

UDC657
JEL M15

APPLICATION OF MODERN TECHNOLOGIES OF INTELLIGENT DATA PROCESSING IN SED \ ECM SOLUTIONS

Nikolenko L. A.,

*PhD in Economics, Associate Professor of the Department of Accounting,
SHEE «Kyiv National Economic University named after Vadym Hetman»*

A The article is devoted to the problem of the development to fin novative informational, systems that provide operative usage of information for making management decision sand allow to integrate existing function-applied subsystems into unified system of electronic documents circulation (SED). This system provides common organization and administration of all documents of the enterprise with definition of the access permission, processing of large volumes of documents, provides safety, processes of coordination and publication, efficient fulfilment of different tasks of documents circulation, archiving and preservation of all corporate information. Electronic documents move freely inside the information system and serve as the source of information for integration and distribution among all business-processes of the enterprise. This simplifies flows of important information and allows to get immediate answers to various queries. Implementation of the se functions shows significant advantage of SED over existing systems of automation of business-processes.

K information, system, management, electronic documents circulation, accounting.

ЗАСТОСУВАННЯ СУЧАСНИХ ТЕХНОЛОГІЙ ІНТЕЛЕКТУАЛЬНОЇ ОБРОБКИ ДАНИХ В СЕД \ ЕСМ-РІШЕННЯХ

Ніколенко Л. А.,

*кандидат економічних наук, доцент кафедри бухгалтерського обліку,
ДВНЗ «Київський національний економічний університет імені Вадима Гетьмана»*

A В статті розглядаються проблеми створення інноваційних інформаційних систем, що забезпечують оперативне використання інформації для ухвалення управлінських рішень та надають змогу інтегрувати наявні функціонально-прикладні підсистеми в єдину систему електронного документообігу (СЕД). Ця система забезпечує загальну організацію та управління усіма документами підприємства з визначенням права доступу, опрацювання великих обсягів документів, безпеку, процеси погодження та публікації, ефективне виконання різних завдань документообігу, архівацію та збереження усієї корпоративної інформації. Електронні документи вільно переміщуються всередині інформаційної системи і є джерелом інформації для інтеграції та поширення між усіма бізнес-процесами підприємства, що спрощує великі об'єми важливої інформації та дає змогу отримувати миттєві відповіді на різні запити. Здійснення цих функцій засвідчує суттєву перевагу СЕД над чинними системами автоматизації бізнес-процесів.

K інформація, система, управління, електронний документообіг, бухгалтерський облік.

ПРИМЕНЕНИЕ СОВРЕМЕННЫХ ТЕХНОЛОГИЙ ИНТЕЛЛЕКТУАЛЬНОЙ ОБРАБОТКИ ДАННЫХ В СЭД \ ЕСМ-РЕШЕНИЯХ

Николенко Л. А.,

*кандидат экономических наук, доцент кафедры бухгалтерского учета,
ГВУЗ «Киевский национальный экономический университет имени Вадима Гетьмана»*

A В статье рассматриваются проблемы построения инновационных информационных систем, которые обеспечивают оперативное использование информации для принятия управленческих решений и предоставляют возможность интегрировать существующие функционально-прикладные подсистемы в единую систему электронного документооборота (СЭД). Эта система обеспечивает общую организацию и управление всеми документами предприятия с определением права доступа, обработку больших объемов документов, безопасность, процессы соглашения и публикации, эффективное исполнение разных задач документооборота, архивацию и сохранение всей корпоративной информации. Электронные документы свободно перемещаются в информационной системе и являются источником информации для интеграции и распространения между всеми бизнес-процессами предприятия, что упрощает потоки важной информации и разрешает получать мгновенные ответы на разные обращения. Исполнение этих функций демонстрирует существенное превосходство СЭД над существующими системами автоматизации бизнес-процессов.

K информация, система, управление, электронный документооборот, бухгалтерский учет.

