



Copyright © 2019 by Academic Publishing House Researcher s.r.o.

All rights reserved.

Published in the Slovak Republic

European Journal of Contemporary Education

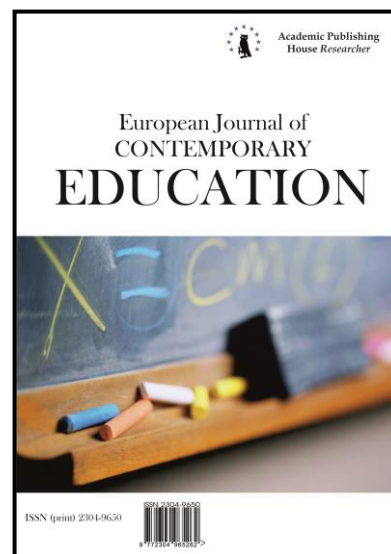
E-ISSN 2305-6746

2019, 8(4): 801-809

DOI: 10.13187/ejced.2019.4.801

www.ejournal1.com

WARNING! Article copyright. Copying, reproduction, distribution, republication (in whole or in part), or otherwise commercial use of the violation of the author(s) rights will be pursued on the basis of international legislation. Using the hyperlinks to the article is not considered a violation of copyright.



Analysis of Management of Higher Education Institutions

Maxim S. Kozyrev ^{a,*}, Tatiana V. Bogacheva ^b, Evgeniya E. Jukova ^a, Polina V. Palekhova ^c

^a Russian State Social University, Moscow, Russian Federation

^b Russian State University of Tourism and Service, Moscow, Russian Federation

^c Russian Presidential Academy of National Economy and Public Administration, Moscow, Russian Federation

Abstract

The article studies special aspects of management of higher education institutions through the use of correlation analysis. There were twelve universities of Moscow and Moscow region that were included into selection. According to results of the conducted research the authors of article have come to the following conclusions. Universities' administrations are prone to compensate the defects of management, decrease of students' number and, as consequence, revenue contractions by laying off the teaching personnel. In this vein, teachers are the most voidable group in a system of higher education management. Meantime, the number of students does not influence the real financial revenue of higher education teaching personnel, which may increase only with the growth of teaching load. The same situation is with publication activity of academic staff. It seems, that universities' administration either does not use large-scale financial incentives to increase the publication activity of academic teaching personnel in journals from the information-analytical systems of scientific citation Web of Science and Scopus, or these incentives are not comparable with the labor and other costs of publishing scientific articles in these bases, which does not lead to the expected actions on the part of the faculty.

In both cases, it is not fair to put the whole responsibility on managerial incompetence of higher institutions. The reasons, which lead to this situation, might be weak managerial independence, relatively lean funds allocated for research, which are most likely concentrated in leading universities.

Keywords: management of higher education institutions, correlation analysis, indicators of higher education institution's activity.

* Corresponding author

E-mail addresses: kozyrevms@rgsu.net (M.S. Kozyrev), tvbogacheva@mail.ru (T.V. Bogacheva), nahratovae@rgsu.net (E.E. Jukova), ppalehova@gmail.com (P.V. Palekhova)

1. Introduction

In recent decades higher education sphere has been subjected to wide changes. The dynamics of students' number at the universities is a prove to it (Figure 1).

