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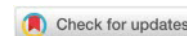
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Comprehensive Analysis of The Activities of Russian Federal Universities

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Abstract: This article aims to fully investigate the activities of the Federal Universities of Russia in the context of various aspects of development and to find appropriate comprehensive assessment methods that can be applied to modern universities that meet the best global standards. The main methods of research are comparative analysis and the formation of qualimetric models based on synthetically selected evaluation criteria. Structural changes in the activities of Russian federal universities have been analyzed. Authors analyze scientific, educational and social activities and other parameters. Particular attention is paid to the development of the ecosystem of innovations in Russian federal universities, its constituent elements and the peculiarities of their functioning. The study provides an opportunity to combine various aspects in the model of university activities. The article presents a comparative analysis of the development of federal universities and their ranking by integrated assessment. The development of communication channels between the academic community and mass audiences was analyzed, also the publication activity of federal universities was evaluated. The authors propose the main methods and sources of collection, processing and verification of disparate information on the state of innovation ecosystems in Russian federal universities. The proposed methodology, unlike existing approaches, allows a comprehensive assessment of the successful and underdeveloped activities of modern universities in both statistics and dynamics. The conclusion of the work is the need for a comprehensive analysis of federal universities by building a qualification parametric model on a regular basis.

Keywords: university ranking, higher school, education, expert assessments, scientometrics, institutional environment.

Introduction

The concept of high-profile universities in Russia emerged in 2006, when the legal framework was established and the first two federal universities (FU) – the Northern Federal University (NFU) and the Southern Federal University (SFU) – were created. Thirteen years have passed since then, and the ideas about the system under development and the related tasks have changed. Various ways and mechanisms of cooperation between the federal universities and outside world have been entering into force at different times, with special importance attributed to federal districts, where the universities function as development drivers and flagships in all senses and areas, including social, economic, political, scientific, explorative, cultural and educational aspects (Ivanov and Sokol-Nomokonov, 2018). Scattered talent pools located throughout the country and the ambition to create educational centers for new regional and federal elite resulted in the network of federal universities established in the Russian Federation. At the moment, there are ten national universities of this kind (one in each federal district, with three more universities in the Far Eastern Federal District, Southern Federal District and Northwestern

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Federal District; in the Central Federal District there is no federal university due to high number of top-quality higher educational institutions in Moscow).

Federal universities were mainly created in Russian regions through the merger of several universities into a single academic organization. The original purpose was to establish a leading university in each region. D. Salmi, a specialist in education policy, points out that “creation of leading universities exclusively by means of merger, especially in case of poor-quality educational institutions, is the most expensive, the slowest and highly risky way to achieve academic excellence” (Salmi, 2009).

It is important to make it clear what the “leading regional university” is understood to be. One more question is whether federal universities succeed in obtaining the status of leading educational institutions in their regions. First of all, they are not only educational, but also powerful scientific and research entities on a local level. Secondly, the background for their increasing prominence with regard to innovative processes in regions was predetermined historically. In more recent times, due to reorganization of higher education system carried out in the Russian Federation in the 21st century, these universities have taken part in transformation programs, obtained the status of federal scientific research entities, joined 5-100 competitiveness improvement program (five out of ten federal universities, namely Immanuel Kant Baltic Federal University, Far East Federal University, Ural Federal University, Kazan Federal University, Siberian Federal University), innovative universities contest, Digital University 2019 Competition (Ural Federal University) etc. Thirdly, these universities have already entered the regional innovative technological chain, established scientific and production ties with research centers and manufacturing enterprises, and, above all things, facilitated promotion and mass production of innovative products at these enterprises.

Summing up what has been said, Russian federal universities now face a wide array of tasks, which are aimed at the development of human potential and innovative ecosystems in local economies (Salmi and Frumin, 2013).

Literature review

Russian scientific literature review

Various problems related to the development of high-profile federal universities have been continuously discussed in Russian scientific discourse since 2006, when this concept first emerged (Altbach, 2018; Arzhanova and Knyazev, 2013; Verkhovets, Kirko and Keush, 2010).

E. Smolnikova from Kazan Federal University highlights the importance of cooperation between federal universities and the respective regions. She points to the growing collaboration of the aforementioned university with real economy and business sector. The accumulated experience shows that the synthesis of science and production is mutually beneficial for both parties, because the university in this case has financial sources for the development and introduction of new technologies, which is supported by the legislative package of Russian Government (Smolnikova, 2014).

