

TRENDS IN THE USE OF INFORMATION AND EDUCATIONAL TECHNOLOGIES IN UNIVERSITIES: PRELIMINARY RESULTS OF CEE UNIVERSITIES SURVEY 2016

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Bojinov B. V. Trends in the Use of Information and Educational Technologies in Universities: Preliminary Results of CEE Universities Survey 2016

The article aims at revealing trends in the use of information and educational technologies in universities. It presents the preliminary results of the international study "Challenges for the management of information technology in universities" conducted between 31 October to 30 November 2016. It is demonstrated that IT technologies have deeply penetrated into the sphere of higher education. It is found that the personalized adaptive learning, open educational resources and Massive open online courses (MOOC) have an essential impact on activities of universities. The main technological changes taking place in universities are related to the introduction in education of mobile and cloud technologies, as well as social networks with consideration for increasing demands for information security. The findings of the study indicate the need to rethink the approach to the management of information technologies in universities as well as the business model of higher education.

Keywords: IT, university, higher education, IT Governance, IT management, IT managers, Central and Eastern Europe.

Fig.: 8. **Bibl.:** 8.

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Божинов Б. В. Тенденції у сфері використання інформаційних і освітніх технологій в університетах: попередні результати опитування, проведеного в університетах Центральної та Східної Європи у 2016 р.

Метою статті є розкриття тенденцій у сфері використання інформаційних і освітніх технологій в університетах. Представлено попередні результати міжнародного дослідження «Проблеми управління інформаційними технологіями в університетах», проведеного в період з 31 жовтня по 30 листопада 2016 р. Показано, що ІТ-технології стали невід'ємною частиною вищої освіти. Встановлено, що персоналізоване адаптивне навчання, відкриті освітні ресурси й масові відкриті онлайн-курси (МООК) впливають на діяльність університетів. Основні технологічні зміни пов'язані з упровадженням в освіту мобільних і хмарних технологій, а також соціальних мереж з урахуванням підвищення вимог до інформаційної безпеки. Результати проведеного дослідження вказують на необхідність переосмислення підходу до управління інформаційними технологіями в університетах, а також бізнес-моделі вищої освіти.

Ключові слова: ІТ, університет, вища освіта, бізнес-регулювання інформаційної служби організації, ІТ-менеджмент, ІТ-менеджери, Центральна і Східна Європа.

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Божинов Б. В. Тенденции в области использования информационных и образовательных технологий в университетах: предварительные результаты опроса, проведенного в университетах Центральной и Восточной Европы в 2016 г.

Целью статьи является раскрытие тенденций в области использования информационных и образовательных технологий в университетах. Представлены предварительные результаты международного исследования «Проблеми управления информационными технологиями в университетах», проведенного в период с 31 октября по 30 ноября 2016 г. Показано, что ИТ-технологии стали неотъемлемой частью высшего образования. Установлено, что персонализированное адаптивное обучение, открытые образовательные ресурсы и массовые открытые онлайн-курсы (МООК) оказывают существенное влияние на деятельность университетов. Основные технологические изменения связаны с внедрением в образование мобильных и облачных технологий, а также социальных сетей с учетом повышения требований к информационной безопасности. Результаты проведенного исследования указывают на необходимость переосмысления подхода к управлению информационными технологиями в университетах, а также бизнес-модели высшего образования.

Ключевые слова: ИТ, университет, высшее образование, бизнес-регулирование информационной службы организации, ИТ-менеджмент, ИТ-менеджеры, Центральная и Восточная Европа.

