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ЕКОНОМІКИ УКРАЇНИ

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*Представлені у виданні наукові дослідження та висловлені думки належать авторам.*

**Інформаційно-комунікаційні технології управління сталим розвитком економіки України** : колективна монографія / за ред. А. В. Череп, І. М. Дашко, Ю. О. Огреніч, О. Г. Череп. Запоріжжя : видавець ФОП Мокшанов В. В., 2024. 266 с.

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Колективна монографія присвячена розкриттю ролі інформаційно-комунікаційних технологій в розвитку економіки країн ЄС та України; висвітленню особливостей інтеграції європейського досвіду в напрямку використання інформаційних технологій; дослідженню впливу інноваційних цифрових технологій на розвиток економіки; формуванню теоретичних, методичних і практичних засад розвитку інформаційно-комунікаційних технологій управління сталим розвитком економіки.

Монографія виконана за результатами досліджень у рамках проекту фундаментальних наукових досліджень, прикладних наукових досліджень, науково-технічних (експериментальних) розробок за темою №1/24 «Європейські практики діджиталізації як інструмент забезпечення соціально-економічної безпеки в умовах війни та повоєний період» (державний реєстраційний номер 0124U000600) (01.01.2024 – 31.12.2026).

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# ТЕОРЕТИКО-МЕТОДИЧНІ ЗАСАДИ ТА ПРАКТИЧНІ РЕКОМЕНДАЦІЇ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ БІЗНЕСУ В УКРАЇНІ

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## INFORMATIZATION PASSPORTIZATION AT THE INDUSTRY LEVEL AS THE BASIS OF AN EFFICIENT ECONOMIC MECHANISM

**Abstract.** The main direction of research, the results of which are reflected in this work, is a thorough analysis of the processes of activation of the introduction of modern information technologies as a determining factor characterizing the period of full-scale informatization. The work substantiates that this leads to the creation, modification and improvement of the information society, which will take into account the elements of the market economy, which contains a number of components of the country's external regulatory policy, as well as the mechanism of its internal regulation. In the course of the conducted scientific research, the authors developed and proposed criteria that allow determining and evaluating the processes of informatization (negative and positive). The developed criteria will allow to influence the level of changing pre-crisis and crisis conditions in the space of the studied issues and to change and improve the system of needs of the modern economy. The theoretical and methodological bases of the formation of the strategy

for the development of the informatization of the national economy have been summarized, and the promising directions of regulation have been identified and the understanding of the evaluation criteria for the strategy of the development of the informatization of the national economy has been expanded. The methodical regulations regarding the formation of the foundations of strategic planning for the development of the informatization of the national economy have been improved thanks to the development of directions for assessment and certification of the informatization processes of the national economy at the level of branches. It is substantiated that the application of the proposed developments expands the ways of development of processes of informatization of the national economy, adequate to modern requirements, which, in turn, leads to the qualitative improvement of the system of information support for entrepreneurship, which is relevant in the context of economic security and improvement of regions and the state.

Key words: information technologies, informatization, informatization passportization, information ecology

**Introduction.** With the transition to market relations, with the development of the informatization of society, the rapid growth of the demand for all information, as well as the increase in requirements for the content and formation of its provision, which are essential factors of its development, the conditions of the functioning of enterprises, industries, and the national economy as a whole are changing in the context of the economic security and improvement of regions and the state.

In many ways, this is a strategic direction of the active development and dissemination of the informatization process, defined primarily as a set of measures of a technical, economic, social, ecological, and cultural nature, which is aimed at the full use of comprehensive and reliable knowledge in modern conditions.

Problems of formation and development of information society and activation of informatization processes in general in the context of economic security and development of regions and the state were studied by a group of Ukrainian and foreign scientists. The most interesting conclusions were reported by the following of them: Vachevskyi M., Finin T., Hafiiak A., Alyoshin S., Borodina O., Chepurko A.,

Prodanyuk R., Finogeev A., Finogeev A., Steinerova J. etc [1-10]. But the breadth of outlook and vision of the characteristic features and features of the development of processes of informatization of the national economy is at the stage of formation.

The relevance of the problem of the emergence, modification and development of the modern information society has aroused the interest of many scientists, whose works are devoted to the analysis of the essence and research of current issues of information ecology and the activation of informatization processes: Joshi A., Kolari P., Ahati J., Barlow J., Bu F., Harvey L., Tanem E., Xu L., Capurro R., Davenport T., Cai H., Malhotra Y., Nardi B., Pór G., Thinker., Yan J., Soylu A., Seely B., Bateson G., Liu Z., O'Day V., Hu J., Davenport T., Zhu Y., Prusak L., Xu L., García- Marco F., Xu B, Harris K., Norris T., Suomela T., Schmidt K., Dall S., Pei H., Gils J., Wang X, Guo Y., Yang M., Li J., Fang S., Zong C., Jia B., Zhang Y., Wei Y., Sha F., Yan W., Whitmore A., Agarwal A., Xu L., Wójcik M., Xie C., Xu E., Li L [10-39].

