

# Chapter 20

## State Management of the Educational Services Market in a Multicultural Region as a Tool of Provision of Population's High Living Standards



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**Abstract** The purpose of the research is to determine scenarios and to develop a “road map” of implementing the optimal scenario of state management of the educational services market in multicultural regions of Russia in the interests of increasing the population's living standards. It is substantiated that standardization (development and usage of common requirements to all universities) hinders the implementation of the potential of the educational services market in stimulating the increase of living standards in Russia's regional economy. It is necessary to limit standardization in the Russia's educational services market. The quality of provision of educational services (characteristics of the educational process) and their results (mastered competencies) should be standardized, but universities should have larger independence for their provision.

### 1 Introduction

In the conditions of “knowledge economy,” the issues of development of education are given a lot of attention, as the level of education determines the opportunities for employment and career building for a modern employees, as well as the level of labor efficiency and, therefore, effectiveness and competitiveness of the region's

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entrepreneurship and the volume of gross regional product, which influences the region's population's income.

In modern Russia, the larger part of the educational services market (according to the criterion of the number of students) is covered by state universities, which receive federal financing. For extending the license for provision of educational services, for obtaining state order for training of specialists, and for attracting the best students and lecturers, universities in Russia's regions have to conform to the requirements that are set by the Ministry of Science and Education of the Russian Federation (2019), which also performs the monitoring of effectiveness of their activities.

The requirements are developed based on the generalized experience of development of the educational services market on the country on the whole and do not take into account the regions' specific features. Recently, requirements to universities in Russia include reduction of the number of branches, digitization (increase of the number of PC's that are used for educational purposes), increase of the number of students (for increasing the level of education in the Russian society and implementing the concept of "life-long learning"), and reduction of the number of academic staff.

Standardization (development and application of unified requirements to all universities) hinders the realization of the potential of the educational services market in stimulating the increase of living standards in Russia's regional economy. Thus, according to the Federal State Statistics Service (2019), growth rate of real accrued wages of employees of organizations in Russia's regional economy in 2018 constituted 102.9%, as compared to 2017, i.e., real incomes of the Russian population grew by 2.9%; the unemployment level constituted 5.2%.

The following hypothesis is offered: it is necessary to limit standardization in Russia's educational services market. The quality of provision of educational services (characteristics of the educational process) and their results (mastered competencies) should be standardized, but universities should have more independence for their provision. There is a necessity for a more flexible and standardized approach to state management of the educational services market, which would allow taking into account the specifics of each region.

The purpose of this chapter is to determine scenarios and to develop a "road map" of implementing the optimal scenario of state management of the educational services market in multicultural regions of Russia in the interests of increasing the population's living standards.

## 2 Materials and Method

The specifics of development of the educational services market in the conditions of "knowledge economy" in a region and the influence of this development on the population's living standards are reflected in the works Durazzi (2018), Frunzaru et al. (2018), Hünninger (2018), Molla and Cuthbert (2018), Ponce et al. (2019),

Popkova (2019), and Tulloch and Randell-Moon (2018). The conceptual and applied issues of state management of the educational services market in a modern region are studied in the works Dobbins (2015), Mok (2016), Popkova et al. (2017a, b), Salto (2014), Sergi et al. (2019), Sibirskaya et al. (2019), and Tavoletti (2010).

However, despite the high level of elaboration of the topic of the research, the perspectives of decentralization and the specific features of state management of the educational services market in a multicultural region for increasing the population's living standards are not studied sufficiently in the existing research literature.

The research is conducted by the example of top-3 multicultural regions of Russia in 2018: Leningrad, Moscow, and Kaliningrad Oblasts. The research is conducted in two consecutive stages. At the first stage, the regression analysis is used for compiling the models of multiple linear regression dependence of the indicator of living standards (Unemployment level and Annual growth rate of real accrued wages of organizations' employees) and the indicators of development of the educational services market in the region (number of universities, number of PC's that are used for educational purposes by universities, number of students of universities, and number of academic staff of universities).

In the second stage, optimization modeling (simplex method) is used for determining the scenarios of the population's living standards depending on state management of the educational services market in Russia's multicultural regions. The optimal scenario is the one that ensures simultaneous reduction of the unemployment level and an increase in the volume of real accrued wages of organizations' employees. Modeling is performed separately for each multicultural region, which allows taking into account the regional specifics of the development of the educational services market and its influence on the population's living standards. The statistical database for 2009/2010–2017/2018 and the forecast for 2018/2019 are shown in Tables 20.1, 20.2, and 20.3.