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The aim of the article is to consider the place and role of a modern IT manager in education according to preliminary results of the international study "Challenges for the management of information technology in universities" conducted between 31 October and 30 November 2016. The call for participation in the survey was sent to 552 universities in the following countries: Albania – 35, Bosnia and Herzegovina – 17, Bulgaria – 51, Greece – 40, Estonia – 18, Cyprus – 35, Kosovo – 6, Latvia – 18, Lithuania – 21, Macedonia – 17, Poland – 80, Romania – 55, Slovakia – 20, Slovenia – 8, Serbia – 13, Hungary – 36, Croatia – 40, Montenegro – 3 and the Czech Republic – 39. The participants in the survey were IT managers of the uni-

versities and/or members of senior academic management responsible for information technologies development in the university (IT Vice Rectors, CIO). The questionnaire was structured in 10 sections including a total of 103 questions divided as follows: (1) General information about the university – 6 questions, (2) General information about the Manager of the IT department – 12 questions, (3) the Manager of the IT department in the governance structure of the university – 10 questions, (4) Personal skills and commitments of the Manager of the IT department – 4 questions, (5) the IT department structure, appointments and personnel – 14 questions, (6) Role of the IT department Manager in the formation and management of IT budget – 17 ques-

tions, (7) Model of IT management and planning of IT activities in the university – 14 questions, (8) Technologies in the university – 7 questions, (9) Educational technologies used in the university – 11 questions, (10) Evaluation of activities of the IT department and the IT Manager – 8 questions. The survey is build upon the existing research on similar issues and complements it, and in cases where this is possible, the questions and answers to them are preserved in the form used in their original study [1–8].

Among the universities participating in the survey there prevail those with state or public funding (75.6%). Considering educational qualifications obtained by students in these universities, among the participants dominate higher schools rendering all forms of educational services provided for by the legislation. The respondents are IT managers primarily representing the middle management level. Their age distribution is relatively even, being in the range of 26-55 years, and has a tendency to a decrease in the upper limit. It is interesting to note that in two thirds of the cases IT managers of the universities gained their practical experience in the management of IT processes and technologies in business and 78.6% of them had worked in the sphere for more than five years. The fact that most of the managers (75.6%) occupied the position of IT manager in the university for the first time and that the majority of them held the current position over three years allows to suppose that they were able to define the problems and meet challenges of IT governance in the universities. In terms of their educational background, almost all of the IT managers have master's (47.6%) and doctorate (42.9%) degrees, mainly in engineering sciences (65.9%) and business (17.1 %). In prevailing cases they possess an academic degree (63.4%) but do not take up an academic position (56.1%). As for the majority of their commitments, they define them as administrative (39%), technical (34.1%), and lastly – academic (26.8%) ones.

The study found a high degree of the development and spread of information technologies in the universities (64.9%) and a considerably lower degree of irrationality expectations of students (13.5%) and the public (21.6%) (Fig. 1).

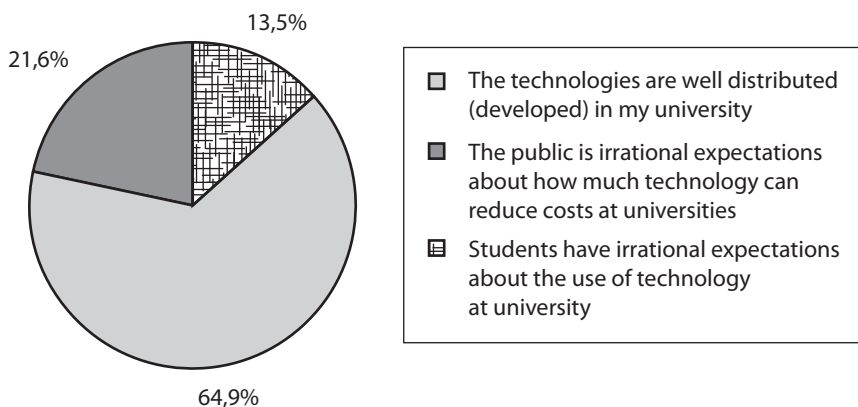


Fig. 1. The use of IT in the universities

The majority of respondents (48.6%) indicate that the information needs are well understood, and responsibilities for their management are imposed mainly on the centralized IT department. Some universities use mixed (37.8%) or decentralized (13.5%) models of IT management technology.