The problem presented in the article was considered briefly or systematically in the works of Alyoshin S. and Borodina O. (in the context of the philosophy of information civilization); Finogeev A. and Finogeev A. (in the aspect of the relationship between globalization and information risk society); Barlow J. (in the aspect of globalization practices); Steinerova J., Malhotra Y., Schmidt K., Dall S. and Gils J. (formation of informational and cybernetic principles of ecological information); Hafiiak A. and Alyoshin S. (in the context of the role of the education industry in the formation valuable knowledge); There is Prodanyuk R., Finogeev A. and Finogeev A. (informational and psychological mechanisms in the sociology of security); Hafiiak A. and Chepurko A. (socio-cultural principles of information security) [3; 4; 5; 6; 8; 9; 16; 29; 40]. Relying on the requirements and those needs that arise as a result of the development of the modern information society, scientists are forming a theoretical and methodological base for new areas of research on information activities, the information market, informatization, product characteristics of information products and services, etc.

Information ecology is a concept that links the principles of ecology with the properties of the digital information environment. The concept is gaining wide acceptance in an increasing number of disciplines. It is also often used as a metaphor for the information space as an ecosystem. Information ecology is a science that studies the patterns of influence of information: on the formation and functioning of intelligent biosystems, including humans, human communities and humanity as a whole; health as a state of mental, physical and social well-being. Information ecology aims to develop methods for improving the information environment and is often associated with information hygiene.

Modern processes that constantly affect the change and development of the information society, which is taking place all over the world, is objective in nature and cannot fail to permeate our country and its economy. But the weak successes of the informatization of our enterprises, industries, state and regional organizations, the so-called passive informatization, lead to the discrediting of the improvement of the information environment and the lack of a serious assessment of the economic and social effectiveness of these processes.

Today, theoretical and methodological approaches to the study of such areas as social, ecological and psychological problems and prospects of informatization processes are defined. In many ways, the position that informatization is not only and not so much a technical and technological process is being outlined now, but first of all, in the context of economic security and improvement of regions and the state, it is social, economic, scientific and technical. The substantiation and systematization of knowledge about the social and economic processes of informatization of the national economy extends to the complex pyramid of relations "nature-man-society-enterprise-industry-state". That is, there is a clear social dependence and relationship between the preconditions of development, characteristic internal processes, problems and trends, which must be studied and further directed in the right strategic direction. The study of information ecology as ensuring institutional conditions of balance meaning production and replication logically leads to the formulation of the

concept of information balance as a basic factor of information security and information environmental friendliness.

Thus, the relevance of the issue of the strategy for the development of the informatization of the national economy in the conditions of the activation of scientific and technological progress, increasing the role of economic security and improvement of regions and the state, the global spread of the information economy, as well as their insufficient development in both theoretical and methodological aspects determined the choice of the topic, goals, objectives and structure of this study. The set goal determined the need to solve the following problems:

1. to generalize the theoretical and methodological bases of the formation of the development strategy of informatization of the national economy;
2. identify promising areas of regulation and expand the understanding of criteria for evaluating the development strategy of informatization of the national economy;
3. to improve methodical regulations regarding the formation of the foundations of strategic planning for the development of informatization of the national economy;
4. to develop directions for evaluation and certification of processes of informatization of the national economy at the level of branches.

The object of the study is the modern processes of the development of the informatization of the economy, the introduction of modern information activities.

The subject of the research is the theoretical and methodical basis of forming a strategy for the development of the informatization of the national economy.

Research methods. The basis of the study was made up of the works of leading domestic and foreign scientists and specialists in the field of formation and development of the informatization strategy. The work uses legislative acts of Ukraine, methodological regulations and instructional materials on informatization, other special scientific literature, the results of the author's research and observations. The methodological basis of the study formulated the philosophical principles of knowledge, dialectical, logical and systemic approaches to the consideration of

management processes. General scientific methods were used in the work: observation, comparison, generalization, abstraction, formalization, analysis and synthesis. In particular, a systematic approach was used to determine the composition and structure of the processes of informatization of the national economy; to determine proposals for the development of informatization and its infrastructure - methods of observation, analysis and generalization; when studying theoretical approaches to the definition of the main concepts related to the informatization of the national economy - methods of comparison.