Both Russian and foreign scientists put emphasis on scientific efficiency issues through the analysis of scientometric indicators of Russian universities (Balatsky and Ekimova, 2020; Petrosyants et al., 2020).

Quite a lot of articles focus on overall development problems experienced by the leading high-profile universities in Russia, with special attention paid to harmonious innovation eco-systems in the regions (Slobodchikova, Bojaeva and Goldenova, 2014).

Analysis of foreign researches

International scientific discourse analyzes the development of national high-profile universities from the point of view of their competitiveness improvement in the uncertain economic environment and today's circumstances that create new challenges for the academic community (digitalization, massive open online course development, disalignment with labor market etc.). In this regard, the analysis of higher education system reforms in Russia and foreign countries in Europe, Asia and America is of great interest (Guironnet and Peypoch, 2018).

After the Bologna Declaration and Lisbon Program were signed, reformation of European university systems has been dominating the global agenda, because regulations applied to European universities have created serious obstacles for their development in comparison with American peers. Moreover, the booming economies of China and India promote the creation of excellent universities in their countries. Europeans now face the challenge of using universities as drivers for cooperation between authorities, business and societies in order to make European economy more innovative and competitive (van der Ploeg and Veugelers, 2008).

During the last thirty years both Spain and Russia have been experiencing social and economic difficulties inherent to the transition period, with massive impact produced upon the financing, management

and quality of education. The year of 2007 marked the beginning of higher education system reforms in Spain, which gave the highest priority to research activities and knowledge transfer mechanisms used by universities. It is interesting to note that neither the availability and development of special infrastructure aimed at higher knowledge transfer rate (business incubators), nor the region's good financial standing affect the efficiency of research and studies carried out by universities, and the historically formed scholarly traditions are more important in this sense (Berbegal-Mirabent, 2018). Similar problems in Italian higher education system were illustrated through an example of national universities in the period from 2000 to 2010 (Guccio, Martorana, and Mazza, 2016).

In evaluating the consequences and effects of the recent global economic crisis upon cuts in public higher education expenditures in European countries, some analysts came to conclusion that higher education system was to a smaller extent subject to harsh austerity measures as compared with education sector in general. These findings are valuable for understanding how national governments control public financing of higher education amid economic crisis (Skrbinjek, Sanlesjak and Sušteršič, 2018).

Some researchers pay attention to labor productivity in European universities. The general analysis shows great difference in production volume per researcher in various countries, diverse efficiency figures within each branch of knowledge and unequal distribution of resources per researcher. It is interesting to mention that all EU countries have significant capacities enabling them to increase the research volume without the need to spend more resources (Pastor and Serrano, 2016).

Materials and Methods

1. Primary information sources for this study comprise publicly available data from the official websites of Russian universities, websites of Russian state authorities, magazine articles (including those indexed in WoS and Scopus), and Russian scientific e-library used in accordance with Open Science paradigm.

2. The authors of the present article used information from the following websites:

- information analysis findings based on efficiency monitoring of higher education institutions / official website of the Ministry of Science and Higher Education of the Russian Federation. Main information computer center (<http://indicators.miccedu.ru/monitoring/?m=vpo>):

- official website of the Ministry of Science and Higher Education of the Russian Federation. National Education Project (<https://edu.gov.ru/national-project>);

- official website of the Russian Academic Excellence Project (<https://5top100.ru/en>);

- official website of the State Statistics Committee of the Russian Federation (<http://www.gks.ru>);

- abstract database of scientific publications Scopus (<http://www.scopus.com>);

- official website of Alexa Internet, Inc. (<https://www.alexa.com/login>)

- Russian science citation index (<http://www.elibrary.ru>);

- SCAN-Interfax. Russian mass media monitoring and social media analysis (<http://scan-interfax.ru>);

- official website of the Academy Interfax Project / National universities ranking (NUR-Interfax) (<http://academia.interfax.ru>). Abbreviated names of Russian universities used herein are available on this website.

3. The present study uses traditional investigation methods, including classification, comparative analysis, generalization, comparison and forecasting.

4. Study validity is ensured by the comparison of data coming from different sources together with various data validation methods, such as variability index, mean absolute deviation, variability range, skewness and kurtosis.