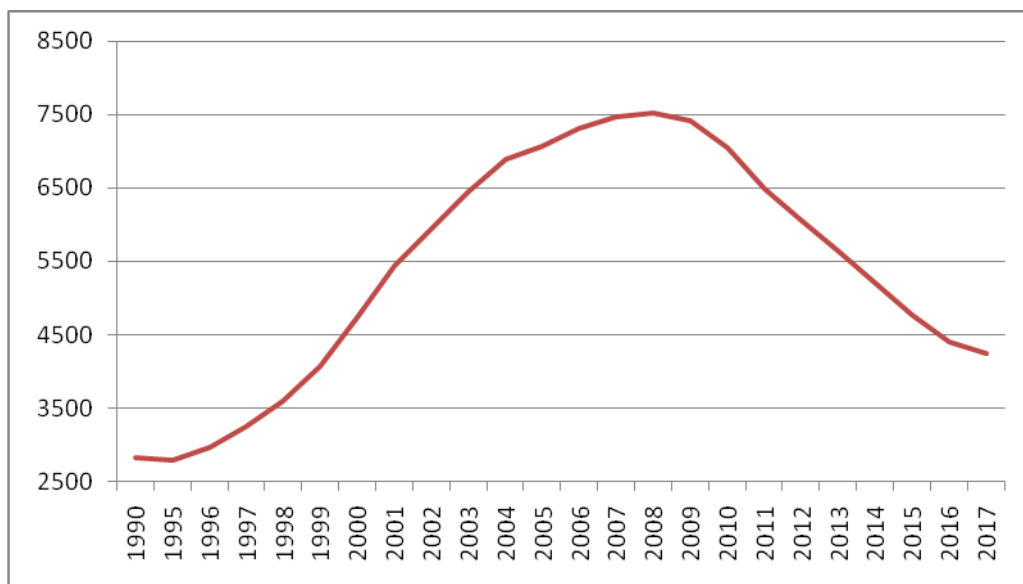


Fig. 1. The number of students at the universities in Russia (Rossiiskii statisticheskii ezhegodnik, 2019)

It is hardly probable, that such vibration amplitude (almost three times the original value) concerns only quantity changes. In this case quality transformations are almost ineluctable. The principal factor certainly will be population aged 20–24 years. However, the influence of state politics, the quality of higher education teaching personnel and administration, the image of higher education, the demand for university graduates in labor market, etc. remains influential factors. In this vein, it will be useful to find out, how university administration reacts on such challenges, what is the main line of their behavior in context of sweepingly changing situation.

It is not necessary to apply such complicated and time-consuming methods as statistical poll or observation to give a response on these questions. The analysis of statistical data will be enough. That's why the principal method of this study is correlation analysis, which gives opportunity to find difficult complex of their causal relationships. It is necessary to admit that correlation analysis allows to find not only reasons of various facts, but also connection with other social phenomena.

In Russian scientific field the topic of management practices in higher education institutions was studied by A.P. Prohorov, V.N. Blinov (Prohorov, Blinov, 2019), A.K. Klyuev, O.B. Tomilin, I.M. Fadeeva, O.O. Tomilin (Klyuev et al., 2018), P.A. Ambramova, G.E. Zborovskij (Ambarova, Zborovskij, 2017), M.A. Abramova, V.V. Krasheninnikov (Abramova, Krasheninnikov, 2016), S.N. Pryadko, A.E. Vinnik (Pryadko, Vinnik, 2018), A.A. Kirillovyh (Kirillovyh, 2018), M.V. Kurbatova, I.V. Donova (Kurbatova, Donova, 2019).

There are also interesting foreign studies, devoted to this topic, which are presented in publications A.K. Stage, K. Aagaard (Stage, Aagaard, 2019), J.D. Aberbach, T. Christensen (Aberbach, Christensen, 2018), I. Bleiklie, M. Kogan (Bleiklie, Kogan, 2007), D. Deering, C. Sá (Deering, Sá, 2018), C. Bell, N. Dodd, T. Mjoli (Bell et al., 2018), A. Taylor (Taylor, 2017), G. Krucken, A. Blumel, K. Kloke (Krucken et al., 2013).

2. Methodology

The essence of the correlation analysis is to identify the dependence between the results of investigation of indicators of various factors, as well as investigation of the degree of their mutual influence. The statistical dependence between several variables is characterized by a correlation coefficient. Its scale estimates the degree of dependence (Orlov, 2004). If the last is lineal then the dependence can be calculated by the Pearson correlation coefficient using the formula below:

$$r_{xy} = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{n}\right) \left(\sum y^2 - \frac{(\sum y)^2}{n}\right)}}$$

The mentioned coefficient changes the scale from -1 to $+1$. It is supposed that if the coefficient is higher than $|0,7|$, then the dependence is strong and tight, if it is not higher than $|0,3|$, then the dependence is weak; if it is from $|0,3|$ to $|0,7|$, then the dependence is middle. If the coefficient equals ± 1 , then the dependence is functional, if it equals 0 , then there is no any lineal dependence between indexes.

While using correlation analysis it is necessary to consider a set of its limitations.

First limitation. If factors' variables are inextricably linked, it does not lead to cause-and-effect relations between them. There is another possible factor that may influence the others and might be a reason of changes of their variables.