The authors see the practical significance of the obtained results in application of the proposed developments expands the ways of developing the processes of informatization of the national economy, adequate to modern requirements, which, in turn, leads to the qualitative improvement of the system of information support for entrepreneurship, which is relevant in the context of economic security and improvement of regions and the state.

**Presentation of the main results of the study.** The active development of the national economy largely depends on the pace and characteristics of the information component-factors. Today, the conditions of production, commercial, scientific activity, state and industry management are changing. Therefore, the need for adequate adaptation and strategic development of management systems in new conditions of activity becomes particularly relevant.

Together with the purely economic characteristics that form the foundation of the national economic complex, technical, technological, social, ecological, cultural and other parameters of development are often considered. In this case, we are talking about complex approaches in assessment, which are gaining more and more importance in the conditions of democratization and humanization of public life. Complex characteristics have long since become full-fledged indicators in assessing the degree of development of the national economy and any territory. Today, in the world economic system, it is no longer possible to define only economic or social processes, or purely technical or informational processes. The process of active interaction and penetration of all components of the economic, technical,

technological, social, ecological, informational and cultural spheres of life is being observed.

But it should be emphasized that in the national economic complex of Ukraine, the general development of the economic sphere does not have a sustainable character, does not always have an intensive focus, does not have a clear strategy and appropriate development tactics. Development always has a direction defined by a goal or a system of tactical and strategic goals. In the case of determining a positive assessment of this direction, it is customary to talk about progress, if the assessment is negative, then we are talking about regression or degradation. In other words, the nature of modern economic development always involves one or more goals. The development of the national economy is a multidimensional and multifaceted process and is usually studied through the prism of a set of different social, economic, technological, environmental and informational goals. Even if it is only about economic development, it is usually studied together with social development.

This understanding of development fundamentally distinguishes it from processes of mechanical growth. Although today in the economic and technical literature there is such a view, when saturation with technical and technological means, which in practice have sufficiently high prices (which affects the assessment of fixed assets), is assessed as a progressive process [1; 4-7; 11; 12; 28; 34; 40]. It can be confidently stated that the process of managing the information component is a leading component of the system of functioning and development of the national economy, industry, large, medium and small entrepreneurship in modern conditions.

This activity is constantly improving in accordance with the objective laws of commodity production and commodity circulation, improvement of commercial activity, changes in requirements for the production and sale of goods, the complication of economic relations, increasing the role of the consumer in the formation of technical, economic and other parameters of products, as well as with the development forms and methods of state regulation. Changes in the organizational and legal forms and the nature of the activities of enterprises, the

increase in the importance of the activities of transnational corporations in economic and state international relations also play a very important role.

Such changes and positive developments have been formed quite recently. Thus, modern achievements in the field of informatics and microelectronics have led to new concepts in the organization of internal and external information flows and the emergence of specialized information institutes. Thanks to high-performance, knowledge-intensive and economic microprocessors, information and computing resources are approaching the workplaces of managers, economists, civil servants, engineers and other categories of workers.

According to the authors, modern processes of intensification of the use of the latest information technologies are a determining factor accompanying the development of a new period of our present, namely, the period of full-scale informatization. This largely determines the formation and development of a new system - an information society, which will take into account the elements of the market economy, relying on a meaningful component that fills the mechanisms of state regulatory policy (external and internal). In view of the obtained results, it can be argued that it is important to propose new criteria for evaluating the processes of informatization (negative and positive), which in the future will provide opportunities to significantly reduce pre-crisis and crisis conditions in this area, which will lead to the possibility of forming an optimal structure of the country's economic needs.

In its essence, informatization is a general and inevitable modern active processes of the development of society, the time of understanding the new informational picture of the changing world, awareness of the unity of the laws of functioning, creation of an information production and processing industry [5; 6; 7; 34; 40]. Informatization is often considered as an effective process of introduction of the latest technologies both in social life in general, and has certain features and characteristic features within the framework of implementation and implementation in the national economy. The importance of informatization processes in the national economy is quite large and axiomatic[13; 27; 30-31; 35-39].

According to the authors of the work, this process has a very broad interpretation. Informatization is a systematic process of introducing the achievements of informatics methods and new information technologies into public life, socio-economic, socio-cultural, scientific-technical, technological and other institutions of the state. Analyzing and systematizing the existing categorical definitions of the conditional new term "informatization", the work gives a new interpretation of it. This is the process of qualitative and quantitative transformation of information by enterprises, the population, and society, which is considered in a system centered on a meaningful component of complete, relevant, modern, reliable knowledge in all spheres of activity. The core of informatization is not the technical essence, but human relations regarding the accumulation, systematization, processing and use of information based on modern technical means and technologies. Thus, the strategic focus of the informatization process is determined as a set of measures of a technical, economic, and social nature, which are aimed at the full use of comprehensive and reliable knowledge in modern conditions. Taking into account the given expanded author's interpretation of the "informatization" category, the main principles of the development of informatization processes within the national economy are defined and given a concise description (table 1).

