

MSC 2020**International Scientific and Practical Conference «MAN. SOCIETY.
COMMUNICATION»****DEVELOPMENT FEATURES OF THE EDUCATIONAL
SERVICES MARKET AT THE REGIONAL LEVEL**

Alexey Dolgov (a)*, Vladislav Shchekoldin (b)

*Corresponding author

(a) Novosibirsk State Technical University, Novosibirsk, Russian Federation, Dolgov.als@yandex.ru

(b) Novosibirsk State Technical University, Novosibirsk, Russian Federation, Raix@mail.ru

Abstract

The article examines and studies the features of the educational services market in the field of higher education in socio-economic areas of training in higher educational institutions of the Novosibirsk region. The analysis of the problems of studying the market of educational services in the Russian Federation is carried out, the approaches associated with identifying the factors that determine the choice of higher educational institutions by applicants are generalized. The specificity of regional markets is noted, associated with both geographic, demographic and social factors that characterize the capabilities of applicants. The dynamics of changes in the market of educational services in the field of higher education in the Novosibirsk region was analyzed according to data for 2016-2019, the market capacity was calculated for certain areas of training ("economics", "management"), the market shares occupied by the largest higher educational institutions were determined, leaders in each of the areas of training were identified. Correlation analysis established the relationship between the number of applications submitted and the number of applicants enrolled on a paid basis. The use of linear regression analysis made it possible to evaluate the equations of the corresponding dependencies. Due to the heterogeneity of the analyzed data, it was found that it was also necessary to conduct cluster analysis, which made it possible to differentiate the resulting dependencies based on data on the results of the admission campaign in 2019.

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1. Introduction

The downward trend in the number of budget-funded places in the areas of the socio-economic profile of training in Russia is currently prevalent in the market for educational services in the field of higher education. In these conditions, the marketing strategy of a particular university acquires special significance while ensuring plans for the recruitment of students studying on a contract basis. For this reason, the study of the relationship between the marketing strategies of universities, the adjustment of these strategies under the influence of the external environment and the regulator represented by the Ministry of Science and Higher Education, as well as the assessment and change in the position of educational organizations in the educational services market of a particular region are particularly relevant.

Higher education in modern Russia is still prestigious and in demand. It helps to form the necessary competencies, broaden the horizons of the individual, and launch a career in a prestigious organization. Higher education can now be obtained in public and private universities that have state accreditation and a license to conduct educational activities in higher education programs. Educational organizations must provide both the training of highly qualified personnel to meet the needs of society as a whole, and of an individual in intellectual, cultural and moral development.

Applicants now have the opportunity to enter Russian universities for undergraduate programs in full-time, part-time and blended forms. Depending on the results of entrance examinations, the peculiarities of educational programs and the specifics of the chosen university, students can study both on a budgetary and on a contract basis, at the so-called "places with full cost recovery." An educational organization, when enrolling an applicant on a contract basis, must conclude an education agreement in accordance with the Procedure for admission to study in educational programs of higher education (2018). When choosing a full-time form of study for undergraduate programs, the clients are most often the parents of the applicant, less often potential employers, for example, state enterprises and / or private companies. Thus, upon admission of applicants to contract places, universities compete with each other both for the money of customers and for a "better" applicant who is able to master the educational programs offered by universities in full and master the required level of practical skills.

2. Problem Statement

One of the most important problems of regional universities, given a sufficiently high demand on the part of applicants for areas of the socio-economic profile of training, such as, for example, "economics" and "management", is the reduction of budget places, a tendency directly opposite to what is currently available in relation to technical specialties, where the number of budget places, on the contrary, is growing. Therefore, for universities that have appropriate educational programs, the issues of recruitment for the listed areas of training become especially urgent, and therefore, to ensure their stable development, universities are forced to concentrate not only on their direct professional (educational and scientific) activities, but also on ensuring financial stability in conditions of intense competition and changing demand for areas of training of a socio-economic nature (Dolgov & Shchekoldin, 2017).