An intellectual experiment might serve as an example. If 1000 random people on the street are measured with an intelligence index (IQ) and shoe size, then a close correlation may be found between them. However, it does not prove the dependence between person's intellectual development and their height. There are such people's features as gender and age are the third factor here.

Second limitation. While calculating an appearance of the accidental correlation is possible. The illustration of this limitation is English site Spurious Correlations, authors of which demonstrate rather funny connections. In particular, the dependence between the US expenses on space and technology and the number of suicides by hanging, strangulation ($r = 0.99$); cheese consumption per capita and the number of people who died entangled in their bed sheets ($r = 0.94$); chicken consumption per capita and total import of crude oil in the USA ($r = 0.89$) ([Blog «Spurious Correlations»](#)).

Third limitation. In studies with correlation analysis, it is desirable to do 12–15 observations for each indicator. This restriction is not a serious problem with a large base of data ([Gusev et al., 1998](#); [Bajnova et al., 2016](#); [Kozyrev, Maslikov, 2016](#)).

Fourth limitation. It is impossible to detect a connection between phenomena by means of correlation analysis if the effect is delayed, for instance, by several years. As an example, we may cite the dependence of the population at the ages of 15–19 years and 20–24 years with the number of university students ([Figure 2](#)).

In the first case correlation coefficient is $0,08$, and in the second case is $-0,77$. According to the figure in case of using only correlation analysis for this purpose “delay” of 5 years makes it impossible to establish a causal relationship between two phenomena.

An algorithm of the correlation analysis, used in this case, is the following.

1. Selection and grouping of indicators through statistical data.
2. Calculation of correlation coefficients within a group of indicators (formation of a correlation matrix).
3. Interpretation of the obtained exponents of the correlation coefficients.

