

Higher Education Market Segmentation

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Abstract—The relevance of this study is to analyse the higher education market segmentation of the northwestern federal district of Russia by conducting a survey among high school students, building a cluster analysis or segments based on the results, analysing the market of educational services. The purpose of the study is to advise higher education institutions on how to increase the number and quality of applicants. The research questions are as follows:

- what segments of the higher educational services market exist and what is their nature?
- what background characteristics describe each segment?
- from what sources do modern applicants find out the greatest amount of information about a higher education institution?
- to what should university pay attention to increase the number and quality of applicants?

Keywords—higher education market segmentation; cluster analysis; questioning; applicant

I. INTRODUCTION

Today in the modern world it is very fashionable to talk about the new economy, which is developing with super-speed. The modern world is characterized by the increasing role of information, and communication technologies since they have a strong impact on other top technologies (nanotechnology, biotechnology, cognitive technologies), thereby strengthening the process of globalization, permeating the economy, politics and culture [8]. The systems of education throughout the world are undergoing reforming due to global changes in society, transformation of political systems and other socio-economic factors [11].

A market economy develops, which expands the possibilities of foreign economic activity, and interest in marketing as a method of market management increases. Often, marketing implies the philosophy of management, management in market conditions, proclaiming the orientation of production to meet the needs of specific consumers. Marketing is used not only by manufacturing enterprises, but also by trade organizations, organizations of the service sector, individuals. Therefore, marketing is not some kind of a universal, unified concept; directions and methods of its implementation require adaptation to the type of organization, conditions and possibilities of its application. The information age is flourishing, giving new opportunities and new forms of marketing, which are used primarily to recognize and satisfy human and social needs [5, 10].

Work in any market is work not only and not so much with the goods, it is, first, work with the consumer. Work with the consumer today is conducted in the conditions of the revolutionary development of information technologies, constantly increasing global competition, growing demand fragmentation and supply differentiation [1]. This means that the consumer is becoming more and more demanding, and working with him is becoming more and more complex, interesting and professional.

The educational program is the product with which the university enters the market, more precisely, the markets. Thus, on the one hand, students, and on the other - companies and organizations can be attributed to consumers of educational services of the university.

In addition, universities try to satisfy public needs, the needs of companies and organizations. In addition, another important consumer of educational programs is a society,

often provided by the state itself, which establishes its own requirements and standards, focused both on preparing the professional workforce of the necessary qualifications and on meeting the individual's need for intellectual, cultural and moral development [9].

The strategy of marketing activities of the university, like any other, includes an analysis of both strengths and weaknesses, opportunities and threats of the market, competitors, their distinctive features and based on the research done, the formulation of their own competitive advantages is made.

A marketing strategy for educational services should include clear definitions of goals and objectives, a description of its customers and target audiences, as well as the procedures and competitive advantages of the university's educational programs with which it enters the market.

Educational services are fundamentally different from service in that they have a long-term impact on consumers and society. All other services, as a rule, relate to the satisfaction of actual needs, and education has a promising significance both for the individual receiving these services and for the socio-economic development of society.

Higher education marketing has exploded in recent years, and with the growing need to use effective marketing strategies in higher education comes a seemingly endless stream of firms and agencies offering marketing services to universities and schools. Higher education marketing firms should be the ideal way to maximize the potential of your school's marketing capabilities, but with so many to choose from selecting a firm that will meet all your needs, fulfil your goals, and fit your budget can be as daunting as marketing without assistance needs [6].

II. PROBLEM STATEMENT

In the higher education sector, despite the existence of different market segments, market segmentation is not well established in the literature, although there is evidence of widespread use of market segmentation in terms of the marketing of programs by universities worldwide [7]. The relevance of this study is to analyse the higher education market segmentation of the north-western federal district of Russia by conducting a survey among high school students, building a cluster analysis or segments based on the results, analysing the market of educational services.

A. Research Questions

1. What segments of the higher educational services market exist and what is their nature?
2. What background characteristics describe each segment?
3. From what sources do modern applicants find out the greatest amount of information about a higher education institution?
4. What should university pay attention to to increase the number and quality of applicants?

B. Purpose of the Study

The purpose of the study is to advise higher education institutions on how to increase the number and quality of applicants.

III. RESEARCH METHODS

A. Theoretical and empirical methods are

To test the hypothesis of the study, a set of various methods, complementary to each other, was used:

- theoretical: analysis of the works of teachers and psychologists on the problem of research; analysis of methodological and educational literature;
- empirical: observation, ascertaining, questioning, testing, cluster analysis of the results of experimental work [2, 3].

B. Base of research

The study was conducted based on Saint-Petersburg Cervantes Gymnasium №148 (Saint-Petersburg, Russia).