Table 1

Systematization of directions regulating  
the development of informatization processes.

Principle	Characteristic
Reproductive	Forms unity and activates the efficiency of the reproductive process and forms its intensive growth model
Administrative	Establishes modern management relations, development and expansion of management functions
Administrative	Ensures preservation of cultural and historical traditions, forms standards of information culture
Cultural	Ensures information security
Security	Forms new forms of labor relations and new boundaries of division of labor
Labor	Spreads informational transparency of social benefits and forms new forms of democratic control

Source: author's development

Such an understanding of the principles of the development of informatization processes makes it possible to broaden the view on the influence and significance of the information component in national progress and to form new views on the possibility of intensive economic growth. The modern progress of the economic, social, labor, cultural, ecological and technical development of mankind is determined by a number of interdependent processes. The main ones are directly related to the information component and informatization, there are the following.

First, the information component of scientific and technological progress, which actively ensures the quantitative and qualitative growth of information resources. This process has a generally civilizational character and forms within the framework of the most highly developed part of humanity a new form of social organization - the information society.

Secondly, activation of processes of informatization of the market environment, as the most powerful economic mechanism of development, which is expressed in globalization, internationalization, and full informatization of all markets. In general, this is the process of forming a new model of the economy - the information economy, which is already gradually replacing the industrial one.

Thirdly, the continuous development and improvement of information technologies, which form the information transparency of the entire global space, for the developers of the so-called "meta-technologies" will have a decisive place in the development of all components of the country's economy. These technologies are characterized primarily by the fact that their application makes any form of competition with the developer of these technologies fundamentally impossible for users. In this way, a new form of technical, economic, socio-labor and cultural dependence is created - informational, supplementing other, less perfect forms of economic and non-economic dependence. Due to their high productivity, these technologies are gradually becoming dominant and actively turning into a technical and economic component of the information society.

Fourthly, informational transparency of any economic activity, primarily at the business level, is becoming an equally significant socio-economic phenomenon. As a

result, new forms of perfect competition spread. Fifth, modern standards of information culture are formed and adapted by information transparency. This type of culture is largely formed in the country developing meta-technologies and is oriented towards its national traditions, values, and moral principles. New forms and methods of adaptation of the economic culture corresponding to the information society are emerging. Informatization of society actualizes the task of protecting reliable socially significant information, the source of which is culture. Today it can be confidently asserted that, higher cultural registers in modern society, which include spiritual and valuable knowledge.

The listed processes are implemented in the everyday life of Ukrainian society and are reflected in the comprehensive activation of the information activity of the population, as well as the system of economic relations.

Already today, the majority of state and regional structures, enterprises are intensifying the work of conducting complex informatization, which is focused on the creation of technical, economic-organizational, ecological-economic and socio-cultural foundations of comprehensive information activity (which directly considers the internal needs of the listed structures and is directed to the development and implementation of new products and services). Active promotion of complex informatization processes at the level of the national economy (households, enterprises, industries, state institutions and other business entities) accelerates the development of the information society [2; 3; 10; 14-26; 29-34 ].

Not only technical means of informatization, but also other factors should be included in this total. These are, for example, social means, methods and structures that contribute to the reproduction and development of information relations, the increase of the information culture of society, its intellectual potential. Therefore, the unity of the processes of computerization, socialization and intellectualization is necessary.

A special role should be given to the problem of defining the basic conditions of informational ecology as a condition for the functionality of cultural and social orders. The study of information environmental sustainability as the provision of

institutional conditions for the balance of meaning production and relay logically leads to the formulation of the concept of information balance as a basic factor of information security and information sustainability. Information security, therefore, is defined as the ability of social groups and institutions (meaning producers and meaning replicators) that carry out value censorship in the cultural system, to ensure a balance between secondary information circulating in society (fragmented knowledge) and valuable knowledge that forms a single, coherent, non-contradictory picture cultural and social order.

Informatization, due to its complexity and scientific capacity, has a colossal impact on almost all spheres of social development. The governments of all developed countries of the world pay special attention to the development of the information component of the national economy as a strategically important socio-economic direction. The formation of an effective economic mechanism is impossible without effective use of information resources. Today, local authorities and business entities do not have a sufficient idea of the current level of development of informatization processes at the industry level. Weak information support leads to the incompleteness of many decisions in the direction of managing the development of the industry. Therefore, there is a need to assess and provide self-governing bodies with information regarding information and analytical activities at enterprises, provision of information resources by enterprises, personnel support for informatization processes, development of information culture, etc. [5; 6; 7; 34; 40].

