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## THE ROLE AND PLACE OF INFORMATION SYSTEMS I TECHNOLOGY IN ENTERPRISE MANAGEMENT

In the context of structural globalization, there is a sharp transition from industrial to information society, the development of which is directly related to the intensification of information processes, the need to collect, process and transmit huge amounts of information, turning information into goods, usually significant value. The role of informatization processes in the transition to the information society and information economy is determined.

The main trends in the world of information technology and prospects for the use of modern information technology for business management provide an increasing opportunity to optimize and streamline management functions in many enterprises of different scales, both small and medium and business: production, finance, services, etc. , because it is at enterprises that the products necessary for society are created and highly qualified personnel are concentrated, the most modern integrated information systems and information technologies are used.

The emergence of the World Wide Web, the globalization of the economic space has led to the rapid growth of communication between countries and continents in various spheres of human life, the need to create corporate servers to provide various information about the company in the markets.

Modern information systems and telecommunications technologies are becoming one of the most profitable and fast-growing sectors of the economy. Information is becoming an important production and commercial resource (e-commerce, computer simulation and modeling of processes and events, Internet technology).

Prospects for further research in this direction include the study of applied aspects of the use of information systems and technologies to solve both tactical and strategic tasks of enterprise management.

Keywords: enterprise information systems, management, accounting tasks, analysis, planning, information technology, economic information.

**Formulation of the problem.** In modern economic conditions, the viability and rapid development of information systems and technologies are relevant, because modern business is extremely sensitive to management errors, and in order to make a competent management decision in conditions of market uncertainty, it is necessary to constantly keep under control various aspects of the financial and economic activity of the enterprise and the situation in rapidly changing market environment. Therefore, it is quite reasonable to claim that the enterprise, which uses modern information technologies and systems in management, can win in fierce competition.

More and more at enterprises, both public and private, banking institutions, insurance organizations, commercial institutions, etc. Automated information systems and new

technologies are being implemented in Ukraine, which allow to increase the speed and quality of processing of economic, accounting, accounting and management information with minimal expenditure of human resources.

A large mass of documentation at enterprises has been replaced by a multi-functional and operational electronic process that transforms input and reporting data into information and knowledge, developing thinking and the ability to use a process approach when solving accounting and financial problems at enterprises and organizations, which makes it possible to ensure a high level of flexibility production, its ability to instantly respond to market needs in conditions of economic instability.

**Analysis of recent research and publications.** Important aspects of the formation and development of information systems and information technologies at enterprises in the management process are highlighted by such Ukrainian scientists as T. Bova, K. Kharina, N. Buslenko, V. Glushkov, O. Ivakhnenko, O. Chernyak. However, the definition of the role of informatization processes in the transition to the information society and the information economy has not yet been systematized and not fully developed.

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**The purpose of the article** is to study the features of information systems as an element of management of economic objects in Ukraine and to determine the main trends in the development of information technologies and the prospects for using modern IT for business management.

**Presenting main material.** Any information system has a corresponding object for which it is configured. In practice, in the management of enterprises, various factors are distinguished that affect the information system itself and the development strategy of any organization, which gives them a number of specific qualities.

The role and functions played by information systems at enterprises should adapt to the methods and styles used in the organization, be as convenient as possible, provide information independence to managers at different levels in the organization, which reduces the practice of preparing multi-purpose certificates and false information, provide completeness of information support.

There is also a clear understanding that a system that provides continuous information support of the production cycle - from the development of a new product to the release of finished products will be the most effective [1, p. 97-112].

IT networks and computer systems have reduced the time required for accountants to prepare and present financial information to management and stakeholders. This not only reduced the order fulfillment time required for the presentation of financial information, but it also increased the overall efficiency and accuracy of the information [2].

Under the conditions of normal functioning of the system, the accounting staff does not need to intervene in the information process at any of its stages by displaying intermediate data [3, p. 48].

Since a complex system is always multifunctional, the information system can be classified according to various characteristics: by the level of management (higher, middle, operational); type of managed resource (main assets, material, labor, financial and informational resources); by scope of application (banking information systems, statistical, tax, accounting, stock market, insurance, etc.); by functions and stages of management [4].

IT is a complete system that functions in a single information space thanks to the coordinated work of all its components. Implementation of the system and its deployment over time ensures the dynamics of information technology development, its modification, restructuring, joining of new system components and modernization [5].