In terms of expectations for changes in the use of IT services in the universities, respondents almost unanimously indicated that they expect the demand to increase over time (80%). In parallel, IT managers realize that the universities are facing many challenges and changes that should be addressed in the new digital age. Among the most important factors that are expected to affect the activity of the universities they point out education based on competencies (59.5%), success of students (56.8%), electronic surveys (51.4%) and role of the institutional brand (43.2%) (Fig. 2).

Regarding the effect of the advent of new digital technologies in the universities, the expectations of the respondents are related mainly to increasing business opportunities through mechanisms of digital channels (21.6%), cost reduction (21.6%) and crossing the borders between industries (16.2%) (Fig. 3).

An important aspect of a modern university is the introduction of educational innovations in order to improve the quality of education, student satisfaction and competitive advantages of the institution. When asked “What innovation, in your opinion, will have the most positive impact on higher education in the future”, the universities under survey indicated the adaptive training for personalized education (22.2%), hybrid courses (30.6%) and open educational resources (25%) (Fig. 4).

Furthermore, the universities prefer the hybrid form of education (84.8%) before online training. As regards to the Massive open online courses (MOOC), they are not subject to consideration and implementation in most of the universities under survey (58.8%). Decisions related to the management of educational innovation, including through the use of information technology, are mainly in charge of a specialized unit for online training (35.3%) as well as higher levels of academic government – Academic Vice Rector (23.5%) or Dean (17.6%).

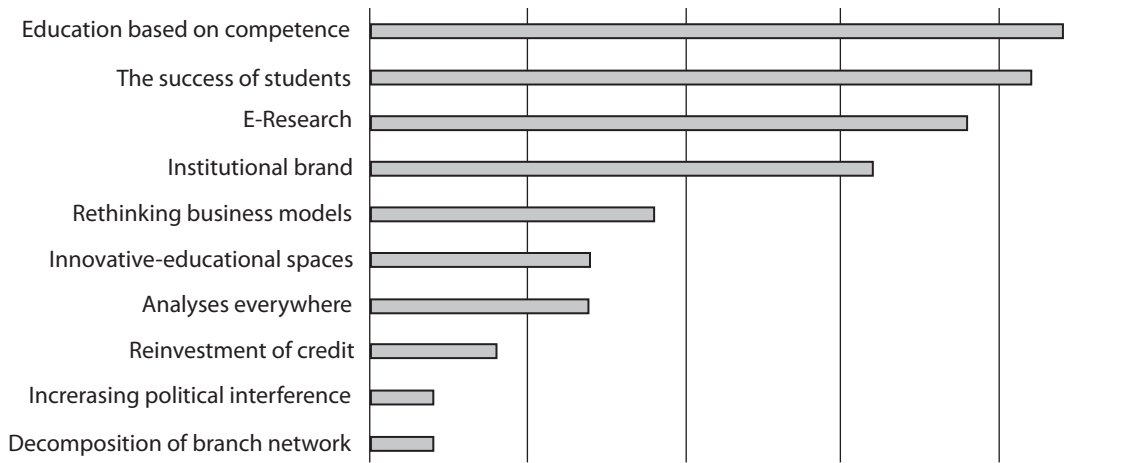


Fig. 2. The most important business trend and strategic technologies affecting higher education in 2016