In the opinion of the author, comprehensive training is necessary for informatization processes within any industry. The difficulty lies in the fact that the work with such information is quite large in scope, and some of it has a small period of viability. To solve this problem, the preparation of an informatization passport will help to accumulate data on the state of informatization of the industry.

The purpose of the introduction of the informatization passport is to ensure sustainable social, economic, scientific and technical development of the industry, increase the quality of work, life and safety of industrial workers due to the assessment of the real state of informatization processes, the introduction and wide

use of information communication and innovative technologies, as well as the creation and development of a single information the space of the industry.

In the author's opinion, the informatization passport should help in solving the following tasks:

1. evaluation and improvement of the system of formation and management of information resources at enterprises of the industry;
2. personnel support of informatization processes;
3. improvement of the financing mechanism of informatization processes;
4. development of the information and communication infrastructure of enterprises in the industry;
5. development of electronic document flow in the industry, implementation of unified electronic administrative regulations for industrial enterprises;
6. creation of a single system of information, analytical and technical support for the activities of enterprises in the industry;
7. introduction of information culture;
8. ensuring the required level of information security of enterprises in the industry.

The main function that the informatization passport will perform is to assist in the development of industry policy in the field of information technologies, including in the field of the use of modern information technologies in the formation of information resources of enterprises of the industry and ensuring access to them.

The industry information passport should contain the following sections:

1. General characteristics.
2. General characteristics of the state of informatization.
3. Assessment of provision of legislative and regulatory acts in the field of informatization.
4. Assessment of resource provision of informatization.
5. Evaluation of software and technical, telecommunication and information support of industrial enterprises.
6. Evaluation of the development of information culture.

7. Assessment of information security.
8. Evaluation of the document flow of enterprises.
9. Assessment of the quality of information support.
10. Assessment of prospects for the development of informatization.

The content of each chapter requires more detailed consideration and analysis.

1. General characteristics of the industry.

This section allows you to assess the general social and economic condition of enterprises in the industry using standard social, economic, scientific and technical indicators of economic entities:

1. the total average annual volume of the received product;
2. average annual volume of sales;
3. total number of personnel;
4. average annual labor productivity;
5. wholesale price of a product unit;
6. the full cost of the activity product;
7. average monthly salary of employees, etc.

2. General characteristics of the state of informatization of the industry.

In this section, it is necessary to provide a general description of the issues:

1. the existence of an organizational and regulatory framework for the development of informatization;
2. the state of work on informatization of the main areas of economic activity of enterprises;
3. the main summarizing indicators of the level and pace of providing information processes;
4. main general indicators of the level of use of external products and technologies;
5. financing and budget policy of processes of informatization of the industry;
6. a general description of the work on ensuring the information security of enterprises, the main means of data protection used by them;
7. priority areas of informatization for the future;

8. difficulties and problems of the use and development of information technologies;

9. proposals of enterprises to improve work in the field of informatization.

On the basis of the main generalizing indicators of the level and pace of provision of information processes, the existing level is determined and potential opportunities for increasing the efficiency of the use of information resources are identified. They should include a system of indicators of information saturation of enterprises in the industry, the analysis of which will reveal the informational and technical-informational armament of labor, the degree of use of computing facilities by capacity and time, the degree of renewal of the fleet of computing machines, the level of organization of information operations, etc.

3. Assessment of the provision of the industry with legislative and regulatory acts in the field of informatization.

Here it is necessary to specify the list of legislative and regulatory acts and instructions that ensure the processes of informatization of industry and which are in force and adopted during the analyzed period. It is also necessary to list the main problems that stand in the way of informatization of the industry and that require a legislative solution.

4. Assessment of resource provision of informatization of the industry.

In this section, it is necessary to indicate the amount of funding and the structure of expenses for the informatization of the industry, as well as the total number of specialists engaged in the maintenance of information technologies, as well as information and analytical activities at the enterprises of the industry.

But the list of the given indicators will not give a clear and complete picture in the assessment of resource provision of informatization of the industry. Therefore, it is advisable to use the system of indicators proposed by the authors for evaluating the effectiveness of activity management in the field of informatization of industrial enterprises (table 2). This will make it possible to evaluate in detail and effectively the technological, informational, personnel and financial components of resource support for the informatization of enterprises in the industry and draw conclusions for

the future. It is proposed to evaluate the technological component of resource provision of informatization of enterprises of the industry using the following technological indicators:

1. coefficient of use of means of automation of engineering and management work;
2. coefficient of service quality of automated workplaces of engineering and management personnel;
3. the ratio of provision of engineering and management work by means of information technology and the use of these means;
4. coefficient of technical security of engineering and management work by means of informatization;
5. level of mechanization of engineering and management works;
6. the level of technical equipment of engineering and management work.