Statement of the problem

The development of social relations demand the development, improvement and renewal of scientific and technical, regulatory and legal framework of Ukraine, creation of special juridical standards

and rules of regulation of the sphere of informational and documentary relations. The Verkhovna Rada of Ukraine has already adopted a number of laws that define main organizational and legal foundations of electronic documents circulation and usage of

electronic documents. Thus, the usage of electronic documents circulation is legally supported and is rather widespread in Ukrainian enterprises.

Nevertheless, there are a lot of problems concerning implementation and storage of documents together with attributes in data bases. Also, one can see increasing security requirements for access to documents, and the main task of enterprises is to improve the efficiency of work with documents in conditions of a large amount of information stored.

That is why in conditions of informational society, those enterprises that want to stand the tempo of modern competition must develop new informational systems. These systems must provide operative usage of information for making management decisions and give the opportunity to integrate existing functional-applied subsystems (accounting, operative administration of production, administration of personnel, administration of resources and etc.) into unified system of electronic documents circulation, which can be determined as functional subsystem, that fulfills integrative function for all informational system of the enterprise and is the platform for the development of the last one. Characteristics of current economic reality meet the new opportunities provided by modern computer technologies. A huge progress in the field of computer science that we can observe during recent years has provided a number of new tools in the implementation and administration of accounting processes that significantly enhance productivity.

That is why there is a problem: how to integrate different techniques of administration and their tools in corporate system on the basis of the platform SED \ ECM and to guarantee the manager the unified point for entrance for different techniques of administration and quick and well-timed usage of information for planning, accounting, control and decision making.

Analysis of recent researches and publications

Questions of choice, implementation, and usage of certain SED in order to provide the activity of commercial enterprises, state organizations and institutions were widely disclosed in scientific and specialized professional publications. Thus, for example, V. P. Py-sarenko, S. V. Radchenko investigate of State Authority, P. P. Polinovskiy – the question of implementation of SED in scientific organizations, M. Pleshakova-Borovyńska – SED in the activity of industrial enterprises. As for implementation of SED, scientific publications widely investigate problems of implementation of SED in order to automate business processes. International experience concerning usage of modern SED in management of the enterprise is innovative part concerning implementation of new instruments and methods

of management. Review of the literature on the impact of SED (international interpretation of ERP-system) on management of the enterprise has a relative short history. Thus, E. Hunton and others tried to determine the impact of implementation of the ERP at the general condition of the enterprise. They compared rates of return on assets, rates of return on investment and total assets turnover. Z. Matolchi investigated advantages of ERP in the areas of internal logistics, production operations and marketing. According to their point of view, the system positively influenced the inventory turnover ratio and asset turnover ratio.

Statement of the problem

Most part of available investigations do not allow to get a clear answer on appropriateness of usage and practical implementation of SED in Ukrainian enterprises. Thus, some aspects of usage of ESD in corporate business were covered in the scientific literature, but it lacks clear views on approaches to creation of open SED – infrastructure that integrates specialized repositories across the whole enterprise.

Presentation of the basic material

We consider the system of electronic document circulation, which is a set of processes of creating, processing, sending, transmission, receipt, storage, usage and disposal of electronic documents that are performed using the integrity check and, if necessary, with confirmation of receipt of such documents. Electronic document circulation is a high-tech and progressive approach to significant improving the efficiency of various enterprises, organizations and institutions.

This characteristic is caused by the fact that unlike the existing information objects, electronic documents, which are key element of SED, firstly, have legislated legal force and, secondly, can move freely within the enterprise information system due to its independence from specific software applications. Besides, electronic document, unlike other information objects, is a unit of management information, quality and efficiency of which receipt affects the work of the whole enterprise.

In general, we can assume that SED – is organizational and technical system that provides the process of creation and control of access and distribution of electronic documents in computer networks, and provides control over the flow of documents within the organization. There are different methods of management in modern organization. They are based on usage of different software. Outlines of operational management in processes of production and logistic tasks are being automated with the help of ERP systems, and directive and documentary management – with the usage of SED (electronic documentation systems). Studies have

shown that the vast majority of domestic enterprises automate their document circulation by means of using a software package of Microsoft. It can be explained by the easiness of the usage and extensive features.

