E-LEARNING AND COMPETITIVENESS IN HIGHER EDUCATION INDUSTRY: FUTURE TRENDS AND DIRECTIONS

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Abstract: *This paper considers future of e-learning system (LMS) in relation with competitiveness in higher education industry. The main purpose of e-learning system in educational institutions is to serve to students and professors in terms of managing educational knowledge. Applying e-learning systems in higher educational institutions contributes to effectiveness and efficiency of receiving new knowledge and skills needed by students. However, recent technological breakthrough in information industry and internet technologies impact the approach of students to learning and the learning process itself, reshaping e-learning system. What will the future of e-learning look like? Will it be substituted by some more sophisticated means of learning? What are the consequences for the students, professors and the learning process at the universities?*

Keywords: *E-learning, Higher education, LMS, transition, institutional framework, economic policy.*

1. INTRODUCTION

Information and communication technology, especially rapid growth of Internet, have a great impact on modern education, offering various opportunities for different kinds and modes of education.

E-learning has been recognized, both legally and in practice, as a significant and novel sphere of education. However, e-learning not only transforms the education itself, but also the economy as a whole.

Using e-learning in higher-education industry is not unusual any more; it has become a standard. In this way, e-learning education method is not an important competitiveness factor per se. A majority of universities in the world today offer this kind of education to students. This is also situation with Serbia.

Considering rapid transformation of the education industry, influenced by wide involving of e-learning and permanent improvements and enhancement of the education process by introducing new ITC technology, competition and competitiveness in higher-education are changing radically, in new, unprecedented ways and directions.

2. E-LEARNING IN TERMS OF COMPETITIVENESS IN HIGHER EDUCATION IN SERBIA

Generally speaking, e-learning (alternative terms: on-line learning, distance learning, etc.) may be seen as a mode of delivering education on an individual basis to students not physically present in the traditional setting (classroom). E-learning is technology enhanced learning mode, as it needs adequate technology framework, based on some LMS (learning management system) software, web connection and powerful hardware networking.

With its rapid growth and turbulent evolution, e-learning has become substantially diverse in its form and implementation. Hence, there is a problem in proper defining e-learning. Aside from many definitions that cover various aspects of e-learning, we may use a comprehensive definition by JISC [1] which says: "E-Learning can be defined as 'learning facilitated and supported through the use of information and communications technology. It can cover a spectrum of activities from the use of technology to support learning as part of a 'blended' approach (a combination of traditional and e-learning approaches), to learning that is delivered entirely online. Whatever the technology, however, learning is the vital element."

Much research has been conducted in this area, and the conclusions are that the e-learning segment of education industry has a huge and yet unrevealed potentiality.

In the 21st century, e-learning has become a standard of education process. Recent survey on e-learning presence in European higher education institutions, conducted between October and November 2013, clearly showed that the majority of European higher education institutions (HEI) have included e-learning in their education process in various forms. [2] Results of the research, in which participants from 38 European countries took place, show that that practically all higher education institutions have started to embrace e-learning. Most of the surveyed HEI use blended learning (91%), (combining e-learning and conventional teaching), and surprisingly 82% of institutions also indicate that they offer online learning courses.

The situation in Serbia is not so much different. According to Law on Higher Education in Republic of Serbia [3, Art. 32], distance learning or e-learning has been established as integral component of education process, as a study program alongside with traditional study program.

According to the database of the Ministry of Education, Science and Technological Development [4], there are 19 universities, 65 higher education colleges of professional career studies and 6 higher education colleges of academic studies. The total number of public HEI is 139: 8 state universities, which include 83 faculties, 1 higher education college of academic studies and 47 higher education colleges of professional career studies. In private sector there are 11 universities, which include 68 faculties, 4 higher education colleges of academic studies and 15 higher education colleges of professional career studies.

According to the List of accredited higher education institutions in Serbia, given on Ministry of education site, there are totally 100 HIE accredited in 2014, from which there are 1 state-owned and 2 private universities, and 79 state-owned and 18 private faculties.

Among the universities and faculties within social and humanities field of study, e-learning is fully included at 5 universities (Metropolitan, Singidunum, Megatrend, Educons, Business Academy) and partly on the state universities and other private universities.

