



APPLICATION OF DIGITAL TECHNOLOGIES IN MODERN METALLURGY

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ABSTRACT: The article discusses the use of digital technologies in modern metallurgy. The ferrous metallurgy industry in our country must have an effective management system to enter the world market and increase the competitiveness of its products. Management information is obtained from accounting and other unrecorded sources. The most optimal system for obtaining information is a managerial account. Management accounting consists of a number of elements: budgeting, responsibility centers, management (internal) reporting, management control, management accounting automation system, and so on.

Key words: Application, digital technologies, modern metallurgy, digital economy, implementation, metallurgy students.

Introduction

Modern technology doesn't stop there. Of course, as it is constantly being improved, the legal framework of the industry will be strengthened. The decree of the President of the Republic of Uzbekistan dated February 19, 2018 "On measures to further improve the field of information technology and communications" is very important, since it is a timely document that meets the requirements of such a difficult period.

The digital economy is not a separate activity. This is mainly business, industrial facilities, services. The term "digital" means the active use of information technology in all these areas. If in a simple economy, material things are the main resource, then in a digital economy it is information that is processed and transmitted. After their analysis, a management solution will be developed.

The term "digital economy" was first used in our national legislation. However, the global trend shows that all developed countries have already begun to form it. Uzbekistan should not stay away from this process.

The special department will be responsible for the implementation of automated systems in the real sector of the economy. This will allow large metallurgical enterprises to improve efficiency, increase production, ensure transparency, and reduce production costs.

Materials and methods

If we look at this from a global point of view, today humanity is going through an interesting period when the sectors of the world economy, people's lives and the foundations of life are changing. All this technology is explained by the fact that computers are connected to each other via the Internet. It is estimated that today about five billion devices are connected to the global "web". This number is expected to reach twenty billion in the next five years.

It is becoming more and more obvious that robotics will replace mechanical and physical labor. Therefore, the production in the metallurgical industry, which ensures the mass formation of digital skills, is one of the most pressing problems today. Metallurgy students should be able to use various technologies, computers, the Internet, be ready to process large amounts of digital data. Since the processes are automated, people need to be guided to other, more modern, intelligent professions. If this is not done, a situation called "digital disruption" will arise, which will be exacerbated by the rapid development of ICTs. In short, the modern digital economy faces two tasks: to gradually automate the process and prepare people to use modern technologies in their work.

When a large amount of data is digitized and stored electronically, the problem of information and cybersecurity becomes relevant. The head of our state demanded that information security specialists not be able to study the problem of an accident, but be able to foresee such a situation, that is, to move forward. As a result, although the Information and Public Security Center is operational today, a new Information Security Department is being created within the ministry.

All government bodies carry out interdepartmental information interaction through a specially protected network that has neither access to the outside world, nor access to the outside world. This is an internal communication channel protected by a special encryption device that ensures secure data transmission.

At the same time, it should be noted that now new technologies are used in all areas of the metallurgical industry. Therefore, not only an official, but all people working in the metallurgical industry, more or less involved in the data processing process, must know how to protect the device they use from any attacks.

In his Address to the Senate and the Legislative Chamber of the Oliy Majlis, President Shavkat Mirziyoyev declared 2020 the Year of Science, Education and the Digital Economy.

The digital economy is a system of economic, social and cultural communications based on the use of digital technologies. This is sometimes referred to as the Internet Economy, New Economy, or Web Economy.

In 1995, American programmer Nicholas Negroponte coined the term "digital economy". The term is now used by politicians, economists, journalists and entrepreneurs around the world.

The digital economy should not be built from scratch. It is the transition of the existing economy to a new system by creating new technologies, platforms and business models and introducing them into everyday life.

Signs:

- high level of automation;
- electronic document management;

- electronic integration of accounting and management systems;
- electronic databases;
- corporate networks.

Facilities:

1. Reduces the cost of payments (for example, travel to the bank and other resources are saved).
2. Get more and faster information about products and services.
3. In the digital world, goods and services have great potential to enter the global market.
4. Products and services are rapidly improving through quick feedback (consumer opinion).
5. Faster, better quality, more convenient.

The digital economy significantly improves the living standards of people, which is its main advantage.

Main part

The digital economy is the main enemy of corruption and the black economy. Because numbers seal everything, store it in memory, and quickly provide information when needed. In such a situation, it is impossible not to hide any information, to conduct secret transactions, not to give full information about a particular activity, the computer will show everything. The abundance and structure of data prevents fraud and deception, because it is impossible to deceive the system. As a result, it is impossible to launder dirty money, steal money, spend it ineffectively and aimlessly, exaggerate or hide it.

