AUTOMATION OF TECHNOLOGICAL PROCESSES OF DATABASE PROCESSING OF INDUSTRIAL ENTERPRISES

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АВТОМАТИЗАЦИЯ ТЕХНОЛОГИЧЕСКИХ ПРОЦЕССОВ ОБРАБОТКИ БАЗ ДАННЫХ ПРОМЫШЛЕННЫХ ПРЕДПРИЯТИЙ

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Annotation. This article shows the use of computer technologies through heuristic methods of computer simulation related to production and trade processes based on the automation of technological processes for processing databases of industrial enterprises, modern solutions that provide the formation of operational plans. When solving complex problems at industrial enterprises and expanding the scope of automated control systems, proposals and recommendations were made to unite the executive team of the practice of structural organization and formalization of production processes into a single leader and a single coordinating body operating in the information society, based on the concept of a single integrated enterprise information system.

Key words: *Industrial enterprises, automation, production, management, software, integration, information system, database.*

Аннотация. В данной статье показано применение компьютерных технологий через эвристические методы компьютерного имитационного моделирования, связанные с производственными и торговыми процессами на основе автоматизации технологических процессов обработки баз данных промышленных предприятий, современные решения, обеспечивающие формирование оперативных планов. При решении сложных задач на промышленных предприятиях и расширении области применения автоматизированных систем управления внесены предложения и рекомендации по объединению исполнительного коллектива практики структурной организации и формализации производственных процессов в единого руководителя и единый координирующий орган, действующий в информационное общество, основанное на концепции единой интегрированной информационной системы предприятия.

Ключевые слова: *Промышленные предприятия, автоматизация, производство, управление, программное обеспечение, интеграция, информационная система, база данных.*

Enter.

One of the most important priorities in the focus of the democratic market reforms and the 2017-2021 Action Strategy for the socio-economic development of Uzbekistan is deepening structural changes in the national economy, increasing its competitiveness due to the modernization and diversification of leading sectors of the national economy. In particular, "...increasing the share of industry in the structure of the national economy, rapid development of high-tech industry and processing industries, further modernization and diversification of industry, ensuring comprehensive and effective use of the industrial potential of each region, organization of new industrial enterprises and small industrial zones [1]" is noted. In fact, the head of our country, Sh. Mirziyoev, criticizing the shortcomings in the implementation of the targeted programs for the development of the existing economic sectors, in particular, the industrial potential, "...the effectiveness of the implementation of the targeted programs that show the effectiveness of the reforms. Among these are the state of production facilities, which are the economic and financial indicators of the development of industry and other sectors, the reduction of costs and prices, the localization and the level of profitability, and the absolute increase of product competitiveness.

Today, no one can imagine the development of enterprises without modern information technologies. Because currently information and communication technologies are rapidly developing, which imposes on enterprises the task of introducing new innovative techniques and technologies into their activities and increasing their competitiveness using high technologies. The concept of introduction of "Smart City" technologies has been adopted in our country, according to which "smart transport", "smart education", "smart medicine", "smart energy system", "smart construction", "smart communal economy", "smart house", Projects such as "smart government" and "smart neighborhood" were defined as the main directions of the introduction of "Smart City" technologies. At the same time, a number of problems remain in the implementation of ICT in most enterprises of our country. The program on the implementation of the Strategy of Actions for the further development of the Republic of Uzbekistan in the year of active investments and social development also attaches great importance to this [1].

Of course, during the years of independence, industrial sectors like other sectors of the economy in our country developed rapidly, and new industrial sectors such as oil and gas, chemical industry, automotive industry, construction materials and pharmaceutical industry were formed and developed, and today they enter the world market under the label "Made in Uzbekistan". thousands of industrial goods are offered. Today, the share of industry in the country's GDP is more than 25.0 percent, the total amount of investments in fixed capital is about 38 percent, and the total number of people employed in the economy is 14.0 percent. . Of course, at the heart of all the above reforms lies the realization of the innovative potential of state and non-state sector enterprises at a steady pace. Therefore, in the conditions of today's globalization and liberalization of the national economy, based on the characteristics of the national economy, it is necessary to evaluate the innovative potential, its formation and development, a comprehensive study of the theoretical and methodological issues of management, to determine the factors and specific

characteristics of the development and management of the innovative potential in industrial enterprises, industrial development in the republic improving the organizational and legal basis of increasing the innovative potential in enterprises, comparative study of innovative potential assessment methods, and determining the modern state and trends of innovative activity management mechanisms in industrial enterprises are among the urgent problems awaiting their solution. Therefore, in this article, we consider some theoretical aspects of innovation potential.