The procedure for collecting and processing identical and comparable data for synthetic qualimetric studies is a complex task in itself. The linear ranking technique consists of four stages: selection of calculated (initial) data, transition to dimensionless values, construction of the resulting indicator, ordering of the examined objects into a linear list. The difficulty of selecting indicators is that it is necessary not only to focus on the defining meaning and autocorrelation criteria, but also on their reliability and the possibility of verification.

$$R_i = \sum_j^n M \times r_{ij}, \quad (1)$$

Where: M - multipliers of individual indicators of the rating model, - a two-dimensional matrix of calculated indicators of the model, n - the number of rated objects. The value of private indicators is normalized to 100 points:

$$r_{ij} = r_{ij} / \max_i \{r_{ij}\} \times 1000 \quad (2)$$

The final value of the rating R is obtained by normalizing to 1000 points the synthetic result values of the model indicators:

$$R_i = R_i / \max_i \{R_i\} \times 1000 \quad (3)$$

The multifactorial model of the consolidated analysis of university activities implemented in our study consists of six research blocks (units) and is calculated using the formula:

$$SR = 0,2 \times BE + 0,2 \times BR + 0,15 \times BS + 0,15 \times BC + 0,15 \times BIE + 0,15 \times BB \quad (4)$$

Where SR – Summary Ranked list of universities, BE – Block of Education, BR – Block of Research, BS – Block of Socialization, BC – Block of Communications development, BIE – Block of Innovation and Entrepreneurship, BB – Block of university Brand development.

A total of 36 indicators of federal universities were used in six research blocks.

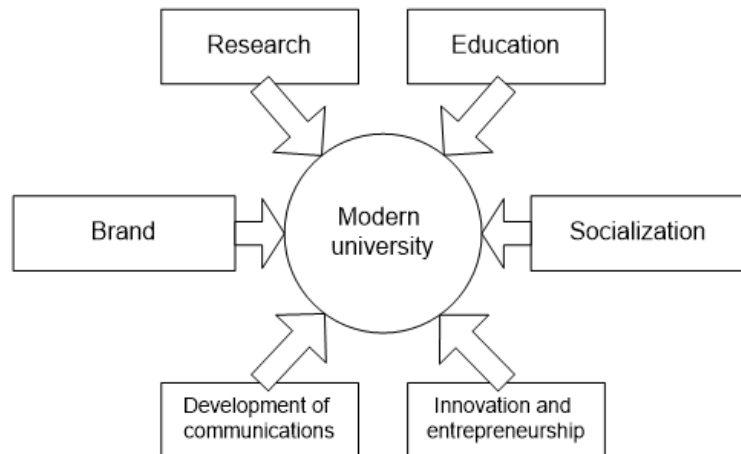


Figure 1. Model Research Blocks.

Results

Initially, we select the most relevant research criteria for the activities of universities and calculate correlation matrices, which gives information about the possible dependence of series, while assuming that in a number of criteria we consider them acceptable and level them with multipliers introduced into the task to each calculated criterion.

In addition, we calculate the model for a larger research sample than only federal universities (10), taking 317 Russian universities selected for the basic model. In this regard, the result obtained for the most successful federal university in block intermediate results will not be equal to 1000 points. To 1000 points, we will give only the final calculation for federal universities.

The first research block, - education (E), is calculated according to 6 criteria.

E1. The range of implemented educational programs of the first level of mass training of highly qualified personnel (bachelors and specialists) in 2020.

E2. Quality of applicants (input average examination score).

E3. Academic staff with degrees (number).

E4. Cost of educational services of the university in 2020.

E5. Organization of student practice. Composite assessment based on: the number of enterprises and organizations with which agreements on targeted training and organization of practice were concluded and operated in 2020, external participants ("practitioners") in the teaching staff of the university.

E6. Work with schools and schoolchildren. Composite assessment based on work with schoolchildren and schools.

Table 1
Correlation matrix for the Block of Education

	E1	E2	E3	E4	E5	E6
E1	1,000					
E2	0,364	1,000				
E3	0,048	0,186	1,000			
E4	-0,123	-0,042	0,370	1,000		
E5	0,309	0,145	0,052	-0,037	1,000	
E6	0,407	0,133	-0,001	-0,144	0,179	1,000

The second research block, - studies (R), is calculated according to 8 criteria.

R1. The range of educational programs (EP) implemented by the university on the second and third levels of training of research personnel of higher qualifications (masters, graduate students, doctoral students).

