

# The Demand for Massive Open Online Courses (MOOC): Evidence from Russian Education

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**Abstract.** The paper examines the popularity of massive open online courses (MOOCs) in Russian universities, moti-

vation to learn in such courses, and the attitudes of students and faculty towards the possible substitution of MOOCs for traditional courses. Results of a survey carried out within the framework of the Monitoring of Education Markets and Organizations Project are used to identify the factors of demand for MOOCs among students and faculty of Russian universities. Findings show that the likelihood of learning in MOOCs or planning to do so is higher among active and high-performing students and faculty involved in research activities and upgrading their skills in summer schools. Studying in a top university has a strong positive impact on the probability of student participation in MOOCs. However, the same effect for university faculty is ambiguous.

**Keywords:** MOOC, distance learning, e-learning, online education, massive open online courses, demand for education.

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Massive open online courses, or MOOCs, are a type of free online course. They came into wide use in 2008, when the term as such was coined [Bugaychuk 2013]. The two key characteristics of MOOCs are openness and massiveness, the latter implying unlimited participation [Li, Powell 2013]. MOOCs provide for interactive communication between learners and teachers as well as online testing opportunities. After signing up for a course, learners get access to educational materials, interactive communication with the teacher, and tests. Course

participants are supposed to watch video lectures, read online materials, and complete tasks and tests on every topic by a fixed date. Test results are assessed in credit points, and learners who earn a specified number of credit points obtain a certificate of successful course completion.

MOOCs are integrated into existing platforms that provide technical support and free access to educational materials, enable teacher-student communication, student performance evaluation, etc. According to the latest data, the proportion of online learning in the global education market hovers around 3 percent, which is \$165 bln [Netology Group 2017<sup>1</sup>]. The most popular platforms include Coursera, edX, and Udacity. Coursera, 2017's market leader, was founded in spring 2012. By the fall of 2017, it reported having 27 mln learners, 150 university partners, over 2,000 courses in hundreds of specializations, four types of certificate, and four Master's degree programs<sup>2</sup>. In 2016, the company's revenue was estimated at \$50–80 mln [Ibid.]. The first Russian universities to cooperate with Coursera in 2013 were the Moscow Institute of Physics and Technology (MIPT), the National Research University Higher School of Economics (HSE), and Saint Petersburg State University.

The Russian market of online learning burgeoned in 2013. As early as 2014, according to J'son & Partners Consulting, it had a few million learners and over 50 course providers<sup>3</sup>. The size of the market was estimated to be 20.7 mln rubles at the end of 2016, accounting for 1.1 percent of all educational services; the market of all distance learning programs in higher education was estimated at 6.8 mln rubles, the proportion of online courses being 1.8 percent [Ibid.].

The arrival of MOOCs is changing the situation in modern education dramatically, increasing accessibility of education [Li, Powell 2013], upgrading the structure of universities, and shaping positive externalities for them [Bugaychuk 2013]. At the same time, some authors wonder if MOOCs could present a potential threat to present-day universities [Foerster 2017]. Given the situation, it is crucial to understand how demand for MOOCs is created in Russia, primarily among university students and faculty. Research has been conducted to examine sociodemographic characteristics of MOOC learners and factors of successful course completion. However, only few studies analyze the component of demand for MOOCs, while the Russian research database features no such studies at all. This article investigates the factors of demand for MOOCs among university students

<sup>1</sup> <http://edumarket.digital>

<sup>2</sup> <https://ru.coursera.org/>

<sup>3</sup> [http://json.tv/ict\\_telecom\\_analytics\\_view/rynok-onlayn-obrazovaniya-v-rossii-i-mire-segment-massovyh-onlayn-kursov-20141209065340](http://json.tv/ict_telecom_analytics_view/rynok-onlayn-obrazovaniya-v-rossii-i-mire-segment-massovyh-onlayn-kursov-20141209065340)

and faculty in Russia, focusing on differences between universities of various types.

## **1. Theoretical and Empirical Research on MOOCs**

### **1.1. MOOC Influence on Education**

A number of studies have been dedicated to what a MOOC is and how MOOCs have developed, e. g. [Bugaychuk 2013; Li, Powell 2013; Stewart 2013]. Li Yuan and Stephen Powell [Li, Powell 2013] have found that the implications of MOOCs for education in general and university development in particular may be analyzed in the context of Clayton M. Christensen's "disruptive innovations" [Christensen, Raynor 2013]. Disruptive innovations give rise to new markets by introducing a new need or demand among existing consumers or creating a product for a new audience, which is exactly what MOOCs do in education. Can such courses disrupt the conventional education system or jeopardize modern universities [Foerster 2017]? Based on what is known today, it is cooperation rather than competition that is observed between the two systems: top universities engage in delivering MOOCs, thus increasing their visibility and the accessibility of their degrees. They often treat online courses as a testing ground and integrate them into their programs, for example assigning them as homework [Li, Powell 2013]. MOOCs do not profess to replace traditional universities, as they do not offer full-fledged degree programs, issue diplomas of higher education, or award university-specific degrees. The great majority of MOOC learners do not seek to obtain a certificate; many simply watch videos or read texts, and some take tests, demonstrating how diverse educational strategies can be [Ho et al. 2014].