As deep and large-scale reforms are implemented in the Republic of Uzbekistan, great importance is attached to the formation of a continuous legal education system. In fact, the thinking and worldview of building a future great country is closely related to the activities of our leaders and experts. Therefore, the training of highly qualified, deeply knowledgeable managers who can effectively apply modern information and communication technologies to their service sector and activities has become a demand of the time. In our modern life, information technologies are used in the management of all types of organizations operating in all aspects of social production. The most prominent and obvious advantages of information management technologies began to appear in the practice of commercial organizations.

Management of industrial enterprises with the help of information technologies is the organization of a set of knowledge methods and tools to solve management tasks based on the development of system software and computer and telecommunication technologies. In management, information technology is often used in an automated way, that is, it involves the implementation of management technologies using technical and software tools. In general, information technology is the technology of data management and processing. Computer technology is usually understood under this term. In the field of information technologies, work is carried out on the collection, storage, protection, processing, transmission of various information through electronic computing machines (EHM) and computer networks. In addition to computer-organizational equipment, communication tools such as telephone, teletypewriter, telefax, etc. are used as the main technical means of information technology. Although information technology has existed at various stages of human development, the characteristic feature of today's information society is that, for the first time in the history of civilization, the effort spent on obtaining and producing knowledge is superior to the expenditure on energy, raw materials, materials and tangible consumer goods, that is, information technology exists takes a leading place among new technologies. The information technology industry consists of computer, communication system, database, knowledge base and related activities.

Today, information technology can be conditionally divided into types that preserve, rationalize and create. Technologies of the first type save labor, material resources and time. Examples of streamlining information technologies include ticket booking and hotel billing systems. Creative (creative) information technologies consist of systems that produce information, use it and include a person as a component. Modern development and achievements of information technologies show the necessity of informatization of all spheres of science and

human activity. Informatization of the society is understood as the use of information as a wealth of the society, which ensures the development of the economy, the scientific and technical development of the country, and the acceleration of the processes of democratization and intellectualization of the society. The main tasks of modern information technologies for enterprise management are to solve various problems of search, collection, processing, storage, development of new information and optimization of necessary information. The task is performed not only by selecting and automating time-consuming, regularly repeated, data processing operations, but also by processing them to obtain new information necessary for making effective management decisions. In the last ten years, the management of enterprises with the help of information and communication technologies has created significant opportunities in management, because they provide managers at all levels and leaders of enterprises with the latest methods of processing and analyzing economic and social information necessary to make the best and alternative management decisions. is getting married.

Analysis of literature on the topic.

The development towards a modern, intelligent economy, the formation of an automated digital economy is a complex process that depends on many factors, and their econometric analysis allows rational management and regulation of the digital economy. Kh. Zayniddinov, T. Shodiev, A. Abdug'afforov, B. Ataniyazov, N. Mahmudov, Sh. Kholmo'minov, Kh. Nabiev, A. N. Aripov, O. K. Iminov, Kha. A. Mukhiddinov, Z. Khakimov and Others have researched methodological aspects of ICT technologies and econometric modeling of economic processes of industrial enterprises. Also, in the scientific works of scientists of our country, S.S. Gulomov, B.A. Begalov, R.Kh.Alimov, K.Kh. Abdurahmonov, etc., issues such as modernization of the management function based on the use of ICT and effective use of all resources are highlighted and comprehensive. are conducting scientific research. At the same time, the problems of development of methods (models) and algorithms for evaluating innovation activity in the conditions of the innovative digital economy, which are expanding and becoming increasingly complex, have not been sufficiently explored.