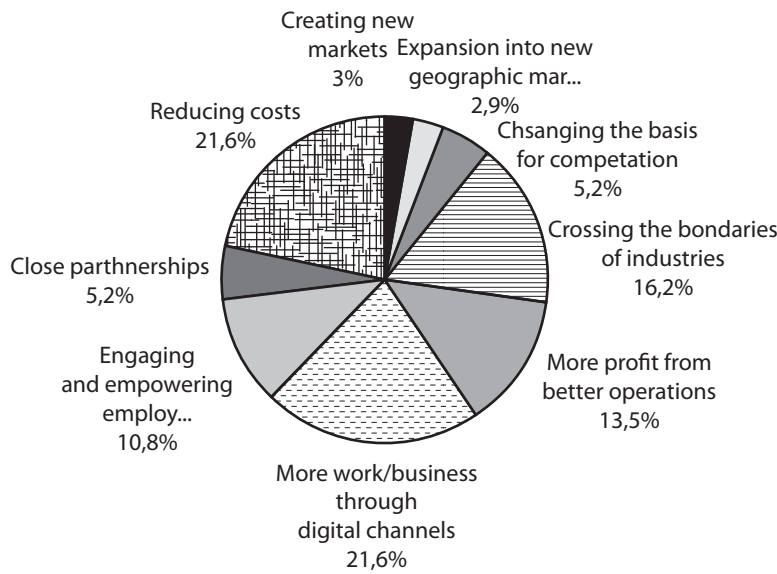


Fig. 3. Impact of digital technologies on higher education

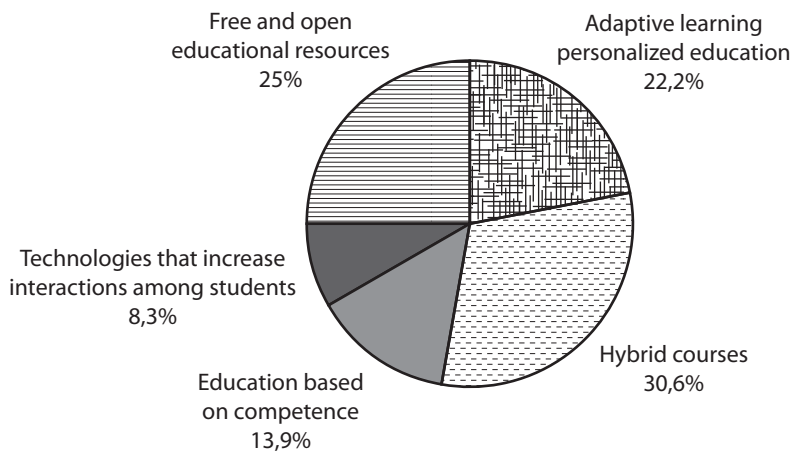


Fig. 4. Positive educational technology impact on higher education

In the technological context, expectations about changes in the activity of universities in the short term are associated mainly with the evolution and penetration of mobile technologies and social networks (53.8%), cloud services (51.3%) and virtualization technologies and solutions (43.6%). At the same time, the analysis shows that IT target funding in the universities is intended for the processes of server and desktop virtualization (35.1%), analytics and business intelligence (29.7%), data management and data storage (29.7%), wireless technologies (29.7%), information security (27%) and modernization of business (27%) (Fig. 5).

is made by top management in the face of Rector (56.4%), since the IT strategy is in line with the strategic priorities of the university.

Concerning the commitments of IT departments in the universities, the survey shows that most of the priority directions are related to administration and maintenance of applications (75.6%), networking and telecommunications maintenance (73.2%), IT storage management (68.3%), maintenance of the university website (68.3%), help desk and end-user support (65.9%) as well as management of hardware configurations (65.9%) (Fig. 7).

