

**THE RELEVANCE OF INFORMATION TECHNOLOGIES IN THE DESIGN OF
MECHANICAL SYSTEMS WITHIN THE FRAMEWORK OF MODERN
TECHNOLOGICAL PROGRESS**

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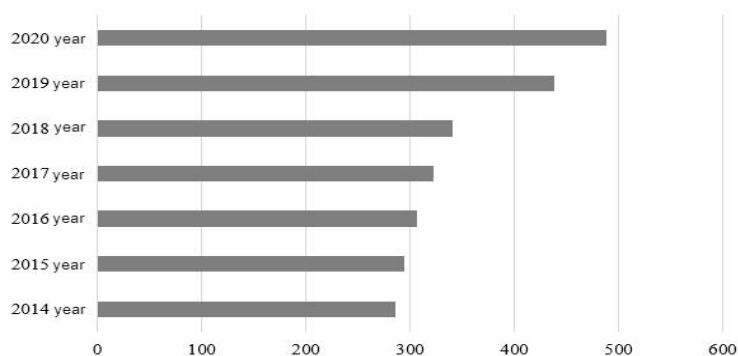
Key words: information technology, technological progress, information, economy, innovation

Introduction. Starting to study the relevance of information technology (IT) integration in order to improve the efficiency of modern manufacturing enterprises, it is necessary to define the concept and significance of IT in the modern world. Information and digital technologies include a number of production and software-technological tools that are combined into a technological chain, through which such processes are performed as: collection, storage, processing and output of information flows.

Literature review. The main goal, which is laid down during the integration of IT, is to reduce labor costs when using and processing information resources. Information systems use such means as: computer technologies; communication technologies, etc. Each of the means has the ability to be used in parallel with others. In addition, information technology provides enterprises with the most favorable conditions for its development due to the high-speed and timely exchange of information between departments, as well as high efficiency in its processing and use in general [Sarmina, Fomicheva, 2017, 21-29]. Information systems and technologies are one of the key vectors for the development of science and education in the modern world. Information and digital technologies are an integral part of human life today. It is through these technologies that today there are the most innovative developments that increase the efficiency of various enterprises and simplify the life processes in the everyday life of ordinary people. These technologies work on the basis of using a variety of means and methods for collecting, processing, and transmitting data in order to obtain information of the required quality and the state of an object, process, or phenomenon. The main goal of information technology is to improve and automate the production processes at the enterprise, as well as the personal needs of a person [Skvorcova, Lebedeva, Sotnikova, 2018, 76-82].

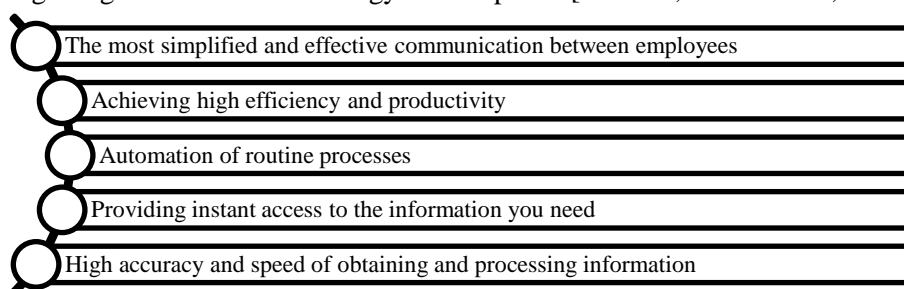
It should be noted that these technologies are the leading direction in the professional sphere of a person. Completely new and previously unexplored technologies are being introduced and developed everywhere. At modern enterprises, there is an intensive distribution with a joint improvement of digital and information technologies. This is confirmed by the monotonically increasing turnover of the Russian IT services market. On figure 1 shows the dynamics of growth in the volume of the information technology services market in Russia in 2014-2020. As can be seen from the graph, information technologies in our country are intensively developing and are being introduced every-

where at modern enterprises, while continuously increasing the turnover of the IT services market [Seidametova, 2021, 34-42].