### **1.2. Advantages and Disadvantages as Compared to Traditional Classrooms**

MOOCs' key advantage is that they make education more accessible due to their openness, massiveness, distance learning opportunities, and possibility of choosing between courses and levels of difficulty. MOOCs designed by the world's best universities offer high quality content, flexible class schedules, and groundbreaking teaching methods [Krukier, Muratova, Saltykova 2014]. MOOCs let universities experiment with online courses and teaching practices, adopt new educational technologies, as well as attract broad public attention to their degrees and promote their brands. Businesses are interested in entering the education market, too [Li, Powell 2013]. Finally, politicians may see in MOOCs opportunities for enhancing access to education and bringing down the education costs for students and governments.

However, MOOCs also have a number of limitations and weak points. For example, many universities still do not award credits for MOOCs; besides, the positive role of MOOCs in the development of new teaching methods is not evident to all researchers [Ibid.]. There are no formal guarantees, so the quality of learning becomes heavily dependent on learners' self-regulation. In addition, learners often receive their certificates from the platform, not from the university that

designed the course [Bugaychuk 2013], although this limitation has been addressed recently, and universities are now taking the responsibility for certifying the competencies achieved on national open education platforms.

Assessment can also be a challenge: MOOCs use tests extensively, which allow for evaluating a number of students but cannot be applied to any course. Where essay-type assessment methods are used, the massive learning model makes it impossible for an instructor to evaluate everyone, so peer assessment is used. MOOC assessments have to deal with limited opportunities for practical work, difficulties of assessing competencies in humanities courses, irregular feedback, and test taker identification issues [Bugaychuk 2013]. A good many researchers have observed high dropout rates and low engagement of most MOOC learners [Ho et al. 2014; Krukier, Muratova, Saltykova 2014].

### 1.3. Motivation to Learn in MOOCs

The following motivations for online learning have been observed in MOOC participants: fun and enjoyment; interest in the topic; relevance of subject to academic field of study; obtaining new in-depth knowledge in subject; trying online education; curiosity, entertainment; eager to explore a new topic; personal challenge; getting a credential; career advancement, opportunity for professional growth; resume enhancement; free access; interest in the field of study; substitute for an offline course which is inaccessible; interest in how these courses are taught; extending current knowledge of the topic; professional conversion / changing a major; obtaining knowledge to improve academic performance; new acquaintances and friends [Belanger, Thornton 2013; Hew, Cheung 2014; Kizilcec, Piech, Schneider 2013; Breslow et al. 2013; Shapiro et al. 2017]. “Non-pragmatic” motives like curiosity, enjoyment from learning, etc. tend to prevail over practical ones, such as career advancement, professional conversion / changing a major, getting a credential, etc.

### 1.4. Factors of Demand for MOOCs and Learner Success

Studies of MOOC learners’ demographics conducted by University of Pennsylvania [Christensen et al. 2013], Harvard and MIT [Ho et al. 2014], and the University of London [Grainger 2013] show that the majority of MOOC learners are university-educated males, except for courses in humanities. Researchers ask themselves more and more often, why only a small fraction of learners complete courses successfully, what affects the chances of course completion, and how MOOC learners distribute their time and efforts among different components of learning [Liang et al. 2014; Alraimi, Zo, Ciganek 2015; Phan, McNeil, Robin 2016]. So far, factors of demand for MOOCs have been largely overlooked. It has been found, for instance, that the demand for online courses is extremely low among Chinese teachers [Johnston 2016]. By contrast with the OECD countries, where demand for MOOCs varies depending on the level of educational attainment, in

China it is contingent on Internet access and income level [Tong, Li 2017]. Meanwhile, university students found performance and effort expectancy to be significant factors of demand for MOOCs rather than demographic or social determinants [Deng 2017].

## **2. Research Method**

This study aims to identify the factors of demand for MOOCs among students and faculty of Russian universities. It also describes intentions of MOOC learners, their opinions about the pros and cons of such education, and their attitudes toward integrating online courses in universities. The basic hypothesis of this study is that demand for MOOCs is affected by the type of university, in particular that it will be higher in universities with better education quality.

The empirical basis of the research represents student and faculty survey data obtained as part of the Monitoring of Education Markets and Organizations (MEMO)<sup>4</sup> conducted in fall 2016. A special set of items on MOOCs was introduced in that wave of the survey. Interviews were conducted in 101 universities (including 94 public and seven private, among them two federal universities and six national research universities) from different regions of Russia, selected as a result of two-stage stratified sampling. At the first stage, universities were selected by the criterion of region and form of incorporation, and then students and faculty members from different departments were selected in every university. Supervised self-completion questionnaires were used. About 13 percent of all contact attempts resulted in refusal from participation, explained by the lack of time. Quality was controlled at both the interviewing stage and the data cleansing one. The final sample included questionnaires completed by 3,396 students and 1,559 teachers. Weighted data is used further on to ensure that the results are representative across the federal districts of Russia. Comparison with Rosstat<sup>5</sup> statistics shows that the sample is largely consistent with the demographics of university students and faculty<sup>6</sup>.