Today, the costs of implementing information technologies in management are not only paying, but also allowing to earn. It is known that large western corporations spend 1.5 to 4% of their annual turnover annually on the development and development of corporate information systems. Information and communication technologies play the role of functional components of other types of technologies (for example, production, organizational, social) and their intellectual core. Currently, information and communication technologies are one of the main parts of economic development. Almost all firms and consumers are developing the use of computers and the Internet for economic purposes, such as providing consumers with more diversified and customized products, improving product quality, and selling goods and services.

As we all know, the expansion of information and communication technologies in developed and developing countries and its impact on economic growth has been growing rapidly in the last two decades. However, within-country data on computer,

mobile phone, and Internet users reflect different ICT penetration rates across countries and regions, showing an increasing trend in ICT usage despite the recent global economic crisis. In fact, information and communication technology is the integration of electronics, telecommunications, software, networks, decentralized computer workstations, and mass media, all of which have a major impact on firms, industries, and the economy as a whole. Information and communication technology consists of various "communications equipment" including radio, television, communication equipment and software. Therefore, investments in the information and communication sector are mainly made in computers and telecommunications, software and services. Management of the enterprise with the help of information technologies requires a detailed analysis of the object, study of management tasks and structure, as well as management of information flows. Based on the analysis of survey materials, an information management model was developed, which establishes the relationship between information processing tasks and new information flows. The main principles of attracting information and communication technologies to enterprises are as follows:

1. The principle of operational control (based on real-time control).

2. The primary management principle (collecting and analyzing information about the state of the object of control, modeling and forecasting its state, planning control measures, direct support for making decisions on their implementation, presenting their solutions to executives and monitoring their timely implementation).

3. The principle of control, taking into account changes in the external and internal environment in enterprises.

4. The principle of network management, which allows the implementation of the interconnection of vertical and horizontal communication lines and enterprise flows.

It is described as a concept that includes information and communication technologies and other information equipment, as well as computer programs covering computers, office equipment (cash registers, calculators), communication equipment.

Research methodology

In the last decade, the impact of information and communication technologies on economic growth has been analyzed by many authors. Most of the evidence in this field confirms that the positive impact of information and communication technologies on economic growth is not visible before the mid-1990s. Oliner and Sichel have empirically compared capital investment in computers, software, and telecommunications equipment, along with investors and work environments, to high-level information and communication technologies to economic growth in the late 1990s, but they did not show positive results. According to research by Jorgenson and Stiroh in the 2000s, information technology's contribution to the economic development of the United States was the replacement of computers, related equipment, and services resulting from technological change.

In addition, other researchers have provided information on the impact of information and communication technologies on the economic growth of each country. Scientists Jalava and Pohjola wrote articles in the 1990s that the use of information and communication technologies and the improvement of product quality were considered important factors in the economic development of the United States of America. In addition, information and communication technologies have been shown to increase Finland's economic growth from 0.3 to 0.7 percent in the 1990s.

Currently, the following information management systems are used in enterprise management:

1. ERP (Enterprise Resource Planning). ERP system is a special software package that implements the ERP strategy, that is, the organizational strategy of production and integration of various operations, management of labor resources, financial management and asset management. This strategy aims to constantly balance and optimize the organization's resources through a special integrated set of software, which provides a common model of information and processes for all areas of activity. Today, most organizations use a number of secure systems to solve various business problems. However, the process of consolidation, data processing, analysis and exchange between these systems is done manually, which in turn leads to increased labor costs and increased human impact. The main platform of the integrated base that we offer can help to overcome these problems. Our specialists have the necessary knowledge and skills, sufficient knowledge of trends in cloud technologies, professional experience in creating the organization's ERP-system infrastructure using the main platform of the integrated base and implementing similar solutions.