3. Research Questions

This article is supposed to discuss a number of issues directly related to the organization and conduct of admission campaigns in higher educational institutions. These include, in particular:

3.1. Identification of factors that determine the choice by applicants of a particular university.

3.2. Establishing the influence of the number of applications submitted on the areas of training of a socio-economic nature.

3.3. Identification of homogeneous groups of areas of training, where the corresponding dependencies have a similar form.

3.4. Determination of the specifics of the admission campaigns of regional higher educational institutions.

4. Purpose of the Study

The purpose of this article is to determine the market share of educational organizations in the Novosibirsk region in socio-economic areas of training based on the analysis of data posted in the public domain on the online resources of these organizations; to assess the ratio of the number of applicants and applicants in the period under review based on the correlation-regression analysis of the data of admissions offices.

5. Research Methods

A lot of scientific research is devoted to the analysis of the problems of the educational services market in modern Russia. The importance of recruiting applicants for undergraduate programs makes universities a kind of "corporation" competing for their customers. The state is assigned the role of a regulator, which sets both the enrollment targets (the enrollment plan for the budget form) and determines the cost of education, the minimum USE scores for admission, introduces a number of subjects of the profile level for admission to a university. In these conditions, universities are faced with the task of implementing the recruitment plan on the one hand, and fulfilling the regulator's restrictions on the other.

To solve the above issues, the authors use a variety of methods for processing and analyzing statistical information, ranging from collecting secondary information to correlation-regression and cluster analysis. As a base for the study, we used data from open Internet sources on the results of admission campaigns by universities in the Novosibirsk region in the period 2016-2019. (data on the number of applicants' applications, on the number of those enrolled in budget and contract forms of education, on the cost of education were obtained from the official websites of universities in the Novosibirsk region: www.nsu.ru, www.nstu.ru, www.nsuem.ru, www.stu.ru).

It should be noted that the statistical correctness of the results obtained in the work is ensured, on the one hand, by the validity of the data being processed, and, on the other hand, by checking the significance of the obtained regression models based on known statistical criteria. In addition, the analysis of data in dynamics makes it possible to draw conclusions about the presence of changes in the structure of the educational services market in the Novosibirsk region, which is confirmed by both the primary statistical

analysis, changes in the market shares of the analyzed educational institutions, and significant changes in the parameters of the estimated regression models.

6. Findings

At the theoretical level, the features of the educational services market have been repeatedly discussed in the works of Zvereva and Zhdankin (2016), Demtsura et al. (2017), Tsoi and Shchekoldin (2010), etc. In particular, they note that the decisive importance for market of educational services is played by the presence of mechanisms of its state regulation. Modern research in this area is devoted to innovative methods of attracting applicants (Maslevich et al., 2018), the Internet (or online) ways of attracting applicants (Novokreshchenov & Shadrin, 2013), analysis of methods of promoting educational services (Vetrova et al., 2019), in a broad sense, the problems of attracting applicants (Abramov et al., 2016), trends in the development of the educational services market (Demtsura et al., 2017), analysis of changes in the average USE scores of applicants and the degree of their preparedness for further education at the university (Nurieva & Kiselev, 2017), etc. Such a wide interest of domestic scientists and practitioners emphasizes the relevance of this topic both in the theoretical and in the practical plane of research on the educational services market.

In the work of Maslevich et al. (2018), it is noted that at present, there is a poor awareness of schoolchildren about their future profession, admission to a university is carried out mainly by a set of examinations for the Unified State Examination and on the advice of parents. The solution to the problem, according to the authors, can be a career guidance center at the university, which operates on a permanent basis, which would allow applicants to take the choice of a future profession more seriously, to communicate with students, and assess the demand for a profession in the market.

Novokreshchenov and Shadrin (2013) point out that online tools are essential in a university's admissions campaign. These tools, acting as an interconnected system, include websites of universities, deans, departments, social networks, targeted advertising, blog platforms, search engines. The paper indicates that currently the best ways to attract applicants are search engine optimization (SEO), contextual advertising and advertising in social networks. The authors reveal the advantages of such methods of attracting applicants: low cost of attracting visitors, reaching not only the target, but also a wider audience of users.