Types of university as a factor of demand for MOOCs were determined using the ranking based on HSE's Monitoring the Quality of Enrollment in Russian Universities<sup>7</sup>. To assess the quality of enrollment, the ranking uses average USE<sup>8</sup> scores of the students enrolled. Because the ranking leaves out private and liberal arts universities as well as some public ones, we also used the average admission USE scores provided by Russian Education, a national portal of Russia<sup>9</sup>. As

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<sup>4</sup> <https://memo.hse.ru/>

<sup>5</sup> Russian Federal State Statistics Service

<sup>6</sup> For more on data collection methods, see [Rudakov, Roshchina 2018].

<sup>7</sup> <https://www.hse.ru/ege/about>

<sup>8</sup> Unified State Examination

<sup>9</sup> <http://www.edu.ru/ratings/srednie-prohodnye-bally-ege-v-vuzy-2016/>

a result, all the universities from the MEMO sample were divided into four categories:

- (1) (i) universities with high enrollment quality (public non-liberal-arts universities with average admission USE scores of 70 and more; 31 universities of the MEMO sample)<sup>10</sup>;
- (2) (ii) universities with average and low enrollment quality (public non-liberal-arts universities with average admission USE scores below 70; 52 universities of the MEMO sample)<sup>11</sup>;
- (3) (iii) liberal arts universities (10 of the MEMO sample);
- (4) (iv) private universities (7 of the MEMO sample).

### **3. Findings: Demand for MOOCs among University Students and Faculty in Russia**

#### **3.1. Awareness of MOOCs and MOOC Experience**

Among university teachers asked, “How do you feel about allowing students to choose massive open online courses over some of the conventional lecture courses delivered in your educational institution?” in 2015, only 7 percent of respondents admitted knowing nothing about MOOCs. In 2016, when asked about their MOOC experience, 41 percent of teachers reported having no idea what a MOOC is, while 25 percent said they had heard of MOOCs but had never taken any interest in them (Table 1). The 2016 findings seem to describe faculty awareness of MOOCs better. The proportion of instructors totally unaware of MOOCs is the highest in private universities and the lowest in top ones.

According to a 2016 survey, 23 percent of the faculty reported knowing about MOOCs and having taken interest in them (visited websites, looked through courses, etc.) but having never tried them, and only 11 percent reported having participated in MOOCs, with slightly over half of them having never obtained any certificate. The proportion of MOOC participants among faculty in top universities was 15 percent, 8 percent of whom had obtained a relevant certificate. Private university teachers are running second in this indicator (11 percent have tried MOOCs, and 7.5 percent have obtained a MOOC certificate), whereas only one in ten faculty members of regular public universities has participated in MOOCs. The percentage is the lowest in medical and engineering universities. Eight percent of instructors reported using MOOC materials to prepare for their own offline courses.

Nearly three in every four students of Russian universities have never heard of MOOCs. Only 26 percent of the respondents know about their existence, 15 percent have heard of them but have never taken interest in them, and eight percent have shown interest but never tried any MOOC. Only 2.3 percent of the students have tried learning in MOOCs, and only 1 percent of them have obtained a certificate. Thus, the integration of MOOCs in the learning process of Russian uni-

<sup>10</sup> “Top universities” from this point on

<sup>11</sup> “Regular universities” from this point on

Table 1. **Participation of students and salaried faculty members in MOOCs**  
(2016, weighted data, % by the type of university)

	Top universities	Regular universities	Liberal arts universities	Private universities	Total
<b>Faculty</b>					
Know nothing about MOOCs	34.7	41.4	41.3	56.4	40.8
Know about MOOCs but have never taken interest or part in them	27.0	24.6	30.7	12.0	24.8
Know about MOOCs, have shown interest in them (visited websites, looked through courses, etc.), but have never taken any MOOC	23.8	24.3	18.7	20.3	23.2
Have tried MOOCs but have never obtained any certificate of completion	6.3	4.4	6.0	3.8	5.1
Have tried MOOCs and obtained at least one certificate of completion	8.2	5.3	3.3	7.5	6.1
<b>Students</b>					
Know nothing about MOOCs	67.9	75.8	76.8	75.9	73.6
Know about MOOCs but have never taken interest or part in them	16.3	13.9	15.3	13.3	14.7
Know about MOOCs, have shown interest in them (visited websites, looked through courses, etc.), but have never taken any MOOC	10.3	7.8	6.2	8.9	8.4
Have tried MOOCs but have never obtained any certificate of completion	3.8	1.7	1.5	1.3	2.3
Have tried MOOCs and obtained at least one certificate of completion	1.6	0.9	0.3	0.6	1.0

versities has to be recognized as very insignificant. At the same time, some optimism is inspired by the fact that students of top universities know more about MOOCs and use them more actively than students from universities of other types. In particular, 68 percent of students in top universities know nothing about MOOCs, as compared to 76 percent in regular universities; 10 percent have taken interest in MOOCs, as compared to 8 percent in regular universities; 4 percent have participated in MOOCs, as compared to 2 percent in regular universities; and 2 percent have obtained a MOOC certificate, as compared to 1 percent in regular universities. Further on, this article will only refer to faculty and students who have at least heard something of MOOCs.

### 3.2. Attitudes toward Integrating MOOCs in Universities

The same question was asked to faculty members in 2016 and 2015: "How do you feel about allowing students to choose massive open online courses over some of the conventional lecture courses delivered



in your educational institution?” However, in 2016 the question was only asked to those who had reported at least having heard something of MOOCs in the previous year, while the 2015 response options included “Have never heard of MOOCs”. This option was chosen by 7 percent of teachers in 2015. However, the proportion of unaware instructors was found to be 41 percent in 2016, so allowance must be made for these base-level differences when comparing respondents’ answers in 2015 and 2016.