Nevertheless, the dynamic changes and innovative processes in the field of modern information technologies and hyper competition encourage enterprises to implement integrated information systems. These systems are able to improve all production and management processes and provide a number of new tools in order to improve the performance of the enterprise. They also provide efficient hardware platforms for the generation of all parts of information that may be needed for decision-making, preparation of various reports and access to the exchange and dissemination of information to each unit by ensuring its integration between all business-processes of the enterprise. Data are entered into the system and immediately become available through multi-modular constructions for any division and is a source of information for integrating financial and non-financial data. Data are updated on a regular basis and can be accessed any time when they are needed. This degree of integration between all levels of management, covering all processes in the enterprise, integrates various businesses, facilitates flows of important information and allows to get instant answers to various queries.

ECM (Enterprise Content Management) is a set of applications for corporate content management that is designed to develop a unified information space of the enterprise. In addition, ECM is the category that combines the capabilities of corporate documents management systems and content management systems with the ability to manage the full lifecycle of corporate content (with the continued increase of the number of its types). According to the point of view of industry analysts, the concept of ECM proposes many business-advantages. ECM-system, that integrates all content – and process-oriented technology within the enterprise, provides common infrastructure for managing its documents circulation and minimizes deployment and support of different technologies for realization of various business-functions, namely:

- organization and management of all documents with storage of versions of documents, provision of security, obligatory processes of coordination and publication of documents;
- management of audits and inspections of quality;
- effective processing and documenting of deviations, their correction;
- automation and documentation of tasks and processes, that repeat, automatic reminders to users;

- definition of the right of access to database on the basis of skills, role and experience of users;
- creation and management of company's directories, including fixed assets, inventory holdings, software and etc.;
- archiving of information and proper preservation of all corporate information.

Fulfillment of these functions shows a significant advantage of SED over existing systems of automation of business-processes with the ability of high quality and accurate performance of a set of documents circulation tasks and processing of the large volumes of documents.

In addition, according to the basic functions of electronic documents circulation for the enterprise it is important to identify main tasks concerning the use of SED in order to optimize their activities. They include:

- disposable registration of the document;
- the possibility of parallel execution of various operations in order to reduce the time of traffic of documents and to improve efficiency of their implementation;
- continuity of the movement of the document;
- unified database of documentary information for centralized document storage and exclusion of probability of duplication of documents;
- efficiently organized system of searching documents;
- developed system of reports by statuses and attributes of documents, allowing to control phased circulation of documents.

Types of files, that usually support SED, include: text documents, images, electronic tables, audio- and video- data and web-documents. The main purpose of SED is organization of storage of electronic documents and work with them (such as search by attributes as well as by content). All changes in documents, terms of their fulfillment, movements and all their versions must be automatically tracked in SED. Integrated SED should cover entire enterprise's or organization's cycle – from formulation of the task on creation of the document till its writing off to archive, providing centralized storage of documents in any format, including complex composite documents.

SED should combine disparate streams of documents of geographically remote enterprises into the unified system. It also should provide flexible document management both through clearly defined routes, and through the free routing of documents. This system should have a clear separation of users' access to various documents depending on their competence, position and appointed powers. In addition, SED must

tune the existing organizational and staffing structure and enterprise's office management system, and integrate with existing corporate systems.

Main users of SED are large organizations, industrial enterprises, banks and all other entities whose activities are accompanied by a large volume of documents created, processed and stored. SED include reliable means of separation of powers and control of the access to documents. In most cases, the following access types (set of powers depends on the certain SED) are defined with their help:

- the full control over the document;
- the right to edit, but do not delete the document;
- the right to create new versions of the document, but do not delete it;
- the right to annotate the document, but do not edit it and do not create new versions;
- the right to read the document, but do not edit it;
- the right to access the card, but not to the content of the document;
- complete absence of access rights to the document (during the work with SED every user's action is recorded, and, thus, the entire history of its work with documents can easily be checked).

