



Present-day management of universities in Russia: Prospects and challenges of e-learning

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Abstract

The E-learning market is becoming more and more popular in the world. This is evidenced by the increased budget allocations for e-learning programs, the growing prevalence of e-learning in various markets all over the world and new trends in modern technology and tools. The study aims to evaluate the readiness of university management and students for active e-learning. The objective is to identify the prospects and problems of the information and communication technology in educational management when introducing e-learning. To achieve the research objectives, we conducted a survey in the form of a questionnaire among the first-year graduate IT students of three Moscow universities directly involved in e-learning initiatives. The survey involved 135 teachers, 19 information and communication technology (ICT)/e-learning specialists, 6 university managers and 3 heads of university management, one from each of the three universities. The research showed that despite the potential of a learning management system to support both blended learning and e-learning, most e-learning initiatives are not fully realized; they completely or partially fail. Poor marketing strategies, poor service strategies and insufficient technical support are some of the most likely causes of failure. The possibility of students and teachers to interact and the expansion of the geography of education should be noted among the prospects of modern management in the implementation of e-learning. It has been revealed that more than half of the students (54%) independently develop applications and programs for e-learning. The results of our research can become the basis for further research in e-learning and its prevalence in developing countries.

Keywords Distance learning, educational environment · Information and communication technologies · Educational software applications

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1 Introduction

E-learning has a great effect on academic performance (Maldonado et al. 2011). It encompasses a range of activities: from supported learning to blended learning and e-learning (Cruz-Jesus et al. 2016). Learning management systems (LMS) are considered among the tools of this type of learning in the education market. They are often the starting point of any e-learning program. In this study, LMS are regarded as specific online platforms, such as absorb, Blackboard, Moodle, and Canvas, D2L Brightspace etc.

LMS is currently worth more than \$ 3 billion (2016) and it includes hundreds of platforms that help companies manage all aspects of learning, both at the university and at companies (Tena et al. 2016). The development of LMS and LCMS (Learning Content Management Systems), the development of the tools for organizing and conducting webinars or virtual classes, as well as the tools for creating online courses and learning content (course development systems), learning new technologies and methods are of a top priority in education (Walker et al. 2016). According to Ambient Insight, the e-learning market in Western Europe was about 8 billion dollars in 2016, while the Eastern European market was about 1 billion dollars. The largest purchasing country in Eastern Europe is the Russian Federation. The UK is the largest purchasing country in Western Europe. Learning management systems do not depend on the subject. They have more extensive administration features and integrated development tools; they support the development and publication of reusable learning materials. However, despite the potential of LMS, many e-learning initiatives supported by them, especially in developing countries, completely or partially fail (Zaharias and Pappas 2016; Al-Samarraie et al. 2018.). E-learning provides students with the access to quality education. E-learning expands basic infrastructure, including computer and Internet services from universities to a convenient location accessible to different people. E-learning is a good option for lifelong learning through enhanced access to education (Horrihan 2016). With this approach, universities can shorten terms, offer more courses in each term and reach citizens across the whole country. Since e-learning allows students to study anytime and anywhere, initial and further training is becoming more accessible to a bigger number of people. Of course, universities should also provide online registration, electronic access to university services and quick feedback (Volles 2016; Yoon et al. 2017).

E-learning is an important tool to meet the demand for highly qualified specialists in the modern technological world. The problem of separation between student and teacher is solved by a hybrid combination of a learner-centered e-learning, individual lessons and audio/video web communications (Arinto 2016). Online learning has become very popular in developed countries, where online courses, especially IT courses, have been offered for a long time (Akçayır and Akçayır 2017). E-learning is becoming more and more popular in Russia. According to the Federal State Statistics Service of Russia, the share of educational institutions implementing distance learning technologies increases every year and in 2015 it reached 78.2% of the total number of Russian institutions. But the share and the number of Russian universities that have implemented e-learning at the moment are not significant (Krasnova et al. 2017). Basically, these are the leading universities that get additional state subsidies as part of various national projects and initiatives. The use of such a system in the preparation

of new pedagogical personnel remains to be a problem. The first open online courses launched on foreign and domestic platforms were offered by the top-10 Russian universities. They offer the biggest number of open online courses. National top-10 universities are actively implementing e-learning in basic educational programs. They expand the list of such programs and the number of the students enrolled in these programs. In general, leading universities develop an average of 20 online courses per year. Until 2025, Russia plans to increase the number of students enrolled in online courses to 11 million people and to develop at least 4 thousand online courses. These figures have been approved in the framework of the priority project “Modern digital educational environment in the Russian Federation.”