R2. The contribution of the university to the formation of the scientific and educational elite of the country. Regular measurements made by our research group are based on independent methodology. Graduates of universities who have become world-class scientists, have become members of national and foreign academies of sciences, rectors of universities, etc. are taken into account.

R3. Supercomputers. Performance of computing systems and the level of development of mathematical modeling. Evaluation of distributed computer networks of the university and efficient use of the resource.

R4. Scientific productivity of the authors of the University according to Scopus at the end of 2020. The number of articles published in the five-year period 2016-2020, normalized by the average number of academic staff over 5 years.

R5. Citation of University authors' articles according to Scopus at the end of 2020.

R6. Scientific productivity of University authors according to RSCI (Russian Science Citation Index) at the end of 2020.

R7. Citation of University authors' articles according to RSCI at the end of 2020.

R8. R&D funding at the University in 2020.

Table 2
Correlation matrix for the Block of Research

	R1	R2	R3	R4	R5	R6	R7	R8
R1	1,000							
R2	0,291	1,000						
R3	0,286	0,335	1,000					
R4	0,440	0,447	0,457	1,000				
R5	0,396	0,490	0,341	0,831	1,000			
R6	-0,046	-0,029	-0,090	0,104	0,031	1,000		
R7	0,032	0,071	-0,033	0,184	0,236	0,491	1,000	
R8	0,370	0,294	0,344	0,640	0,536	0,010	0,098	1,000

The third research block, - socialization (S), is calculated according to 5 criteria

S1. Average salary of academic staff of the University in 2020.

S2. Continuing education. Composite assessment, which includes: income from additional education services in the general budget of the university in 2020, Supplementary Vocational Education (SVE) programs implemented by the university, customers of the SVE EP, the number of students who received additional education in 2020.

S3. Campus quality and convenience. Evaluation by experts.

S4. Participation of the University in the development and implementation of programs of socio-economic development of the country, region, city. Evaluation by experts.

S5. Development of the social sphere of the University (social programs). Qualitative parameter:

participation of university representatives in the development of programs; joining expert councils and public councils of government bodies (federal, regional, city) (for the period 2016-2020).

Table 3
Correlation matrix for the Block of Socialization

	S1	S2	S3	S4	S5
S1	1,000				
S2	0,135	1,000			
S3	0,134	0,373	1,000		
S4	0,134	0,341	0,458	1,000	
S5	-0,030	-0,074	0,011	0,020	1,000

The fourth research block, - Block of Communications development (BC) -, is calculated according to 6 criteria.

D1. Foreign citizens in the contingent of students at the university (2020/21 academic year).

D2. International cooperation of the University in 2020 (joint publications).

D3. Global Communications of the University. The Alexa Sites Linking In indicator of the university's website at the end of 2020.

D4. University's research cooperation with foreign universities and research organizations.

D5. Educational programs (courses) of double diplomas.

D6. International Academic staff (academic mobility).

Table 4
Correlation matrix for the Block of Communications development

	D1	D2	D3	D4	D5	D6
D1	1,000					
D2	0,154	1,000				
D3	0,123	0,371	1,000			
D4	0,168	0,513	0,422	1,000		
D5	0,164	0,332	0,515	0,353	1,000	
D6	0,231	0,491	0,384	0,465	0,384	1,000

The fifth research block, the Block of university Brand development (BB), is calculated according to 5 criteria.

B1. "Selection of elites" - graduates of the university, who have become prominent state, political, business figures and other citizens, meritocratically considered to be among the elites of society.

B2. University communications with target audiences. Linear combination: the ranking of the university site Alexa Glob Rank, the ranking of the university site in the global section Science & Education Similar Web.

B3. Media activity of the University in 2020. Using the SCAN-Interfax database.

B4. The perception of the University's research by the international academic community. Hirsch index of the university in foreign scientometrical bases.

B5. The perception of the University's research by the Russian-speaking academic community. Hirsch index of the university in Russian scientometrical bases.

Table 5
Correlation matrix for the Block of university Brand development

	B1	B2	B3	B4	B5
B1	1,000				
B2	0,587	1,000			
B3	0,484	0,623	1,000		
B4	0,468	0,427	0,596	1,000	
B5	0,395	0,320	0,584	0,564	1,000

The sixth research block, Block of Innovation and Entrepreneurship (BIE), is calculated according to 7 criteria.