This will increase the flow of legal funds into the economy, taxes will be paid on time and correctly, budget allocations will be transparent, funds allocated to the social sphere will not be stolen, schools, hospitals, money allocated for roads will be fully paid, etc.

The government's decision to develop the digital economy opens up new opportunities in the field of information technology and electronic document management in general. The transition to digital technologies was caused by the development of the world wide web and quality communications.

It should be noted that today users are actively using the Internet to order products from metallurgical enterprises. Electronic payment systems are also actively developing. This means that our society believes in electronic transactions. Only today are users making small transactions that do not require high costs and are less likely to increase the average purchase volume. The challenge now is to develop medium and large economic transactions and financial transactions using digital technologies.

There are also terms such as the digital economy's own currency (cryptocurrency, bitcoin), savings wallet (blockchain), and settlement methods (mayning). It is recommended to learn more about them.

The National Agency for Project Management under the President of the Republic of Uzbekistan is the competent authority for the implementation and development of the digital economy. In addition, the ministries of economy, finance, information technology, justice and a number of other government departments have specific responsibilities and tasks for the development of the digital economy. This is stated in the Address of President Shavkat Mirziyoyev to the Senate and the Legislative Chamber of the Oliy Majlis.

Further development of the industrial economy is one of the key areas of material production, affecting socio-economic development. As with all sectors of the economy, industry has a number of

important issues that need to be addressed in the near future. One of the most important and pressing problems of the industry is the modernization of production technologies, the creation of additional jobs, a significant reduction in imports of raw materials, the development of sectors that ensure socio-economic stability. Industry plays a key role in ensuring rapid economic growth and production growth. This, in turn, will increase its efficiency and competitiveness.

The potential of industrial enterprises operating in the country is significantly lower than the requirements of the world market; some industrial complexes have long needed new modern equipment, methods and technologies. Another important problem is the lack of a technical, material and raw material base. Improving and updating the technical base of industrial enterprises in the face of a constant lack of material resources, as well as the introduction of innovative technologies and the transition to a new stage in the development of the technical industry, the development, production and implementation of technologies is the main task and need of any industry.

Thus, in accordance with the Decree of the President of the Republic of Uzbekistan dated December 25, 2018 No. 4077 "On measures to accelerate the process of modernization of production facilities, technical and technological re-equipment of industrial production", the modernization of production facilities, production capacities, technical and technological equipment of the main industries, further increasing their export potential, creating favorable conditions for ensuring the competitiveness of products, as well as increasing the investment attractiveness of enterprises.

The implementation of this work will contribute to the development of the economy and the competitiveness of products, and the creation of an investment climate.

Based on this solution, the technology is used to optimize the processes and norms of consumption of raw materials, materials and energy resources, increase energy consumption and increase labor productivity, reduce operating costs and additional costs, reduce the cost of purchased raw materials, materials and components, develop measures aimed at reducing the cost of industrial products due to optimization of the number of personnel. The role of the industry in ensuring the country's competitiveness in the world market is also important, primarily due to the internal requirements of the metallurgical industry, the need to organize accounting and management accounting, which is its integral part. In particular, it will be important to introduce internal control systems, which are an integral part of management accounting. Ferrous metallurgy, one of the main industries in Uzbekistan, must have an effective management system in order to operate optimally.

The rapid development of ferrous metallurgy will be ensured only under the condition of sustainable reproduction of each of its components and the industry as a whole.

Development problems of ferrous metallurgy enterprises:

- obsolescence of the majority of fixed assets;
- Insufficient organization of rail freight transport processes;
- expansion of production cycles;
- high dependence of production on government orders;
- Lack of highly qualified management personnel;
- high interest rates on loans for production;
- products are not competitive enough.

Ensuring sustainable development of the metallurgical industry depends, first of all, on eliminating the negative impact of natural and economic factors that destabilize metal production.

The results of the study made it possible to identify the following factors affecting the development of the ferrous metallurgy industry:

1. Availability of state programs provided for by special programs for the placement and lending of investments, the promotion of the integration of the manufacturing industry with the production and sale of metal products.
2. Innovation through science to improve the technology for the production of metal products.
3. The level of development of the processing industry.
4. The level of development of the transport services sector. Impact of highways, reduction of railway tariffs for scrap metal and metal products.
5. Industry associations and associations of various public organizations representing the collective interests of ferrous metallurgy producers.
6. Services for the transportation, storage, processing of metal products, risk insurance, which increase the business efficiency of ferrous metallurgy enterprises.
7. Lack of barriers to export infrastructure, development of logistics centers and target markets.
8. Reducing churn, increasing entrepreneurship and knowledge of modern technologies.
9. Timely formation of the regulatory and legal framework for activities, determination of the order and amount of state support for the industry.
10. Availability of energy infrastructure in areas involved in the production or processing of metal, including acceptable electricity tariffs. In the economy of the republic, ferrous metallurgy is the most important source of income from entering the world economic system and exports.