C. Stages of research

The study was conducted in three stages:

- at the first stage, a theoretical analysis of existing methodological approaches in the scientific literature, dissertational works on problems, as well as theory and methodology of pedagogical research, was carried out. The purpose, the methods of the research were singled out and a plan for experimental research was drawn up;
- at the second stage, experimental work was carried out: questioning, testing, cluster analysis of the results of experimental work; the conclusions of the experimental work were analysed, tested and clarified;
- at the third stage, the experimental work was completed, theoretical and practical conclusions were refined, the results obtained were summarized and systematized.

D. Processing questionnaires using mathematical statistics

In this research work, a questionnaire was used (Fig. 1), in which there were 10 questions. The authors of the study conducted a survey of students in grades 10-11 (boys - 46% and girls - 54%) of Cervantes Gymnasium №148 (Saint-Petersburg, Russia).

The STATGRAPH program was used as a tool for segmentation [14]. Previously, using the program EXCEL, coefficient of variation for all issues was calculated. Then, the factors having a small coefficient of variation were removed from the research results [12, 15].

E. Identification of the main segments of educational services

The final stage of the construction of segmental groups is the "criterial assessment" [4]. It allows us to identify segments in which they are considered according to a few marketing criteria for the success of positioning products or services on them.

In our case, we selected those questions whose coefficient of variation exceeded 60%. The following parameters were used for segmentation as an example:

- prestige of the university;
- low cost of education;
- not a big level of difficulty in learning;
- the possibility of working abroad.

Further, the segmentation of consumers was made directly into three clusters (Fig. 2).

Please answer the following questions. The questionnaire is anonymous - the surname is not necessary. The results will be used in a generalized form. Thank you for participating in the survey!

1. Gender (___)
1 - M, 2 - Ж

2. Do parents have higher education? (___)
1 - no, 2 - one of the parents has, 3 - both parents have

3. How did you hear about the university you are going to enroll in? (___)
1 - from school teachers
2 - from university staff
3 - from parents, relatives, friends
4 - from students and university graduates
5 - university site
6 - site abiturient.by
7 - social networks
8 - television
9 - newspapers
10 - posters in the city
11 - other, write _____

4. You are going to apply for (___)
Budget 1 2 3 4 5 commercial form of study

5. What did you do when choosing a school?
- level of competition 1 2 3 4 5 (___)
- tuition fee 1 2 3 4 5 (___)
- quality of teaching 1 2 3 4 5 (___)
- university prestige 1 2 3 4 5 (___)
- modern educational and technical base of the university 1 2 3 4 5 (___)
- other, write _____

6. What attracted you to a higher degree to this particular university?
- advice from parents, relatives, acquaintances 1 2 3 4 5 (___)
- convenient location of the university 1 2 3 4 5 (___)
- the opportunity to get a good job after graduation 1 2 3 4 5 (___)
- low competition 1 2 3 4 5 (___)
- shortened term of education 1 2 3 4 5 (___)
- the chosen specialty is only in this university 1 2 3 4 5 (___)
- other, write _____

7. The university's state status (___)
It does not matter 1 2 3 4 5 Great significance

8. Prestige of the university in society (___)
It does not matter 1 2 3 4 5 Great significance

9. Competitiveness of the chosen profession in the labor market (___)
1 - it does not matter, 2 - great significance

10. Low cost of education (___)
It does not matter 1 2 3 4 5 Great significance

Fig. 1. Questionnaire.

Analysis Summary				

Data variables:				
Col_1				
Col_2				
Col_3				
Col_4				
Number of complete cases: 65				
Clustering Method: Nearest Neighbor (Single Linkage)				
Distance Metric: Squared Euclidean				

Cluster	Members	Percent		

1	16	24,24		
2	48	72,73		
3	2	3,03		

Centroids				
Cluster	Col_1	Col_2	Col_3	Col_4

1	3,75	1,8125	1,5	4,625
2	2,1875	1,6875	1,82979	2,02128
3	0,5	4,5	3,5	0,0

Fig. 2. Consumer segmentation results.

Consumer segmentation into three clusters revealed the patterns.

IV. RESULTS

A. The first cluster

The first cluster is about 25%. This cluster or a segment of applicants is distinguished by the parameters of prestige and the possibility of working abroad. Such student after graduation with a high degree of probability wants to work outside of Russia.

B. The second cluster

The second segment is the most numerous and makes up about 72%. This segment is less demanding of the prestige of the university and is not motivated to work outside of Russia. The first and second segments almost do not differ in such indicators as low cost of education; not a big level of difficulty in learning.

C. The third cluster

The third segment is the smallest - 3% but is significantly different from the first two. The main thing is the low cost of training and not a large level of difficulty in learning. If this segment is focused on higher education, then in the simplest and most accessible form. That, in our opinion, testifies to the reluctance to continue studying in higher educational institutions and gain enough knowledge for professional activities.