Today ECM-systems became mandatory components of IT-architecture in many companies. Some companies work in the field of automation of documents circulation by means of cloud technologies. Others try to develop mobile content management system. Nevertheless, making the decision on the implementation of the ECM-system is defined by the stage of the development of the enterprise. Modern platform SED \ ECM has all important mechanisms that allow to use it in the capacity of the base for integration different techniques of management.

Possibilities of ECM-systems can be divided into several main categories:

1. general functions of content management, which include the ability to manage a number of electronic objects (images, office documents, graphs, drawings, web-content, email, video, audio and multimedia);
2. ECM-system provides repository for all these types of electronic objects with different library services (by means of profiling content, functions check-in/check-out, versions management, conducting audits chronology, security of access to documents and etc.), and also the ability to manage these objects during all their life cycle.

ECM-systems radically change the definition of information as a basic resource of organization. They contain elements of organizational integration, solve the problem of preserving data exchange standards, allow to conduct constant control and to have financial benefits.

These peculiarities make the ERP-system especially useful for management accounting. Access to a wide range of newly introduced data from any location or geographical position provides new opportunities in work of accountant or financial controller.

An important feature of ECM, which includes relevant applications of the most part of vendors of the industry, is its independence from a single universal repository content. ECM-infrastructure integrates a number of specialized (or inherited) data repositories (even from competing vendors), including, in particular, storage of electronic documents on products, e-mail, Web-content repositories, file systems, and even databases. Thus, ECM – infrastructure provides a common integration layer (or virtualization) for each data store, allowing to request them from anywhere across the enterprise, thereby minimizing the need for integration of electronic document management systems and content management systems from many vendors. This approach to ECM development can be named infrastructural. Its essence is that the content of corporate data does not have to belong to one of the applications or the system. It must be available for a multitude of applications and be distributed freely between them. Proposed approach to the development of ECM-infrastructure will allow to implement such services of management of corporate content as personalization, access control, management of powers of users and other things that simplifies administration and support of ECM-systems, and integration with other ECM-systems, which implies the ability to integrate ECM-system with external ERP-systems, office applications, content repositories, other SED.

Despite the variety of systems of automation of documents circulation, there are common requirements that these systems must meet:

- convenience and simplicity of administration and usage;
- scalability – the ability to support any number of users; the opportunity to increase its capacity must be determined only by the capacity of appropriate hardware;
- state of distribution – support of work with documents in territorial – distributed organizations and interaction with distant users;
- modularity – the system must consist of separate modules, integrated with each other, that

gives the opportunity to the customer to choose and to implement components according to his needs;

- openness – the existence of open interfaces in the system for possible revision and integration with other systems;
- universality-possibility of usage by means of different hardware-based platforms in conditions of various system software.

Conclusions. Usage of ECM-system gives practically unlimited opportunities for processing different information and removing any barriers concerning implementation of new methods of management accounting, that will lead to significant changes in the accounting system and in the general management system of the enterprise. ECM-systems, that use the main resource of the enterprise – information and contain elements of organizational integration, solve almost all problems concerning the change and control of data and provide significant economic benefits to those enterprises that use them in their business activity. And the usage of ECM for the processing of huge flows of information allows to:

- calculate financial and nonfinancial performance indicators operatively;
- perform multivariate analysis of profitability;

- plan and control own budgets;
- manage cash flows;
- conduct operative management based on calculation, target costs;
- generate all parts of accounting process;
- improve methods and instruments of management accounting.

Such new solutions concerning corporate information management help to change the traditional view on information systems, deprive companies of information chaos, and provide quick access to relevant information from any subsystem and from any device. In addition, their usage give companies the opportunities to provide aggregation of information, management of information and its delivery by means of Internet. Thus, by means of using ECM, we significantly expand our knowledge of how software-based accounting tools can work effectively within the organization. Moreover, gaining the experience of the usage of electronic documents in a corporate environment through the use of business rules, context and mega data allow companies to develop their own support mechanisms of accounting. Overall, this study helps to develop our understanding of relationships between accounting, information technologies and integrated management systems.