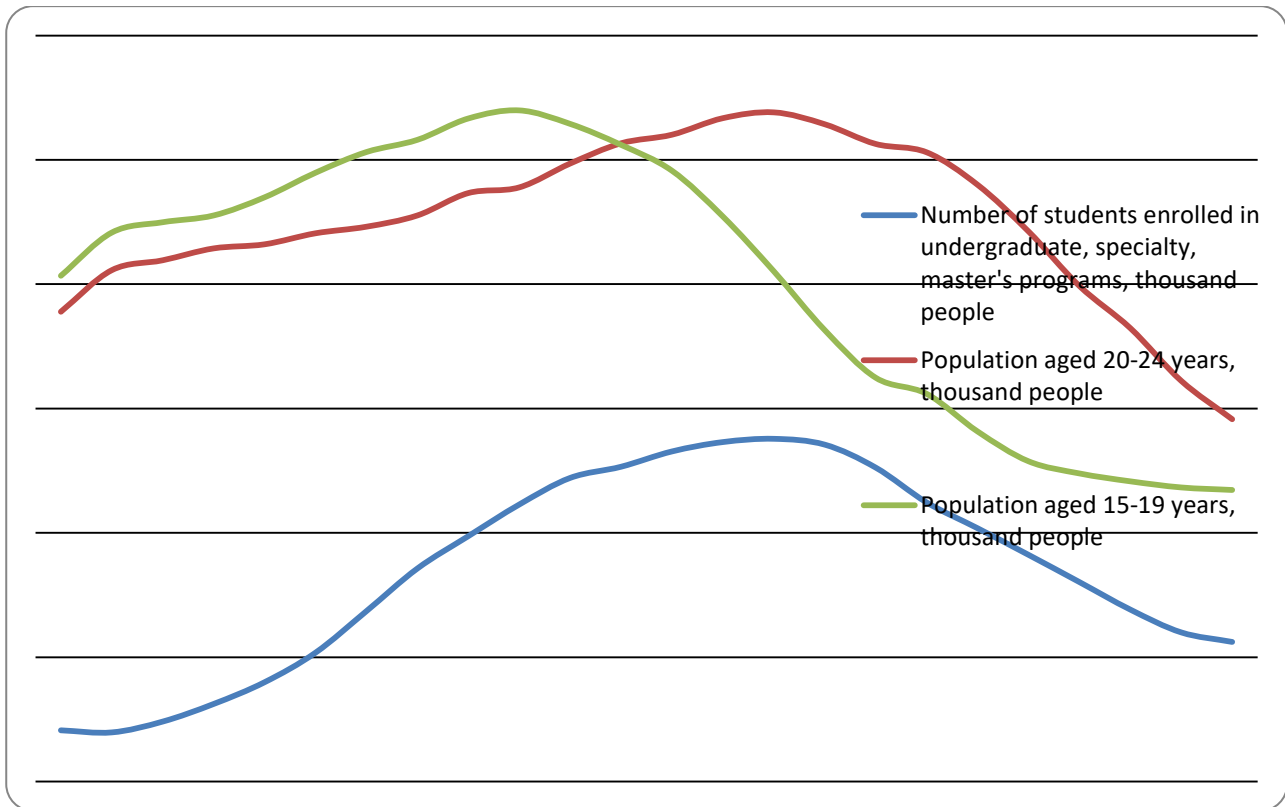


Fig. 2. The number of students and population ([Rossiiskii statisticheskiy ezhegodnik, 2019](#))

With the current development of technology, the calculation of several tens or hundreds of correlation coefficients does not demand any hard work. In particular, in this research the capabilities of a Microsoft Excel spreadsheet were used.

3. Results and discussion

As indicators, characterized university activity, the following factors were chosen:

- The total number of students (all modes of study);
- The total number of employees of the educational organization (without external part-time workers and those who work under civil law contracts);
- The total number of faculty members (faculty) (without external part-time workers and those who work under civil law contracts);
- The total number of scientists (without external part-time workers and those who work under civil law contracts);
- The average salary of the teaching staff (without external part-time workers and those who work under civil law contracts);
- The financial revenues of university from all sources;
- The financial revenues from the federal budget;
- The number of organization's publications indexed in the analytical system of scientific citation Web of Science (per 100 scientific and teaching personnel);
- The number of organization publications indexed in the analytical system of scientific citation Scopus (per 100 scientific and teaching personnel);
- The ratio of the total number of university employees to the number of faculty.

The object of study are typical federal state universities of Moscow and Moscow region. Universities from the first places of various ratings, with the status of a national research university or federal university and the participants of the 5-100 project were excluded from the sample.

Overall, according to author, the universities which are the closest to the “image” of typical university are the following:

1. Federal State Budgetary Educational Institution of Higher Education "Russian State Social University" (RSSU);
2. Federal State Budgetary Educational Institution of Higher Education "Russian State University for the Humanities" (RSUH);
3. Federal State Budgetary Educational Institution of Higher Education "State University of Management" (SUM);
4. Federal State Budgetary Educational Institution of Higher Education "Moscow State University of Technology and Management named after K.G. Razumovsky (First Cossack University)" (MSUTM);
5. Federal State Budgetary Educational Institution of Higher Education "Russian State University of Tourism and Service" (RSUTS);
6. Federal State Budgetary Educational Institution of Higher Education "Russian Technological University" (MIREA);
7. Federal State Budgetary Educational Institution of Higher Education "Russian State University named after A.N. Kosygin (Technology. Design. Art)" (RSU named after A.N. Kosygin);
8. Federal State Budgetary Educational Institution of Higher Education "Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev" (Moscow Agricultural Academy named after K.A. Timiryazev);
9. Federal State Budgetary Educational Institution of Higher Education "Russian Chemical-Technological University named after D.I. Mendeleev" (RSCTU named after D.I. Mendeleev);
10. Federal State Budgetary Educational Institution of Higher Education "Moscow Automobile and Road State Technical University (MADI)";
11. Federal State Budgetary Educational Institution of Higher Education "Moscow State Technical University of Civil Aviation" (MSTU CA);
12. Federal State Budgetary Educational Institution of Higher Education "Moscow State Institute of Culture" (MSUC).

According to the results of monitoring the efficiency of higher education institutions' activity during 2018 with the usage of informational and analytical materials on the website of the Main Information and Computing Center of the Ministry of Science and Higher Education of the Russian Federation ([Informatsionno-analiticheskie materialy..., 2018](#)) (Table 1), the calculations of the correlation coefficients are the following (Table 2).