The external environment for the HEI consists of three main bodies: (a) Ministry of Education, Science and Technological Development (MESTD), (b) National Council of Higher Education (NCHE) and (c) Commission for Accreditation and Quality Assessment (CAQA).

MESTD proposes education policy to the Government, make plans on admission policy for students and take care of allocating financial resources tio HEI, monitors the general development of higher education and manages and makes decisions of importance to the hugher education industry as a whole. NCHE is an independent body, generally responsible for strategic planning and decisions about main issues relevant for the coherence of the system of higher education, such as setting standards for the internal assessment and quality evaluation of HEI and establishing standards for issuing work permits. CAQA is legally responsible for organising and monitoring the quality assurance scheme for all higher education institutions in Serbia. [5]

Considering the results of the research that was conducted for the purpose of analyzing HEI concerning implementing e-learning system at the HEI in Serbia [6], we can conclude that there is a great interest for this kind of learning on our HEI, and they are technically prepared for involvement of e-learning technology. On the other hand, there is a lack of motivation and coordination among the staff for continuous improvement of the e-learning system. Two main factors for recognizing strategic and competitive value of the e-learning at the HEI in Serbia were emphasized: (a) need of proper education and training intended for teaching staff and management, in order to realize the full value of e-learning system, and (b) adequate motivation of the professors to accept and completely recognize the shift to e-learning mode of the learning process, which means huge change in organization and culture in HEI in Serbia.

3. TRENDS AND TENDENCIES OF FUTURE EDUCATION

In the modern global knowledge economy and society, learning is essential process and a key to knowledge management within education institutions, as well as businesses, non-profit industry and government.

Learning in the 21st century, together with knowledge, became a subject of global interest, study and research, developing into meta-learning issue, being a subject on its own, as we are continually dealing with learning, attempting to discover new modes of learning, and permanently *learning how to learn*.

Global e-learning market is in constant rise. According to [7], the global e-learning market is expected to reach 107 billion $ by 2015. The global e-learning market reached 32.1 billion $ in revenue in 2010, and amazing annual growth rate of approximately 9.2% was produced withiun five year compound. The estimated revenues for 2015 reach 49.9 billion US dollars.

There are some important "hot" trends, revealed in the current global setting that will continue in the future and will shape the form of future education.

We can recognize future trends in the present, hidden in the seed-form, as seminal ideas. Though we need to discover that seminal ideas in current micro-shifts in various industries, which have a potential to grow and develop further into significant waves of progression. There are some important "hot" trends, revealed in the current global setting that will continue in the future and will shape the design and dynamic of future education:

- Blended learning,
- Open education resources, especially Massive Open Online Courses (MOOCS),
- Micro-learning,
- Gamification,
- Virtual classrooms,
- Personalized learning,
- Social learning,
- E-learning ecosystems,
- M-learning,
- Augmented learning,
- APIs (Application Programing Interface),
- Cloud LMS,
- Wearable learning,
- Video learning, etc.

The fore mentioned trends are identified by analysis of the trends in the wide domain of global business [8], massive studies and research conducted by government and international bodies and institutions studies, and tracing and analysing expert opinions and scientific publications and other material published in paper and on the web.

What is really important here is that these identified trends are potentially new areas of using e-learning in the future. In other words, there are many new domains and fields of interest, which wait to be explored in the future. It is a huge scope of potential new ways of implementation and use of e-learning, which offer new amazing opportunities of development and satisfying new, yet unrecognizable needs and requirements of future clients. On the other hand, this large unrevealed scope of opportunities means new explosion of disruptive innovation, which will certainly change the learning and knowledge industry, the structure, modes and dynamic of learning, and, eventually, human learning capacity and even its meaning and place that learning occupy in our lives.

Some of the trends mentioned are already successfully implemented, such as blended learning, as a mode of combining formal learning practice and e-learning, and using MOOCS. Popularity of M-learning (using mobile devices as a platform for e-learning), with the huge expansion of mobile devices, is also big trend. UNESCO recognizes M-learning and promotes it, "working to help governments and individuals use mobile devices to advance Education for All Goals; respond to the challenges of particular educational contexts; supplement and enrich formal schooling; and, in general, make learning more accessible, equitable and flexible for students everywhere." [9]

Micro-learning is a new approach to learning, meaning learning in small chunks of knowledge. As it is well defined [10], it is "all about getting your eLearning in small doses, as tiny bursts of training material that you can comprehend in a short time (contrast with the hefty tomes you had to read at school to study a subject or the typical content-heavy eLearning class — which would be classified as "macro" learning)."

