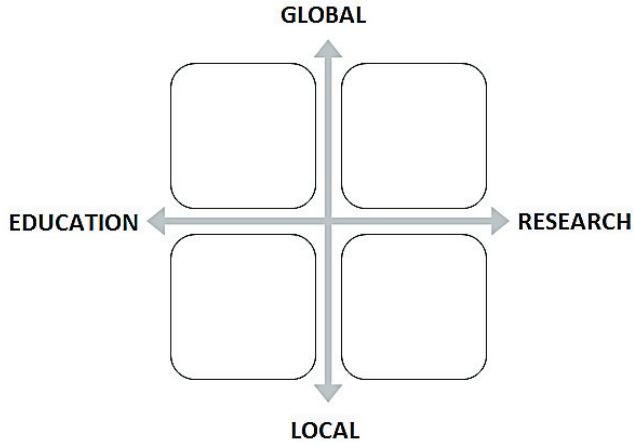

Fig. 3. The matrix of a university's strategic choice. Source: authors' own analysis

It is essential that, under current conditions, a university cannot work exclusively at one of the poles horizontally; it can only make a strategic shift towards one direction or another. For example, it can be said that Harvard is somewhat more focused on education, while MIT – on research and technology transfer. However, it is difficult to imagine that one of these institutions will completely abandon research or education, respectively. Universities opt either for the global or local market. However, universities tend to be isomorphic: "*they operate under similar incentive structures and imitate one another* [52]."

The position of a locally engaged university also opens up plenty of strategic opportunities. Here is an example of the Zuyd University of Applied Sciences (the Netherlands)[8], which is located on three campuses in Heerlen, Sittard and Maastricht. Zuyd is not included in the global university rankings. Its mission statement is short: *"Professionals develop themselves with Zuyd."* Zuyd University hosts 30 research centres. Associate professors, lecturers and students carry out practical and socially relevant research. They connect practice and education, contribute to innovations and R&D in the business sector. Research and knowledge transfer contribute to regional development and are designed in close cooperation with the regional or Euregional government bodies, the business world and educational institutions.

In the global or local market, the engagement mechanism works similarly. The thesis of the falsity of the opposition between global and local universities is also supported by the results of the *The Three University Missions* ranking. In the Top 10, we again observe the dominance of American universities, with Harvard and MIT ranking the first (Table 7).

[8] Available at: https://www.zuyd.nl/en (date assessed 14.12.2018)

It is interesting to note that the leading group is stable in composition (we compared with the data in 2018); the only change is the emergence of Duke University in the 10th place, which replaced the Columbia University.

Table 7

Top 10 rankings of the Three University Missions*

1	Harvard University	United States
2	Massachusetts Institute of Technology (MIT)	United States
3	University of Pennsylvania	United States
4	Yale University	United States
5	University of Cambridge	United Kingdom
6	University of Oxford	United Kingdom
7	Stanford University	United States
8	University of California, Berkeley	United States
9	University of Chicago	United States
10	Duke University	United States

* Source: URL: https://mosiur.org/ranking/ (date accessed 06.11.2019).

We can assume that a modern university cannot function without a social mission and knowledge transfer. Nevertheless, we should note that this ranking still uses conventional scientometric indicators and a few altmetrics, such as views, the number of visitors of the university website and the number of subscribers to the university account in social media. Most local universities are out of sight due to low scientometric indicators (the ranking includes only 333 universities). In this case, we do need a peer review analysis.

It is not by chance that there are many examples of engaged universities in the Netherlands. The Dutch university evaluation system called the Standard Evaluation Protocol (SEP)[9] is focused on assessing not only the quality of research but also its social significance. In particular, it contains Table D 1, where peers evaluate how effectively the university produces scientific knowledge for targeted social groups. The Dutch case is undoubtedly a positive experience, but it is not entirely clear how it can be scaled up. At the moment, we are not ready to offer a suitable organizational mechanism, but are open to discussion with interested readers.

Disclosure statement

The authors declare no conflict of interest.

[9] Available at: https://www.knaw.nl/nl/actueel/publicaties/standard-evaluation-protocol-2015–2021 (accessed: 14.12.2018).

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Appendix 1

Clusterization of the terms*

Label	Cluster	Links	Total link strength	Occurrences	Avg. pub. year	Avg. citations	Avg. norm. citations
civic engagement	red	2	2	6	2016.17	2.00	0.54
community engagement	red	12	16	10	2016.90	2.30	0.79
developing countries	red	9	11	5	2015.00	3.80	0.60
education	red	36	86	23	2015.52	3.57	0.95
engaged university	red	9	9	6	2016.83	1.33	0.48
entrepreneurial university	red	8	8	5	2016.20	3.00	1.59
higher education	red	24	46	36	2016.14	2.86	0.82
innovation	red	10	14	6	2016.00	4.33	1.26
local participation	red	8	13	5	2016.40	1.20	0.28
organization	red	9	13	6	2016.00	1.83	1.08
public health	red	16	21	5	2014.80	3.40	0.66
research	red	12	17	8	2016.75	2.00	1.94
societies and institutions	red	14	25	10	2015.60	6.90	2.42