- IE1. Technological (innovative) entrepreneurship at the University.
- IE2. University Patent Portfolio.
- IE3. Cooperation of the University with high-tech companies.
- IE4. Academic spin-off companies of the University (Small Innovative Enterprises), University's Innovation Infrastructure
- IE5. University R&D
- IE6. Basic departments of the university. The share of R&D financing without attracting budget funds in the total budget of the university in 2020, normalized by the number of academic staff.

Table 6
Correlation matrix for the Block of Innovation and Entrepreneurship

	IE1	IE2	IE3	IE4	IE5	IE6
IE1	1,000					
IE2	0,514	1,000				
IE3	0,599	0,468	1,000			
IE4	0,295	0,424	0,319	1,000		
IE5	0,400	0,366	0,492	0,248	1,000	
IE6	0,189	0,287	0,234	0,319	0,274	1,000

Table 7 presents the data for calculating the qualimetric model according to the criteria selected for calculating the activities of Russian federal universities.

Table 7
Ranking of federal universities of Russia according to the results of calculating the research model

Rank	University	Research	Socialization	Development of communications	Brand	Innovation and entrepreneurship	Education	Total - without recalculation to 1000 points to the entire sample	Final total of 1000 points
1	KFU ¹	359	1000	437	320	612	899	607	1000
2	UrFU ²	421	753	384	314	535	835	549	904
3	SouthFU ³	467	725	226	192	430	979	525	865
4	SibFU ⁴	325	809	194	229	518	786	485	798
5-6	FEFU ⁵	289	688	195	160	513	719	435	717
5-6	NCFU ⁶	329	772	166	80	385	794	435	717
7	NEFUAmosov ⁷	306	617	127	100	499	810	425	699
8	BFUImmanuelKant ⁸	343	644	227	104	358	759	420	693
9	NArFU ⁹	277	289	187	83	367	878	370	609
10	CrimeanFUVernadsky ¹⁰	264	514	128	88	337	689	351	578

Source: compiled by the authors.

¹Kazan (Volga region) Federal University, ²The Ural Federal University named after the first President of Russia B. N. Yeltsin, ³Southern Federal University, ⁴Siberian Federal University, ⁵Far Eastern Federal University, ⁶North-Caucasus Federal University, ⁷The Ammosov North-Eastern Federal University (NEFU), ⁸Immanuel Kant Baltic Federal University, ⁹Northern (Arctic) Federal University named after M. V. Lomonosov, ¹⁰ V. I. Vernadsky Crimean Federal University.

Discussion

Federal Universities: Participation in «Priority-2030»

University activity research implies investigation and model analysis of complicated system development. Comprehensive assessment of university activity is provided by various rating systems, which are not always universally approved, but represent a useful tool that has become quite popular and informative in the last fifteen years (Balatsky and Ekimova, 2019). Information base comprising a whole range of performance indicators of Russian universities (including federal universities) was accumulated within the scope of research carried out by the task force known as National University Ranking Interfax (NUR-Interfax). One of co-authors of the present article (Petrosyants) acts as its expert member. Some of the findings of the aforementioned research are presented herein.

The diagram in Figure 2 shows the volume and sources of federal universities budgets.

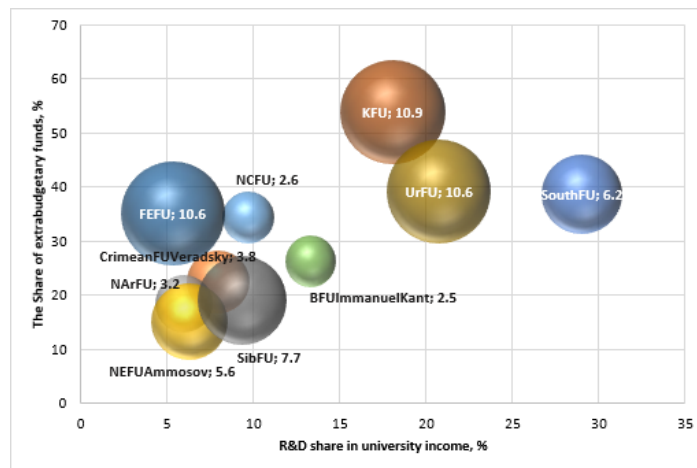


Figure 2. Budgets of federal universities (RUR bln) with the percentage share (%) of extrabudgetary funds and R&D in 2020.