Among faculty members aware of MOOCs, 38 percent of respondents in general fields of study felt “rather positive” about such a possibility, and 31 percent were neutral in 2015. In 2016, the respective indicators were 27 and 34 percent, i. e. the balance of attitudes swung from positive to neutral. Meanwhile, teachers in specialized fields of study showed even less approval: the proportion of respondents with a positive attitude dropped from 29 percent in 2015 to 17 percent in 2016, while neutral responses decreased from 25 to 22 percent.

A positive attitude towards online courses is observed most often among teachers of private universities (34 percent in general fields of study and 40 in specialized ones), although it would seem that they should be competing with MOOCs. Only 18 percent of faculty in general fields of study and six percent in specialized ones supported the online learning initiative in liberal arts universities, which comes as no surprise, given the great role of tutorship, practical work, and personal teacher engagement in universities of this type. Differences in the level of approval between top and regular universities are quite expected, yet insignificant: 28 percent of teachers in general fields of study and 19 percent of those in specialized fields feel positive about integrating online courses in top universities, as compared to 27 and 15 percent in regular universities, respectively.

In terms of university specialization, support for MOOCs in general fields of study is the highest in humanities universities (42%) as well as medical, teacher training, economic, legal, and agricultural universities (about 30% for each type). Use of MOOCs in specialized fields of study is considered possible by 37 percent of teachers in humanities universities, 26 percent in economic, legal, and teacher training universities, and 20 percent in agricultural universities. Liberal arts universities and classical universities have been found to favor such courses less than any other category. Assumingly, the perception of MOOC integration and implementation prospects is contingent on teachers’ evaluations of their potential benefits in education. Instructors in classical and liberal arts universities see their education programs as “irreplaceable” due to the unique value of a teacher’s personality in creative majors or the high quality of teaching in classical universities. The question as to whether uniqueness of human resources imposes grave limitations on using MOOCs or if this is only a trap of “academic snobbery”, remains open.



Students were not asked about their attitude towards introducing MOOCs instead of some offline courses in 2015. In 2016, only 7.5 percent of students spoke strongly against integrating MOOCs into general fields of study, and 13 percent, into specialized fields of study. Students are more likely to agree to the substitution of MOOCs for traditional courses in general fields of study (43 percent feel “positive” or “rather positive” about it) than in specialized ones, where only 34.5 percent reported feeling “positive” or “rather positive”.

### **3.3. MOOC Advantages**

Among the main advantages of massive open online courses, university teachers named first of all greater access to education (59%). Other advantages identified include self-paced learning (30%), professional growth opportunities (31%), use of advanced teaching strategies/methods (including those that are interactive and increase motivation for learning (22%), more relevant course content and opportunity for all-round general development (19–20%), and the diverse choice of courses available.

Curiously, teachers of private universities tend to value the “opportunity for improving academic attainment of students as a result of such education” much more than their colleagues (22%), which is also true for the “opportunity for all-round general development” (24%, similar to teachers in liberal arts universities). Respondents from liberal arts universities were found to attach more importance to the “diverse choice of courses available” (25%) than teachers from universities of other types. Faculty in regular public universities tend to value “professional growth opportunities” a lot (34%).

Students, in their turn, see the main advantages of MOOCs in greater access to education (53%), self-paced learning (36%), opportunity for all-round general development (31%), and professional growth opportunities (28%). Only 19 percent of students chose more relevant course content to be a MOOC advantage. The “opportunity to take a course in a foreign language” was selected by 9 percent of the respondents.

Certain differences in assessing MOOC advantages can be found among universities of different types. For instance, teachers from private universities are much more likely to agree that MOOCs will improve student attainment (22.4%), while teachers from liberal arts and private universities tend relatively more often to appreciate the opportunity for all-round general development as a MOOC advantage, and liberal arts university teachers value MOOCs first of all for the diverse choice of courses available.

Students in top universities are relatively more likely to name greater access to education, opportunity for self-paced learning and all-round general development, professional growth opportunities, and opportunity to learn in a foreign language as the key MOOC advantages than their peers. Meanwhile, students from private univer-

sities are relatively more likely to focus on more relevant course content, communication, and peer support.

### **3.4. MOOC Disadvantages**

Forty-five percent of the faculty see the main disadvantage of MOOCs in the lack of personal teacher-student contact and fewer individual learning opportunities. Other disadvantages named by the respondents include the impossibility to identify test takers (35%), low course completion rates (37%), education quality degradation (27%), and the need to pay for a verified certificate (20%).

Teachers from top universities (32%) and liberal arts universities (31%) focused on the risk of education quality degradation more often than their colleagues. Additional research is needed to find out whether this is a genuine risk assessment or an attempt to protect their “teacher benefits”. The lack of personal teacher-student contact as a MOOC disadvantage was mentioned more often by faculty members from regular (47%) and liberal arts universities (45%), the need to pay for a verified certificate by respondents from private universities (32%), and the lack of strict performance assessment policies by instructors from liberal arts universities (21%). Teachers of liberal arts universities are also more likely to see taking courses in a foreign language as a disadvantage (32%). Respondents from private universities are concerned much less than their colleagues about test taker identification issues (18%). Their opinion is a particularly far cry from that of faculty in regular universities, 39 percent of whom would prefer to be sure about test takers’ identities.