Label	Cluster	Links	Total link strength	Occurrences	Avg. pub. year	Avg. citations	Avg. norm. citations
student engagement	red	7	9	8	2016.75	1.38	1.39
sustainable development	red	15	29	12	2016.25	6.00	1.39
teaching	red	19	36	15	2015.80	6.67	1.26
technology transfer	red	7	10	8	2016.50	1.38	0.54
third mission	red	7	9	9	2016.67	2.67	1.18
university engagement	red	11	18	30	2016.43	2.63	0.96
university sector	red	34	71	24	2016.50	2.42	0.88
university-community engagement	red	6	6	6	2017.17	0.17	0.68
adolescent	green	24	71	9	2014.67	5.78	1.18
adult	green	32	112	15	2015.60	3.53	1.03
exercise	green	16	40	5	2015.40	7.40	2.12
female	green	27	107	13	2015.08	5.23	1.06
male	green	29	120	15	2015.13	4.60	0.93
middle aged	green	16	35	5	2015.20	9.20	3.73
motivation	green	24	35	9	2016.89	1.78	0.98
physical activity	green	14	30	5	2015.60	3.80	1.16
physical education	green	13	16	5	2016.00	3.60	1.01
psychology	green	25	58	10	2015.70	4.70	1.43
statistics and numerical data	green	12	37	5	2014.60	5.40	1.04
student	green	38	129	32	2015.94	3.84	1.09
university student	green	17	29	6	2016.50	1.50	1.35
young adult	green	21	74	10	2014.90	5.50	1.26
community-institutional relations	blue	17	39	6	2015.83	3.50	1.45
curriculum	blue	21	39	11	2015.45	3.36	0.74
health promotion	blue	22	38	6	2016.17	8.00	3.38
human	blue	36	244	51	2015.73	3.69	1.25
human experiment	blue	14	31	7	2016.43	1.14	0.59
leadership	blue	16	22	5	2016.00	3.20	1.00
learning	blue	25	48	11	2016.45	0.55	0.25
organization and management	blue	18	39	7	2014.86	5.43	1.29
procedures	blue	28	80	12	2015.25	5.17	1.37
public relations	blue	22	50	7	2015.71	3.00	1.25
scientist	blue	14	23	5	2017.20	1.20	0.70
university	blue	43	195	48	2015.67	3.88	1.11
academic achievement	yellow	15	18	5	2017.00	0.60	0.18
academic engagement	yellow	13	22	9	2016.33	3.00	1.23
academic performance	yellow	14	21	5	2016.80	2.60	1.39
social justice	yellow	19	27	6	2017.00	1.67	0.34

*Source: authors' own development. Developed with VOSviewer.

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PATENT STRATEGY AS A KEY COMPONENT OF INNOVATION DEVELOPMENT IN UNIVERSITIES

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Abstract. Category: conceptual article. The problem considered in the article is the failure of most Russian universities to develop intellectual property (IP) management strategies capable of meeting the challenges of the market. The importance that is currently attached to this issue concerns the national strategy for the scientific and technological development of the Russian Federation – in particular, as enshrined in the national project "Nauka" (Science). The goal of the work determined by the current situation is thus to formulate the structure of the strategic goals of universities in the field of intellectual property, as well as to identify and systematise typical strategies for their accomplishment.

To achieve this goal, the following tasks were carried out within the framework of the study: 1) an analysis of Russian and foreign publications in order to systematise methodological approaches to the formation of the university's patent strategy; 2) a systematisation of key performance indicators used in assessing the activities of universities in their reporting documents and ratings; 3) a collation of approaches to the formation of patent strategies of Russian universities, based on a comparative analysis of university-wide missions and goals, as well as general aims and strategies for managing intellectual property.

The solutions to these problems formed the basis for a systematisation of approaches to the formation of patent strategies in Russian and foreign practice. It is proposed that patent strategy be considered as a vector of the development of university IP across such coordinates as the competitive behaviour model, as well as the volume, geographical distribution and structure of the patent portfolio with respect to target audiences (key consumers) and strategic partnerships.

The conducted studies and generalisations, which will be used to support the innovation activity of UrFU, may also be useful to other universities of the Russian Federation for improving systems of innovation and intellectual property management.

Keywords: University, patent strategy, intellectual property, commercialisation

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Introduction

One of the most important institutions for ensuring the implementation of research and development results in world practice is the patent system, which ensures the consolidation of intellectual rights to the results of research, design and project works and provides the legal basis for their commercialisation. According to the strategy of scientific and technological development of the Russian Federation[1], indicators of patent activity also play a very significant role. Thus, in particular, within the framework of the national project "Nauka", the first three evaluation parameters in the selection of applicants for the creation of scientific and educational centres are associated with patent activity. In other words, since comprising one of the key components of the national innovation system, universities should have a strategic vision of the development prospects of patent activity due to its strategic importance in the scientific and technological development of the Russian Federation.

In recent years, Russian universities have achieved some success in this area. First of all, the results regarding the formation of the universities policy in the field of intellectual property should be noted. The first official intellectual property policy adopted by a university in the Russian Federation was in 2012 at the Ural Federal University[2]; subsequently, other Russian universities implemented this practice. A significant contribution was made by the project of the World Intellectual Property Organisation (WIPO) to

[1] STRATEGY OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF THE RUSSIAN FEDERATION Approved by Decree of the President of the Russian Federation of December 1, 2016, № 642.

[2] Intellectual Property Policy of the Ural Federal University, available at: http://inno.urfu.ru/admin/ckfinder/userfiles/files/doc20121120170643.pdf (accessed: 05.08.2019).

develop a model intellectual property policy for universities and research institutions. The corresponding document, approved by the Ministry of Science and Higher Education of the Russian Federation in July 2018, is currently being introduced into the practice of Russian universities[3]. The adoption of a university policy in the field of intellectual property defines and formalises the basic principles of intellectual property management, including models for the separation of exclusive rights and distribution of income from their use, which contributes to the development of motivational schemes and, therefore, patent activity of universities. These days, an indication of an effective motivation for creativity is the filing several dozen or even hundreds of patent applications per year, which is no longer an exception for Russian universities.