The internal part of the university management consists of the regulation of relations between the direct participants of the educational process and the academic staff through the subsystems of the educational institution. The goal of pedagogical management is to ensure optimal functioning of various pedagogical systems aimed at the personal development of the student. Pedagogical management results in the pedagogical system improvement that makes it possible to achieve the goals of education which best meet the requirements of educational programs and state educational standards and take into account individual characteristics and personal needs (Novikov 2009). When introducing innovations in the educational process, the manager should identify the problems and contradictions relevant for the educational institution and make a step-by-step action plan to resolve the identified problems. The manager should also know how to use modern methodological tools with regard to the specifics of research in educational management. The manager should be able to organize pilot study and monitor professional research, as well as to predict the results of their own decisions and actions and implement motivational self-management of research activities (Alyushin and Kolobashkina 2019; Badwan et al. 2017; Kuprina et al. 2019).

Currently, there are not enough studies devoted to the e-learning management in universities of Russia. Therefore, the objectives of this research are to identify the applicability of an e-learning approach in Moscow universities and to highlight the main obstacles and opportunities of the university management, teachers, and students.

2 Methodology

The main research method is a survey. The goal is to determine the advantages and disadvantages of the information and communication technology in modern educational management. The survey was conducted in 3 Moscow Universities of Information Technology. Initially, 600 respondents were invited to the survey, but only 563 people accepted the invitation. The respondents are directly related to the management and coordination of the e-learning process at universities. There were 19 information and communication technology (ICT)/e-learning specialists, 6 university managers and 3 heads of university management, as well as 135 teachers and 400 first-year graduate students, who possess competency and experience in the field at a decent level.

Proportionate Stratified Random Sampling was used to group the teachers who implement e-learning. With simple random sampling, 30% of the teachers were randomly selected out of these groups at each of the three universities to obtain representative information. The university management and the heads responsible for

e-learning have also been considered as key participants in this study. The data were collected by conducting a structured questionnaire with open questions for lecturers and ICT/e-learning specialists. A semi-structured interview was conducted with the heads.

The survey consisted of the following questions:

- Your attitude towards e-learning (ready to use actively in the educational process, rather ready, rather not ready to use, not ready to use).
- Choose the most important, in your opinion, problems of the state universities in Russia that hinder the successful implementation of e-learning.

The list of possible problems is given below (you can choose more than one option).

1. Challenges identified as hindering the implementation of e-learning
2. Inadequate ICT and e-learning infrastructure
3. Financial constraints
4. Lack of affordable and adequate Internet bandwidth
5. Lack of operational e-learning policies
6. Lack of technical skills on e-learning and e-content development by the academic staff
7. Lack of interest and commitment among the academic staff to use e-learning
8. Amount of time required to develop e-learning content
9. Problems associated with the organization of webinars and virtual classes
10. Other problems

The second question is to determine factors that influence the process of making managerial decisions regarding the implementation of an e-learning model.

- Choose the most important benefits of e-learning. The list of possible benefits is given below (you can choose more than one option).
 1. There is a possibility of interactive communication between students and teachers.
 2. It allows you to conduct lectures from anywhere in the world and expands geographical access to education.
 3. It provides more timely, consistent and reliable content that can be used again; there is a combination of synchronous and asynchronous learning.
 4. It supports a learner-centered e-learning and students can learn at their own pace.
 5. E-learning reduces costs and increases the cost-effectiveness of educational resources.
 6. It expands access to education and makes it possible to combine study with work and family life.
 7. It facilitates monitoring of students' performance.
 8. New technologies are a top priority for higher education institutions.
 9. Your option.