Students determined the main disadvantages of MOOCs to be low course completion rates (48%), the lack of personal teacher-student contact (41%), the impossibility to identify test takers (30%), and the need to pay for a verified certificate (22%). The risk of education quality degradation in MOOCs was mentioned by 18 percent of university students.

Differences across the types of universities have been observed. Teachers of top universities are relatively more likely to beware of education quality degradation and high dropout rates, while teachers of regular universities focus more on the impossibility to identify test takers. Instructors from private universities see it more often as a disadvantage that many courses are delivered in a foreign language, while respondents from regular and liberal arts universities are frustrated more by the lack of personal teacher-student contact.

Students of top universities see the key disadvantages of MOOCs in the low course completion rates and the lack of personal teacher-student contact. Students from private universities are relatively more likely to mention test taker identification issues and lower education quality.

### **3.5. Intentions to Learn in MOOCs**

Among teachers who are aware of MOOCs, 26 percent are definitely going to take such courses in the future, 60 percent allow for such

Table 2. **MOOC Experience and Intentions Among Students and Salaried Faculty Members** (2016, weighted data, % of the sample, by university type)

	Top universities	Regular universities	Liberal arts universities	Private universities	Total
Faculty					
Never heard of MOOCs	35.0	41.6	41.7	56.4	41.0
No past experience, no intentions	8.8	7.3	11.9	3.8	7.9
No past experience, planning to participate	<b>41.8</b>	<b>41.4</b>	37.1	28.6	40.0
Past experience, no intentions	0.9	0.1	0	0	0.3
Past experience, planning to take more	13.5	9.6	9.3	11.3	10.9
Students					
Never heard of MOOCs	67.9	76.2	77.0	75.9	73.8
No past experience, no intentions	2.6	2.6	5.6	3.8	3.0
No past experience, planning to participate	<b>24.0</b>	18.7	15.9	18.4	19.9
Past experience, no intentions	0	0.2	0.6	0	0.1
Past experience, planning to take more	5.5	2.4	0.9	1.9	3.1

possibility, and 14 percent will definitely never use the opportunity. The proportion of prospective MOOC participants is the highest among instructors of private universities and the lowest in liberal arts universities. Among students who know about MOOCs, 17 percent will definitely take such courses in the future, 72 percent allow for such possibility, and 12 percent are definitely not going to participate. Just as among faculty, the proportion of prospective MOOC participants is the highest among students of top universities.

Table 2 brings together data on MOOC awareness, experience, and intentions (Table 2). Forty percent of the faculty have never tried but are going to take MOOCs with more or less probability; only 0.3 percent have some prior MOOC experience and do not want to take it any further, and 11 percent have already taken some MOOCs and intend to take more in the future. The highest proportion of prospective MOOC learners (over 40%) is observed among teachers of public non-liberal-arts universities regardless of the quality of enrollment, and the lowest has been manifested by private universities (29%).

Seventy-four percent of students have never heard of MOOCs, and three percent have heard of them but have never tried them and are not going to do so. Only 3.1 percent have some online learning experience, and almost every student with MOOC experience is going to take it further. One in five students has no MOOC experience but is going to use MOOCs in the future. The highest proportion of students

planning to take MOOCs is observed in top public universities (24%), and the lowest in liberal arts universities (16%).

From now on, we will only dwell on those respondents who have tried or are going to take MOOCs, which is 51 percent of all teachers and only 23 percent of the student sample. As judged by the faculty's answers, nearly two thirds have taken or will take courses in Russian only, and one third has tried or is willing to try courses in both Russian and foreign languages. Only 3.7 percent have taken or will take on-line courses in a foreign language exclusively. The proportion of Russian-adhering respondents is the highest in regular public and private universities.

Most students interested in MOOCs have tried or are going to take courses in both Russian and foreign languages (38%) or in Russian only (37%), while MOOCs in foreign languages exclusively attract 4.5 percent of students. Students willing to take courses in foreign languages are more numerous in top universities than in universities of other types.

Fifty-nine percent of the instructors have taken or intend to take courses related to their major or subject taught, six percent opt for courses outside their majors and subjects, and 27 percent have tried or are going to try both. The proportion of teachers choosing courses outside their major and subject is the highest in private universities (20%). Courses inside one's major or subject are most often selected in public universities: 58 percent in top universities and 62 percent in regular ones.

Most students are going to take (or have taken) MOOCs in their own or related major (46%), regarding them as complementary to their basic education, not as a tool for changing their major or gaining totally new knowledge. Students of top universities are more likely to take MOOCs in their own or related major, yet 27 percent of them ticked "related as well as new majors" (as compared to 39 percent in liberal arts universities), and 12 percent opted for majors outside their own (as compared to 19 percent in private universities).

### 3.6. Learning Objectives in MOOCs

Seventy-six percent of all faculty members who have tried or intend to take MOOCs see objectives of such learning in enhancing their professional skills in their major/subject, 42 percent in mastering new strategies and methods of teaching, 30 percent in general development, 29 percent in gaining online learning experience, and 12 percent in learning a new major (Table 3). Enhancement of professional skills in one's own major/subject was chosen more often in regular public universities (82%), learning a new major in private universities (21%), and general development in liberal arts universities (48%), along with gaining online learning experience (35%) and learning new teaching strategies (50%).