The successful use of information systems requires an understanding of the key trends in the

development of the enterprise's business, while they must be ensured mainly:

a) accounting functions are not only income, material costs and keeping bank statements, but also the formation of all primary documents necessary for the automatic creation of any reports;

b) analytical and reporting capabilities - first of all, the ability to quickly and correctly create new and change existing reports using certain operations;

c) opportunities for working with reports - quick execution of reports with large volumes of data, the ability to receive in one report all the necessary data for all by divisions of the enterprise (warehouse, accounting, finance, production, sales), group data in any sections, detail data to any level;

d) the possibility of combining data of branches, divisions, subsidiary companies or stores, processing documents and reports for several of their companies, dividing and consolidating data at the level of one/several/all companies of the corporation or other accounting entities;

e) possibilities of logical, dynamic, statistical and analytical processing of primary data, on the basis of which planning and forecasting should be carried out using a decision support system;

e) reliability and security of IS - data loss cannot occur under any circumstances. Protection of information - restriction of access to information by any means should be strictly limited. The resource capacity of the equipment should be such that the enterprise does not have to increase the capacity of the equipment when data increases or the number of workplaces increases.

Management with the help of information systems at enterprises takes place at the operational and tactical levels. At the tactical level, this includes the procedures of medium-term planning, analysis and organization of work, that is, at the tactical level, such objects as, for example, the compilation of orders for the formation of a production program, are considered. In contrast to the tactical level of management of information systems at the operational level, management deals with a separate order and the transactions accompanying its execution.

The increase in the efficiency of the enterprise depends to a large extent on economic information, which is one of the main resources, because it allows you to set the strategic goal and objectives of the enterprise and use the opportunities that open up at the same time, coordinate the actions of different divisions, directing their efforts to achieve the set goals, to make timely and well-founded management decisions.

In its development and improvement, ICs in various sectors of the economy had a diverse

structure of components that largely depended on the technical and operational characteristics of computing equipment, which at one time or another was used to automate economic tasks and the presence of a functional and supporting part, in accordance with the decomposition of the system into component parts - subsystems that are in certain relations with each other.

The structure of IS is determined by the placement and interrelationships of its elements or parts when performing their functions. The structure depends on the size of the system and its complexity. The size of the system is characterized not only by the number of its elements, but also by the connections between them. The complexity is determined by the variety, heterogeneity of the properties of the elements and the different quality of connections between them (direct, reverse, neutral, etc.) [7, p. 26]

At present, in Ukraine, the information system in most cases is understood as automated information systems, mainly MRP, ERP, CRM, SRM systems.

The results indicate the following trends in the development of AIS and computer technologies: a system distributed over a virtual network, integrated with the Internet system, functioning on the basis of standard interfaces, which combines both software products for business and their individual components, which are assigned for autonomous operation without connection to the global network; management systems of medium-sized organizations will be based on the possibility of flexible management of orders, support of the full life cycle of goods and services produced, and on the possibility of integration as components into more virtual enterprises, more and more enterprises have become and are becoming the first consumers of personal computers and automated systems and technologies, including accounting automation systems.

AIS is intended for automated collection, registration, storage, search, processing and issuing of information at the request of users (management personnel). It consists of a set of interconnected components: technical means of data processing and transmission (computing and communication tools), processing methods and algorithms in the form of appropriate software, arrays (sets, databases) of data on various media, personnel and users, united by organizational-structural, thematic, technological or other characteristics for automated data processing in order to meet the information needs of information consumers. At the same time, the principle of orienting the developed technical, software, and information support to the needs of

specific users - management personnel who are participants in the management process [8, p. 26].

According to regulatory documents, during the creation of automated information systems (AIS) in financial and credit institutions, it is necessary to adhere to such basic principles as openness, standardization, compatibility, economic efficiency, systematicity and security:

1. According to the principle of openness, the AIS should be created taking into account the possibility of updating and supplementing its functions and composition without disrupting the functioning of the AIS.

2. The principle of standardization. During the creation of systems, standardized elements, design solutions, application program packages, etc. should be rationally applied. The information system and its elements need standardization in order to minimize all types of costs.

3. The principle of compatibility. During the creation of AIS, information interfaces must be implemented, thanks to which this system will be able to interact with other systems according to the established rules.

4. The principle of economic efficiency represents the achievement of a rational ratio between the costs of creating an AIS and the target effects, including the final results obtained from automation, which do not always and do not necessarily have to take a monetary form, these can be new functions, time, certain conveniences.

5. According to the principle of systemicity, it is extremely necessary to establish such connections between the structural elements of the information system that ensure its compatibility and interaction with other systems. Therefore, all elements, connections, functions, problems of management and activity should be considered as a single whole.

6. The principle of security. Information must be protected both during its direct processing and storage in AIS, and during the exchange between computers. The possibility of unauthorized access to data in the system should also be excluded.

In modern conditions, there are many automated information systems on the software market, which are based on general enterprise management standards and are presented on the computer software market. Practically all information systems have a standard set of tools for automating the following areas of accounting: the cash register module, inventory accounting, currency accounting, fixed assets and intangible assets, settlements with accountable persons, payroll settlements; calculations with the budget and extrabudgetary funds.