The third question is to evaluate the awareness of e-learning specialists regarding the potential of e-learning and to identify its crucial functions.

Below is an additional question designed for students only. It is to determine the possession of modern-day management competence among students, as well as the way of forming it (i.e., in university setting or online).

- Do you study the modern methods of Scrum and Agile project management? (yes / no; if yes, do you do it at the university or independently).

To assess the results of the survey, we organized cross-survey tabulations and processed the results. The method of comparative analysis was used to compare the results obtained from all respondent groups.

The error of the survey was 7%. These were spoiled, incomplete questionnaires.

The data collected from the questionnaire were analyzed quantitatively and processed in the Origin program.

3 Results

Tables 1 and 2 present the results of the respondents' answers.

The survey results showed that more than half of teachers (55.5%) from the examined universities are ready to implement e-learning (Table 1). The university management and the heads also support the active implementation of information technology into the educational process.

However, despite this positive result, there is a percentage of teachers (19.2%) who are not interested in the full transition to the ICT. E-learning has not become common in this universities yet. This is demonstrated by the low level of its implementation.

E-learning has not become common in this universities yet. Tables 2 and 3 give more details on the problems and prospects of the modern management in the implementation of e-learning.

The analysis shows that the university management considers the possibility of reusing educational material without costs (97%), remote education and expansion of the geographical access (80%) to education to be the benefits.

The remote monitoring of student performance is the greatest difficulty (47.9%). This is due to the fact that it is impossible to control the actual attendance of students.

Table 1 Generalized survey results

Occupation / attitude towards e-learning	Lecturer	ICT specialist	University management	Head
Ready to use	75 (55.5%)	9 (47.3%)	5(83.3%)	2 (66.6%)
Rather ready	34 (25%)	7(36.8%)	1(16.7%)	1(33.4%)
Rather not ready	19(14%)	2 (10.5%)	0	0
Not ready to use	7 (5.5%)	1(5%)	0	0
Total	135	19	6	3

Table 2 Prospects of modern management in the implementation of e-learning (responses of the lecturers, ICT staff, university management and heads)

Advantaged identified as hindering the implementation of e-learning	No. of respondents
It provides more timely, consistent and reliable content that can be used again; there is a combination of synchronous and asynchronous learning.	158 (97%)
New technologies are a top priority for higher education institutions.	150 (89%)
It allows you to conduct lectures from anywhere in the world and expands geographical access to education.	130 (80%)
There is a possibility of interactive communication between students and teachers.	104 (64%)
There is a combination of synchronous and asynchronous learning.	100 (61.3%)
It supports a learner-centered e-learning and students can learn at their own pace.	97 (59.5%)
It expands access to education and makes it possible to combine study with work and family life.	93 (57%)
It facilitates monitoring of students' performance.	78 (47.9%)
E-learning reduces costs and increases the cost-effectiveness of educational resources.	76 (46.6%)
Other	20 (12.2%)

163 respondents were taken as 100%

Despite the prospects, some respondents are not interested in innovations. The main problems of modern management are lack of technical skills on e-learning and e-content development by the academic staff (55%) and inadequate ICT and e-learning infrastructure (71.7%). The lack of interest and commitment among the academic staff to use e-learning is another management problem that impedes the implementation of e-learning. This may be explained by the lack of motivation among teachers who regard the transition to e-learning as extra workload without further payment. The risk of job losses as a result of the

Table 3 Problems of modern management in the implementation of e-learning (responses of the lecturers, ICT staff, university management and heads)

Challenges identified as hindering the implementation of e-learning	No. of respondents
Inadequate ICT and e-learning infrastructure	117 (71.7%)
Financial constraints	110 (67.5%)
Lack of operational e-learning policies	108 (66.3%)
Amount of time required to develop e-learning content	100 (61.3%)
Lack of affordable and adequate Internet bandwidth	93 (57%)
Lack of technical skills on e-learning and e-content development by the academic staff	90 (55%)
Lack of interest and commitment among the academic staff to use e-learning	84 (51.5%)
Problems associated with the organization of webinars and virtual classes	55(33.5)
Other problems	4 (2.4%)

163 respondents were taken as 100%

introduction of e-learning has also been mentioned as a reason for the lack of interest and commitment among the academic staff to use e-learning. The survey also showed that financial constraints are one of the problems that impede the introduction of e-learning in state universities. Insufficient financing of e-learning is a serious obstacle to its successful implementation. Although it was noted that Moscow state universities annually allocate budget funds for the introduction of e-learning, it was obvious that these allocations are not sufficient for conducting all important e-learning activities, such as e-learning, technical support and electronic content development.