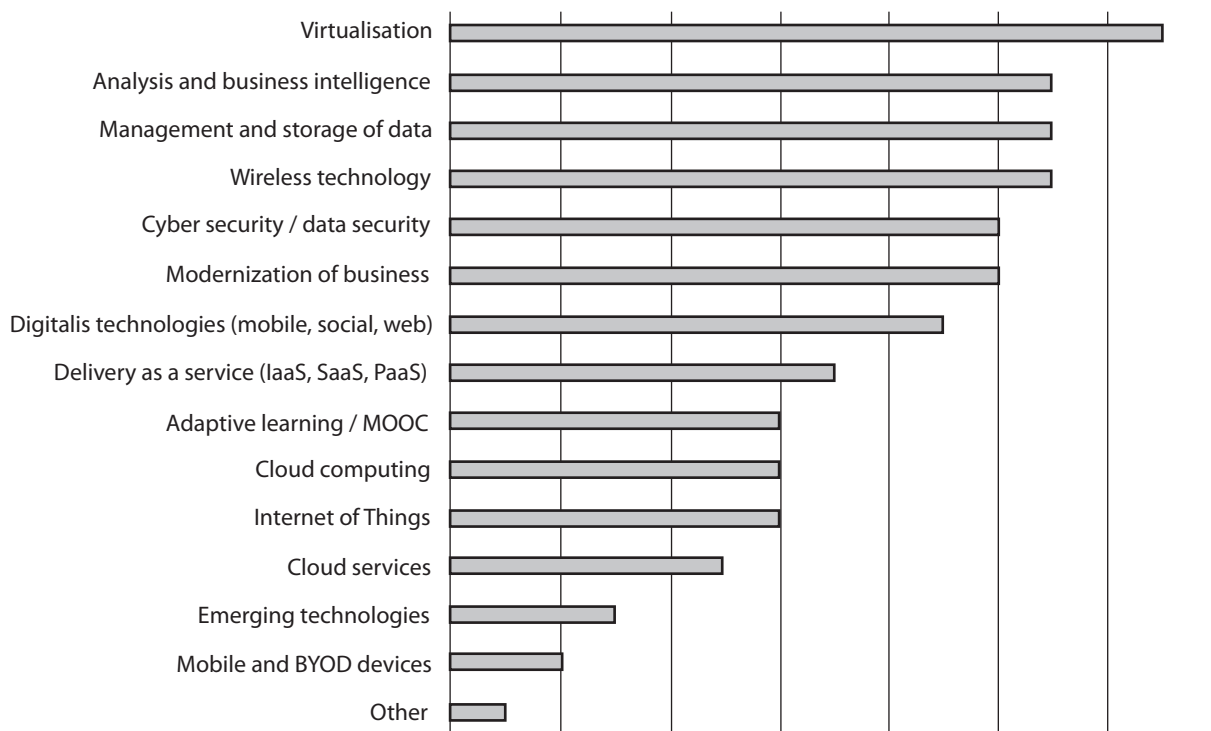


Fig. 5. IT financing priorities in the universities

As concerns the type of technologies used in universities (commercial/open-source /homemade), the study found a preference for commercial solutions (34.2%) as well as homemade solutions (23.7%) in regard to the basic administrative and business applications. Considering the technologies used in the area of content management systems, the universities preferred commercial solutions (28.6%), open-source solutions (20%) as well as homemade solutions (20%). As to the penetration of cloud solutions and technologies, the universities indicated that they definitely apply them in their activities (76.9%) and priority areas in this respect are the migration of e-mail storage, data management, student applications for online courses, and social networks of universities.

The leading IT institutional priorities comprise IT department activities related to IT cost optimization (63.4%), the institutional integration of ICT in universities (58.5%), network and data security (53.7%), as well as upgrade or replacement of the existing software solutions (53.7%) and computer equipment (53.7%) (Fig. 8).

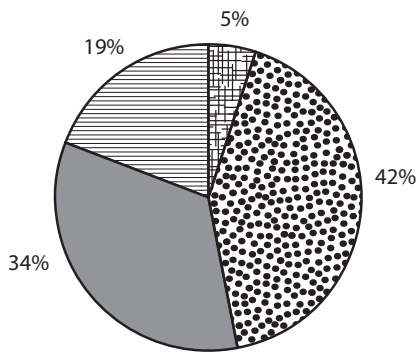
Speaking of the strategic management and planning of IT processes, in most cases, the universities developed and adopted strategic plans (mandate programs), some of which are related to the use of IT technology (76%), with the share of those where the IT department developed a strategic plan independently amounting to 42% (Fig.6).