Table 1. The indicators of State Universities' activity (part 1)

| | | RSSU | RSUH | SUM | MSUTM | RSUTS |
|---|---|--------|--------|--------|--------|-------|
| 1 | The total number of students (all modes of study), people | 17 056 | 12 970 | 9 603 | 9 924 | 3 940 |
| 2 | The total number of employees of the educational organization (without external part-time workers and those who work under civil law contracts) | 1 135 | 1 792 | 1 096 | 574 | 411 |
| 3 | The total number of faculty members (faculty) (without external part-time workers and those who work under civil law contracts) | 322 | 844 | 573 | 197 | 133 |
| 4 | The total number of scientists (without external part-time workers and those who work under civil law contracts) | 12 | 55 | 1 | 5 | 5 |
| 5 | The average salary of the teaching staff (without external part-time workers and those who work under civil law contracts), thousand rubles | 109,85 | 102,44 | 115,39 | 119,88 | 89,39 |

| | | | | | | |
|----|--|---------|---------|---------|---------|--------|
| 6 | The financial revenues of university from all sources, thousand rubles | 2164052 | 2226393 | 1578870 | 1218340 | 591133 |
| 7 | The financial revenues from the federal budget, thousand rubles | 948288 | 859610 | 544394 | 566772 | 278187 |
| 8 | The financial revenues of university from extra-budgetary sources, thousand rubles | 1210837 | 1366792 | 1031501 | 642381 | 310307 |
| 9 | The number of organization's publications indexed in the analytical system of scientific citation Web of Science per 100 scientific and teaching personnel | 13,74 | 54,56 | 4,79 | 3,65 | 5,72 |
| 10 | The number of organization publications indexed in the analytical system of scientific citation Scopus per 100 scientific and teaching personnel | 36,32 | 14,22 | 5 | 10,94 | 13,99 |
| 11 | The ratio of the total number of university employees to the number of faculty | 52,97 | 15,37 | 16,76 | 50,38 | 29,62 |

Table 1. The indicators of State Universities' activity (part 2)

| RTU (MIREA) | RSU named after A.N. Kosygin | Moscow Agricultural Academy named after K.A. Timiryazev | RSCTU named after D.I. Mendeleev | MADI | MSTU CA | MSUC |
|-------------|------------------------------|---|----------------------------------|---------|---------|--------|
| 24 515 | 8 349 | 14 157 | 5 505 | 9 562 | 3 694 | 4 960 |
| 2 799 | 1 099 | 2 908 | 1 551 | 1 544 | 608 | 882 |
| 1 142 | 503 | 1 152 | 499 | 673 | 220 | 440 |
| 76 | 0 | 39 | 33 | 8 | 6 | 10 |
| 123,78 | 116,44 | 95,98 | 105,05 | 114,74 | 144,5 | 48,51 |
| 5290911 | 1525060 | 3731226 | 1989004 | 2112289 | 953133 | 948227 |
| 3194123 | 992967 | 2634246 | 1439045 | 1227028 | 706462 | 647260 |
| 2096820 | 451587 | 1085541 | 537770 | 885185 | 246702 | 300930 |
| 24,27 | 23,76 | 22,87 | 60,59 | 3,54 | 3,23 | 4,6 |
| 32,83 | 29,69 | 8,7 | 135,19 | 9,84 | 5,54 | 4,6 |
| 21,47 | 16,60 | 12,29 | 11,03 | 14,21 | 16,79 | 52,97 |

Table 2. Correlation matrix

| | Line 1 | Line 2 | Line 3 | Line 4 | Line 5 | Line 6 | Line 7 | Line 8 | Line 9 | Line 10 | Line 11 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Line 1 | 1,00 | | | | | | | | | | |
| Line 2 | 0,73 | 1,00 | | | | | | | | | |
| Line 3 | 0,68 | 0,97 | 1,00 | | | | | | | | |
| Line 4 | 0,70 | 0,82 | 0,78 | 1,00 | | | | | | | |
| Line 5 | 0,23 | 0,03 | -0,01 | 0,03 | 1,00 | | | | | | |
| Line 6 | 0,88 | 0,93 | 0,88 | 0,84 | 0,19 | 1,00 | | | | | |
| Line 7 | 0,73 | 0,93 | 0,85 | 0,78 | 0,15 | 0,96 | 1,00 | | | | |
| Line 8 | 0,95 | 0,76 | 0,75 | 0,78 | 0,23 | 0,87 | 0,69 | 1,00 | | | |
| Line 9 | 0,17 | 0,46 | 0,40 | 0,62 | -0,02 | 0,33 | 0,31 | 0,28 | 1,00 | | |
| Line 10 | -0,04 | 0,15 | -0,01 | 0,25 | 0,04 | 0,13 | 0,20 | -0,02 | 0,70 | 1,00 | |
| Line 11 | 0,26 | -0,36 | -0,47 | -0,23 | 0,20 | -0,13 | -0,25 | 0,09 | -0,32 | -0,10 | 1,00 |