### 3 Results

As a result of regression analysis, the following models of multiple linear regression were obtained:

- $y_{11} = 4.29 - 0.13 \times x_{11} + 0.005 \times x_{12} + 0.09 \times x_{13} - 0.009 \times x_{14}$ , reflecting the influence of the indicators of development of the educational services market on the unemployment level in Leningrad Oblast.
- $y_{12} = 2.17 + 0.04 \times x_{11} + 0.47 \times x_{12} + 0.03 \times x_{13} - 0.01 \times x_{14}$ , reflecting the influence of the indicators of development of the educational services market on the volume of real accrued wages of employees in Leningrad Oblast.
- $y_{21} = 1.67 - 0.01 \times x_{21} + 0.005 \times x_{22} - 0.0003 \times x_{23} + 0.004 \times x_{24}$ , reflecting the influence of the indicators of development of the educational services market on the unemployment level in Leningrad Oblast.

**Table 20.1** Indicators of development of the educational services market and population's living standards in Leningrad Oblast in 2009/2010–2018/2019

Academic year	Number of universities and scientific organizations with departments (at the start of the academic year)	Number of PC's that are used for educational purposes in universities, per 1000 students	Number of students of universities (at the start of the academic year), per 10,000 people	Number of academic staff universities (at the start of the academic year)	Unemployment level, %	Annual growth rate of real accrued wages of employees of organizations, %
	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>	X <sub>14</sub>	Y <sub>11</sub>	Y <sub>12</sub>
2009/2010	35	223	103	534	5.3	105.5
2010/2011	35	220	102	527	5.2	104.1
2011/2012	25	217	64	391	4.2	102.7
2012/2013	26	227	67	409	4.4	107.4
2013/2014	25	222	66	400	4.3	105.1
2014/2015	24	212	63	383	4.5	100.5
2015/2016	15	195	55	351	5.1	92.2
2016/2017	15	210	50	339	4.6	99.3
2017/2018	14	220	44	302	4.6	104.2
2018/2019	15	231	46	317	4.8	109.3

Source: Compiled and calculated by the authors based on the Federal State Statistics Service (2019)

**Table 20.2** Indicators of the development of the educational services market and population's living standards in Moscow Oblast in 2009/2010–2018/2019

Academic year	Number of universities and scientific departments with organizations with departments (at the start of the academic year)	Number of PC's that are used for educational purposes in universities, per 1000 students	Number of students of universities (at the start of the academic year), per 10,000 people	Number of academic staff universities (at the start of the academic year)	Unemployment level, %	Annual growth rate of real accrued wages of employees of organizations, %
	X <sub>21</sub>	X <sub>22</sub>	X <sub>23</sub>	X <sub>24</sub>	Y <sub>21</sub>	Y <sub>22</sub>
2009/2010	154	232	243	6303	3.2	99.3
2010/2011	158	226	249	6464	3.3	101.8
2011/2012	132	221	171	4291	2.8	104.4
2012/2013	127	213	165	4136	2.7	108.3
2013/2014	133	223	173	4332	2.8	103.4
2014/2015	139	232	180	4511	2.7	99.3
2015/2016	117	253	153	4917	3.3	91.1
2016/2017	82	239	117	3896	3.3	96.3
2017/2018	63	218	103	3601	3.2	105.7
2018/2019	69	239	113	3952	3.5	116.0

Source: Compiled and calculated by the authors based on the Federal State Statistics Service (2019)

**Table 20.3** Indicators of the development of the educational services market and population's living standards in Kaliningrad Oblast in 2009/2010–2018/2019

Academic year	Number of universities and scientific organizations with departments (at the start of the academic year)	Number of PC's that are used for educational purposes in universities, per 1000 students	Number of students of universities (at the start of the academic year), per 10,000 people	Number of academic staff universities (at the start of the academic year)	Unemployment level, %	Annual growth rate of real accrued wages of employees of organizations, %
	X <sub>31</sub>	X <sub>32</sub>	X <sub>33</sub>	X <sub>34</sub>	Y <sub>31</sub>	Y <sub>32</sub>
2009/2010	28	189	443	1825	10.2	108.5
2010/2011	28	187	446	1838	10.3	109.3
2011/2012	18	205	303	1336	6.1	100.1
2012/2013	18	198	294	1296	5.9	103.2
2013/2014	17	188	278	1227	5.6	109.0
2014/2015	19	210	311	1373	5.4	97.4
2015/2016	16	226	280	1473	5.7	90.8
2016/2017	15	211	251	1375	6.0	97.1
2017/2018	11	204	238	1269	5.2	100.4
2018/2019	11	211	246	1312	5.4	103.8