Meanwhile, there is a clear imbalance between the number of patents generated and the indicators characterising the income derived from the use of inventions. Although patent portfolios of leading Russian universities reach several hundred documents, the percentage of inventions actually used and financial indicators pertaining to their effective commercialisation are significantly lower than in the world practice[4]. It should be noted that the current situation reflects the general state of the IP market in Russia. The licensed market for patented technologies is very poorly developed due to the structural features of the Russian economy, the low receptiveness of Russian companies to innovation and the prevailing form of technology transfer in Russian practice, which occurs mainly in the form of R&D [2]. Given this circumstance, the state is making efforts to stimulate the development of the licensed market, in particular, through various forms of financing university research and development with the obligatory involvement of an industrial partner. In particular, following the completion of work under the Federal Target Programmes, as well as projects under the Decree of the Government of the Russian Federation No. 218, intellectual property achieved via state support is licensed to an industrial partner. In our opinion, despite the somewhat artificial nature of such organisational models, the licensing of research results to an industrial partner is an important and effective tool for stimulating practice – and, no less importantly, developing a technology licensing market culture.

However, these are only the first steps in the development of a technology licensing market, which will not be sufficient to solve the problem of the financial effectiveness of patent activities of universities in the near future. In reality, in this situation, universities tend to operate intuitively and in most cases without any system, given the conceptual need to patent innovative developments, and, counting on a potential commercial result, register the rights to their developments. At the same time, at the current stage of development of the Russian economy, intuitive actions concerning the market of intellectual property are no longer sufficient. In this context, the development of a strategic vision of the university development prospects in the field of intellectual property becomes an imperative.

With some rare exceptions, an analysis of open sources[5] failed to reveal the presence of documented patent strategies in Russian organisations. Moreover, this common practice for both universities and industry is probably due to the confidential nature of these documents. However, our interviews indicate that very few organisations have developed a patent strategy across both university and business environments. It is evident that Russian organisations lack a formalised strategic vision of approaches to managing the most important resource for innovative development. Thus, there is reason to believe that the attention paid to this issue by universities, research institutions and industrial enterprises does not correspond to the significance of the legal protection tasks and commercialisation of the results of intellectual activity formulated in the Scientific and Technological Development Strategy of the Russian Federation.

It should also be noted that patents are only part of a university's intellectual property portfolio, along with copyright, know-how and others. Due to the inherently public nature of patent information and the key role of patent protection in the innovative technological field of a university's activities aimed at implementing its "third mission" [2.25], this component of the institution of intellectual property is among the more interesting areas for research. In addition, a practical patent strategy generally contains an analysis of alternative methods of legal protection, which are either classified or, conversely, based on the publication of relevant information. In this context, the primary emphasis of the present work will be placed on patent strategy, but not excluding other ways of legal protection of the results of intellectual activity.

The above considerations determined the goal of the work: to formulate the structure of the strategic

[3] Intellectual Property Policy for Universities and Research Institutions // M.MINOBRNAUKI.GOV.RU, available at: Internet site. https://m.minobrnauki.gov.ru/common/upload/library/2018/10/Politika_v_oblasti_IS_s_VOIS.pdf (accessed: 05.08.2019).

[4] AUTM Licensing Activity Survey: FY 2017, available at: https://autm.net/AUTM/media/SurveyReportsPDF/AUTM_2017_US_Licensing_Survey_no_appendix.pdf (accessed: 05.08.2019).

[5] Available at: http://www.vega.su/innovations/Patent_strategia.pdf (accessed: 05.08.2019).

goals of universities in the field of intellectual property, as well as to identify and systematise typical strategies for their achievement.

Research rationale

The hypothesis of our study consists in the fact that the component associated with intellectual property management strategy is presented in the development strategies of leading Russian universities at a level that does not correspond to the challenges of the market and the importance attached to this issue in the strategy of scientific and technological development of the Russian Federation and, in particular, the national project "Nauka". To test this hypothesis, as well as to find ways to solve the problem associated with it, the following tasks were set in the study.

1. To analyse Russian and foreign publications in order to systematise approaches to the formation of the university's patent strategy in terms of external factors, including the nature of the institution of intellectual property and trends in the development of the market for intellectual property rights.

2. To identify and systematise formalised and non-formalised corporate patent strategies of Russian universities based on an analysis of the wordings of university-wide missions and goals, as well as goals and strategies for managing intellectual property. Universities included in the association of leading universities of the Russian Federation were taken as a sample.

3. To analyse indirect indicators of university strategies in the field of intellectual property, including key performance indicators used in assessing the activities of universities in university reporting documents and ratings.

Publication Analysis

The framework within which organisations form their patent strategies is generally defined by corporate strategies [3]. At the same time, in a knowledge-based economy, innovation forms the main link between a company's business strategy and patent strategy. Indeed, it is not so much inventive activity itself that is stimulated by the patent system as the transfer of knowledge gained in the scientific field to industry [4]. Moreover, the monopoly on technical solutions makes private investment in R&D and the commercialisation of innovative technologies more attractive.