Since the survey was conducted at the universities of information technologies, we found out how competent the management and the students of the university in modern e-learning applications are.

Additionally, the survey showed that more than half of the students (55%) are not aware of the modern project management methods.

Eighty-three per cent out of 45% of students, who are aware of flexible project management methodologies, studied them independently. The most popular methodology is Scrum as it is understandable and popular among employers (see Fig. 1).

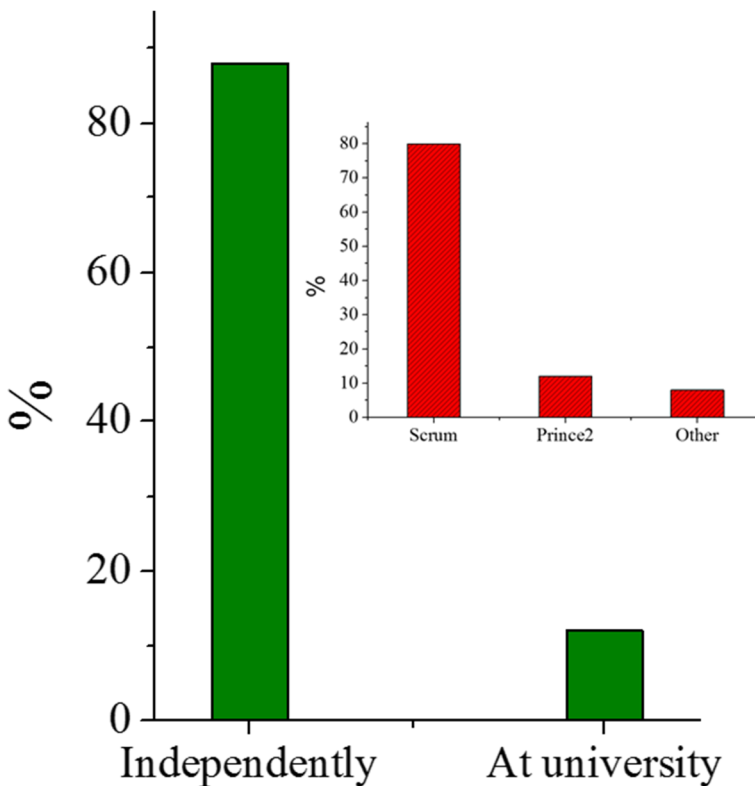


Fig. 1 Answers to the question “Do you study the modern methods of Scrum and Agile project management?”

4 Discussion

This study demonstrates that in the examined universities, the lack of interest in e-learning is due to the fact that employees often limit its use when posting and distributing information and resources or incorporating visual mass media into individual learning. One of the problems is associated with the psychological and physical distance between teachers and students (Kataoka and Mertala 2017). Sometimes teachers find it difficult to detect psychological barriers impeding student motivation and attitudes towards learning. Technologies and especially information and communication technologies help to overcome obstacles in the implementation of e-learning (Tamrakar and Mehta 2009; Belyakova and Zakharova 2019). If teachers want to succeed in using technology in their classes, they should have a positive attitude towards the new technology implementation (Touray et al. 2013).