1. Electronic documents circulation: current trends and problems of implementation [Electronic resource]. – Access mode: http://www.rusnauka.com/34_VPEK_2012/Philologia/7_121024.doc.htm.
2. The Law of Ukraine «On electronic documents and electronic documents circulation» № 851-IV of May 22, 2003 [Electronic resource]. – Access mode: <http://zakon4.rada.gov.ua/laws/show/851-15>.
3. News of the market of SED and ECM [Electronic resource]. – Access mode: <http://www.docflow.ru/news/news/detail.php?ID=32443>.
4. Pleshakova-Borovynska M. Systems of electronic documents circulation in the activity of industrial enterprises [Electronic resource] / M. Pleshakova-Borovynska // Bulletin of the Book Chamber. – 2012. – № 7. – P. 35–38. – Access mode: http://nbuv.gov.ua/UJRN/vkr_2012_7_10.
5. Radchenko S. V. Peculiarities of systems of electronic documents circulation in state bodies of Ukraine / S. V. Radchenko // Articles and notices. – 2013. – 396 p.
6. Structure and components of the system of electronic documents circulation [Electronic resource]. – Access mode: <http://nauch.com.ua/geografiya/20401/index.html?page=2>.
7. Tkachuk H. I. Usage of electronic system of documents circulation in SHEE / H. I. Tkachuk, S. A. Postova // Magistracy in conditions of processes of European integration of higher education. – Zhytomyr: ZhDU, 2014. – 254 p.
8. Improvement of corporate in formational systems [Electronic resource]. – Access mode: <http://ukrbukva.net/page,8,69376-Sovershenstvovanie-korporativnyh-informacionnyh-sistem.html>.
9. Hunton E. [Electronic resource]. – Access mode: <http://retractionwatch.com/2015/06/29/accounting-professor-notches-30-retractions>.

1. Електронний документообіг: сучасні тенденції та проблеми провадження [Електронний ресурс]. – Режим доступу: http://www.rusnauka.com/34_VPEK_2012/Philologia/7_121024.doc.htm.
2. Закон України «Про електронні документи та електронний документообіг» № 851-IV від 22.05.2003 р. [Електронний ресурс]. – Режим доступу: <http://zakon4.rada.gov.ua/laws/show/851-15>.
3. Новости рынка СЭД и ЕСМ [Электронный ресурс]. – Режим доступа: <http://www.docflow.ru/news/news/detail.php?ID=32443>.
4. Плешакова-Боровинська М. Системи електронного документообігу в діяльності промислових підприємств / М. Плешакова-Боровинська // Вісник Книжкової палати. – 2012. – № 7. – С. 35–38. – Режим доступу: http://nbuv.gov.ua/UJRN/vkr_2012_7_10.
5. Радченко С. В. Особливості систем електронного документообігу у державних органах України / С. В. Радченко // Статті та повідомлення. – 2013. – С. 396.
6. Структура та компоненти системи електронного документообігу [Електронний ресурс]. – Режим доступу: <http://nauch.com.ua/geografiya/20401/index.html?page=2>.
7. Ткачук Г. І. Використання електронної системи документообігу у ВНЗ / Г. І. Ткачук, С. А. Постова // Магістратура в умовах євроінтеграційних процесів вищої школи. – Житомир: ЖДУ, 2014. – С. 254.
8. Удосконалення корпоративних інформаційних систем [Електронний ресурс]. – Режим доступу: <http://ukrbukva.net/page,8,69376-Sovershenstvovanie-korporativnyh-informacionnyh-sistem.html>.
9. Hunton E. [Електронний ресурс]. – Режим доступу: <http://retractionwatch.com/2015/06/29/accounting-professor-notches-30-retractions>.

Submitted: 04.05.2016