A wide range of works by domestic and foreign authors sets out to study the functional role of the patent portfolio as a key success factor in a modern economy. In the study [5], the relationship of the functional role of intellectual property and business needs is considered within the paradigm of Maslow's hierarchical pyramid. The two lower, basic levels of the pyramid include ensuring such stakeholder needs as minimising the risks of patent conflicts (patent purity of products), as well as ensuring the competitiveness of products and the business as a whole on the basis of a legal monopoly provided with exclusive rights. Neglecting these levels leads, in the figurative expression of the author, to the "dismissal of the manager". The following three levels include such factors and effects as: (1) a significant impact on the transfer of new technologies from the scientific environment to industry; (2) the acceleration of research and development processes, as well as the creation of new products; and (3) the fullness of realising the benefits from the use of new technology. Effective intellectual property management at these levels provides effects of a higher order, exerting an indirect, but very significant impact on the achievement of corporate goals. A similar approach to the structuring of intellectual property management strategies was proposed by N. N. Karpova [6]

The author of the work [7], which considers the impact of patent strategy on innovation that provides competitive advantages, notes such effects as: creating "patent thickets" around key competitor patents, blocking similar developments of a competitor, as well as technology licensing. The presence of a patent portfolio is also a prerequisite for negotiations with investors, which operate on the principle that if no patent is possible, then there is no need to invest. Moreover, the author emphasises that, besides competition, the growth in the number of applications for inventions is directly attributable to this growth, since the accelerated development of the technology market plunges the world of ideas into the rapidly burgeoning patent arms race, within which a defensive patenting strategy plays an increasingly important role. In other words, the main reason why companies patent more inventions is because their competitors are patenting more inventions.

Regarding the value of the patent portfolio as a source of direct income, for some industries, such as biopharmaceuticals, software, semiconductors and telecommunications, technology licensing is becoming a "way of life" according to [7]. According to The Economist magazine [9], worldwide technology licensing accounts for an estimated $ 100 billion in revenue. Moreover, as the author [7] notes, an active licensing strategy is characteristic not only for small technology-oriented enterprises, but also for large companies, such as, in particular, Procter & Gamble, DuPont, Boeing, Hoechst, IBM, Texas Instruments, AT&T, and Phillips Petroleum, which

also see licensing revenue as a significant part of technology investment revenue. However, it should be noted, that in the Russian market such a strategy is currently not dominant[6] [15].

In the literature, there is an increasing focus on the information function of patents as an important tool for representing the company's value in public space, e. g. [5, 6]. Automated systems for searching and analysing patent documents, of which there are currently about 120 million[7] worldwide, are used to analyse the patent and technological strategies of key market players, as well as to keep investors informed about their own key competencies. The Intellectual Property Owners Association compiles an annual TOP-300 rating of copyright owners[8] [17]. According to the results of 2017, the top three places in the ranking are occupied by IBM (8996 patents), Samsung (5810 patents) and Intel (3726 patents), showing an eight percent increase in the volume of the patent portfolio compared to 2016.

Analytical systems such as Questel-Irbit[9], Clarivate Analytics[10], Patent Lens[11] support an express analysis of the structure of the patent portfolio, including such parameters as

- key products, nodes and basic technologies;
- share of patents supported;
- the intensity and dynamics of patenting;
- availability of patents related to technical standards (SEP – standard essential patent);
- geography of patenting;
- number of patents pending litigation;
- licensing policy;
- partnerships in licensing and co-patenting formats.

A generalisation of the approaches to describing corporate patent profiles used in analytical systems provides grounds for considering the structure of the patent portfolio as a certain coordinate system in which the company's patent strategy vector is formed.

Some authors [10] rightly note a terminological ambiguity concerning the concept of patent strategy. Considering in his work a number of approaches to the definition of the patent strategy concept, R. B. Tokarev believes that the authors tend to confuse the criteria and features of patents, patent portfolios and patent management strategies [10]. For example, when talking about patent strategies many authors typically mention so-called offensive and defensive patent strategies. In [11], the author considers such patent strategies as simple majority, patent "flood" and patent blocking strategies, while in [12], approaches described for managing intellectual resources include strategies for defending against competitors, attacking competitors, licensing, creating a company's contemporary image, forming authorised share capital and optimising financial and economic activities.

Agreeing with Tokarev [10], we note that in many studies, either a model of competitive behaviour (offensive or defensive), a patenting strategy (for example, blocking patents), or specific parameters of a patent strategy, including volume and patent portfolio structure, geography of patenting and others, are considered as patent strategies. In our opinion, the reason for this is that many such interpretations consist in different "sections" or views on the patent strategy, which in general either determine all the above-noted factors and conditions, or are connected to them. As a result, the definition of a patent strategy due to the multiplicity of its cross-links with other functional strategies of the organisation, including marketing, technological, product and others, inevitably leads to a facet classification of features.

A number of a well-known works [13–19] are devoted to the analysis of approaches to a university's intellectual property portfolio management. Thus, the authors of [13] note that universities are universally considered as the main source of applied knowledge, the majority of which is transferred to the industrial sector of the economy through university technology transfer centres. According to an annual review carried out in 2017 by AUTM[12] [5], American universities entered into more than 6,000 licensing agreements.

Meanwhile, despite the fact that university technology transfer centres using standard commercialisation strategies are making notable successes in such areas as biomedicine, chemistry and electronics, according to the authors of [15], different approaches are required in a number of other industries, usually focused on direct income through legal mechanisms for licensing intellectual property and control of key resources. As a very promising alternative, the authors consider more flexible approaches to the commercialisation of intellectual property, based on the concept of open innovation.

[6] Annual Report of ROSPATENT 2018, available at: https://rupto.ru/content/uploadfiles/otchet_2018_ru.pdf (accessed: 05.08.2019).

[7] World Intellectual Property Organization: https://www.wipo.int/portal/en/index.htm

[8] Intellectual Property Owners Association (IPO), available at: https://www.ipo.org//wp-content/uploads/2018/06/2017_Top-300-Patent-Owners.pdf (accessed: 05.08.2019).

[9] Questel Orbit, available at: https://www.questel.com/# (accessed: 05.08.2019).