2. CRM (Customer Relationship Management) systems. From the point of view of information and communication technologies, CRM is a tool for managing employee relations with customers, which allows organizations to record their interactions, expand revenue opportunities as much as possible, and increase the efficiency of compliance with organizational and regulatory rules. Given information and communication technologies are aimed at creating long-term and profitable relationships with customers by interpreting their specific needs. The CRM-system is a computer program that clarifies information about the customer, and with the help of this system, it is used for the purposes of attracting new customers and not losing previous customers, reducing costs, increasing labor productivity and, as a result, increasing the volume of sales and income, increasing the competitiveness of the organization. The CRM system performs the tasks of organizing a clear and transparent process of cooperation with customers and partners, organizing effective marketing and sales, forming customer loyalty, and controlling the work of all employees of the organization in an agreed manner. A modern CRM system must have the following components in the process of performing the specified tasks:

- communication and customer base management;
- trade management;
- telephone sales (telemarketing);

- time management (time management);
- customer service (after-sales service);
- marketing management (survey, form filling);
- report for senior management;
- interconnection with other information systems;
- data matching;
- e-commerce management (connection to the organization's website, portal for customers and partners);
- mobile trading management (computer, laptop or remote access).

3. BI (Business Intelligence) is an information support system for analytical activities of the enterprise. This system consists of analytical data sets and information processing tools. In addition, OLPS systems (On Line Processing Systems) are considered an important system in the development of information and communication technologies in the enterprise, they are a data warehouse used to collect data from ERP and other systems and for further analysis of the collected data.

Analysis and results

In the field of hardware, data processing and processing have made significant advances in design and technology in recent years. More efficient generations of computers, updated every two to five years, are the result. The software industry used to work with a product life cycle of around 10 years. The very long product life cycle in the field of application software is based on the fact that professional requirements do not change as quickly as the technical capabilities of hardware. Due to hardware changes, as well as new compilers and operating systems, a large number of changes will be necessary during the lifetime of the software. To some extent, the top-down rule doesn't work because the new environment can't support the old programs and doesn't outlast the old-style compiler commands. In addition, these new tools have a large number of new tools that make old programming easier.

At one place, they may be interested in obtaining information about certain properties of certain objects or some results between certain Objects of the model world. In order to meet such requirements, appropriate software tools that perform functions of interest to users or information systems capable of extracting information about relationships of interest to users are developed. At the beginning of the development of computer technology (when the power of computers was not so high), this approach to the model world was a natural thing. It was this approach that gave rise to the functional (relative) approach to software development, which was discussed in detail in previous lectures. The essence of this approach is that function (relation) ecocomposition is regularly used for the description and construction of the structure of software tools (including program texts). In this case, the objects of the model universe loaded with the functions being ordered and implemented are presented in separate parts (that is, in the size necessary to perform these functions) and in a form convenient for the implementation of these functions. In this way, effective performance of required functions has been achieved, but a comprehensive and adequate computer view of the model world of interest to the user has not been created. Even an attempt to slightly expand the scope and visibility

of information about this model universe would require significant innovation in the software itself.

So, the most important factor in a software project is risk. Risk management is one of the most important tasks for a project manager. Risk management includes the risks that may affect the project schedule, and the actions required to prevent these risks in order for the software to perform well. Risks can threaten the software developed, or the organization. There are three relevant categories of risk:

1. Threats to resources. The risk of the project is the loss of an experienced designer. As a result of the exchange, the relevant experience and skills may require a designer for a long time, and consequently, the software design will take more time to complete its work.

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3. Business risks or risks affecting an organization's software. This is the risk taken by a competitor when introducing a new product. A competitive product launch can be very thoughtful about marketing existing software products.

Summary

In short, as the progress of science and technology develops, the practice of structural organization and formalization of production processes during solving complex tasks in industrial enterprises and expanding the field of application of automated control systems makes the executive team a single manager and a single coordinator operating in an information society based on the concept of a single integrated information system of the enterprise. requires the need to join the body. The concept of this information system is a set of basic principles that express the idea of an information system, its goals, structure and functioning within the framework of a single information environment. A single information environment is an urgent issue of creating a complex of information communication systems and networks, operating on the basis of uniform principles and general rules, as well as technologies for their management and use, which provide the informational interaction of enterprise units, as well as their information needs. Based on this goal, the following tasks are planned. In particular, it is possible to provide important information about internal and external processes, increase the speed and efficiency of interactions between departments, bring the management of processes within the enterprise to a qualitatively new level, predict the progress of the enterprise, and reduce losses not related to production.

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