The informational component - with the help of indicators of the efficiency of provision and use of information resources (table 2):

1. the number of documents belonging to one structural unit of the enterprise of the industry (expert systems);
2. coefficient of active use of information;
3. utilization ratio;
4. turnover rate of information materials;
5. coefficient of rationality of management documentation;
6. level of information load.

The personnel component - using indicators (table 2):

1. the coefficient of the qualification composition of the company's information systems workers;
2. staffing ratio of informatization processes;
3. efficiency ratio of the information apparatus of the enterprise;
4. labor intensive preparation and processing of information materials;
5. general labor intensity of preparation, search, storage, processing and transmission of information materials;

6. labor productivity of workers carrying out activities in the field of enterprise informatization.

When evaluating the financial component, it is suggested to use the following indicators:

1. unit cost of information products;
2. expenses for the maintenance of one worker who performs activities in the field of information provision and service of the organization;
3. profitability of informatization processes;
4. coverage ratio of information assets;
5. rate of return on information costs;
6. cost standard for managing enterprise informatization processes.

5. Evaluation of software and technical, telecommunication and information support of industrial enterprises.

Today, all legal entities and their subdivisions, regardless of the type of economic activity and organizational and legal form of business, submit the annual "Report on the availability of a fleet of computing equipment" to the state statistics office by location. Businesses report the total number of computers and types of processors. But the collection of statistical data on the fleet of computing equipment is only the first steps on the way to assessing the informatization of enterprises in the industry [41].

For a more detailed evaluation of the informatization of the enterprises of the industry, it is necessary to collect and analyze the following statistical data, which we propose to accumulate in the "Software and technical, telecommunications and information support of industrial enterprises" section of the informatization passport:

1. availability of computer equipment at enterprises of the industry, including by types of computer processors;
2. the number of enterprises with information and communication technology maintenance departments;
3. the number of enterprises in the industry with access to the Internet;

4. the number of enterprises in the industry that have a website on the Internet;
5. availability of a local network at enterprises;
6. computer types (and share) of general system software at enterprises of the industry;
7. network types (and share) of system-wide software at enterprises of the industry;
8. the number of information resources (databases) operating at enterprises of the industry;
9. the number of databases by the main spheres of activity of industrial enterprises;
10. the number of documentary databases (including regulatory and legal and scientific and technical information).

#### 6. Evaluation of the development of the information culture of the industry.

It was previously determined that information culture is the knowledge, skills and motives of a person, which ensure purposeful independent activity to optimally satisfy individual information needs using both traditional and new information technologies. Therefore, the level of information culture of employees can be assessed in the following directions:

1. the ability to independently formulate one's information needs;
2. knowledge of the basic methods and algorithms of information search depending on the information request;
3. the ability to extract information from the source and correctly form the results of information and analytical activities;
4. mastery of new information technologies.

According to the author, the assessment of the level of information culture of enterprises in the industry should be carried out in each area by the method of questionnaires and test control on a 100-point scale. At the same time, three levels of information culture should be distinguished with an assessment in points: high (H) -

from 70 to 100 points; medium (M) - from 50 to 70 points; low (L) - from 0 to 50 points (table 2).

#### 7 Assessment of information security of the industry.

In this section, first of all, it is necessary to indicate the availability, sufficiency and effectiveness of normative legal acts, documents and instructions on processing, storage and transfer of information subject to protection. Secondly, it is necessary to indicate the number of enterprises of the industry, which have full-time units for the protection of information resources, networks and systems. An analysis of information risks will enable a more detailed and effective assessment of the industry's information security. Risk analysis for each enterprise is exceptional. Exclusivity provides the first parameter - the amount of losses, as it is related both to the information resources themselves and to the assessment of their importance, which is unique in each organization. Therefore, every enterprise of the industry needs to collect data on all information resources and accumulate them in the form of a separate document - a classifier of information resources by degree of secrecy. The data in the information resource classifier must be compared to the NIST SP 800-60 "Risk Management Guide for IT Systems" standard[42].

The next step should be the construction of a reporting table, which will be the basis for assessing the security of informatization of the industry in the informatization passport. In the process of building the report table, the authors suggests being guided by the octave risk management methodology. According to this method, the structure of information distribution in the report is as follows. By sources of threats: accessibility from the network with the participation of a person (from the inside and outside), the possibility of physical access by a person (from the inside and outside), system problems (software errors, viruses, system failure, hardware defects), other problems (power failure, failure or unavailability of telecommunications, natural disasters, problems with buildings, premises or equipment). On purpose: accidentally, intentionally. By results: disclosure, modification, destruction, blocking. The report should indicate not only the final level of losses, but also their probability.