There are some curious details according the results of conducted analysis. It is hardly a surprise, that the total number of employees ($r_{xy}=0,73$), the number faculty members ($r_{xy}=0,68$) and the number of scientists ($r_{xy}=0,7$) depends on the total number of students. However, dependence level is less than expected, if the number of teaching positions is calculated on base of the volume of the academic load, i.e. the number of students. It is possible to suppose that university's administration sometimes prefers to replace vacancies with internal part-time workers rather than to employ new workers. Consequently, with a decrease in the number of students, first of all, part-time positions are reduced, and the teachers themselves do not quit. In some case, it is aligned with the reality. However, the average salary of faculty is weakly related to the number of students ($r_{xy}=0,23$). Moreover, the average salary also weakly correlates with university financial revenues, regardless of their source ($r_{xy}=0,19$; $r_{xy}=0,15$; $r_{xy}=0,23$). This leads to a conclusion that under the decrease of number of students universities' administration tries to reduce the number of faculty instead of their salary. It may be explained by the action of the "May" presidential decrees, where special requirements for the size of salaries to employees of the "public sector" were set. At the same time, it is clear that the higher education personnel becomes a hostage to the socio-economic and political situation, as well as the level of quality of university management. A teacher pays their working place for all crises and wickedness of university management.

Another curious fact is that publication activity of the faculty is not related to their salary. The correlation coefficients between the average salary of teachers, the number of publications, indexed in the analytical system of scientific citation Web of Science ($r_{xy}=-0,02$) and the number of publications, indexed in the analytical system of scientific citation Scopus ($r_{xy}=0,04$) are rather low. Meantime there is an average link between the number of publications, the number of the faculty ($r_{xy}=0,4$) and the total number of faculty ($r_{xy}=0,62$). It draws a conclusion, that university administration does not widely use financial stimulation to increase publication activity, or the proportion of financial stimulation in the expenses to publications in journals, indexed in Web of Science and Scopus, does not highly motivate teaching personnel. There is another appropriate hypothesis that some members of the faculty unite into small groups to concentrate their efforts on increasing publication activity in journals from Scopus, but their quantity is not so big to influence statistical data. Indeed, scientists, who are responsible for publishing the results of their studies in mentioned databases, play the principal role in this case.

The financial revenues of organization and the number of publication in journals, indexed in Web of Science ($r_{xy}=0,33$; $r_{xy}=0,31$; $r_{xy}=0,28$) are on the border of medium dependence of correlation. It leads to hypothesis, that the financial revenues from scientific research are not the principal and substantial resource of educational institution's revenues.

The correlation of the total number of students and the number of the faculty is poorly related to average salary of teaching personnel ($r_{xy}=0,2$). This confirms the earlier assumption that the university administration prefers to replace vacant positions by teachers on the basis of internal part-time. In this case there is no any increase in financial revenues, because teaching and other loads grow along with salaries.

4. Conclusion

According to results of the conducted research there are the following conclusions about the management at the higher education institutions:

1) Higher education teaching personnel is the most vulnerable group at the universities. The faculty pays their working place for crises, which lead to decrease of the number of students, and for managerial incompetence of universities' administration. The salary of teachers increases only with an additional load. There is an approved hypothesis, that weak managerial independence of universities, which do not have legal opportunity to increase financial revenues, is responsible for the immediate situation (Kozyrev, 2016). The magnitude of the flow of students, which depends not only on demographic, but also socio-economic factors (prestige of higher education, material well-being of the population, demand for specialists with higher education in the labor market, etc.) is weakly influenced by the administration of universities. In addition, even aggressive marketing policy is not able to change the overall situation. In the most cases it is a zero-sum game: increase of the number of students at one university leads to decrease of the number of students in others.