But there are completely new fields of use, such as augmented, APIs and wearable learning. Augmented learning means learning by using technical capacity of creating augmented (virtual) reality in a context of learning. In combination with rapidly rising artificial intelligence (AI) industry, it can be a new powerful opportunity of future learning. Augmented learning is "all about superimposing information on the learner's visual or auditory field, in essence augmenting his or her sensory inputs. In fact, a major part of augmented learning is known as *augmented reality,* which is concerned explicitly with enriching the user's perception of outside reality with extra information." [11]

API is a set of standards that enables communication between different programs or application, in a way that various e-learning software can be connected with each other and allowing content to exchange easily between different LMS platforms. SCORM is an example of this API. [12]

The role of teacher or a professor is of critical importance in evaluation future of education. Envisioning the challenges of the future role of a teacher, A. Pradhan writes: "Learning and development professionals are beginning to support this change‐creating learning ecosystems that empower learners by deepening experiences and reflect on them, while encouraging rich interactions with peers/mentors/ and coaches." [13]

The role of teachers is being transformed into a role of mediator, facilitator, coach or mentor. As D. Rosen wrote in her inspiring article: "In fact, e-learning can be a great resource because it frees up time and provides much richer content, and educators' roles will evolve to fit the times. Laboratories, social outlets, activity hubs, sports teams etc. may remain as important amenities of schools, but the classroom will function differently… A teacher may become a facilitator, motivator, and confidante rather than a transmitter of knowledge or disciplinary figure. Teachers may be the people designing the content, organizing the flow of courses, making sure students stay on-track, and supplementing the online content." [14]

4. COMPETITIVENESS FRAMEWORK AND IMPLEMENTATION OF COMPETITIVE INTELLIGENCE SYSTEM IN HEI IN SERBIA

Taking all previous data into consideration, we can state that the framework for competitiveness of the HEI in Serbia is defined by the following relevant factors:

- Regulation of HEI by legislative and government bodies responsible for proper and quality functioning of HEI,
- Trends and tendencies of the growth and development of e-learning on global and regional level,
- Internal organizational culture of the HEI itself;
- Technological implementation and resources used in the HEI,
- Education and training of the HEI staff for proper managing of the e.learning system,
- Potential new modes of implementation and use of e-learning, recognized in the new trends and tendencies.

Competitiveness of HEI, as complex, both educational and business organizations, which functioning is to a certain extent limited and regulated by governmental bodies, need to be supported and driven by using Competitive Intelligence (CI) system. CI can be defined as "strategic set of methods and techniques (scenario method, war-gaming, competitive profiling, SWOT, benchmarking, etc.) with a purpose of collecting, analyzing and producing knowledge about competitors' position and actions. Hence, CI serves to management of organization as a powerful strategic tool for tracking its competition." [15]

Competitive Intelligence can be fully defined as "*certain strategic and competitive concept, which includes application of adequate methods, techniques and tools, as a whole and continually, used by one or more companies, that enable collecting, processing and analyzing information and knowledge on characteristics and*

movements of competitors, tracing and predicting their future activities, with the purpose of designing and implementing one's own competitive strategy, in order to attain sustaining competitive advantage and improve its own competitive position in compare with direct and potential competitors in the environment." [Ibid.]

CI process consists of the following phases: (a) planning of the CI process; (b) collecting information; (c) processing; (d) analysis and (e) dissemination. It is permanent cycle, which purpose is to continuously search and monitor, process and analyse the external environment for the relevant information, and to serve as competitiveness factor of an organization.