Source: compiled by the authors according to the Ministry of Science and Higher Education of the Russian Federation

Figure 3 shows the overall R&D volume and its share per each member of academic, research and teaching staff in federal universities. The figures for ten federal universities are significantly different. For instance, in SouthFU and UrFU the amount of research and development revenues per person accounts for more than 400 kRUB, while in FeFU (129 kRUB), NeFUAmmosov (130 kRUB) и CrimeanFUVernadsky (14 kRUB) this figure is low.

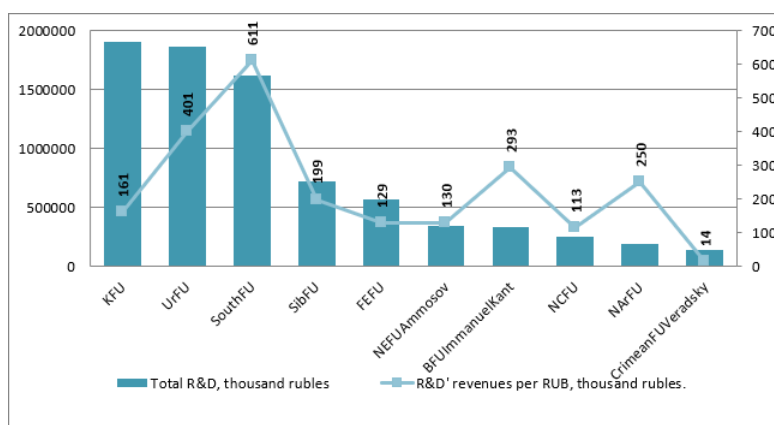


Figure 3. R&D revenues in the structure of federal universities' budgets in 2020.

Source: Ministry of Science and Higher Education of the Russian Federation

The dynamics of publications in mass media helps to keep track of university prominence in information and communication environment, while the index of prominence (earlier known as SPI) follows the quality of publications. Apart from the number of references, it takes notice of the source (publication in a leading newspaper is obviously more prominent than in regional mass media), object's

role in publication, its key note and many other linguistic and semantic parameters. Figure 4 shows the number of publications in mass media mentioning federal universities and the aggregate value of prominence index in 2020 (Brodovskaya et al., 2020).

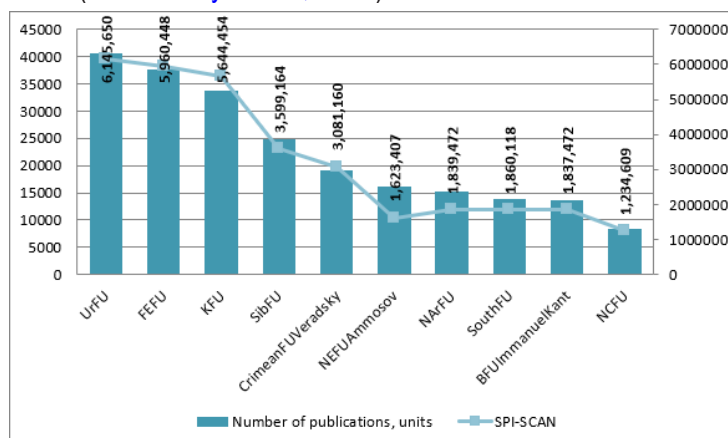


Figure 4. Publication activities in 2020. Leaders in terms of the number of publications. Source: SCAN-Interfax

As in 2021, a new large-scale university development project called «Priority-2030» is being implemented in Russia. Table 8 presents the data on financing of federal universities in the project «Priority – 2030», determined by the Ministry of Internal Affairs of the Russian Federation for 2021 and 2022 according to the results of the contest. We also determined the amount of funding for the Project in the total budget of federal universities. On average, it amounted to about 8.4% of university budgets in 2020. However, if for BFUImmanuelKant this is ¼ of the total budget, then for NEFUAmosov it is less than 4%.