It is necessary to admit that the financing of scientific activities on the basis of state grants hardly seriously affects the income of most of higher education teaching personnel.

2) University administration does not widely use financial stimulation to increase publication activity, or the proportion of financial stimulation in the expenses to publications in journals, indexed in Web of Science and Scopus, is so incomparable with labor and other costs of publishing scientific articles in these databases, that it does not lead to expected actions from the higher education teaching personnel. As in the first case, it is not fair to put the whole responsibility on the administration of higher institutions. Another factors of the current state of affairs are the insufficiently wide presence of Russian scientific journals in international scientific citation databases (for example, out of 24513 journals indexed in Scopus there are 447 Russian journals, 1691 journals from Germany, 5693 from the UK, 6122 from the United Kingdom, 566 from Spain) and narrowed possibilities for financing scientific activity.

Besides, it is should be admitted that the scientific activity of higher education institutions has relatively weak effect on their financial revenues. Such situation is possibly unfair in comparison with the leading Russian universities excluded from the selection. However, authors suppose, that it is common for the most state higher education universities.

References

Aagaard, 2017 – Aagaard, K. (2017). The Evolution of a National Research Funding System: Transformative Change Through Layering and Displacement. *Minerva*, 55: 279-297. DOI: <https://doi.org/10.1007/s11024-017-9317-1>

Aberbach, Christensen, 2018 – Aberbach, J.D., Christensen, T. (2018). Academic Autonomy and Freedom under Pressure: Severely Limited, or Alive and Kicking? *Public Organization Review*, 18, 4: 487-506.

Abramova, Krasheninnikov, 2016 – Abramova, M.A., Krasheninnikov, V.V. (2016). Reforma vysshego obrazovaniya: ot kolichestva k kachestvu [Higher education reform: from quantity to quality]. *Filosofiya obrazovaniya*, 2(65): 44-52. [in Russian]

Ambarova, Zborovskij, 2017 – Ambarova, P.A., Zborovskij, G.E. (2017). Upravlenie universitetami v otsenkakh obrazovatel'nykh obshchnostei [Management of universities in the assessments of educational groups]. *Universitetskoe upravlenie: praktika i analiz*, 21, 3(109): 100-111. [in Russian]

Bajnova et al., 2016 – Bajnova, M.S., Kozyrev, M.S., Petrov, A.V. (2016). Korrelyatsionnyi analiz gosudarstvennogo vozdeistviya na otdel'nye aspekty rossiiskoi ekonomiki [Correlation analysis of state influence on certain aspects of the Russian economy]. *Aktual'ni problemi ekonomiki*, 182, 8: 334-343. [in Russian]

Bell et al., 2018 – Bell, C., Dodd, N., Mjoli, T. (2018). The effect of participative and directive leadership on team effectiveness among administrative employees in a South African tertiary institution. *Journal of Social Sciences*, 55, 1-3: 81-91. DOI: 10.30901/24566756.2018/55.1-3.1716

Bleiklie, Kogan, 2007 – Bleiklie, I., Kogan, M. (2007). Organization and governance of universities. *Higher Education Policy*, 20, 4: 477-493. DOI: <https://doi.org/10.1057/palgrave.hep.8300167>

[Blog «Spurious Correlations»](#) – Blog «Spurious Correlations». [Electronic resource]. URL: <http://www.tylervigen.com/spurious-correlations> (date of access: 27.06.19).

[Deering, Sá, 2018](#) – *Deering, D., Sá, C.* (2018). Do corporate management tools inevitably corrupt the soul of the university? Evidence from the implementation of responsibility center budgeting. *Tertiary Education and Management*. 24, 2: 115-127. DOI: <https://doi.org/10.1080/13583883.2017.1398779>

[Ekonometrika, 2012](#) – *Ekonometrika: Uchebnik* [Econometrics: Textbook] (2012). Pod red. prof. V. B. Utkina. M.: Izdatel'sko-torgovaya korporatsiya "Dashkov i K°". [in Russian]

[Gusev et al., 1998](#) – *Gusev, A.N., Izmailov, Ch.A., Mikhalevskaya, M.B.* (1998). Izmerenie v psikhologii: obshchii psikhologicheskii praktikum [Measurement in psychology: a general psychological workshop]. 2-e izd. M.: Smysl. [in Russian]