In the model of competitiveness of HEI in the higher education industry, e-learning must be included as an important component of the complete learning process. Based on my former research that I have conducted on competitiveness of HEI in Serbia, and designing specific model of implementation of CI system in higher education industry in Serbia [16], I propose a modified model of CI implementation in HEI in Serbia, where e-learning is included as a main component of the system (image 1).
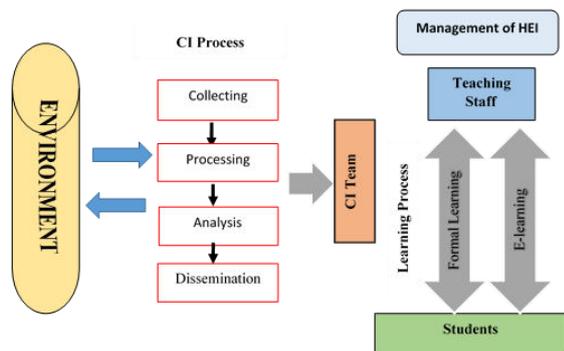

Image 1: Model of CI-driven competitiveness of HEI

As we may conclude, existence of e-learning application within HEI cannot be enough for the purpose of acquiring sustainable competitiveness. HEI, in order to be competitive in the global knowledge economy, need to change towards mobility, flexibility and adaptability with regard to grown knowledge and skills of the clients – students and the demand of the economy as such. E-learning has the potential to provide the underlying capabilities to make lifelong learning a reality.

There is a crucial role of the teaching staff (professors, instructors, mentors, etc.) in assessment functionality, effectiveness and efficacy of the e-learning system, considering its flexibility and interactivity, which emphasize importance of marketing intelligence: constant monitoring and analyzing of users' needs and requirements. Yet, human capital (knowledge workers) – teaching staff – is the really key factor of strategic competitiveness success. There is a huge potential of innovation in the new ways of application of e-learning, combined with formal learning and involved in the whole learning process anywhere and anytime, which may only

be realized if human capital takes responsibility for its own permanent learning (lifelong learning) and knowledge re-engineering.

As seen in the image 2, the learning process as whole (which includes e-learning) needs to be connected with CI system, which role is to identify relevant trends and tendencies from the external environment, recognize potentially valuable trends, and help designing new e-learning applications and practices, all that in continuously interactive learning process framework, including critical role of teaching staff, marketing and IT, and upon decision of the management of HEI.
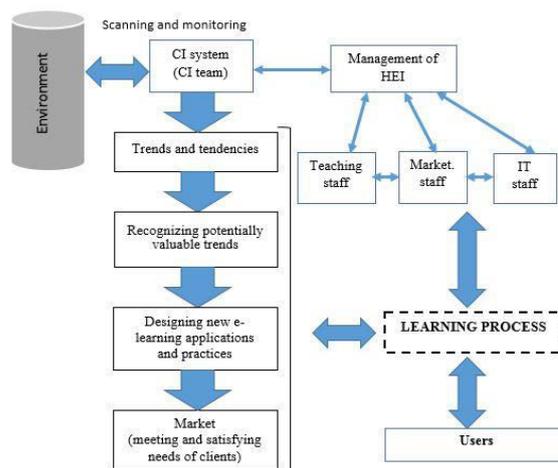

Image 2: CI as an competitiveness factor in coordination with learning process in HEI

5. CASE STUDY: E-LEARNING PERFORMANCE AT BELGRADE METROPOLITAN UNIVERSITY

E-learning system is widely used at the Belgrade Metropolitan University (further in the text: BMU) for many years and it is subjected to continuous change and improvement, in order to offer better service to its students as users.

The main strategic goal of the university is the improvement of the quality of learning process, including traditional learning and e-learning practices. In the past two years, a new e-learning platform has been developed and involved – LAMS (Learning Activity Management System), which replaced the previous e-learning system realized by Oracle. Although the new e-learning system is still in the stage of reconstruction and adaptation, it was used through the academic year 2014-15 and will be still kept used on.

LAMS is an open source platform, intended to designing, managing and delivering colaborative activities and conmtents for e-learning. This system offers an intuitive and open environment to a teaching staff, suitable for creating teaching activities both for small and bigger groups of attendees, depending on content, interactivioty

and collaboration needs. More detailed technical description of LAMS is given in [17].

The main reason of introducing new e-learning platform instead of the existent is the range of opportunities that LAMS system offers for e-learning, its adaptability, flexibility and interactivity. Along with that, the former e-learning system is Oracle product, i.e. the proprietary one, which generally doesn't offer any new function then any of the non-proprietary peers.

Research

Bearing in mind that the competitiveness of HEI based on the e-learning system performance need continuous change, modifications, adaptation and re-evaluation of the characteristics, performance and efficiency of the implemented e-learning system, as well as permanent interaction with students as the main users of the university's products and services, we conducted a certain research.