[10] Clarivate Analytics, available at: https://clarivate.com (accessed: 05.08.2019).

[11] Available at: https://www.lens.org/ (accessed: 05.08.2019).

[12] AUTM Licensing Activity Survey: FY 2017, available at: https://autm.net/AUTM/media/SurveyReportsPDF/AUTM_2017_US_Licensing_Survey_no_appendix.pdf/ (accessed: 05.08.2019).

The authors of [16] note that leading universities in developing countries have been characterised by a strategy to increase patent portfolio volumes in recent years. At the same time, despite the undoubted successes of leading technology transfer centres, there is still a significant gap between the number of patented inventions and technologies that have reached market [17]; moreover, licensing income makes up only a small fraction of the total research budget of universities. As the main barrier, the authors note a lack of qualified personnel in the universities' transfer centres, the insufficient existing level of remuneration for their work in budgetary organisations, as well as the contradiction associated with the self-sufficient policy of technology transfer centres, which often diverts resources for projects with higher profitability rather than focusing on the commercialisation of university developments.

The correlation between the university's policy in the field of intellectual property and the method of commercialising technology, including the creation of a start-up and licensing, revealed in [18], is very interesting. Distinguishing between patents "owned by the university" and patents "created at the university", the authors showed that the rights to inventions created at universities are typically secured for small innovative enterprises when creating start-ups, while licensing to industrial enterprises is more characteristic of rights to patents owned by universities. This conclusion was based on an analysis of a sample of more than 800 patents created at universities from 22 countries.

As one of the strategic alternatives to the commercialisation of university technologies, international alliances between universities were considered in [19]. As the advantages of such alliances, the author notes such factors as the opportunity to develop key competencies and a higher level of trust.

In the study [20], a comparative analysis of approaches to technology transfer in developed economies and developing countries was carried out on the example of the republics of Belarus, Kazakhstan and Azerbaijan. Based on statistical processing of the results of numerous interviews, the authors confirm the hypothesis that, unlike the situation in developed countries, university-based technology transfer centres in developing economies cannot yet claim to be a significant channel for transferring knowledge.

Analysing the activity of technology transfer centres of 178 European universities, the authors of [21] identified three typical university knowledge transfer strategies: (1) an income generation strategy, (2) a strategy for supporting researchers; and (3) a local economic development strategy.

The revenue generation strategy focuses on securing patent rights for the university and licensing technology to industrial enterprises. According to [21], such a strategy is characteristic of large, prestigious universities and several large successful licensed transactions that provide the main income.

The so-called "Service-to-Faculty Strategy" is aimed at the long-term development of research potential, including not only support and development of staff qualifications, but also the development of social and professional networks. In this model, technology transfer centres help researchers to increase the value of their developments by attracting leading scientists to commercial research projects based on collaboration with industry. Here, the main focus is on increasing the number of patent applications, seeking financial support for research and developing collaborations, as well as supporting network activity.

The strategy of "local economic development" is aimed at involving researchers and students in the creation of new companies, as well as developing technologies that are in the interests of regional companies. As part of such a strategy, technology transfer centres focus on the development of business incubators, acceleration programmes, seed stocks, as well as research laboratories with financial support from regional enterprises. The measure of the effectiveness of such a strategy is the number of start-ups, as well as the number of new jobs.

It should also be noted that technology commercialisation strategies are constantly evolving. In this regard, the work of Tom Hockaday, Head of Oxford University Innovation (previously Isis Innovation) [22], is of particular interest. This example is primarily of interest for Russian practice due to this transfer centre being most often considered as an example in the works of many Russian experts in the field of technology commercialisation [23]; accordingly, the first steps in the formation of technology transfer systems in Russia in the late 1990s and early 2000s took the experience of this transfer centre into account.

Summarising the experience of Isis Innovation from 2000 to 2016, the author of [22] identifies several phases of the development of university technology transfer forms in the UK and notes that the first phases of the development of technology transfer centres, taking place from the late 1980s until approximately 2010, were primarily related to the commercial interest of universities and their transfer centres. Russian experts in this field will probably remember the key points of reports on the work of British and American technology transfer centres, which were based on vivid indicators of revenue growth from license sales and the cost of university shares in start-ups. According to the author, research links with industry began to

acquire more and more value for British universities during the subsequent period, with the existing and potential patent portfolio of universities becoming a very attractive incentive ("carrot") for attracting money from enterprises for research. Moreover, following reviews of interaction models, foreign companies are beginning to prefer long-term scientific collaborations and partnerships with universities, relying on intellectual property created under research contracts instead of licensing the results of research that has already been carried out.

This trend also affected the functionality of British technology transfer centres, which, according to the author [24], began to pay more attention to the support of researchers in preparing applications for research funding. Among other reasons, the author identifies both increased attention to negotiations on intellectual property issues at the conclusion of research contracts and an increase in the interest of state scientific foundations in applied research results.

Similar approaches and trends are also characteristic of the development of technology commercialisation systems and intellectual property management in Russian universities, see, for example, [1, 14, 23, 24]. One of the distinguishing features of university technology transfer systems in the Russian Federation is the emphasis on infrastructural support for project teams and start-ups, also seen as a part of acceleration programmes associated with the underdevelopment of the Russian technology licensing market.