[Informatsionno-analiticheskie materialy..., 2018](#) – Informatsionno-analiticheskie materialy po rezul'tatm profedeniya monitoringa effektivnosti deyatel'nosti obrazovatel'nykh organizatsii vysshego obrazovaniya [Information and analytical materials on the results of monitoring the effectiveness of educational institutions of higher education]. (2018). [Electronic resource]. URL: <http://indicators.miccedu.ru/monitoring/?m=vpo> (date of access: 08.10.19). [in Russian]

[Kirillovyh, 2018](#) – *Kirillovyh, A.A.* (2018). Upravlenie vuzom v usloviyakh mezhdunarodnogo rynka obrazovatel'nykh uslug: publichno-pravovoi aspekt [University management in the international market of educational services: public law aspect]. *Pravo i obrazovanie*, 3: 86-90. [in Russian]

[Klyuev et al., 2018](#) – *Klyuev, A.K., Tomilin, O.B., Fadeeva, I.M., Tomilin, O.O.* (2018). Upravlenie universitetom: itogi transformatsii [University management: transformation scenarios]. *Universitetskoe upravlenie: praktika i analiz*, 22, 1(113): 93-104. [in Russian]

[Kozyrev, 2016](#) – *Kozyrev, M.S.* (2016). Gosudarstvennye uchrezhdeniya kak sub"ekt publichnogo upravleniya [State institutions as a subject of public administration]. *Gosudarstvennyi sovetnik*, 2(14): 37-41. [in Russian]

[Kozyrev, Maslikov, 2016](#) – *Kozyrev, M.S., Maslikov, V.A.* (2016). Application of correlative analysis for investigation of some types of crimes conducted in Moscow. *Criminological Journal of Baykal State University of Economics and Law*. 10(1): 28-39.

[Krucken et al., 2013](#) – *Krucken, G., Blumel, A., Kloke, K.* (2013). The Managerial Turn in Higher Education? On the Interplay of Organizational and Occupational Change in German Academia. *Minerva*, 51, 4: 417-442.

[Kurbatova, Donova, 2019](#) – *Kurbatova, M.V., Donova, I.V.* (2019). Effektivnyi kontrakt v vysshem obrazovanii: rezul'taty realizatsii proekta [Effective contract in higher education: project implementation results]. *Journal of Institutional Studies*, 11, 2: 122-145. [in Russian]

[Orlov, 2004](#) – *Orlov, A.I.* (2004). Prikladnaya statistika [Applied statistics]. Uchebnik. M.: Izdatel'stvo "Ekzamen". [in Russian]

[Prohorov, Blinov, 2019](#) – *Prohorov, A.P., Blinov, V.N.* (2019). Defitsity i paradoksy rynka vysshego obrazovaniya v Rossii i ego organizatsii v rossiiskikh vuzakh: chto mozhno izmenit'? [Deficiencies and Paradoxes of the Higher Education Market in Russia and its Organization in Russian Universities: What can be changed?]. *Universitetskoe upravlenie: praktika i analiz*, 23, 1-2: 165-176. [in Russian]

[Pryadko, Vinnik, 2018](#) – *Pryadko, S.N., Vinnik, A.E.* (2018). Povyshenie effektivnosti upravleniya konkurentosposobnost'yu vuzov [Improving the competitiveness of universities]. *Vestnik belgorodskogo gosudarstvennogo tekhnologicheskogo universiteta im. v.g. Shukhova*, 1: 117-120. [in Russian]

[Rossiiskii statisticheskii ezhegodnik, 2019](#) – Rossiiskii statisticheskii ezhegodnik [Russian statistical yearbook] (2019). [Electronic resource]. URL: <https://www.gks.ru/folder/210/document/12994> (date of access: 08.10.19). [in Russian]

[Stage, Aagaard, 2019](#) – *Stage, A.K., Aagaard, K.* (2019). Danish universities under transformation: Developments in staff categories as indicator of organizational change. *Higher Education*, 78, 4: 629-652. DOI: 10.1007/s10734-019-00362-y

[Taylor, 2017](#) – *Taylor, A.* (2017). Perspectives on the university as a business: The corporate management structure, neoliberalism and higher education. *Journal for Critical Education Policy Studies*, 15, 1: 108-135.