Picture 1. The volume of the Russian market of IT services (billion rubles)

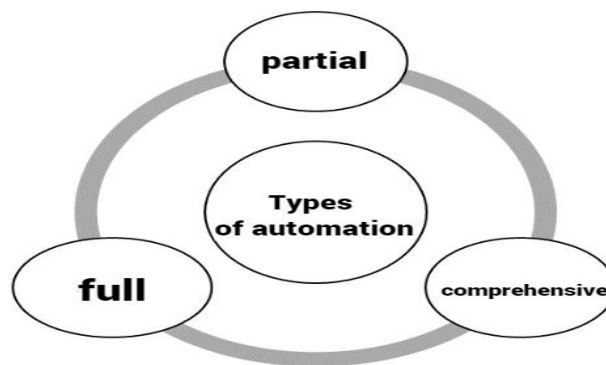
Analysis. The direction of development of the information technology market for a long time determines the main trajectories of the development of the economy and society, and has also led to tremendous changes in people's lives more than once. Mechatronic systems and technologies are widely used in modern enterprises and rationalize the work activities of people in the modern world. Over the years, IT has proven to be superior to human mechanical labor. These technologies have a number of advantages, through which the importance of their use in modern enterprises in the activities of a technologist is proved. The widespread integration of information technology in modern enterprises is a necessary factor, through which the efficiency and quality of technological processes are significantly increased. Thus, the set indicated in figure 2, the benefits of developing and integrating information technology in enterprises [Evtseva, Tatishcheva, 2015, 125].



Picture 2. Benefits of IT Integration in Enterprises

One of the most relevant areas of information technology development in the professional activity of a modern person is automation. It is automated tools that are currently the most relevant and promising in the development of scientific and technological progress. The concept of "automation" includes a broad concept, by which all processes that occur and are performed on the basis of special software are described. Due to automation, many technological tasks are performed that do not require direct human

participation. Information systems integrated at modern enterprises provide the most efficient collection, storage and processing of information required in the decision-making process from tasks in any areas. Information systems and technologies are an integral part of modern enterprises and organizations that qualitatively improve the efficiency of processes functioning within them [Bochkarev, 2018, 28-32]. Depending on technological functions and processes performed, three main types of automation are distinguished. It should also be noted that the automation of production processes is understood as the use of such equipment, which makes it possible to carry out the technological process according to a predetermined mode. In this case, a person does not use physical force, but only controls the correct operation of machines [Braclavskij, Shmatko, 2017, 23-34].



Picture 3. Types of automation

Automation of one or more unrelated operations of the production process is called partial. It is used in cases where the direct control of a complex fast process becomes practically inaccessible to a person, or when this process takes place in life-threatening conditions. Integrated automation provides automatic implementation of the production process. In this case, human functions are reduced to monitoring the progress of processes and the operation of the device. With full automation of human functions, this allows you to control the production of a fully respected car. In this case, errors that the operator can make [Kovalyk, Fomicheva, 2017, 11-17] are excluded. Along with this, it should be noted that one of the key advantages of integrated automated tools is the removal of a person from work that is potentially hazardous to health. In this case, a person can only control production [Shmatko, Kutuzova, 2016, 87-93].

Conclusions. Thus, the main purpose of this article was to study the relevance and main trends in the integration of information technology in the technological process of the modern world. As a result of the work performed, such aspects were studied as: the relevance of the development of information technologies; the relevance of information technology integration in modern enterprises; key aspects through which the relevance of the development and implementation of automation tools is confirmed; basic information regarding information, information technology and automation in general.

Scientific novelty. We have studied the problematic aspects related to the dynamics of information technology integration in the technological process of the modern world. The results of the study can be useful in further work related to the design and development of innovative IT projects that are planned to be integrated into the engineering industry. In conclusion, it should be noted that the main focus of attention in the development of technological progress should be directed specifically to the study of information technology and the integration of the digital space in modern enterprises. It is due to this that modern enterprises and organizations will be able to acquire the highest economic and labor indicators, which will be the result of intensive and successful development in the technological aspect.

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The relevance of information technologies in the design of mechanical systems within the framework of modern technological progress

Key words: information technology, technological progress, information, economy, innovation.

One of the most relevant areas actively used in the professional sphere of life of a modern person is information technology. Mechanical engineering technologists are expected to apply current technologies and principles from machine and product design, production and material and manufacturing processes. Mechanical Engineering is one of the broadest and one of the most popular fields of engineering. The main goals of the Information Technologies in Mechanical Engineering group is to contribute to the art of product development and to increase the permanent innovation ability of our partners, thus enabling high-valued, highly productive and dynamically acting product development. The main purpose of this article is to study the relevance and main trends of IT integration in the technological process. In the process of writing the work, the authors used theoretical, statistical and empirical research methods.