Based on the data obtained, conclusions can be drawn, and several hypotheses are proposed on the development of marketing in the field of education. This event will help to promote the education market to a new level and create competition between institutions of higher education. The

greater the competition, the more people are interested in the university (the demand is higher). For the applicant this is a great opportunity to try oneself in this service sector.

There is an empirical fact according to which the domestic philosophers and sociologists have been lagging in their attempts to comprehend and investigate the rapidly improving and rapidly upgrading information, and communication technologies, and thus there is a lot to be done in this field [13]. Education in modern times is the most important factor for life. In our country, it is customary to have at least one higher education, but there is a choice where to go. In Russia, there are hundreds of universities with their own educational programs and some advantages. If we take the North-West Federal District of Russia, then the most worthy universities, institutes, academies, etc. are in St. Petersburg. There are 71 higher education institutions. Every university wants to get as many prospective students as possible. It is meaningful enough to be admitted to a higher educational institution. After all, this is a unique opportunity to further get a prestigious and highly paid job and feel like a full-fledged person with a bright future and good prospects. In addition, higher education is highly valued in other countries, so why not represent the state and parents in the future already at the international level.

After conducting a study of the segmentation of the educational services market, it is possible to single out some segments that characterize a higher educational institution. From the questionnaire, we select a larger coefficient of variation (the ratio of the standard deviation to the arithmetic mean, expressed as a percentage or on scales), and it is necessary to give recommendations to the university on how to attract applicants.

The authors of the study conducted a survey among students of grades 10-11 (46% - boys and 54% - girls) of Saint-Petersburg Cervantes gymnasium № 148 (Saint-Petersburg, Russia); the following results were obtained (Table I).

TABLE I. RESEARCH RESULTS

No.	Parameter	Evaluation by a teenager					Share	Score (out of 5)
1.	university information from teachers	5	5	1	1	2	0,76905	1,89044
2.	university information from university	1	1	1	4	1	0,716119	1,859335
3.	university information from parents, friends	5	3	1	5	5	0,435645	3,606702
4.	university information from students / graduates	1	3	5	3	4	0,578459	2,66028
5.	university information from the university website	1	4	1	4	4	0,492791	3,3408
6.	university information from the website abiturient.by	1	2	1	1	1	0,919203	1,583372
7.	university information from social networks	1	1	1	3	5	0,674331	2,410374

No.	Parameter	Evaluation by a teenager					Share	Score (out of 5)
8.	university information from television	1	1	1	1	2	0,805036	1,254622
9.	university information from newspapers	1	1	1	1	1	0,524132	0,932184
10.	university information from posters in the city	1	1	1	1	1	0,754425	1,132643
11.	budget receipt	1	2	5	4	3	0,571546	2,781387
12.	admission to commercial training	1	1	1	0	5	0,935552	1,620236
13.	orientation to the level of competition	3	1	2	2	2	0,638999	2,236955
14.	cost orientation	1	3	2	2	2	0,644026	2,494606
15.	focus on teaching quality	4	5	5	5	5	0,34456	3,884008
16.	focus on the prestige of the university	5	4	5	5	5	0,3776	3,551176
17.	orientation on the modern image-tech base	4	3	5	3	3	0,481581	3,113357
18.	attracted the advice of parents, friends	3	3	0	1	1	0,550374	2,750763
19.	attracted convenient university location	2	1	0	1	1	0,585235	2,766443
20.	attracted the opportunity to get a good job after graduation	5	4	0	3	3	0,479519	3,386053
21.	attracted a low competition	1	1	0	1	1	0,777273	1,814807
22.	state status	3	3	5	0	3	0,407255	3,406265
23.	prestige in society	5	4	5	0	3	0,735579	2,450539
24.	competitiveness of the profession in the labour market	1	1	1	1	1	0,976885	0,515264
25.	low cost of education	1	3	1	5	5	0,884974	1,79823
26.	advice of close people	5	4	1	2	2	0,50111	2,807709
27.	desire of parents / relatives	4	3	1	2	2	0,442745	2,733981
28.	the influence of family traditions	3	3	1	2	2	0,499398	2,219688
29.	low level of learning complexity	3	2	1	3	3	0,624495	1,751886
30.	organization of extracurricular process	2	3	1	2	2	0,589027	2,039228
31.	plan to change the profession, if it is difficult \ not interesting	2	2	1	4	4	1,028385	1,712551
32.	providing a future profession an acceptable standard of living	5	3	1	4	4	0,375628	3,566297
33.	assessment of work opportunities abroad	4	5	5	5	5	0,822415	2,512461

A. *The first segment*

Based on the data obtained, it can be concluded that applicants learnt the greatest amount of information about a higher education institution from parents, friends and from the university website. Approximately 3.3-3.6 points are on the 5th scale. This means that the main guides in the life of a child are his parents. Hence, you first need to base on their opinions.