Vetrova et al. (2019) consider the university website as a tool for attracting applicants, noting that when visiting the site for the first time, it is important that the necessary information, interesting to applicants and their parents, immediately catches the eye, is bright and easily perceived. In addition, the authors extensively research the application of other methods of promoting educational services, such as advertising in the media, outdoor advertising, exhibitions and fairs, open days, master classes, round tables, conferences and seminars, online advertising, etc.

A significant inconsistency in the development trends of the educational services market is noted in the work of Demtsura et al. (2017), it is indicated that the market for educational services is expanding, there is high competition among leading universities. According to the authors, the leaders are those educational institutions that were able to provide the educational services that are in demand, supported by qualified personnel and a reasonable pricing policy.

Nurieva and Kiselev (2017) investigates the question of how the average USE score of university entrants in a certain territory is determined, taking into account different characteristics - the number of potential applicants, the remoteness of the university, the population's income (based on the average monthly salary), the frequency of admission applicants living in a certain territory. The correct application of such a tool as the average USE score allows one to draw qualitative conclusions about which applicants will be in higher educational institutions, as well as to assess the dynamics of changes in their degree of preparedness. It is also of some interest to solve the problems of assessing the value of the average USE score, which allows universities to timely adjust their marketing policy in order to most effectively interact with applicants and their parents, as well as ensure the successful mastering of educational programs by students. Among the works devoted to this topic, in addition to Nurieva and Kiselev (2017), Poldin (2011), Dolgov and Shchekoldin (2017), etc. should be noted.

The article by Abramov et al. (2016) discusses the issue of the demand for university graduates in the labor market and the identification of factors that influence this. The authors note that in a favorable situation on the educational services market there are universities that improve the quality of educational activities, increase the competitiveness of their graduates in the labor market, work on branding and gain a "good" reputation.

In the work of Tyurikov et al. (2019), the question of the demand for educational services is considered from the point of view of their direct consumers - university entrants and students. It is noted that in addition to objective characteristics such as the professional status of a future graduate or the demand for employment, subjective indicators characterizing the personal needs of graduates have a significant impact on the choice of a place of study.

It is also important to analyze the impact on the opinion of applicants of their close relatives, friends, acquaintances, mass media, etc. Shushara et al. (2019) directly indicate that it is the opinion of parents about certain universities that often determines the choice by school graduates of the place of their future study. At the same time, the authors note that the educational services market is sensitive to the complex nature of values determined by the triple nature of modern society, which combines traditional values, modernism and postmodernism.

Thus, the methods of attracting applicants and the factors that have a decisive influence on the choice of a particular institution of higher education are of particular importance in the face of fierce competition in the educational services market. An example of the analysis of these problems is the work of Tsoi and Shchekoldin (2010), which considers explicit (direct) and latent (hidden) factors that influence an applicant's choice. On the basis of factor analysis and a detailed study of its results, the authors revealed the true motives in the behavior of applicants, determined by the identified latent factors.

The authors of this article, studying the experience of admissions campaigns in 2010-2017 in Novosibirsk (Dolgov & Shchekoldin, 2017), attributed the following to the factors determining the choice of applicants: the minimum USE score for admission, set by the university; the presence in the university, along with contract places, of budgetary places in the area of training for which recruitment is being conducted; cost of education; the presence of a hostel for nonresident students and a developed university infrastructure; university marketing strategy; the image of the university. Note that it is these indicators that

have a significant impact on the enrollment numbers, and, accordingly, on the organization's position in the educational services market.

Today, the leading universities of the Novosibirsk region (NSO), providing training in socio-economic areas of training, are: Novosibirsk State University (hereinafter - NSU), Novosibirsk State Technical University (NSTU), Novosibirsk State University of Economics and Management (NSUEM) and Siberian Transport University (STU).