Forty-six percent of the students see the main objective of MOOCs in general development, while 41 percent believe that such education

Table 3. **Motivation for (Prospective) Learning in MOOCs among Students and Salaried Faculty Members** (2016, weighted data, % of (prospective) MOOC learners, by university type)

	Top universities	Regular universities	Liberal arts universities	Private universities	Total
Faculty					
Enhance professional skills in one's own major/subject	70.1	<b>81.7</b>	69.7	58.3	75.6
Learn a new major	12.4	10.8	6.6	<b>20.8</b>	11.7
General development	33.3	25.4	<b>48.4</b>	32.5	29.9
Gain online learning experience	30.1	30.3	<b>35.0</b>	11.5	29.4
Learn new teaching strategies, methods, etc.	35.5	<b>46.4</b>	<b>49.9</b>	28.6	41.7
Join the crowd	1.7	0.7	0	3.7	1.2
Students					
Get employed or get a specific job	27.7	25.2	5.3	<b>32.5</b>	24.9
Improve academic performance	<b>14.6</b>	8.8	6.2	2.6	10.6
Enhance professional skills in one's major	44.6	36.1	<b>54.1</b>	32.4	40.7
Learn a new major	<b>18.9</b>	<b>19.8</b>	12.1	17.2	18.8
General development	41.0	47.5	52.4	<b>57.0</b>	45.7
Join the crowd	1.9	2.9	5.6	<b>5.9</b>	2.8

can be pursued to enhance one's professional skills in their university major. Twenty-five percent hope that MOOCs can help them get a job, and only 11 percent associate learning in MOOCs with improving their academic attainment in university (Table 3). Enhancing one's professional skills in their major is a more important motivation for students in top universities than general development (45 and 41 percent, respectively). Quite probably, students in universities of other types approach higher education as a way of filling gaps in their high school education, whereas their peers from top universities attach more importance to professional growth on the basis of quality high school education.

### 3.7. Factors that Influence Engagement in MOOCs

Two multinomial logistic regressions were assessed to identify factors influencing engagement in MOOCs among faculty (Table 4) and students (Table 5), the dependent variable taking three values:

- never heard of MOOCs or not intending to use MOOCs" (basic category);
- never taken any MOOC but planning to do so"; and
- have some MOOC experience".

Table 4. **Estimated multinomial regression of factors influencing engagement in MOOCs among faculty members** (base: “never heard of MOOCs or not intending to use MOOCs”), N = 1,331

	Intentions		Past experience	
	RRR	sign	RRR	sign
Top university (base: regular university)	1.277	0.131	<b>1.557*</b>	<b>0.084</b>
Liberal arts university	0.967	0.892	0.928	0.854
Private university	0.985	0.955	0.736	0.541
Moscow	1.031	0.839	<b>0.575**</b>	<b>0.026</b>
Doctor of Sciences	1.439	0.156	1.152	0.751
Candidate of Sciences	<b>1.451**</b>	<b>0.020</b>	<b>2.119***</b>	<b>0.004</b>
PhD	0.515	0.320	2.388	0.145
Teacher of (base: social sciences)				
— foreign language	<b>2.125*</b>	<b>0.066</b>	<b>3.812**</b>	<b>0.016</b>
— humanities	1.112	0.598	1.388	0.297
— mathematics, programming	<b>1.571**</b>	<b>0.046</b>	<b>2.557***</b>	<b>0.003</b>
— natural sciences	1.054	0.823	0.775	0.548
— engineering	<b>0.713*</b>	<b>0.079</b>	0.603	0.121
— other	1.037	0.829	1.063	0.833
Alumnus of the employer university	<b>1.603***</b>	<b>0.002</b>	1.017	0.945
Course content design experience	<b>1.672**</b>	<b>0.029</b>	<b>3.082**</b>	<b>0.026</b>
Proportion of lectures in teaching load (%)	0.996	0.508	0.991	0.306
Proportion of seminars in teaching load (%)	1.002	0.777	1.006	0.526
Proportion of practical work in teaching load (%)	1.003	0.618	1.000	0.960
Engages in research activities	<b>1.953***</b>	<b>0.001</b>	<b>4.912***</b>	<b>0.001</b>
Has publications	1.269	0.263	<b>2.366*</b>	<b>0.088</b>
Over the last three years, has participated in:				
— visiting teaching programs	<b>0.710*</b>	<b>0.055</b>	1.012	0.965
— continuing education	<b>1.458**</b>	<b>0.011</b>	1.097	0.699
— summer school	<b>2.243***</b>	<b>0.000</b>	<b>2.743***</b>	<b>0.002</b>
— teacher exchange programs	0.927	0.796	0.608	0.285
— Master's degree programs	1.340	0.261	<b>2.178**</b>	<b>0.025</b>
Has a side job	0.930	0.599	1.392	0.139
Wants to quit this job	<b>0.673**</b>	<b>0.029</b>	1.246	0.392
Needs training in:				
— foreign language	1.195	0.246	1.449	0.154
— ICT literacy	0.882	0.451	0.960	0.872
— dedicated computer programs	<b>1.429**</b>	<b>0.024</b>	1.252	0.371
— pedagogy	0.955	0.780	0.732	0.240