To inform parents about a university qualitatively and as much as possible, it is necessary to organize enough open days at educational institution and in individual departments of the university for parents and applicants so that they become better acquainted with the educational institution. These are events where parents and applicants can personally visit the institution itself and get acquainted with its curriculum and students who study there. That is why every university should have booklets at the open days, which summarize the concept of the university, the prevailing specialties, exams and documents required for admission, as well as the nuances of the learning process and a preliminary date for the entrance exams. This event will help parents and children to be confident in the future student's quality education.

There are those applicants and their parents who live very far from the university. In this case, it is worth developing and maintaining the university site so that people can get acquainted with the school at a distance and be aware of all the events and changes. In addition, the site can hold online conferences from the day of open doors or lectures. It is quite important to develop social networks, for example, V Kontakte, Instagram, Facebook, etc., because most young people learn information from online sources. This will show the university as a modern and developing body in education. There is another way to maximize the attention to institution of higher education. The administration of the university should organize an original and memorable advertisement. It can be anything starting from the signs on the bulletin boards and ending with commercials on TV. It is desirable to carry out such an advertising campaign from the beginning of spring to attract as many applicants as possible. More beautiful and inspiring slogans, and future students will be storming to take this or that institution of higher education.

B. *The second segment*

The analysis showed that the first cluster of high school students is guided by the prestige of a higher educational institution and the opportunity to work abroad. Prestige is 3.75 points on the 5th scale, and the turn is 4.6 points on the 5th scale. This means that 25% want to study at the most prestigious university and possibly move from the country. For this, the university will need to have and guarantee strong international contacts that are not so easy to maintain. This option will perfectly help the student to get acquainted with another country. In addition, to be able to provide language training related to the specialty means to teach a student in a professional language. This will help not to fall into the language "pits" and be a qualified specialist.

C. *The third segment*

This segment is based on the data in Table 3, which demonstrates the following factors: low cost of education (~ 2.5 points on the 5th scale). About 64% of all respondents are guided by the low price of education because there is a chance not to enter the budget. Today, not every entrant is able to enter the budget, and the competition for a place is rapidly growing from year to year. Much in the applicant's desire depends on the tuition fee, therefore the universities introduce preferential conditions for admission. To determine the cost of education, the university must give internal examinations or tests to determine the level of training of the applicant. If he shows a high score in credits, then he is given a discount on tuition. Also, the applicant may have a decent portfolio, which also provides a small discount. This is a great opportunity for those people who win in sports, win prizes in various competitions or are engaged in creativity. This is already considered as the "last car", in which there is an opportunity to jump.

Thus, using statistics, you can identify many other segments that are based on a survey or questionnaire. Some segments will be the same or different in many ways. Each person in the questionnaire answers in his own way and has his own opinion, which is added to the opinion of other respondents. Hundreds of such segments can be identified from this work, but the most important groups of people who are the main part of applicants were considered.

V. CONCLUSION

In Saint-Petersburg, Russia, there are many universities that promote their marketing strategy. Prominent representatives of such strategies are:

1. Saint-Petersburg Mining university, which invites parents and children to visit the University. At each open day, all questions of interest are examined in detail, for example, the necessary items for exams, the number of points on admission, the presence of dormitories and military chairs, and more. For non-resident educational institution supports and develops social networks and the university site, which also describes all the criteria for admission and it is quite important to conduct webinars or online broadcasting from open doors, where you can also ask questions and get answers to them. The university also provides preparatory courses for passing the exam - this is very useful for those who do not have time to learn the entire educational program at school and need help. The university also organizes excursions for all schools from grades 9-11 so that they can compare or look at a specialty and decide on the choice of their future profession.

2. Herzen university provides an opportunity to visit the open days of various faculties and get acquainted with the chosen specialty. Each open day is assigned to a department so that there are no crowds. The university interacts with schools, conducting various Olympiads and contests, which give a few points when entering this institution. The university also conducts preparatory courses for admission and for the Olympiads that it conducts. All the necessary information is on the website of the university and in social networks.

3. Saint-Petersburg State University of Economics is one of the leading economic universities in the North-West. A great example of a modern school that monitors its own site, constantly posting the latest news, conducts master classes and online broadcasts, holds, like other universities, open days, the program of which includes: meetings with the selection committee and representatives of faculties. Also, this institution provides an opportunity to participate in competitions and passes pre-university training.

The universities are an excellent example of how universities are not standing still but are developing in the modern times. These universities have international contacts, thus providing the opportunity for a double degree, which is an excellent opportunity to gain additional experience.

Based on this study, higher education institutions can pay attention to the results obtained by the questionnaire and statistics and take some measures to increase the number of applicants. To set the task of promoting the university as a large marketing company, while providing high-quality and affordable education services that will be necessary for further life is important.

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