Summarising the foregoing, we systematised the functional roles of patents from the point of view of stakeholders, dividing them into a number of categories including the following goals and tasks, (Table 1):

– Competitive goals and objectives
– Technology transfer support tasks
– Financial goals
– Informational goals

Moreover, the presented analysis allows us to offer an interpretation of the term "patent strategy" and its relationship with the more familiar term "patent policy" in the context of Russian university practice, also through the initiative of WIPO[13]. While patent policy defines the goals, basic priorities and principles of intellectual property management [2], patent strategy can be defined *as the development vector of the university in the field of intellectual property across such coordinates as: the competitive behaviour model; the volume, geography and structure of the patent portfolio; target audiences (key consumers); target markets; strategic partnerships* (see, for example, [10]).

Fundamental differences between patent strategies applicable to industrial enterprises and universities should also be noted. These are primarily due

[13] Intellectual Property Policy for Universities and Research Institutions // M.MINOBRNAUKI.GOV.RU, available at: https://m.minobrnauki.gov.ru/common/upload/library/2018/10/Politika_v_oblasti_IS_s_VOIS.pdf (accessed: 05.08.2019).

Table 1

Functional roles of patents

Role-based functions of patents as factors determining business interest	Source
Competitive Tasks	
Minimising the risks of patent conflicts	[5–7]
Legal support of product and business competitiveness	[5, 7, 12]
Creating "thickets" around competitors' key patents	[5, 7, 10, 11]
Blocking similar competitor developments	[5, 7, 10, 11]
Transfer support	
Legal support for the process of technology transfer from science to industry	[13–16, 18, 21, 22]
The completeness of benefits from the use of new technologies	[14–16, 18, 21, 22]
Patents as a financial asset	
Availability of patents as a necessary condition in negotiations with an investor	[7]
Additional or core revenue from licensing patented technologies	[7, 8]
Informational goals	
Patents as a source of information on technological strategy*	[2, 3]
Patents as an indicator of the level of competence of companies and universities	[12, 21, 22]

* World Intellectual Property Organization, available at: https://www.wipo.int/portal/en/index.html (accessed: 05.08.2019).

to the difference in corporate missions, the goals and mechanisms for achieving them, as well as in the strategies for commercialising innovations and key products thereof. Thus, in particular, the key goals of enterprise are to increase profits from the sale of products and the value of corporate assets, while the goals of universities are primarily focused on the formation of highly qualified personnel, the creation and transfer of the results of fundamental and applied research, as well as support for regional economic development (the third university mission). In other words, a significant part of the activities of universities is focused on the transfer of knowledge (personnel and new technologies), which is to be commercialised in the future based on the realisation of their potential in the business environment. At the same time, the more indirect economic effect of the innovative activities of universities is manifested in the development of the economy as a whole through the activities of industrial enterprises.

From the point of view of advancing commercial goals, intellectual property rights for business can be seen as a tool that provides competitive advantages in the product market, while for universities it is a means and a form of commercialising new knowledge in various forms, e. g. through licensing, R&D and the creation of start-ups. The target audiences of the commercialisation of intellectual property for industry and universities are also different: in the first case, they are consumers of final products, while for universities they are consumers of qualified personnel and formalised knowledge. As a result, partnerships with businesses, including industrial companies and small innovative enterprises, play a significant role in the university's patent strategy.

Overview of indicators for assessing the effectiveness of the Russian universities IP management

Analysis of the patent activity of universities lies in the sphere of interests of the Ministry of Education and Science of the Russian Federation, Rosstat, as well as a number of analytical centres, including Interfax (national university ranking) and the "Expert" Analytical Centre (rating index of the inventive activity of Russian universities). The grouped indicators used in the blocks "Legal protection of the results of intellectual activity (RIA)", "Commercialisation of RIA" are presented in Table 2.

The analysis showed that in all ratings there are quantitative indicators of patent activity of higher education institutions. Approximately 40 % of the ratings take collaboration with commercial organisations into account, as well as the number of licensing agreements. Three out of five ratings pay special attention to foreign patenting activity. Financial indicators of the use of intellectual property are evaluated in only one of the five ratings reviewed. Thus, the analysis of well-known university ratings confirms the thesis that the volume and structure of the patent portfolio are one of the main indicators of university patent activity.

As for indicators that directly or indirectly reflect the direct commercial results of universities, the performance on these indicators is still low. Indeed, on the basis of the sample studied by us, only a few universities receive income from the sale of licenses and very few promote their developments abroad (which indirectly indicates the expectation of an economic effect, given the differences in the costs of Russian and foreign patenting).

As an illustration and confirmation of the above thesis, Table 3 presents the data on the foreign patent activity of Russian universities for the TOP-10 of Russian universities according to the rating of the "Expert" analytical centre [26].

As follows from the analysis, only 6 out of 40 Russian members of the Association of Leading Universities are patenting and – presumably – promoting their developments. The situation is similar for the indicator "licensed activity of the university". Obviously, this situation does not meet the strategy of scientific and technological development of the Russian Federation and consequently requires a strategic approach to the formation of Russian universities' patent portfolios.

Thus, referring to the classification of the functional roles of intellectual property in Table 1, we can assume that for most of the Russian universities, the main patenting function consists in providing information about the core competencies of the university. It should also be emphasised that, to a certain extent, the informative function plays a competitive role, raising the university in rankings and providing attractiveness in the market of educational services and scientific products.

