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The cultural factor in the implementation of strategic projects for poverty reduction and sustainable development in Iraq, the use of artificial intelligence technologies and promising areas of personnel training in the context of digitalization: experience in Belarus

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Abstract:

The article considers the historical foundations of Iraq for ensuring environmental and economic sustainability in the context of digitalization. The article presents facts about the contribution of the thousand-year-old culture of Iraq to world culture and the relevance of this contribution in solving the problems of sustainable development. A critical assessment of training technologies and the application of popular neural networks is given. It is proposed to use the experience of Belarus in planning and implementing strategic projects in Belarus in relation to the conditions of global digitalization and to use the results of Belarusian scientists in linguistic analysis of texts to create national neural networks. The importance of an ecosystem approach in solving the problems of socio-economic development of the country is emphasized. The relevance and necessity of appropriate training of personnel for the digital economy, the most important part of which in modern conditions is digital culture and the formation of a national market for high-quality data is substantiated.

Keywords: historical foundations of digitalization of the economy and society of Iraq, key conditions for the implementation of strategic projects in Belarus, Belarusian experience of linguistic analysis for the creation of national neural networks, ecosystem approach in planning socio-economic development, personnel training, digital culture, creation of a national market for high-quality data.

Introduction:

In the context of the theme of the conference on poverty reduction and sustainable development of Iraq, the ancient formula "Ex Oriente lux" - "Light from the East" is filled with new content in the modern era of global digitalization. And it is not by chance. The undoubted historical priority of the ancient Sumerian civilization should be noted for achieving the most important goals of sustainable human population levels and lifestyles, such as:

- ending poverty in all its forms everywhere,
- ending hunger, achieving food security and improved nutrition and promoting sustainable agricultural development,
- ensuring the availability and rational management of water and sanitation for all,
- Promoting the construction of peaceful and inclusive societies for sustainable development, ensuring access to justice for all and building effective, accountable and participatory institutions at all levels.

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Recall that the Sumerians developed the earliest writing system - cuneiform, invented the wheel around 3700 BC and a system of mathematics. The king of Babylon Hammurabi in the 7th century BC. created one of the greatest monuments of world literature and the oldest completed literary work - "The Tale of Gilgamesh", which is written on clay tablets and was translated into many languages in ancient times. The human ideals described in the work are still relevant today.

Some of the most ancient irrigation systems were created in Mesopotamia, which played a vital role in agriculture and were the greatest technological innovation of that time. Medical texts describing methods of treating various diseases were created in ancient Babylon. Mesopotamian astronomers made the first maps of the starry sky and were the first to introduce the zodiac system. Babylonian mathematics was based on a number system with a base of 60, and it is thanks to this that we still divide an hour into 60 minutes and a minute into 60 seconds. Let us add that in the 9th-10th centuries, Baghdad was the center of education, science and philosophy. Here was the House of Wisdom, a unique library and a translation center, where scientists from different countries gathered to exchange knowledge.

All this allows us to speak of Iraq as the most ancient forerunner of the modern concept of sustainable development, for understanding the development trends of which the historical experience of the country's development is relevant and important. At the same time, the legacy of Ancient Iraq is a source of pride for its modern citizens and a moral support in solving urgent problems of sustainable development.

With the beginning of the 21st century, the world entered the era of global digitalization, which required countries to develop and implement complex projects to create an information and telecommunications infrastructure, form a national market for primary data and train specialists with not only digital literacy, but also the appropriate digital culture. In this regard, it seems appropriate to familiarize ourselves with the experience of Belarus in the preparation and implementation of strategic digitalization projects, assessing the effects of artificial intelligence technologies and one of the new areas of training personnel for digitalization - a training course on digital culture for economists.

Digitalization is a strategic project. The Initiative of Strategic Projects put forward by the President of the Republic of Belarus A.G. Lukashenko is the starting point for new plans and is of crucial importance for the further modernization of the Belarusian industry and the formation of the economy of the future. "Not a single person, not a single system, not a single state can exist without the future," the President notes. The economy of the future is a digital economy and the principles of modern strategic planning are applicable to it, which can be fully implemented using digital technologies. Outlining his vision of the significance and problems of implementing strategic projects of Belarus, the President identified the following three key conditions for their success.

1. The highest level of Trust in the assessments of the progress of projects, strict adherence to implementation deadlines and their effectiveness. This requires specifics and truthful information from bottom to top, strict control over the implementation of instructions, and timely preparation of analytical data.
2. Effective Management of strategic projects aimed at selecting promising development areas and high speed of project implementation by maintaining continuity with existing production facilities, deepening and improving existing technological processes in mechanical engineering and agriculture, relying on the experience of successfully implemented national projects, existing technologies, scientific and industrial schools and trained personnel.
3. High-quality Scientific support for the processes of planning, designing and implementing a strategic project "from an idea to its implementation and guaranteed economic effect", which is expressed in substantiated proposals for the creation of new industries, energy complexes and new industries.

The conditions formulated by the President are dictated by life and a difficult external environment that require an appropriate response from government bodies. This includes the need for protective and compensatory measures against external shocks and the definition of strategic prospects for the development of the national economy for the long term, as well as the relevance of

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improving the planning system and control over the implementation of strategic projects. This is important for exporting products with higher added value, increasing the level of localization of joint ventures and increasing the production volumes of products in demand on the markets.