Let us analyze the results of admission campaigns 2016-19 to identify the dynamics of changes in the shares of universities in the market of educational services in full-time education in socio-economic areas of training in the framework of bachelor's programs (Quality of admission by enlarged groups of directions, Economics, 2019; Quality of admission by enlarged groups of directions, Management, 2019). The most important indicators that determine the position of an organization in the educational services market are the number of applicants admitted to the contract form, the cost of training, and the total revenue (Table 01).

Table 1. The capacity of the educational services market of the NSO in the field of higher education in the area "economics" (full-time education, in 2016-2019)

№	Name of the higher educational institution	Number of signed contracts	Tuition fees per year	Revenue (thousand rubles)	Market share (%)
2016					
1	NSUEM	238	92 000	21 896 000	29%
2	STU	299	103 600	30 976 400	41%
3	NSU	57	130 000	7 410 000	10%
4	NSTU	175	90 200	15 785 000	21%
2017					
1	NSUEM	289	97 500	28 177 500	32%
2	STU	274	105 400	28 879 600	33%
3	NSU	76	135 000	10 260 000	12%
4	NSTU	215	92 300	19 844 500	23%
2018					
1	NSUEM	332	116 000	38 512 000	39%
2	STU	275	115 300	31 707 500	33%
3	NSU	70	150 000	10 500 000	11%
4	NSTU	154	110 750	17 055 200	18%
2019					
1	NSUEM	83	124 000	10 292 000	13%
2	STU	324	122 500	39 690 000	51%
3	NSU	64	170 000	10 880 000	14%
4	NSTU	142	119 000	16 898 000	22%

From Table 01, we can conclude that one of the trends in the educational services market of the NSO when recruiting in the area of "economics" is an increase in the cost of training for 2016-2019 by an average of 30% and, in connection with this, an increase in the revenue of NSO universities.

Table 2. Average USE scores in the area of “economics” in the NSO

№	Name of the higher educational institution	2016	2017	2018	2019
Contract					
1	NSU	73.6	73.3	74.7	75.4
2	NSUEM	65.1	61.9	61.5	60.8
3	NSTU	63.2	61.6	62.9	62.8
4	STU	60.6	58.3	58.9	58.4
Budget					
1	NSU	87.4	85.3	85.9	88.0
2	NSUEM	84.0	83.2	81.9	82.2
3	NSTU	-	-	86.8	83.1
4	STU	-	-	-	-

From Tables 01 and 02 it is possible to draw a conclusion about the strategies of universities in the market of educational services of the NSO. So, NSU, occupying a leading position in the average USE score for the period from 2016 to 2019, had the highest tuition fees compared to other universities and occupied from 10% to 14% on the market. The STU adheres to the opposite strategy - taking the last place in terms of the average USE score, the university holds the leading place in terms of the number of people accepted for a contract and in terms of market share from 41% in 2016 to 51% in 2019 (Table 03).

Table 3. The capacity of the educational services market of the NSO in the field of higher education in the area "management"

№	Name of the higher educational institution	Number of signed contracts	Tuition fees per year	Revenue (thousand rubles)	Market share (%)
2016					
1	NSUEM	76	90 300	6 862 800	15%
2	STU	203	100 000	20 300 000	44%
3	NSU	40	150 000	6 000 000	13%
4	NSTU	139	90 200	12 537 800	27%
2017					
1	NSUEM	90	96 000	8 640 000	17%
2	STU	212	100 500	21 306 000	43%
3	NSU	55	156 000	8 580 000	17%
4	NSTU	125	92 300	11 537 500	23%
2018					
1	NSUEM	137	123 000	16 851 000	26%
2	STU	167	115 300	19 255 100	30%
3	NSU	64	168 000	10 752 000	17%
4	NSTU	153	110 750	16 944 750	27%
2019					
1	NSUEM	102	128 200	13 076 400	22%
2	STU	121	122 500	14 822 500	23%
3	NSU	70	180 000	12 600 000	19%
4	NSTU	192	119 000	22 848 000	36%

The tendency to increase the cost of education in the educational services market by 30% is also typical for the area of "management". It is worth paying attention to the strategy of NSTU, which in 2016-

2019 increased its market share from 27 to 43%, while remaining the second university in terms of the average USE score (Table 04).