Goals in the field of intellectual property and the university mission: correlation of values

Further, we will try to show how the indicators for assessing the effectiveness of IP management considered above are related to the achievement of universities' corporate goals. Assuming that cause-effect relationships here are obvious, but are now more likely to be determined at the level of intuition, to solve this problem we will conduct a comparative analysis of the values supported by universities as strategic goals, missions and vision of development prospects, on the one hand, and opportunities, provided by the

Table 2

Patent performance indicators for Russian Universities

Patent performance indicators of Russian Universities	Ministry of Science and Higher Education of the Russian Federation*	Form No. 4 – NT**	Interfax (national university ranking)***	5–100	Analytical centre "Expert" **** [26]
Legal protection of RIA					
Number of patents, including					
General	+	+	+	+	+
Received in the reporting year	+		+		
Supported	+		+		
Foreign	+	+			+
Acting					+
Share of cited patents					+
The number of patents citing articles					+
In collaboration with universities and academies of sciences					+
In collaboration with companies				+	+
With students	+				
Number of applications, including	+		+		
With students	+				
Foreign		+	+		
Commercialisation of RIA					
Number of patents sold					+
Number of licenses	+				+
Payment of royalties		+			
The use of intellectual property in economic turnover		+			
Intellectual property financial performance		+			

* Report of the Ministry of Science and Higher Education of the Russian Federation on the composition of information on the results of the activities of scientific organisations performing research, development and technological work for civil purposes, submitted for monitoring and evaluation.

** Report of the Federal statistical observation on information on the use of intellectual property.

*** National University rating on entrepreneurial (innovative) potential of the University

**** (Rating "Index of inventive activity of Russian universities").

Institute of Intellectual Property, on the other. Here, we are talking about the need for clear and formalised goal-setting by universities in the field of intellectual property in conjunction with general university aims. It should be noted that the importance of harmonising IP management indicators with the strategic goals of universities is demonstrated, among other things, by the recommendations proposed in the WIPO Model Intellectual Property Policy for Universities[14].

In order to systematise development goals for innovative activities of universities, we analysed 46 development programmes of the Association of Leading Universities[15], which showed that despite the variety of formulations, some of the most typical emphasis of formulations can be highlighted as presented in Table 4.

Summarising the results of the analysis, we can say that the missions formulated by the considered universities are largely similar. At the same time, federal universities more often emphasise the development of

[14] Intellectual Property Policy for Universities and Research Institutions // M.MINOBRNAUKI.GOV.RU, available at: https://m.minobrnauki.gov.ru/common/upload/library/2018/10/Politika_v_oblasti_IS_s_VOIS.pdf (accessed: 05.08.2019).

[15] Association of leading universities // ALU.SPBU.RU, available at: http://alu.spbu.ru/ob-assotsiatsii/about (accessed: 05.08.2019).

Table 3

Foreign patent activity of Russian universities. The table shows data on foreign patents and applications filed by Russian universities in 5 years

University	Near Abroad		Far abroad		
	EA applications	EA Patents	PCT Applications	National foreign applications	National overseas patents
Moscow State University (MSU)			7	1	3 (KR, EP)
Moscow Aviation Institute (MAI)	1		2		2 (CA)
Moscow State Technical University (MSTU)	1	9			1 (US)
National University of Science and Technology (MISIS)	2		4	7 (KR, CN, DE, JP)	1 (JP)
Samara National Research University		3		8 (US, DE)	4 (US)
St. Petersburg State University (SPbSU)	15		1		1 (US)
Kazan Federal University	2	3	5		
Siberian Federal University (SFU)			1		
Novosibirsk State Technical University (NSTU)	3				
Moscow Institute of Physics and Technology (MIPT)				1 (US)	
Ural Federal University (UrFU)		2	1		

Table 4

Emphasis in the formulation of Russian university missions

Emphasis in the formulation of universities' missions	Frequency of formulation use	University types
The development of the university as a *modern educational, scientific, expert-analytical, innovative and cultural centre*, providing high-quality training of competitive specialists able to ensure sustainable development of the region.	15	Federal – 8National Research University (NRU) – 7
Personnel, scientific and innovative support for priority development directions based on systemic modernisation of the multi-level professional education of the university, ensuring the integration of science, education and production.	13	Federal – 1NRU – 12
Sustainable development of the university as *a world-class innovative research university with* deep integration and a developed infrastructure of scientific, educational and innovative activities, ensuring the quality, competitiveness and demand of graduates, educational programmes, research and development in the interests of priority sectors of the Russian economy.	12	NRU – 10
University entry into the world elite of classical universities, comprehensive research and educational support of the Russian Federation innovative development state policy.	SPbSU, MGIMO	
Creation of a Russian university of the future, based on the principle of the unity of scientific, educational, economic and social processes and serving the prosperity of the state and society.	Moscow State University named after M. V. Lomonosov	
Promoting technological development and enhancing the competitive advantages of Russia in priority areas of modernisation of the Russian Federation economy in the context of accelerating scientific and technological progress, and globalisation of the world economy.	NRU Information Technologies, Mechanics and Optics (NRU)	

the university as a modern educational, scientific, expert-analytical, innovative and cultural centre in their mission formulations, while research universities focus on the support of personnel, as well as scientific and innovative development. Such universities as Moscow State University, MGIMO and St. Petersburg State University set ambitious goals for joining the world elite and creating a university of the future.

It should also be noted that the concept of the third university mission is clearly traceable in the considered formulations, i. e. in addition to the educational and research components, an emphasis is placed on assisting regional economic development. This was most clearly reflected in the goal setting of NRU ITMO – **Assisting technological development and strengthening the competitive advantages of Russia** in priority areas of modernisation of the Russian economy in the context of accelerating scientific and technological progress, as well as the globalisation of the world economy"[16].

It is precisely in this direction that the goal-setting in the field of intellectual property of leading Russian universities is focused. As a rule, it is presented in the policy in the intellectual property area. Thus, for example, Moscow State University named after M. V. Lomonosov in October 2011, in partnership with the LLC "Naukoyemkiye tekhnologii" announced the launch of the Lomonosov Moscow State University Intellectual Property Management Centre" (LLC "IPMC MSU"), whose main purpose is to develop the innovative activities of the scientific community of the Lomonosov Moscow State University through research, provision of legal protection and practical application (implementation) of the competitive results of intellectual activity[17].