Thus, it is advisable to use the table 2 in the informatization passport to assess the information security of the industry. This table contains the estimated loss of information resources and the probability of resource threats, as well as the calculated risk. It is clear that in cases where the assessment of losses and threats coincide, the resulting risk will be high. To simplify reporting, it is necessary to develop a standardized, normative list of information resources, which must be included in the report on information security of the industry. It is this standardization and detailing that will serve as an indicator of the performance of the risk assessment work.

8. Assessment of the document flow of enterprises in the industry.

Table 2.

Industry Information security report in \_\_\_\_\_ year.

Resource (object)	View access	Subject	Intention	Result	Losses	Probability	Risk
Information resource No.	Network	internal	accidentally	Disclosure	M	H	H
				Modification	H	H	H
				Destruction	M	M	M
				Locking	M	L	M
			deliberately	Disclosure	H	M	H
				Modification	M	M	M
				Destruction	L	M	L
				Locking	L	L	L
		external	accidentally	Disclosure	M	H	H
				Modification	H	M	M
				Destruction	H	M	H
				Locking	H	L	M
			deliberately	Disclosure	M	L	M
				Modification	L	L	L
				Destruction	L	M	L
				Locking	L	M	L

Source: author's development

A competently constructed document management system not only simplifies the work of the financial and economic service, but also allows to significantly increase the efficiency of the financial management of the enterprise. Document circulation is available at any enterprise. But not everyone pays attention to its regulation, although with the development of business, such work becomes a necessity. It is possible that employees of enterprises will not immediately get used to

the fact that their actions are regulated, but this will save time when performing their duties - and, therefore, work more efficiently.

Any company in the industry faces the flow of unstructured information due to the increase in the number of employees. Without document circulation regulations, the company will have confusing routes, loss of documents, unclear nomenclature of cases and, as a result, problems with searching for documents, keeping management records, the inability to establish a relationship between them and get operational access to the history of transactions.

Thus, in this section of the informatization passport, it is necessary to provide the following data regarding the state of document circulation at the enterprise:

1. availability and number of regulated (standardized) documents at enterprises of the industry;
2. the number of cases of lost documents;
3. presence of repetitions of information in documents;
4. availability of electronic document management systems at enterprises of the industry.

These are general absolute indicators of the state of document flow, but you can also specify relative indicators:

1. the level of regulation of documents, which is calculated as the ratio of the number of regulated documents to the total number of documents;
2. percentage of repetitions of information in documents;
3. the fate of enterprises in the industry that have electronic document management.

Today, more and more enterprises are implementing electronic document management systems, which is one of the most famous projects in the field of information technologies. Thus, if an electronic document flow system was implemented at some enterprises of the industry during the reporting period, it is considered appropriate to list the performance evaluation indicators of this measure in this section.

Such indicators include, first of all, the assessment of the quality of system implementation:

1. the share of electronic documents, which is calculated as the ratio of the number of electronic documents created in the system to the number of paper documents;
2. the share of system users, which is calculated as the ratio of the number of employees who are actual users of the system to the total number of managers or engineering and technical workers whose activities are related to documents (this indicator should be close to 100%);
3. the share of electronic digital signatures, which is calculated as the ratio of the number of documents with an electronic digital signature to the number of original registration documents (if the value of this indicator is greater than 100%, it means that the enterprise managed to reduce the number of documents that are signed, that is, the number of paper documents).

This information is proposed to be issued in the form of table 3.

Table 3.

Assessment of the quality of the implementation of  
electronic document management.

Indicator	Enterprise industry			
	1	2	3	4
Share of electronic documents, %				
Total number of paper documents				
The number of electronic documents in the system				
Share of system users, %				
Total:				
including, that work in the system				

Source: author's development

You can directly estimate the economic effect of the implementation of the electronic document management system using the direct method. At the same time, the evaluator will act as an absolute indicator of profit increase or cost reduction after

deducting system and implementation costs. Also, indicators of the main economic effect of the implementation of the electronic document management system can be qualitative and quantitative.

Quantitative indicators during the implementation of electronic document management systems are associated with a reduction in working time due to the reduction of time for searching for documents and their coordination, for familiarization with documents, reducing the amount of routine work, etc.

The time savings of employees on document coordination after the implementation of the electronic document management system can be easily calculated:

$$E_{cd} = (t_0 - t_1) \cdot q, \quad (1)$$

where  $E_{cd}$  - time saving of employees for the coordination of documents after the implementation of the electronic document management system;

$t_0$  and  $t_1$  – time spent by employees on collecting signatures and coordinating documents in accordance with and after the implementation of the electronic document management system;

$q$  is the number of documents agreed per month.