Among the main problems and causes of failure of IT projects in the universities the respondents indicated the lack of earmarked funds (72.5%), lack of critical skills and human resources for implementation of the projects (50%), problems with the existing infrastructure, problems with IT processes planning, as well as the lack of continuous training of users.

CONCLUSIONS

As regards defining IT priorities in the strategic documents, in particular the IT strategy of the higher school, it

The survey found that IT managers in higher education occupy positions in the middle management echelon, since strict coordination of their work with the top management of the university is required. In prevailing cases the university authorities include information technologies in their strategic documents and priorities, but they do not always correspond to the vision of IT managers. In general, the







-  University of no strategic plan (Mandatory Program) Development
-  University has a strategic plan (Mandatory Program) for development, IT technologies are part of this plan, as the IT department has independently developed a strategic plan for the development of IT technology
-  University has a strategic plan (Mandatory Program) for development, IT technologies are part of this plan, but the IT department has no self-developed strategic plan for the development of IT technology
-  University has a strategic plan (Mandatory Program) for development, but IT technologies are not part of this plan

Fig. 6. Strategic IT planning in the universities

universities have bias towards centralized management of IT processes, especially in the part related to financial costs.

The use of information and educational technologies at the universities is relatively wide in scope and range of the services provided, but they very often confront with incomprehension and excessive expectations of students and

the public, as sometimes they have the lack of support from the university authorities. There expected an increase in the demand for this type of service as well as their positive effect on the quality of education, but the business model in higher education needs rethinking. The observed trends to improve adaptive and personalized training related to the acquisition of competencies and the freedom for open universities to provide their educational resources are expected to have especially significant effect on the process. In the technological context, major changes are expected in the field of mobile and cloud technologies and social networks with consideration for the increasing demand for information security.

The findings of the study indicate the need to rethink the approach to the management of information technology in universities to improve the alignment of business and IT priorities with the objectives of the higher educational institution, which would significantly help to increase the efficiency of management of the limited financial resources of the universities and help them to achieve their educational and business purposes.

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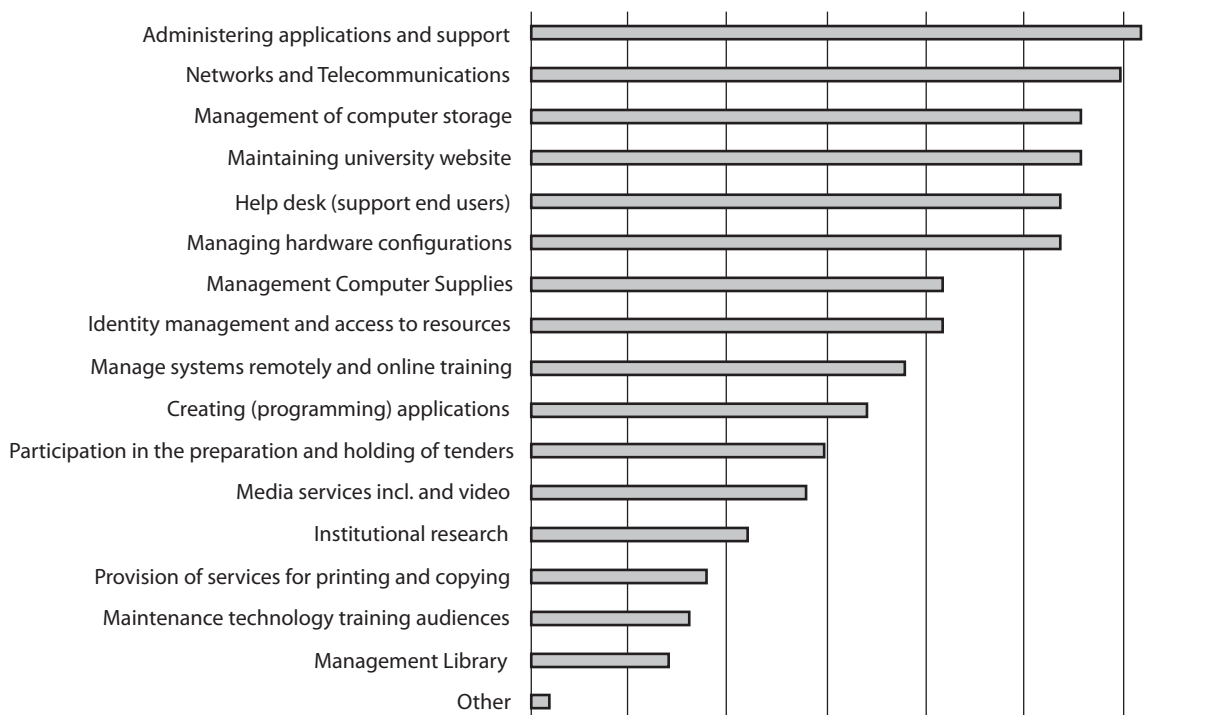