The goal of the research was to examine whether the new e-learning platform – LAMS – was more suitable for learning purposes, more efficient and with more adaptable functions. We wanted to test the students' perception of the LAMS system compared to the experience with the old, Oracle-based system. Thereby, we considered the fact that LAMS system is still in the phase of reconstruction and not yet in full function. The goal was to find out how the new LAMS e-learning system implemented at the BMU was perceived by students, which are the advantages and benefits of using LAMS rather then previous e-learning system, and what is students' opinion about the new e-learning system performance?

The hypothesis that the new LAMS system gives more opportunities, better interactivity and better performance, in general, then the old system, was stated.

The survey was performed by using a questionnaire, with 19 questions, out of which there were 9 open and 10 closed questions. The questionnaire was sent to respondents by email.

Sample

The sample was consisted of 64 students in total, all from various study years of the BMU. There were 29 (45%) male and 35 (55%) female students. According to the study program course, there were 45 (70%) students on e-learning study program and 19 (30%) on traditional study program.

Results

We will summarize the results on six questions, as they are dealing more concrete with the performance of LAMS e-learning system compared with the former one used at the BMU. We will take a short analysis of the given results.

The replies on the first question: "How much are you satisfied with the implementation of the current e-learning system on the BMU?" were distributed on a 5-point scale, where 1 = highly unsatisfied, 2 = unsatisfied, 3 = neither, 4 = satisfied and 5 = highly satisfied. Most of respondents replied they were satisfied – 29 or 45,3%, but there was a substantial number of those who were neither satisfied nor unsatisfied – 14 (21,9%), and not so small number of unsatisfied – 9 (14%); besides, there were equal number of highly unsatisfied and satisfied respondents – 6 (9,4%) in total.
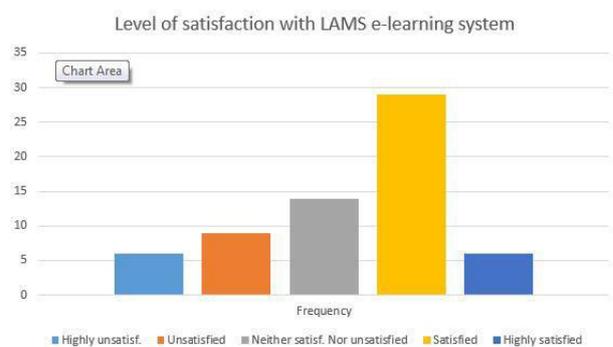

Image 3: Satisfaction of respondents with LAMS

The second question was: "Do you have problems in dealing with the e-learning system?" The respondents replied as follows: 10 (16,3%) replied "Yes" and 54 (83,7%) "No".

The third question was dealt with the problems in detail, so respondents had to choose one of the offered options: (a) it's complicated, (b) I need a lot of time to deal with it, (c) instructions are not so much clear, (d) it's not enough interactive, (e) _____. Respondents not only chose one or more of the options offered, but also explained their answers shortly. From the number of respondents who replied "Yes" in the previous question, 4 respondents chose option (b) or (b) plus (d), or their explanations were to be understood in that way and 3 respondents chose option (a) or argued that LAMS was complicated. Two of the respondents who replied in the previous question "Yes" did not choose any option.

The fourth question was: "Is LAMS better then the former e-learning system?" and the results were the following: 37 (57,8%) respondents replied "Yes", 16 (25%) replied "No" and 11 (17,2%) replied "I don't know".
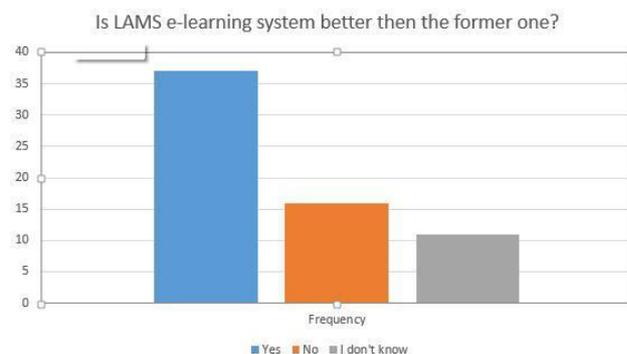

Image 4: Is LAMS better then the former one?