	Intentions		Past experience	
	RRR	sign	RRR	sign
— one's own major	1.102	0.557	1.205	0.484
— another major	1.117	0.522	<b>1.711**</b>	<b>0.041</b>
Proficiency in foreign language	<b>1.152*</b>	<b>0.056</b>	<b>1.379**</b>	<b>0.014</b>
Years working for the university	<b>0.983**</b>	<b>0.038</b>	0.990	0.498
Married	1.144	0.396	<b>0.595**</b>	<b>0.033</b>
Age /10	<b>2.288*</b>	<b>0.050</b>	0.864	0.821
Age-squared /100	<b>0.928*</b>	<b>0.080</b>	1.029	0.665
Male	0.797	0.116	0.901	0.642
Has children under 6 years of age	0.838	0.387	1.340	0.350
Has children aged 7–18	1.118	0.485	1.481	0.123
Assessment of one's financial status	0.997	0.960	1.131	0.194
Constant	<b>0.009***</b>	<b>0.000</b>	<b>0.001***</b>	<b>0.000</b>
Pseudo R2	0.133			
Prob > chi2	0.000			

Table 5. **Estimated multinomial regression of factors influencing engagement in MOOCs among students** (base: “never heard of MOOCs or not intending to use MOOCs”), N = 2,815

	No past experience, intending to use MOOCs		Some MOOC experience	
	RRR	sign	RRR	sign
Top university (base: regular university)	<b>1.278**</b>	<b>0.044</b>	<b>3.070***</b>	<b>0.000</b>
Liberal arts university	0.871	0.536	1.077	0.895
Private university	0.859	0.529	0.252	0.166
Moscow	0.910	0.424	0.838	0.504
Male	1.125	0.308	<b>2.244***</b>	<b>0.001</b>
Field of study (base: social sciences)				
— humanities	<b>0.567***</b>	<b>0.003</b>	1.236	0.639
— natural sciences, mathematics	0.817	0.263	<b>1.918*</b>	<b>0.077</b>
— engineering	<b>0.630***</b>	<b>0.008</b>	0.777	0.472
— other	<b>0.448***</b>	<b>0.000</b>	0.551	0.124
3rd-5th years of Bachelor's/Specialist's degree	0.910	0.433	1.276	0.458
Master's degree	0.788	0.189	<b>2.795***</b>	<b>0.006</b>
Academic attainment	<b>1.208**</b>	<b>0.012</b>	<b>1.647***</b>	<b>0.007</b>
Pays tuition fees	1.155	0.282	1.172	0.630



	No past experience, intending to use MOOCs		Some MOOC experience	
	RRR	sign	RRR	sign
Class attendance	1.016	0.834	<b>0.751*</b>	<b>0.070</b>
Engages in research activities	<b>1.267**</b>	<b>0.039</b>	<b>2.163***</b>	<b>0.006</b>
Combines work and study	<b>2.378***</b>	<b>0.000</b>	1.409	0.159
Focused on knowledge acquisition	<b>0.903**</b>	<b>0.014</b>	1.126	0.229
Not going to work in one's field of study	0.948	0.480	1.176	0.366
Graduate of a regular school	<b>0.759**</b>	<b>0.011</b>	0.670	0.126
Suffers from the lack of basic theoretical knowledge	<b>0.778*</b>	<b>0.079</b>	1.394	0.285
Suffers from the lack of analytical skills and data analysis methods	<b>1.329**</b>	<b>0.034</b>	0.918	0.801
Intends to:				
— pursue a Master's degree in Russia	1.028	0.103	1.023	0.555
— pursue postgraduate education in Russia	0.989	0.476	1.017	0.638
— pursue additional education of other types	1.015	0.324	0.946	0.154
— study abroad	<b>1.035*</b>	<b>0.062</b>	0.977	0.607
— work abroad	0.976	0.170	1.036	0.413
Hours spent on classroom studies	1.002	0.613	0.980	0.100
Hours spent on homework	<b>1.010*</b>	<b>0.054</b>	<b>1.040***</b>	<b>0.000</b>
Assessment of parents' financial status	0.937	0.177	1.033	0.821
Number of science fiction books read	<b>1.040**</b>	<b>0.010</b>	<b>1.106***</b>	<b>0.000</b>
Number of fiction books read	<b>1.025***</b>	<b>0.000</b>	0.984	0.389
Constant	0.129***	0.000	0.002***	0.000
Pseudo R2	0.108			
Prob > chi2	0.000			

The proportion of university teachers who have some MOOC experience is higher than proportions of those who know nothing about MOOCs or have no intention to participate in them among faculty members involved in research (nearly five times), foreign language teachers (3.8 times higher than among teachers of social sciences), math and ICT teachers (2.6 times), those who have attended summer schools over the last three years (2.7 times), and PhD holders (2.1 times). A somewhat weaker yet positive impact is exerted by having publications, course content design experience, Master's degree studies over the last three years, good knowledge of a foreign language, and the need to change one's university major. The probability of being engaged in MOOCs is lower among Moscow universi-

ty instructors and higher in top public universities (although the latter variable is not too significant).