Table 4. Average USE scores in the area “management” in the Novosibirsk region

№	Name of the higher educational institution	2016	2017	2018	2019
Contract					
1	NSU	69.7	68.8	70.5	73.5
2	NSUEM	63.6	60.6	63.0	56.2
3	NSTU	61.3	60.8	61.5	59.8
4	STU	55.2	55.4	56.3	54.4
Budget					
1	NSU	84.1	81.8	84.7	87.8
2	NSUEM	78.0	76.0	73.8	72.1
3	NSTU	-	-	79.1	84.9
4	STU	-	-	-	-

As a result of the work performed the collected data on the number of applications submitted (variable x) and the number of applicants enrolled in the first year in areas of training of a socio-economic nature (variable y) were subjected to a comprehensive statistical analysis to identify patterns and relationships in the process of formation and development of the educational services market of the NSO.

In the previous work of the authors Dolgov and Shchekoldin (2017), the presence of a statistical relationship between these indicators was established and linear pairwise regression models were built, which showed a high forecasting quality. However, it was noted (Lyssenko & Shchekoldin, 2018) that the total set of analyzed data may turn out to be heterogeneous in composition, and, therefore, require the construction of a more accurate model that takes into account such heterogeneity. The results of the 2019 admissions campaign were used to confirm this assumption. For this, a cluster analysis of the obtained data was carried out, which revealed the presence of three groups of areas of training, the values of the corresponding indicators for which turned out to be significantly different. Figure 1 shows a graphical display of the results of cluster analysis, the highlighted areas of the coordinate plane characterize the presence of homogeneous groups of areas of training, and the sizes of the circles corresponding to these areas characterize the measure of proximity (silhouette coefficient, see, for example, Rousseeuw, 1987) of this area to elements of the class in which it entered (the closer, the larger the corresponding circle). It can be noted that the absolute majority of the data (with the only exception - the area "management" in the SIM, a small dot under the solid line corresponding to $y^{(1)}$) is in good agreement with the obtained optimal partition.

Let us characterize the resulting groups of areas of training (we list the most characteristic areas from those that fell into the identified clusters).

As the initial data, the official data on the number of applications submitted to universities in Novosibirsk in economic, management and humanitarian areas were taken. In addition to NSU and NSTU, the sample included SIM (a branch of the RANEPa).

Group 1: economics (NSU and SIM), public administration (SIM), business informatics (NSU), management (SIM).

Group 2: management (NSU and NSTU), economics (NSTU), business informatics (NSTU)

Group 3: management in tourism (NSTU), management in the food industry (NSTU), economic security (NSTU and SIM), national security (SIM), international relations (SIM).

Further, for each group of areas, a linear regression analysis was carried out (Rousseuw, 1991), which made it possible to obtain straight lines describing the relationship between the number of applications submitted and the number of enrolled applicants. It is clearly seen (Figure 01) that these straight lines correctly approximate the sought dependencies, especially since the value of the determination coefficients of the constructed models turns out to be close to one, which indicates the high quality of these models.

