

**SLCMC 2021**

International conference «State and law in the context of modern challenges»

**OPTIMIZING THE IMPLEMENTATION OF UNIVERSITY  
DIGITALIZATION PRACTICES**Natalia N. Kovaleva (a)\*, Polina V. Eresko (b), Vera F. Izotova (c), Yevgeniy R. Gafarov (d)  
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**Abstract**

The process of university digitalization at the present stage includes an information educational environment, electronic office management, financial reporting, various information systems and communication tools. The optimization of university digitalization processes involves the use of the single digital platform for all information processes and university's departments, which provides direct document exchange between the systems. The linking element of digital space formation is, in our opinion, electronic document management. The purpose of the study is to analyze the practice of introducing information systems and technologies into the work of universities, identifying legal and organizational problems arising in this regard, determining the optimal conditions for the introduction of electronic document management. The study analyses the experience of implementation of different electronic document interchange systems (EDMS) as well as the comparison of approaches devoted to electronic document management implementation in other universities. Therefore, EDMS has been chosen. The modeling of the system for the main divisions of the university was carried out using the example of several groups of documents. Experimental approbation of electronic document management in university is implemented. The result of the study is the reasoning of need to develop mutually integrated systems, which model the work of university divisions, branches. The study found that important problems of optimizing the implementation of digitalization practices in universities lie in the legal framework. The argument was made for the internal regulation developing, which, if possible, exclude the duplication of paper and electronic document interchange and parallel maintenance of several information systems.

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*Keywords:* Electronic document management, electronic document management systems implementation, legal regulation, optimal conditions of implementation, university digitalization



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## **1. Introduction**

Different communication tools, specialized information educational environment (Moodle, etc.), cloud technologies, network resources, social networking, data exchange systems are widely used in the university for content processing and maintenance. Thereby specialized information systems and e-learning technologies must ensure information security. Electronic document management is the main resource of university digitalization.

At the state level, a legal basis has been created for maintaining a fully-functional electronic document management (Valeev & Nuriev, 2019), as evidenced by the activities of state bodies (for example, <https://www.gosuslugi.ru/>). However, fully functional electronic document management is not operating at the organization, particularly university, level, as evidenced by numerous publications (Andreeva & Kogai, 2019; Titor et al., 2021). It determines the relevance of this study.

## **2. Problem Statement**

Low user activity including among management personnel of university is one of the reasons for slowing electronic document management. It is stated that underfunding in license and e-signatures purchase does not allow conducting the fully functional electronic document management. It is noted that it is necessary to set up and maintain the software for specific tasks, roles and functions in EDMS (Andreeva & Kogai, 2019; de Cicco et al., 2019).

It is important to note that it is impossible to completely transfer document management into electronic form, since some university documents, according to the law, must be kept in paper form (Titor et al., 2021).

It is hard to disagree with many authors (Meibo, 2019) that there is the need to develop simple document flow routes and create document template; identify document management areas, where only paper document is used, only electronic document management; specify a list of documents, which are the subject to inspection in EDMS.

An important factor in the creation of electronic document exchange is the choice of a modern EDMS, which makes it possible to form a single information space of the university, uniting all of its departments and branches (Volchinskaya, 2017).

Many authors mention the key role of management personnel of university in electronic document management implementation (Klishin et al., 2017). They speak about the need to give to the EDMS implementation manager significant and undivided authority in order to meet the resistance from university conservative staff.

On the one hand, the development of society and state is directly connected with the process of digitalization, electronic document interchange in particular. On the other hand, during the process of electronic document interchange implementation, organisations face not only technological, financial and psychological issues, but also the lack of legal regulation and model local legal acts. Based on the results of the study, the optimal conditions for the introduction of electronic document interchange into the practice of digitalization of universities, the formation of a modern information space of the university and the successful digitalization of each Russian university divisions' work were identified.

### **3. Research Questions**

The study investigates the possible ways for optimization the process of university digitalization in the sphere of electronic document interchange.

Thus, the system "1C: ECM" has been chosen for the Saratov State Law Academy. The main advantage of this programme is that the system is based on the platform "1C: Enterprise 8". The same platform is used by integrated university information management system "1C: University and system of accounting".

The obvious benefits of the system "1C: ECM" are flexibility, safety, information security, file formats and others. The flexibility of "1C: ECM" user settings is manifested in the possibility of constructing security policy rights.

### **4. Purpose of the Study**

The purpose of the study is the analysis of electronic document management implementation as the main digital technology in university, legal and organization management, development of optimal solutions for successful university digitalization practice.

### **5. Research Methods**

The basis of the analysis is the experience of introduction of different electronic document interchange systems and comparison of the approaches to electronic document management implementation in universities and other educational institutions as well as the combination of dialectical, formal and systemic research methods and an informational approach.

Authors used the method of analysing the capabilities of electronic document management systems, particularly "1C: ECM". Based on the modeling method (Krasnyanskiy et al., 2018) the authors performed:

1. Simulation of university's document exchange in 1C on the example specific documents: an order, a contract, incoming and outgoing correspondence.
2. Process customization and testing.
3. Security policy customization, each employee roles and function customization.