Source: Compiled and calculated by the authors based on the Federal State Statistics Service (2019)

**Table 20.4** Scenario 1: overcoming of unemployment (Unemployment level = 1.5%)

Indicators	Leningrad Oblast		Moscow Oblast		Kaliningrad Oblast	
	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %
Number of universities	32	112.80	218	215.71	1	-90.91
Number of PC's, per 1000 students	230	-0.28	170	-28.83	281	33.09
Number of students of universities, per 10,000 people	34	-26.18	117	3.70	252	2.29
Number of academic staff universities	318	0.38	3947	-0.12	1301	-0.84
Unemployment level, %	1.5	-68.75	1.5	-57.14	1.5	-72.22
Annual growth rate of real accrued wages, %	109.1	-0.17	35.0	-69.83	81.9	-21.07

Source: Calculated and compiled by the authors

- $y_{22} = 143.23 - 0.54 \times x_{21} + 0.004 \times x_{22} - 0.064 \times x_{23} - 0.01 \times x_{24}$ , reflecting the influence of the indicators of development of the educational services market on the volume of real accrued wages of employees in Leningrad Oblast.
- $y_{31} = 6.45 - 0.02 \times x_{31} - 0.05 \times x_{32} + 0.004 \times x_{33} - 0.0008 \times x_{34}$ , reflecting the influence of the indicators of development of the educational services market on the unemployment level in Leningrad Oblast.
- $y_{32} = 197.29 - 1.10 \times x_{31} - 0.48 \times x_{32} + 0.08 \times x_{33} - 0.0005 \times x_{34}$ , reflecting the influence of the indicators of development of the educational services market on the volume of real accrued wages of employees in Leningrad Oblast.

Based on the determined dependencies, the simplex method (automatized selection of values) is used for determining the target values of the indicators of development of the educational services market and the resulting values of the indicator of living standards in top-3 multicultural regions of Russia within the three scenarios. The first scenario is aimed at overcoming of unemployment (maximum possible reduction of unemployment level), the second scenario is aimed at provision of growth of population's incomes (maximum possible increase of real accrued wages of employees), and the third scenario is aimed at simultaneous reduction of the unemployment level and increase of incomes. The scenarios are short-term (3 years at most)—i.e., in case of implementation of the measures of state management in 2019 these scenarios will be realized in 2022. The compiled scenarios are shown in Tables 20.4, 20.5, and 20.6.

**Table 20.5** Scenario 2: provision of growth of incomes (annual growth rate of real accrued wages of organizations' employees = 115%)

Indicators	Leningrad Oblast		Moscow Oblast		Kaliningrad Oblast	
	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %
Number universities	17	12.02	66	-4.27	1	-90.91
Number of PC's, per 1000 students	253	9.72	239	0.08	203	-3.93
Number of students of universities, per 10,000 people	47	3.02	116	3.07	265	7.89
Number academic staff universities	316	-0.17	3952	0.00	1312	0.00
Unemployment level, %	5.1	7.07	3.6	2.24	5.6	3.68
Annual growth rate of real accrued wages, %	120.0	9.79	120.0	3.45	120.0	15.95

Source: Calculated and compiled by the authors

Table 20.4 shows that within the first scenario in the unemployment level reduced by the minimum allowable level (1.5%) in all multicultural regions. However, the annual growth rate of real accrued wages reduces in Leningrad Oblast by 0.17%, in Moscow Oblast—by 9.83%, and in Kaliningrad Oblast—by 21.07%. Unidirectional optimization is achieved, at which one component of living standards (unemployment) improves and another (level of income) aggravates—which shows inexpedience of practical implementation of this scenario.

Table 20.5 shows that within the first scenario in all multicultural regions the annual growth rate of real accrued wages of organizations' employees grows to the maximum level (115%). However, unemployment grows in Leningrad Oblast by 9.79%, Moscow Oblast by 3.45%, and Kaliningrad Oblast by 15.95%. Unidirectional optimization is achieved, at which one component of living standards (level of income) improves, and another (unemployment) aggravates, which shows inexpedience of practical implementation of this scenario.