The most popular domestic information management system for small businesses is "1C: Enterprise" of the "1C" company. The number of enterprises in Ukraine that work with the products of the 1C company reaches several hundred thousand. This is explained not only by the quality of solutions, but also by the company's exemplary marketing policy. Product development toolkit: V7 technology, client-server system architecture (based on MS SQL Server), V7 platform language is syntactically quite simple.

For accounting, programs are built on the basis of registration of raw data - accounting entries generated by business operations.

For a complete record of the company's activities, all the company's postings must be displayed:

- manually;
- by means of typical operations, where each operation corresponds to a group of postings, and therefore when the sums of some postings are calculated automatically;
- using primary documents.

Information systems can use almost any number of directories for the organization of analytical accounting, and there is the possibility of currency accounting: type directories for currencies and their exchange rates are used here.

In working with primary documents, a large set of standard primary accounting documents is established in all programs: invoices, payment invoices, income and expenditure cash orders, etc. It is possible to create and optimize primary documents for all other types.

Building the power of information systems for solving accounting problems and designing and functioning of information systems are based on the most important provisions and methods of the general theory of systems, system design, theories of information, which allow to ensure interaction and compatibility of information systems of various economic objects, save labor, time and money design funds.

The most important system engineering principles are: system; informational feedback; decomposition; continuity of information system development; compatibility; standardization and unification; integration; automation of information flows and document flow; efficiency.

The multifaceted, complex and large volumes of information acting as an information base for analysis require the use of modern software and technical means for its processing, therefore the problem of analyzing initial information for decision-making turned out to be so complex that a separate direction of information technologies appeared - information - analytical systems (IAS).

The main components of IAS software tools are the tools for creating and maintaining an information warehouse - DWH (Data Warehouse), tools for operational analysis - OLAP (On-line Analytical Processing), tools for intellectual analysis - DMg (Data Mining). Each of these components has its purpose and tasks.

The main tasks of DWH (Data Warehouse) are the collection of information from databases that reflect individual business processes, automated workplaces, information systems and other sources, information from global computer networks, such as the Internet. Information is formed in different formats and has a different structure. Software tools collect information and form an information repository with a certain structure and data formats.

Powerful IAS includes up to 50 types of formats with which the information system can interact.

The purpose of OLAP analysis is to extract the necessary information from the information store. OLAP tools provide the ability to sort and select data under specified conditions, various qualitative and quantitative conditions can be set. OLAP tools allow you to perform analytical work of a different nature in the visual field of the user by your own means, without resorting to programming. To describe user-specific analytical processes can use built-in tools in the form of high-level languages, graphic designers, visual tools, spreadsheets with built-in functions.

DMg (Data Mining) intellectual analysis tools are designed for fundamental analytical research of problems in one or another visual area. Time requirements are less strict than in OLAP tools. DMg tools are the most complex, intellectually rich part of IAS, therefore they are part of the most developed IAS. Powerful special software and tools are used to solve complex analytical problems.

The main tasks of intellectual analysis are: determining the values of time factors, localization of events or phenomena in the place of detection of interdependencies, cause-and-effect relationships, associations and analogies, classification of events and situations, determination of profiles of various factors, forecasting the course of processes and events.

The latest PLM (Product Lifecycle Management) information technology, formalization of users' professional knowledge in the computing environment of APM, enterprises can integrate various divisions into the general life process of the organization.

There is a strategic approach to the organization of enterprise management, which uses a set of compatible solutions to support the general presentation of information about the product in the

process of its creation, implementation and operation; in the environment of an extended enterprise - starting from the concept of product creation and ending with its disposal - with the integration of human resources, processes and information.

**Conclusions.** It can be concluded that, in its essence, the information system is a complete system and has the following properties in the management of the economy:

1. depending on the type and specific purpose, the information system has qualities that cannot be reduced to the properties of the elements that make it up;

2. the quality characteristics of a specific information system depend on the quality characteristics of its elements;

3. there is a connection between the elements of the information system, and when one component of the system changes, it leads to a change in another, and sometimes the system as a whole;

4. the system as a whole entity is characterized by the orderliness of the elements that make it up, as well as the connections and relationships between them;

5. the information system does not exist in isolation, this property is manifested in the interconnection of the system with other systems [9, p. 80-86].

The following components are the components of information technologies that are used in management at the enterprise: technical means (TK); personnel who are able to work competently with information and computing equipment, an organization that combines resources and personnel in a single process; information means that create and issue information in the form of an information product.

The use of modern IT at any enterprise affects the improvement of the quality and quantity of services, the emergence of new services; software development; creation of conditions for the growth of the standard of living of the population; significant reduction of investment and management costs; expanding access to information by a larger number of users and improving the possibilities of obtaining, saving, and distributing information when using various sources; increasing the effectiveness of multinational economic contacts; creating new opportunities to strengthen the country's national defense capability. a change in the operating conditions of the socio-economic mechanism as a result of a change in working conditions and the involvement of information as a subject of work.