Experimental implementation of the system into academy's actual operation (by the example of the Order) included the development of the routs for document flow; staff training; error detection; incorrect settings.

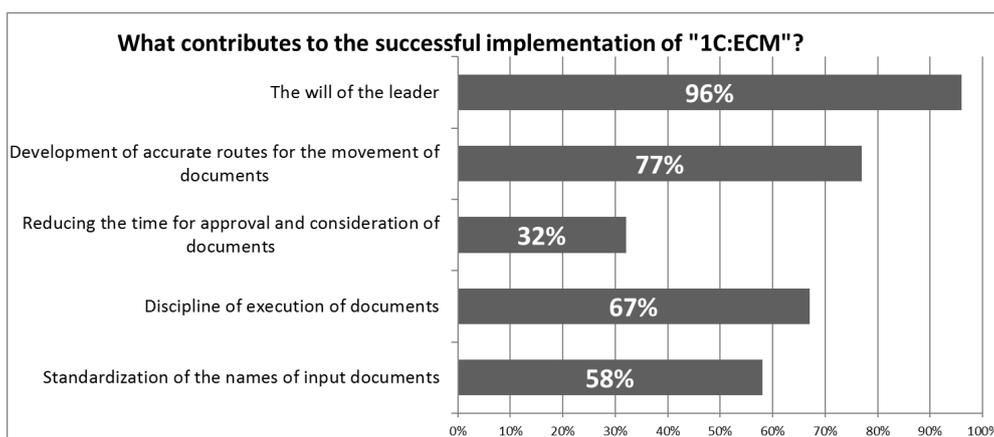
### **6. Findings**

The analysis of university digitalization practices implementation showed that they use various information systems and are at different stages of EDMS implementation. They can be divided into three groups. The first group of universities uses the system for cooperative work on projects and documents for information and execution. The second group uses EDMS for working with specific types of

documents, that do not require paper copy storage, for example, service memo. The third group completely implemented EDMS in most cases and uses "1C: ECM".

The research is based on e-survey (Google Forms), posted on different Internet resources, including Facebook, VK, as well as WhatsApp, Telegram and others. More than 20 Russian universities took part in the survey.

The respondents gave the priority to such benefits of "1C: ECM" program as fast document flow – 100 %, and distant harmonization of documents. Opportunities of 1C for inspection of linked documents and document flow stages monitoring were highly rated by respondents too – 78 and 74 % (Figure 1).



**Figure 1.** Benefits of "1C: ECM" use

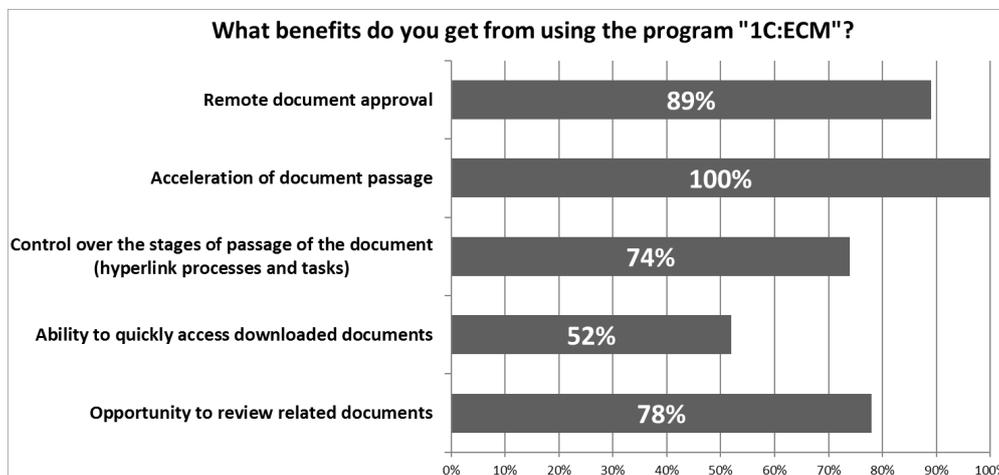
Respondents mentioned such downsides of "1C: ECM" as "Execution of orders control" criterion – 44 %: "Inability to register a document retroactively" and "Duplication of electronic and paper document management" criteria got approximately 26 and 21 %.

The survey results showed, that priority factor of successful implementation of "1C: ECM" is "Manager's will" – 96 %. "The development of document flow exact route" got the second place – 77 %, "Standardization of document names" and "document execution discipline" are equally important – 58 % and 67 %. "Document agreement and consideration deadline reduction" is less popular among respondents (Figure 2).

Standard implementation of "1C: ECM" presupposes the implementation process made by 1C company, management of the current implementation project at the university, monitoring the execution and revision of existing report forms to meet the requirements of the university. Integrated automation using 1C presupposes the use of the single reliable information system instead of isolated databases.