Table 20.6 shows that within the first scenario, the balance of growth of employment and incomes are achieved in all multicultural regions. The unemployment level reduces in Leningrad Oblast by 32.58%, in Moscow Oblast—by 8.74%, and in Kaliningrad Oblast—by 22.76%. The annual growth rate of real accrued wages of organizations' employees increases in Leningrad Oblast by 4.93%, in Moscow Oblast—by 11.31%, and in Kaliningrad Oblast—by 2.91%. Systemic optimization



**Table 20.6** Scenario 3: balance of growth of employment and incomes

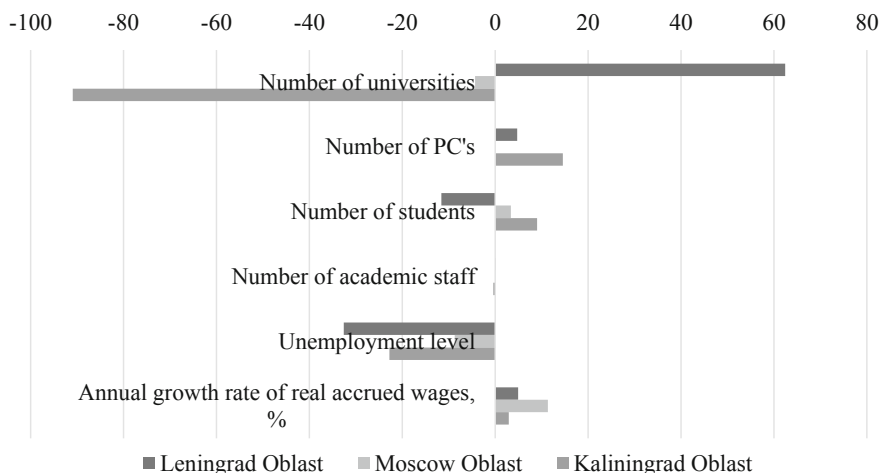
Indicators	Leningrad Oblast		Moscow Oblast		Kaliningrad Oblast	
	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %	Value according to the scenario	Growth as compared to 2018, %
Number of universities	24	62.41	4	-4.35	1	-90.91
Number of PC's, per 1000 students	242	4.72	239	0.00	242	14.58
Number of students of universities, per 10,000 people	41	-11.58	117	3.38	230	9.00
Number of academic staff universities	317	0.11	3950	-0.06	1306	-0.42
Unemployment level, %	3.2	-32.58	3,6	-8.74	4.2	-22.76
Annual growth rate of real accrued wages, %	114.7	4.93	129.1	11.31	106.8	2.91

Source: Calculated and compiled by the authors

is achieved, at which both components of living standards (unemployment and level of income) could be influenced by the level of education, which shows expedience of practical implementation of this scenario. Its “road map” is shown graphically in Fig. 20.1.

Figure 20.1 shows that implementation of the optimal scenario in Leningrad Oblast requires the increase of the number of universities by 62.41%, increase of the number of PC's by 4.72%, reduction of the number of students by 11.58%, and increase of the number of the academic staff of universities by 0.11%. Thus, it is necessary to pay attention to quality of provision of educational services with allowable reduction of the volume of their provision.

In Moscow Oblast, it is necessary to reduce the number of universities by 4.35%, to increase the number of students by 3.38%, and to reduce the number of the academic staff of universities by 0.06%. It is necessary to reduce the load onto the academic staff of universities. In Kaliningrad Oblast, it is necessary to reduce the number of universities by 90.91%, to increase the number of PC's by 14.58%, to increase the number of students by 9%, and to reduce the number of the academic staff of universities by 0.42%. There is a need for large-scale reorganization and digital modernization of the educational services market.



**Fig. 20.1** “Road map” of state management of the educational services market in top-3 multicultural regions of Russia for increasing the population’s living standards (growth of indicators, %). Source: Developed and compiled by the authors

## 4 Conclusion

Thus, the offered hypothesis was proved—it was shown that in top-3 multicultural regions of Russia various indicators of development of the educational services market have different influences on the population’s living standards. The compiled “road map” reflects the landmarks (target values of the indicators of development of the educational services market) of state management of this market for increasing the population’s living standards.

During further research, it is recommended to compile “road maps” of state management of the educational services market in other multicultural regions of Russia for increasing the population’s living standards and achievement of the synergetic effect at the level of macro-economics, connected to the growth of living standards in Russia on the whole.

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