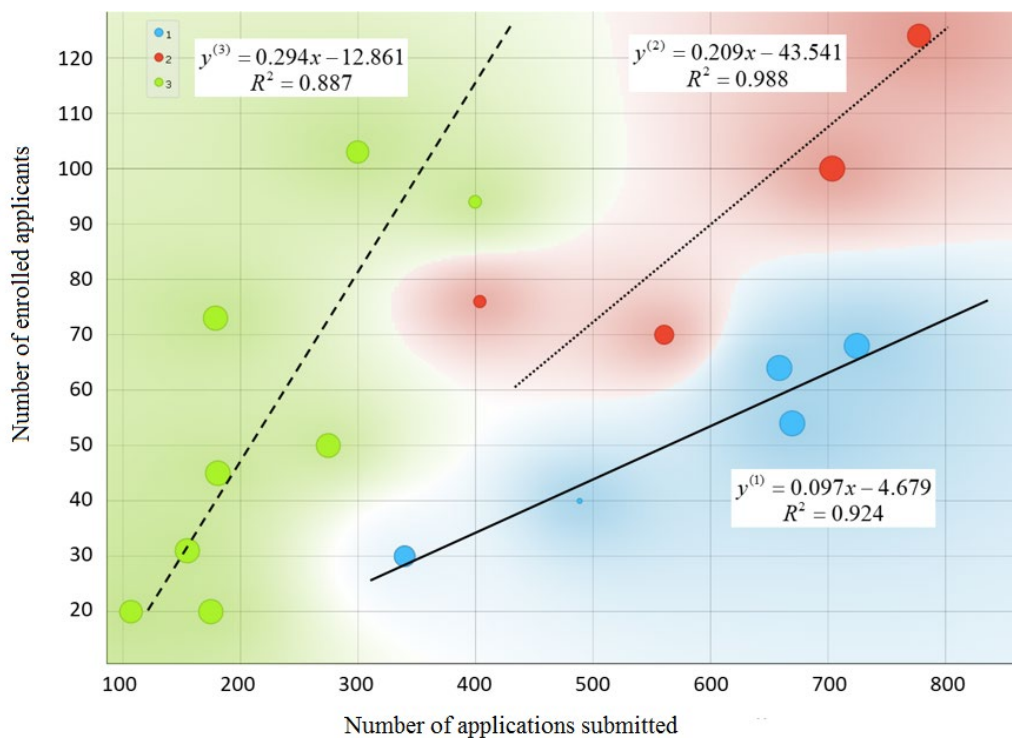


Figure 1. Visualization of the results of cluster and regression analysis of data on the admission campaign in the areas of training of a socio-economic nature in NSO universities, 2019

The constructed regression models allow us to draw an important conclusion - the areas of training differ not only in groups (classes) of homogeneity, but also in the characteristics of the process of conducting an admission campaign. In particular, it can be noted that for the areas of training included in group 1 (solid line, function $y^{(1)}$), the ratio between the number of enrolled applicants and the number of applications submitted is approximately 10:1, for group 2 (the line shown by dots, function $y^{(2)}$) it is approximately 5:1, and for group 3 (dashed line, function $y^{(3)}$) - 3.5:1.

The above ratios are important guidelines in the work of the admissions committee. A larger ratio shows that in order to enroll in these areas, it is necessary to attract a larger number of applicants' applications, which indicates high competition in the educational services market in these areas. The marketing strategy must be structured accordingly. We also note that similar studies previously conducted by the authors for data for 2016-2017. (Dolgov & Shchekoldin, 2017), showed a general (not divided by

homogeneity groups) downward trend in the value of the studied ratio - from about 8:1 in 2016 to 6:1 in 2017.

7. Conclusion

Attracting students studying on a paid basis has become one of the primary tasks at the present stage. In order to remain competitive, an educational organization must correctly determine: the marketing strategy, the cost of training, the minimum USE score for admission, create and maintain an image and public opinion, develop information support, control the quality of educational services and the qualifications of the teaching staff.

There is intense competition among the leading universities in the Novosibirsk region on the educational services market. Studies of the educational services market in the Novosibirsk region for 2016-2019 in socio-economic areas of training showed how marketing strategy affects the change in revenue, market share and the flow of applicants, made it possible to determine the marketing strategies of universities when recruiting for contract places. The main trends in the market of educational services in the Novosibirsk region are the increase in the cost of training in socio - economic areas of training by 30%, a significant predominance of the number of contract places over budget.

The correlation-regression and cluster analysis of data on the results of the admissions campaign in 2019 made it possible to single out three groups of homogeneity of areas of training of a socio-economic nature, evaluate the relationship equations for each of these groups, and build a qualitative interpretation of the results. This, in turn, made it possible to develop recommendations for improving the conduct of recruitment campaigns in various areas of training to ensure the implementation of recruitment plans for commercial places. Obviously, such studies must be carried out regularly in order to assess not only the current situation in the educational services market, but also to determine its dynamics. Thus, a correctly selected and properly adjusted marketing strategy of the university will increase its competitiveness in the educational services market.

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