The fifth question was: "If reply on the previous question was "Yes", please explain why LAMS is better then the former one." On this question, 32 respondents replied (Image 5). Out of that number, the most of respondents (13 or 40,6% of the number of all replies) replied that they are getting accustomed with LAMS quickly and easily, 9 (28,1%) replied that LAMS was simpler, 6 (18,8%) replied that instructions for LAMS were appropriately easy and 3 (9,4%) replied that LAMS was very interactive. Only 1 respondent replied in a vague way, stating "every change is good."
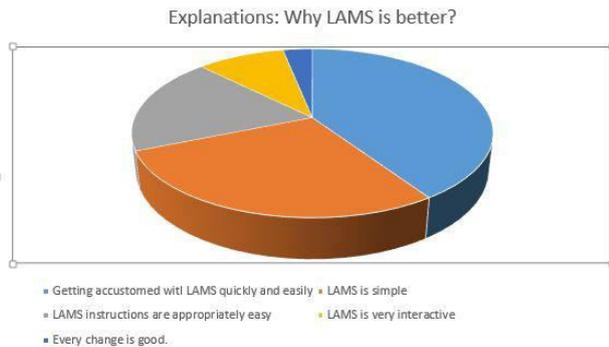

Image 5: Please explain why LAMS is better then the former one.

The aim of the last question was to ask respondents to give their own view on the future of e-learning system at the BMU. Respondents had to choose one of the offered options: (a) E-learning system will keep developing further; (b) It will need to be changed significantly to improve it; (c) It will be subjected to only lesser modifications; (d) There is no such a big future for that, so it will need to be cancelled or supplemented with something different. The replies (15 completed) were as follows: the most of replies (11 or 73,3%) chose option (a): E-learning system will keep developing further. There were 3 (20%) who replied: "It will need to be changed significantly to improve it", and only 1 (6,7%) respondent chose option (c), believing LAMS would be subjected to only lesser modifications. It is clear that respondents mostly believe in continuous development and improvement of the e-learning, which is one of the predominant features of competitiveness of e-learning, and learning process as a whole, within the competitiveness complex of the HEI.

What could be said about the results? The results received from the survey should be taken with some reservation, as LAMS system is pretty new one, and is still in a process of implementation. Hence, there is a significant percentage of indefinite replies (17,2% of all respondents replied "I don-t know" on the fourth question). However, there is an important amount of respondents who think LAMS is better then the former one, which means that there is a process of continuous improvement of e-learning system at the BMU. On the other hand, the analysis of the replies regarding explanation of the LAMS' better performance shows that strength of LAMS is its simple usage and easy and proper instructions for use. The interactivity of LAMS, which is also one of LAMS advantages, is not fully recognized by students. But, it is also consequence of the still unfinished reconstruction of the e-learning system. It is expected that LAMS will be completed and fully implemented throughout the actual academic year.

Finally, the students' opinion on the future of LAMS implementation, with the most of them believing in further sustainable development of LAMS, seems very optimistic and gives to the BMU a signal to keep invest in further development and modification of the e-learning system, for the purpose of sustaining competitiveness in the higher education market in Serbia.

6. CONCLUSION

In the model of competitiveness of HEI in the higher education industry, e-learning must be included as an important component of the complete learning process.

The learning process as whole (which includes e-learning) needs to be connected with CI system, which role is to identify relevant trends and tendencies from the external environment, recognize potentially valuable trends, and help designing new e-learning applications and practices, all that in continuously interactive learning process framework, including critical role of teaching staff, marketing and IT, and upon decision of the management of HEI.

Based on the model of CI-driven competitiveness of HEI, which includes e-learning as a critical component and competitiveness factor, we conducted a survey, which goal was to examine whether the new e-learning platform – LAMS – introduced and developed at the BMU was more suitable for learning purposes, more efficient and with more adaptable functions then the former one.

Based on the results of the survey, we may conclude that there is an important amount of respondents who think LAMS is better then the former one, which means that there is a process of continuous improvement of e-learning system at the BMU. The analysis of the replies regarding explanation of the LAMS' better performance shows that strength of LAMS is its simple usage and easy and proper instructions for use.

Students' opinion on the future of LAMS implementation, with the most of them believing in further sustainable development of LAMS, seems very optimistic and gives to the BMU a signal to keep invest in further development and modification of the e-learning system, for the purpose of sustaining competitiveness in the higher education market in Serbia.

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