During the process of "1C: ECM" implementation, Saratov State Law Academy created the special expert group that tested and adjusted the document processes in 1C system for the peculiarities of Saratov State Law Academy. The group consisted of the employees, who had been trained in "Training Centre 1C No. 1".

"1C: ECM" implementation was held in Saratov State Law Academy from February 1, 2020, and consisted of the following stages. At the first stage, until April 2020, a phased system setup and employee training were carried out.



**Figure 2.** Factors affecting the success of "1C: ECM" implementation

The great methodological work was carried out; all groups of employees, connected with the document flow (HR department, rectorate, institute and departments chief clerks) were trained for the successful adaptation to the EDMS use. The peculiarities of document processing in different Saratov State Law Academy divisions as well as such peculiarities of employees, as personal qualification, computer skills, age, were taken into account during the training process. An extensive methodological material was prepared, including step-by-step instructions, demonstration videos and 24-hour counselling.

At the second stage, the range of processed documents was expanded and employees of practically all departments were involved.

With the active support of the leadership of the Academy, the process of electronic document management implementation was carried out at rapid pace during the pandemic lockdown period, because it helped to face different current issues. However, after the lockdown, many departments returned to using paper document flow in all cases, where the storage of signed paper documents was regulated. There was a situation of double, in some cases, triple registration of the same documents by different information systems: "1C: ECM", "1C: University", "1C: Accounting". Such situation is unnatural and typical for the interelectronic document management stage, after which the registration must be carried out only in one system.

In our opinion, the key factor, limiting the electronic document management implementation in university, is in legal framework.

This refers to regulatory acts, determining the form of document storage. For example, if the regulation determines the long-term document storage in academic board, and the documents are used as the basis for the selection board (signed agreements, with five handwritten visa, paper copies of educational documents, certified by the HR department and others), the secretary cannot replace the

above mentioned documents with the paper copies of the same documents from EDM and save the documents in storing e-form in the EDMS databases.

Distant reconciliation and document sending through EDMS with the following storage is possible only as temporary measure, dictated by the need to distant work in pandemic lockdown conditions until the local regulatory acts are officially adopted.

In traditional conditions the need to keep paper and e-document flow wipe out all efforts to electronic document management implementation. The research confirms this conclusion.

The result of the study is the following criteria, which can be considered as the optimal conditions for the implementation of university digitalization and electronic document interchange:

1. Improving information and literacy skills among the employees.
2. Quick access to information and no double data entry.
3. Improving labour efficiency, reducing time spent on routine operations.
4. Separate accounting.

## 7. Conclusion

Different types of electronic document interchange implementation were analyzed. The authors developed methodological guidelines for legal regulation of the process of electronic document management implementation in organisations. Therefore, the question about creating local norms in the sphere of electronic document management implementation inside an organization and providing information security must be developed and systematized according to the provisions of the current legislation. Model local legal acts must not only be declared, but also supported by relevant terminology and effective measures for its creation.

Besides, analysing the average figures of conducted analytical, methodological and practical research in the sphere of "IC: ECM" implementation, it can be concluded that there is the need to develop and use of model local legal acts in the technical legal form, for example, approval register, which can describe the document flow routes.

## References

- Andreeva, K. A., & Kogai, V. N. (2019). Need and degree of implementation of electronic document management in higher education. *Achievements of science and education*, 2(43). <https://cyberleninka.ru/article/n/neobhodimost-i-stepen-vnedreniya-elektronnogo-dokumentoooborota-v-vuze>
- de Cicco, L. R., Drumond, G. M., & Méxas, M. P. (2019). Critical success factors in the implementation of electronic document management system: a study at a public university. *Information science*, 48(3), 184–202.
- Klishin, A. P., Volkova, N. R., Eremina, N. L., Mytnik, A. A., & Klyzhko, E. N. (2017). Approaches to document management automation in higher education. *Bull. NSU. Series: Information technologies*, 15(1), 36–46.
- Krasnyanskiy, M. N., Obukhov, A. D., Voyakina, A. A., Skvortsov, V. I., & Khvorov, V. A. (2018). The algorithm of document routing in the electronic document management system using machine learning methods. *International Multidisciplinary Scientific GeoConference SGEM*, 18(2.1), 765–772.

- Meibo, E. A. (2019). Electronic document management in the activities of the universities (for example Institute of culture). *Young scientist*, 42(280), 9–11. <https://moluch.ru/archive/280/63060/>
- Titor, S. E., Opimpiev, A. Y., & Eriashvili, N. D. (2021). Legal basis for the electronic document workflow in hr procedures. *Lecture Notes in Networks and Systems*, 155, 1389–1396.
- Valeev, D. K., & Nuriev, A. G. (2019). Electronic Document Flow in the Field of Justice in the Digital Economy. *Perm University Herald. Juridical Sciences*, 45, 467–489. <https://doi.org/10.17072/1995-4190-2019-45-467-489>
- Volchinskaya, E. K. (2017). Electronic document management: storage problems. *Information law*, 1, 4–12.