Prospects for further research in this direction include the study of applied aspects of the use of information systems and technologies to solve both tactical and strategic tasks of enterprise management.

## REFERENCES

1. Dokuchaev, D. (2005). *Vnedrenye ynfomatsyonnoi systemy kak sposob sovershenstvovaniya byznеспrotsessov predpriyatya*. [Vnedrenye ynfomatsyonnoi systemy kak sposob sovershenstvovaniya byznеспrotsessov predpriyatya]. *SAPR y hrаfyka - SAPR and graphics*, 4, 97-112 [in Ukrainian].
2. Kontseptualni zasady orhanizatsii ta metodyky obliku, analizu, opodatkuvaniа ta audytu subiektiv rynku v umovakh novitnikh informatsiinykh tekhnolohii ta rozvytku konsal'tynhu. (2020). [Conceptual principles of organization and methods of accounting, analysis, taxation and audit of market participants in the latest information technology and consulting development]. *Materialy I Rehionalnoi naukovo-praktychnoi konferentsii studentiv, aspirantiv i molodykh vchenykh, provedenoi na bazi Ternopil'skoho natsionalnoho tekhnichnoho universytetu imeni Ivana Puliuia* : [Proceedings of the I Regional scientific-practical conference of students, graduate students and young scientists, held at Ternopil National Technical University named after Ivan Pulyuy]. Ternopil: TNTU, 90. Retrieved from <https://oa.tntu.edu.ua/wp-content/uploads/sites/58/2021/01/Materialy-I-Rehionalnoi-konferentsii.pdf> [in Ukrainian].
3. Muravskiy, V. (2008). Dokumentuvannya v umovakh povnoi avtomatyzatsii obliku. [Documentation in terms of full automation of accounting]. *Bukhhalterskyi oblik i audit Accounting and Auditing*, 5, 48 – 52 [in Ukrainian].
4. Ivakhnenkov, S.V. (2010). *Informatsiini tekhnolohii v orhanizatsii bukhhalterskoho obliku ta audytu* [ *Information technology in the organization of accounting and auditing* ]. Navch. posib., 4-tie vyd., vypr. i dop. K.: Znannia. Retrieved from [https://www.ivakhnenkovaudit.info/IT\\_in\\_control&auditing.pdf](https://www.ivakhnenkovaudit.info/IT_in_control&auditing.pdf) [in Ukrainian].
5. Pleskach, V.L., Zatonatska, T.H. (2011). *Informatsiini systemy i tekhnolohii na pidpriemstvakh* [ *Information systems and technologies in enterprises* ] pidruchnyk. K.:Znannia Retrieved from

[https://pidru4niki.com/1059110247701/informatika/informatsiyni\\_sistemi\\_i\\_tehnologiyi\\_na\\_pidpriyemstvah](https://pidru4niki.com/1059110247701/informatika/informatsiyni_sistemi_i_tehnologiyi_na_pidpriyemstvah) [in Ukrainian].

6. Ponomarenko, V. S., Zhuravlova, I. V., Latysheva, I. L. (2008). *Informatsiini systemy v upravlinni personalom*. [Information systems in personnel management]. Navchalnyi posibnyk. Kharkiv: Vyd. KhNEU, 38 [in Ukrainian].

7. Benko, M.M. (2010). *Informatsiini systemy i tekhnolohii v bukhhalterskomu obliku* : [Information systems and technologies in accounting]. Monohrafiia. K. : Kyiv. nats. torh.-ekon. un-t., 26, [in Ukrainian].

8. Ushakova, I. O. (2009) . *Informatsiini systemy ta tekhnolohii na pidpriemstvi* [Information systems and technologies at the enterprise]. Konspekt leksii. Kharkiv : Vyd. KhNEU. Retrieved from <http://www.repository.hneu.edu.ua/bitstream/123456789/3112/1/Konspekt%20leksii.%20Informatsiini%20systemy%20ta%20tekhnolohii%20na%20pidpriemstvi.%20I.%20O.%20Ushakova..pdf> [in Ukrainian].

9. Lazor, Ya. O. (2016). Poniattia ta vydy informatsiinykh system. [ Concepts and types of information systems ]. *Visnyk Natsionalnoho universytetu "Lvivska politekhnika" - Bulletin of the National University "Lviv Polytechnic"*. Seriiia : Yurydychni nauky, 837, 80-86. Retrieved from [http://nbuv.gov.ua/UJRN/vnulpurn\\_2016\\_837\\_14](http://nbuv.gov.ua/UJRN/vnulpurn_2016_837_14) [in Ukrainian].

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