In turn, the reduction of working time costs allows you to save on wages, in addition, workers free up time to perform intellectual work, which will allow the company to attract additional profits. Quantitative indicators can be considered a decrease in the number of papers on workers' desks, an increase in the speed of document circulation.

Quality indicators include improving the company's image, improving the working conditions of employees, and orderliness of the company's work.

#### 9. Assessment of the quality of information provision of the industry.

The quality of information support of the industry is a general indicator of the level of organization of material and technical support of information processes. In the opinion of the author, it is advisable to evaluate the quality of information provision through the evaluation of a system of indicators, such as: usefulness, reliability, completeness, availability, etc.

A comprehensive assessment of the quality of informatization of enterprises in the industry is carried out using such an indicator as the degree of achievement of planned results. It is the quality of the information provision of the industry, on the one hand, that summarizes the characteristics of the efficiency of the information provision of the enterprises of the industry, on the other hand, the main reasons and factors affecting this efficiency are taken into account.

10. Assessment of prospects for the development of informatization of the industry.

On the basis of the given and analyzed indicators and statistical data, conclusions are made and directions for the development of informatization of the industry are developed.

Thus, the role of the informatization passport is to find opportunities to simplify the processes of preparation and use of the information product, to speed up and reduce the cost of information collection and analysis, as well as opportunities to organize a unified information space of the industry. The organization of the effective information space of the industry will allow to optimize the functions of interrelationships of the integrity of the production information of the enterprises of the industry with reliability, timeliness and the necessary volume. To date, the development and implementation of ideal systems for the organization of information provision, and therefore the creation of a single information space of the industry, are not yet real.

**Conclusions.** Currently, there are many programs and plans for informatization of a branch, regional, local and local nature. But they do not have a common methodological and methodical base. Compatible software products are not always used (even at the industry level). Enterprises do not have methods for evaluating the effectiveness of informatization processes. Knowing and regulating the mechanisms of market transformation, preventing the development of negative trends, making the necessary corrections both in everyday activities and in planning and forecasting will provide an opportunity for regional management bodies to have not only a real picture of the processes, but also to direct efforts to social, innovative, investment,

cultural purposes. The essence of information processes in various economic objects is the collection, storage and processing of information for the purpose of managing these objects. Markets of goods and services cannot develop without reliable data on prices, terms of sale, manufacturers, economic resources, and business conditions. The quality of management decisions made depends on the rationality of using this information, and therefore the effectiveness of management of any organizational system. Based on the sources of the emergence of the concept of information ecology from information management and research on information behavior, one should note the important place of the complex relationship between people and technologies during the use of information in society, at the enterprise, in the industry, where the principles of ecology are used to emphasize the interdependence of the information environment with all components of the ecosystem. The transition to the information economy changes the nature of the functioning of traditional branches of the economy, their technological parameters become derivatives relative to economic and informational processes. The latter are becoming a dominant factor in the development of not only the production sphere, but also the socio-economic system as a whole. Analysis of the level of informatization development confirms the dynamism of this field and shows real opportunities and positive prospects. However, the analysis is a problematic area, because there are no statistics of informatization, accounting of information activities and information markets in Ukraine.

The problems of the development of informatization of the national economy are of a complex nature, where the analysis of information environmental sustainability as the provision of institutional conditions for the balance of meaning production and retransmission logically leads to the formulation of the concept of information balance as a basic factor of information security and information environmental sustainability. In the work, a theoretical justification and a practical solution to the actual scientific problem related to the formation of provisions for a comprehensive approach to the creation of a strategy for the development of the informatization of the national economy and its components have been carried out, directions for evaluation and certification of informatization processes have been

recommended, indicators of evaluation of relevant processes have been expanded under the conditions of formation market economy of Ukraine.

One of the conclusions of this study can be considered the opinion about the need to determine the ratio of different types of information in cultural system and information space society, conducting events aimed at to create an optimal information situation. This optimal information situation can to be defined as a state of informational ecology in the cultural system, when multifacetedness valuable knowledge (of its producer subjects and social institutions) is a reinforced correspondence of secondary information to this knowledge.

It is substantiated that the insufficient coverage and lack of formation of complex scientific research on the development of informatization processes involves the formation of the foundations for the development of strategic plans and programs (at the level of society, regions, industries, enterprises), and also requires a theoretical and methodological definition of the complexity of the informatization processes of the national economy. An extended definition of the components of the informatization process - technical, technological, social, economic, ecological, cultural, and others, which affect the qualitative and quantitative indicators of the country's economic development - is provided. The directions for spreading the information base due to the introduction of certification of informatization processes at the industry level with the aim of comprehensive formation of the informatization strategy of the national economy based on the balanced development of the market environment are substantiated and recommended.

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