Intentions to learn in MOOCs are observed less often among teachers who have never heard of MOOCs or have no MOOC experience and are more likely to be found among instructors who are engaged in research activities, have enhanced upgraded their skills in summer schools, and/or have graduated from the university they work for, as well as PhD holders and math and ICT teachers (as compared to teachers of social sciences). Other positive factors include the need to acquire new knowledge in dedicated computer programs, high proficiency in a foreign language, and experience of designing course content. On the contrary, willingness to learn in MOOCs is lower among teachers of engineering subjects, those who would like to quit teaching, and those who have worked for the university for a while. Age dependence is quadratic (but significant at the level of 10%); type of university makes no difference.

Therefore, demand for MOOCs among university teachers is first of all contingent on their autonomy and innovativeness as well as their inclusion in global educational initiatives: engagement in science, fluency in English, participation in various research activities, and enhancement of their professional skills. Disturbingly, teachers in engineering universities remain conservative about MOOCs. This is probably one of the indicators of morbidity of engineering education in Russia, which is partly caused by excessively narrow specialization, which results in shifted perceptions of one's own irreplaceability, insufficient involvement in global education initiatives, and predominantly weak students (students of many engineering universities have low USE scores, including those in mathematics).

As for students, the probability of learning in MOOCs is the highest in top universities, being three times higher than in regular public ones. In addition, as compared to students who have never heard of MOOCs or do not intend to participate in them, the likelihood of having some MOOC experience is 2.8 times higher among Master's degree students than among students in their 1st or 2nd year of Bachelor's or Specialist's degree, 2.2 times higher among males, and 2.16 times higher among students engaged in research activities. Other significant positive factors include academic attainment, specialization in natural sciences (as compared to social sciences), hours spent on homework, and number of science fiction books read over the last six months. Class attendance appears to be the only negative factor here.

Willingness to participate in MOOCs is found more often in students who have a job (2.4 times more often than in non-working students), study in a top university (1.3 times more often than in students from universities of other types), and engage in research (1.3 times more often than in those who do not). Learning in MOOCs more often attracts high performers, students intending to study abroad, those who devote a lot of time to their homework, those who read more fic-

tion and science fiction, and those who believe they lack analytical skills. As compared to students specializing in social sciences, lower proportions of students planning to learn in MOOCs are found in humanities, engineering, and other fields of study. Other negative factors include the focus on acquisition of practical skills in university (as compared to the focus on independent acquisition of knowledge), the lack of basic theoretical knowledge, and graduation from a regular (non-specialized) school. Similar to faculty members, students' attitude towards MOOCs is largely an indicator of innovative behavior, which involves being part of a top university, engaging in research, reading a lot, and showing good academic performance.

#### **4. Conclusion**

So far, MOOCs have been little integrated in the learning process of Russian university students. The use of online learning technology is not yet massive, being restricted to innovators only. Overall, faculty members are better informed about MOOCs and engage in them more actively than students. Demand for MOOCs among students depends on the type of university: online courses tend to permeate student practices in top universities much more often than in regular ones. Therefore, the fundamental hypothesis of this study has been confirmed first of all with regard to the demand for MOOCs among students, although the likelihood of having past MOOC experience is also higher among teachers of top universities than among their colleagues from regular universities (at significance level of 10%).

While university teachers appear to be more aware of MOOCs than students, the latter tend to favor the substitution of MOOCs for offline courses more often than teachers. Only 4–6 percent of the faculty and 16–22 percent of the students spoke definitively for the initiative, which is an expected outcome. While bringing new opportunities to students, MOOCs may as well bring new risks to teachers, including the loss of their “teacher benefits”, stiffer competition, or even dismissal. Progress in using MOOCs in higher education is hardly possible without organizational changes. Competition risks will cause resistance from the teaching faculty, so behavioral models for universities must be designed to outline possible prospects for teachers in case of large-scale MOOC integration. Such prospects may be related to the development of blended learning that combines MOOCs with traditional classroom practices.

Regression analysis of empirical data shows that the probability of engaging in MOOCs is higher among active and high-performing students and instructors who have engaged in research and upgraded their skills in summer schools. Studying in a top university has a strong positive correlation with the likelihood of learning in MOOCs among students, yet for teachers the factor is less significant. On the whole, readiness for MOOCs in both students and faculty of Russian universities is a pivotal characteristic of innovative behavior.

About half of the students treat MOOCs as a tool for personal development rather than as an alternative or complement to their university education. For the faculty, MOOCs represent a decent alternative to traditional professional development courses. Teachers who have already tried MOOCs often mention mastery of new teaching methods among their goals.

Instructors and students similarly assess advantages and risks of using MOOCs in education. For now, the advantages of greater access and self-paced learning prevail over all the other indicators of quality education. Both faculty members and students feel positive about substituting MOOCs for courses in general fields of study but show no enthusiasm or even oppose replacing specialized (professional) disciplines with MOOCs. Both categories of learners agree that the main risks and challenges of using MOOCs have to do with the lack of teacher feedback, weak motivation for course completion due to self-regulation, and unreliable test taker identification technology. Perception of these risks shapes the main vectors of technology and organizational development required to promote MOOCs into the education system. These revolve largely around the need to develop proctoring algorithms (learner identification, prevention of academic dishonesty), apply blended learning (which complements MOOCs with teacher feedback), and regulate self-learning practices to solve the problem of external control and motivation.

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