Table 8
Financing of national research universities that are project “Priority 2030” participants in 2021-2022

University	Project 5-100 (The Russian Academic Excellence Project) participant	Membership Status in «Priority 2030» ¹	The amount of funding in «Priority 2030» program, RUB mln	University budget in 2020, RUB mln	The share of funding for the project in the university budget for 2020, %
UrFU	+	P2030-RL1	1194,5	10589,7	11,3
KFU	+	P2030-TAIL1	1194,5	10920,4	10,9
CrimeanFUVernadsky		P2030-TAIL2	626,2	3796,8	16,5
BFUImmanuelKant	+	P2030-TAIL2	626,2	2510,2	24,9
FEFU	+	P2030-TAIL2	626,2	10646,9	5,9
SouthFU		P2030-RL3	342,1	6198,6	5,5
SibFU	+	P2030-TAIL3	342,1	7699,4	4,4
NCFU		P2030	200,0	2587,4	7,7
NEFUAmosov		P2030	200,0	5624,0	3,6
NArFU			0,0	3188,9	0,0
Sum			5351,7	63762,3	8,4

¹Membership Status in «Priority 2030» - P2030 – «Priority 2030» membership, P2030-RL(n) – Research Leadership track, P2030-TAIL(n) – Territorial and (or) Industry Leadership track; n = 1, 2 or 3, - depending on getting into the group of universities that are winners of the track and the amount of funding. P2030-TAIL lacking n-index – that are universities that applied for participation in the territorial and (or) sectoral leadership tracks while not able to defend their programs and not receiving additional funding for the Project.

Source: compiled by the authors according to the Ministry of Science and Higher Education of the Russian Federation

Priority 2030 is a new program for Russia from an ideological point of view, therefore, the missions,

strategic goals of universities, the foresight of the image of the future of their university; these are not just beautiful slogans, but clearly built program documents. Strategic thinking is necessary when planning and investing resources at the university. The administration (project office) develops a strategic plan that carefully takes into account the needs of all stakeholders and results in their balance with financial and operational realities accordingly. In addition, the project office must constantly review and update its Strategic Plan to adapt to the rapidly changing operating environment.

Transformations are inevitable, so the Strategic Plan must be dynamic and flexible. The university's project office will continuously update priorities and initiatives to ensure that resources are focused on critical areas. The most important resource in the implementation of the transformation of the university is the team that took on the burden and responsibility for the reforms, it is this group that becomes the core of the entire team of like-minded people, the main forge of human capital.

Case NEFUAmosov

Mission of the university along with focus on its strengths and unique characteristics are of great importance for the development of a modern multifunctional and competitive higher education institution. In this connection, it is worth mentioning NEFUAmosov case. Based on information from open sources and our interviews with its representatives, it may be affirmed that this university, known in the past as the teachers college, has become the center of attraction for science, culture, public life of Yakutsk city and a big part of the Russian Far East district.

A unique research and development center, NEFUAmosov plays an important role in many aspects. First of all, it takes full advantage of its geographic location and difficult climate conditions of the region. Permafrost enables scientists to carry out large-scale archeological and paleontological studies, with mammoths as a separate research area. University academics are searching for ways to clone the extinct fossil species, as well as other representatives of ancient fauna preserved by nature. Cloning is not a long-term perspective and the information that has been collected up to now discloses amazing facts about the history of our planet and its inhabitants. In addition to that, the Sakha Republic needs specific and highly complicated piling construction projects, which require special technologies, design solutions, knowledge in material engineering and structural performance.

Finally, due to long isolation of Yakut ethnic group and the latest achievements of genetics and molecular biology, NEFUAmosov is actively involved in the development of genetic archeology – the new academic discipline that studies and reconstructs the most ancient genetic information of humans as its biological carriers. It is not going to replace the cultural aspect of archeological science, but the findings related to the genetic history of human population may be partly of interest for the solution of ethnogenesis and anthropology issues. In this way, NEFUAmosov competes with other leading Russian universities and demonstrates its scientific and technological achievements in under-investigated and unique research areas.

The limited size of the present article does not enable detailed description of the development and positioning features of all federal universities in Russia, but it is important that all ten federal universities continuously work on their own development strategies synchronized with economy development processes in federal districts.

Conclusion

High-profile federal universities have always played an important role in the hierarchy of modern Russian higher education institutions. Today's challenges affect the entire higher education system in Russia, and federal universities do not stay on the sidelines. It remains to be seen whether they will be able to follow the latest development trends and align with regional economy, but it is clear that only the accommodation of interests and joint efforts of academic community, government authorities and national high-tech business are able to generate synergy and promote the development of federal universities.

Quick and effective assessment of innovation and business environment in Russian federal universities requires universal multi-criteria methods of qualimetric analysis.

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Conflict of interests

The authors declare no conflict of interest.

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