Fig. 7. Main activities of the IT unit in the universities

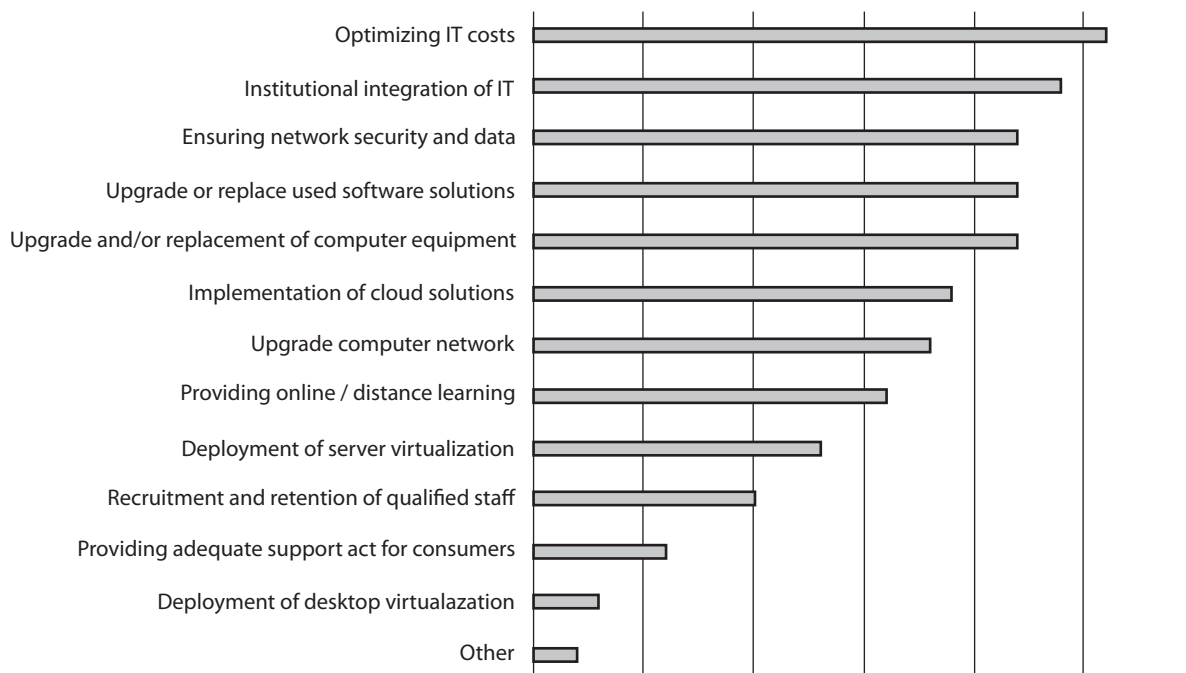


Fig. 8. Main institutional priorities in activities of the IT unit in the universities

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