It is important to pursue a well-thought-out technical policy for the modernization and diversification of production in the industry, the introduction of modern energy-saving technologies and equipment, as well as the expansion of the raw material base of the enterprises of the industry. In this regard, the Resolution of the President of the Republic of Uzbekistan dated September 15, 2017 No. PP-3277 "On measures to improve the management system of Uzmetkombinat JSC" is aimed at ensuring that the scale of production is much larger than in other industries, and the complexity of the technological era is a feature metallurgical complex.

The use of the concept of "processing" in relation to the technological process not only within the industry, but also at some metallurgical enterprises is a characteristic feature of the enterprises under consideration. In ferrous metallurgy, three main processing processes are interconnected: electrical steel, iron smelting, and metal production.

In metallurgy, a distinction is made in terms of adaptation of technological processes: a full production period, which includes all stages of the metallurgical production process, and an incomplete production period, in which not all stages of the technological process are performed. Analysis of the share of ferrous and nonferrous metallurgy products in the total volume of the metallurgical industry of the Republic of Uzbekistan, the share of ferrous metallurgy in the total volume of industrial production increased from 1.3% to 2.8% during the years of independence. Based on these data, it can be concluded that it is necessary to develop tasks for the structural modernization of ferrous metallurgy. In our opinion, the implementation of these tasks will provide:

- reducing the cost of production;
- the level of provision of local markets with cheap and high-quality products from ferrous metals will increase;

- real incomes and foreign exchange earnings will increase as a result of imports of cheap products and timely export of cheap products to world markets;
- the world market reflects the specifics of ferrous metallurgy, which has a positive effect on the marketing policy of enterprises.

At present, the world ferrous metallurgy is formed by groups of countries supplying raw materials, producing and consuming finished metal products. In particular, Brazil, Australia, India, Liberia are engaged in the export of iron ore to the world market. And Japan, Russia, the USA, Ukraine and Germany are producing steel. The developed countries predominate in the consumption of finished metal products.

Developed countries account for 80% of world steel production. Their contribution is especially great in the production of high quality ferrous metal products.

The ferrous metallurgy industry in our country must have an effective management system to enter the world market and increase the competitiveness of its products. Management information is obtained from accounting and other unrecorded sources. The most optimal system for obtaining information is a managerial account. Management accounting consists of a number of elements: budgeting, responsibility centers, management (internal) reporting, management control, management accounting automation system, and so on.

In the metallurgical industry, the organization of technological processes based on automated control and improvement of the control system is a continuous process that includes several key stages:

- introduction of equipment allowing to objectively assess the state of technological processes and operation process;
- due to remote control of the controller, employees are freed from high temperature and high gas pressure conditions;
- Centralization of control and telemechanics is carried out in a special room in the general production area. This contributes to an in-depth analysis of the production situation and an increase in management efficiency;
- The introduction of automated control systems ensures the safety of personnel and the safety of technological equipment. Such systems perform operations in an exact sequence according to a given program. For example, turning on heaters, adjusting the temperature, etc.;
- Of particular importance is the automation of some indicators of technological processes (temperature, gas pressure, etc.);
- Development of monitoring and internal control systems, taking into account the relationship between the production process and the operation of a complex of technological devices. The introduction of these systems will significantly increase the manufacturability of production processes;
- Development and implementation of optimal control systems using control methods and computers in combination with control systems. The main goal of these systems is to combine existing systems into a single interconnected system, which brings the application of technical and economic indicators and management criteria to a qualitatively new level. This stage is still ongoing;
- Creation of integrated automated control systems, i.e. creation of automated control systems to coordinate the technological process with automated production management systems, production management strategies and tactics. The main difficulties in managing these structures:

- Complex system of distribution of powers between parent and subsidiary organizations (workshops, departments);
- several types of activities (production, processing and sale of metal products);
- Specificity of production processes depending on the type of activity.

In our opinion, an integrated system in an automated control system should function as a single financial and economic entity. For this, in interconnected centers of responsibility (workshops, divisions), a reasonable financial and production structure, a cash flow scheme, based on the feasibility of allocating functional units and services that provide the necessary main production, is developed and scientifically substantiated.

Conclusion

This means that for the successful operation of the ferrous metallurgy industry, a perfect mechanism is required, including planning, accounting, control and analysis. Unlike other industries, ferrous metallurgy is a complex structure, which is a production and economic complex associated with the production and management process.

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