In terms of the main goals at which intellectual property management is aimed, St. Petersburg State University identifies a solution to the problem of legal protection of intellectual property and technology transfer, creating favourable conditions under which scientific knowledge is transferred from the research community of St. Petersburg State University through legal protection and technology transfer to start-ups, starting to work for the benefit of the whole of society and bringing practical benefits, ensuring maximum involvement of the educational process in technological development[18].

At Kazan Federal University, the goal of IP management is to create conditions for the protection of the intellectual property and copyright of researchers and developers as a way for KFU research teams to enter the global market for high-tech products[19]. At the Ural Federal University, intellectual property policy is designed to ensure the most efficient use of the results of intellectual activity created at the university in the interests of the university, its employees, students, graduate students and society as a whole[20]. The activity of the university's innovation infrastructure is aimed at solving these problems [1].

Thus, a generalisation of the results of information analysis presented on the websites of 46 members of the Association of Leading Universities indicates that the main emphasis of university patent policies is focused on creating conditions for the efficient transfer of university technology and promoting the region's economic growth.

It should also be noted that, despite the lack of formalised patent strategies for Russian universities, the main indicators determining the development vector of the university in the field of intellectual property can be identified from an analysis of university missions, intellectual property policies, as well as indicators of patent-licensing activities. From the point of view of the classification of strategies for the commercialisation of university technologies that has developed in the world practice, these indicators are mainly aimed at the formation and presentation of key competencies in the information space and the provision of competitive advantages in the research and development market.

Summary of results and conclusions

Summarising the above, we can draw the following conclusions:

1. An organisation's patent strategy is based on a corporate mission and strategy; here, the connecting link is an innovative strategy, which in relation to universities is often referred to in terms of a strategy for the commercialisation of technology (i. e. of the results of intellectual activity).

2. In addition to educational and research components, the majority of Russian universities emphasise the promotion of regional economic development in their mission statements, stressing a commitment to the concept of the university's "third mission".

[16] The development program of NRU ITMO for 2009–2018 // NIU. ITMO.RU, available at: http://niu.itmo.ruru/page/13/o_programme.htm (accessed: 05.08.2019).

[17] Management of innovation policy and international scientific relations // MSU.RU, available at: https://www.msu.ru/info/struct/departments/uip/uip1.html#1.2 (accessed: 05.08.2019).

[18] Intellectual property management of St. Petersburg State University // UNIPAT.SPBU.RU, available at: http://unipat.spbu.ru/ (accessed: 05.08.2019).

[19] Regulation on the management of scientific and research activities // KPFU.RU, available at: https://kpfu.ru/docs/F785916979/Polozhenie.ob.Upravlenie.nauchno_issledovatelskoj.deyatelnomti.KFU.pdf (accessed: 05.08.2019).

[20] Intellectual Property Policy of the Ural Federal University, available at: http://inno.urfu.ru/admin/ckfinder/userfiles/files/doc20121120170643.pdf (accessed: 05.08.2019).

3. An analysis of numerous publications indicates that the strategic priorities for commercialising university technologies in world practice change over time. Researchers typically distinguish three main strategies, with a gradual shift of priorities from the first to the second and third:

• A strategy for obtaining direct revenue from licensing, which is more characteristic of the practice of foreign universities.

• Development strategy of R&D projects based on state grants and direct agreements with business.

• Supporting regional development based on acceleration programmes for innovative projects and the creation of start-ups based on university technologies.

The first of these strategies, which is successfully applied, as a rule, by prestigious universities, allows them to receive tangible commercial income from the use of intellectual property.

In the second technology commercialisation strategy, the university's basic intellectual property plays an informational role, raises the university's ranking according to selection criteria and provides competitive advantages over other universities.

Under the third strategy, the commercialisation of intellectual property is carried out at the stage of determining the right to obtain a patent, which the university then gives to a start-up in exchange for a share in the business.

4. Each of the above commercialisation strategies has patenting priorities. For example, if a university focuses on supporting innovative projects as part of acceleration programmes, then, as a rule, university participation in the company is implemented through a share in the authorised capital, while start-ups have exclusive rights to patents. High competition in the market for R&D projects makes it expedient to form voluminous patent portfolios demonstrating the key competencies of the university; here, the availability of funded international research projects, as well as cooperation with foreign universities, forms the basis for foreign patenting.

An analysis of IP management performance indicators in Russian universities showed that at present the main indicators determining patent activity are quantitative. So far, only a few indicators directly or indirectly reflect the commercial results of the activities of Russian universities and these show that the effectiveness of universities is very low.

5. A generalisation of the publication analysis, as well as the structure of patent profiles offered by analytical patent systems, provides the basis for a determination of patent strategy as the development vector of the university in the field of intellectual property across such coordinates as: the competitive behaviour model; the volume, geography and structure of the patent portfolio; target audiences (key consumers); target markets; strategic partnerships.

6. It was not possible to identify formalised patent strategies carried out by Russian universities within the framework of the study. However, an analysis of university policies in the field of intellectual property along with patent performance indicators demonstrates that most Russian universities choose development strategies for R&D projects based on state grants and direct agreements with business as priority strategies for commercialising technologies, as well as supporting regional development for the basis of acceleration programmes for innovative projects and the creation of start-ups based on university technologies.

Consequently, from the point of view of global classification practice, patent strategies of the Russian universities are mainly aimed at the formation and presentation of key competencies in the information space and the provision of competitive advantages in the research and development market.

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