It should be mentioned that the introduction of e-learning in developing countries is a problem. The study showed that there is potential for e-learning initiatives for the development of e-learning in these countries (Gulati 2008). However, poverty and lack of ICT infrastructure are the main problems that have been identified. In addition, Zamani and Esfijani (2016) singled out three categories of the obstacles that the university management in developing countries faces when using e-learning. The first category is “personal problems.” It includes factors related to internal personal characteristics, character and behavioral habits. The second category is “relationship inhibitors”. It consists of internal variables that are closer to the attitudes and opinions of the users regarding the e-learning function. Finally, the third category is “contextual inhibitors”. It refers to external variables that include lack of ICT skills and organizational support in using e-learning technologies. It also revealed that most of the projects related to ICT and e-learning in Russian state universities rely on donor financing. This practice can also be observed in other countries. For example, most Kenyan state universities do not give priority to e-learning in their budget allocations (Tarus et al. 2015). Huynh et al. (2003) found that budget constraints are a primary concern for educational institutions. According to Kashorda and Waema (2014), Kenyan universities on average spend only 0.5% of their overall spending on the Internet bandwidth. Over the past five years, the Ministry of Education in Germany has allocated around € 22 million for the needs of the virtual institute (Virtuelle Fachhochschule). The institute provides the students with an opportunity to study at a flexible schedule via the Internet regardless of their place of residence (Ehlers 2016).

The staff of universities that were involved in the study may benefit from the remote mode of teaching that the e-learning model suggests and thus, expand the geography of access to education. The current downward centralized approaches should be replaced by upward concepts focused on the self-sufficiency and mobility of modern intellectual workers. These efforts are supported by intelligent personal knowledge management devices that can connect with each other, as well as integrate with organizational systems. Thus, technology creates sustainable opportunities for the academic and professional growth of people and their role as participants and beneficiaries of institutional and social activities (Schmitt 2016). The virtual environment is becoming more and more popular in universities all over the world.

Modern university management should take into account all the problems and prospects for implementing e-learning. In this case, the manager of the educational

process should maximize management activities. At the same time, the manager should also be able to systemically conceptualize the situation in educational management, choose and use specific methodological approaches and principles when developing strategies for the e-learning implementation. All necessary information resources, software products, informational content and actions for their maintenance and provision are concentrated in the virtual environment. The end user does not need to know the real location of such systems (Denchev et al. 2016).

The popularity of e-learning is associated with the existing communication outside the university through the Internet. Universities that are innovative use ICT-based approaches to adjust their teaching methodology. Smart Digital Futures is a new solution that is actively used in management (Uskov et al. 2016). It is provided with the help of:

- A cloud-based application of autonomous networked personal devices based on development, hosting and no-SQL platforms in different technological environments.
- A conceptual framework for smart education that facilitates the development of smart curricula and educational programs in terms of individual, independent or e-learning.
- A digital assistant for intellectual, social, and emotional capital, creative authorship and collaboration throughout an academic and professional career.

In fact, these are real material resources. Thus, the cloud concept becomes the basis for innovative solutions, new business models and educational opportunities that allow each user to use the Internet more efficiently (Pavlova 2015). The cloud structure is an informational and educational environment for students. It is useful not only for administrative purposes (information on admission campaigns, courses, curricula, exam dates, exam results, course fees, a cloud information board for events, seminars, lectures and conferences), but also for educational purposes with the potential to help students improve their knowledge in the subject and specialty (Shakeabubakor et al. 2015; Shiau and Chau 2016). This allows students to: 1) work directly with the concept and environment; to conduct experiments, test a hypothesis and draw conclusions based on the information collected, work in a team; students can more deeply assimilate ideas and connect new concepts and previously studied material; 2) work in real world conditions. The educational environment of cloud computing provides more accurate modeling of various situations and conditions of the real world, where eventually new knowledge will be applied; 3) use information and communication technology resources in a flexible way (Sabi et al. 2016).

5 Conclusion

In our research we studied the problems and prospects of modern management that impede the implementation of e-learning in Moscow state universities. As a result, it was revealed that in modern management, the introduction of e-learning faces a number of problems: inadequate ICT and e-learning infrastructure, financial constraints, lack of affordable and adequate Internet bandwidth, lack of operational e-learning policies, lack

of e-content. We can conclude that e-learning can be successfully implemented if these obstacles are overcome. Additionally, as a result of the research, it was found out that e-learning is actively used by students as part of their independent learning. The study of programs and modern methods of project management is the main direction of students' independent learning. It was established that the majority of teachers and students are engaged in the development activities. The limitation of our research is that the survey was conducted at three universities, so it can be expanded at the federal level.

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