Science plays a special role in strategic projects, primarily in planning strategic projects, objects of high (5th and 6th) technological structures. Belarus has significant scientific potential. There are over 240 scientific institutions in the country, and more than 440 organizations are engaged in research and development. In terms of "scientific results", Belarus ranks 40th in the Global Innovation Ranking with a clear upward trend. At the same time, not 100% of scientific achievements are used in the real sector, which requires both improving implementation mechanisms and increasing the involvement of research institutes and existing technology parks in the practice of specific industries, as well as responsible selection of research areas and topics by scientific organizations.

In order to coordinate measures to improve the effectiveness of strategic projects, the President set the task of creating a Center and Council for Strategic Investment Projects, specifying its functions and forms of interaction with enterprises, industries and government bodies. It is assumed that this will be a "powerful intellectual institution, integrated into the system of public administration and engaged in the analysis of strategic projects, their justification and the preparation of relevant proposals for the Head of State.

Strategic projects are not only new growth points, new impulses and new energy for the development of territories, industries, enterprises and increasing the well-being of every citizen of Belarus, but also an increase in the practical knowledge, skills and abilities of workers and specialists in creating large and promising enterprises of the future and producing popular and competitive products. The importance and relevance of such projects is undeniable. The main thing, as President A.G. Lukashenko notes, is to strengthen their specificity and practical focus, more fully weave scientific achievements into the real life of the country, preserve and develop human capital - those skills and values developed and implemented by Belarusians during the historical process of interaction with their territory to create a strong and prosperous Belarus. And here the relevance of the comprehensive digitalization of industries, enterprises and organizations increases many times over. As the experience of modern Belarus shows, and to which the President of Belarus constantly draws the attention of managers, the most effective in solving the problems of socio-economic development is an integrated ecosystem approach, following which it is necessary to balance the macro- and micro-levels of the economy, taking the ecosystem capital of the territory as a basis and increasing the role of public administration.

The success of the ecosystem approach is determined by the following main factors:

First - ecology - soil and climate features that are important to take into account to ensure food security.

Second - human capital - people who turn difficulties into opportunities. Since real human capital is the skills and values developed and implemented by people in the practice of interacting with their territory and the created production capital during their historical development.

Third - social capital - social ties between residents. The denser these ties, the more people are involved in the economy and the more stable it is.

Therefore, the main task of digitalization is to give new opportunities and new energy to the formation of connections and interactions between the state, business and the population to develop production capital and improve production relations. Based on this, the main goals of digitalization are:

1. First, to develop the strength of interaction between the state, enterprises and residents, which will contribute to the development of new practices of joint action, awareness by teams and individual residents and employees of themselves as activity objects.
2. Second, to develop digitalization projects in the direction of their maximum inclusion in the socio-economic ecosystem of the territory, thereby increasing its value and increasing the return on each of the available resources.

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3. Third, to accumulate the human capital that is needed right here and now, that is, in training personnel, the main emphasis should be placed not on global specialties, but on local needs, on those who are needed by the territory and enterprises created in the country.

At the same time, following these goals will serve to attract investment. The role of public administration in the successful socio-economic development of the country, as the experience of Belarus shows, is key, and in the context of global digitalization, decisive. At the same time, it is important to imagine the contours of the future socio-economic development of the country in the context of the global digitalization of the economy and society. This situation determines the relevance and necessity of appropriate training of personnel for the digital economy, the most important component of which in modern conditions is digital culture.

On a critical look at the development of artificial intelligence technologies. Artificial intelligence is considered today as one of the symbols and drivers of scientific and technological progress and therefore has not left the focus of attention of both specialists and the state for several years. The main issues are to correctly assess the capabilities of AI, effectively use new technologies, and take our place in the global neural network race. At the same time, it is important for us to follow the principle of "overtaking without catching up", which was formulated back in the 20th century by the outstanding Soviet and Ukrainian cyberneticist Viktor Glushkov. That is, do not "chew the tails" of those who have gone ahead, do not imitate, but do something qualitatively new, offering and implementing original solutions.

There is a basis for an innovative breakthrough in the field of AI in Belarus. Four years ago, President A.G. Lukashenko rightly noted that the Internet as it is today will fade - the penetration of deepfakes into real life, cybercrime, extremely excessive traffic and much more not only reduce the positive potential of the Network but often make it incompatible with the development of man, country and civilization as a whole. The emerging qualitative transition in informatization, digitalization and intellectualization is connected, in many ways, and especially in the field of AI, with a shift in emphasis towards nature-like technologies. It is no coincidence that if earlier neural networks were developed by mathematicians and programmers, now linguists, neurobiologists, psychologists, cultural scientists, physicists and chemists dominate. The diversity of real-world problems requires interdisciplinary work. The creators of the most famous neural networks have done a remarkable job: they separated and compressed trillions of data. However, increasingly large-scale developments of AI technologies are accompanied by colossal costs of electricity, water and other valuable resources. For example, one request to a popular chatbot requires 10 times more electricity than a request to a traditional search engine (that is, as much as one light bulb for 20 minutes). At the same time, about 1 half-liter bottle of water is spent on cooling a computer with a neural network. Already in 2024, more electricity was spent on artificial intelligence than on the needs of the economies of many countries (about half of Germany's annual consumption or a third of Russia's consumption), and leading companies spent millions of tons of water on cooling data centers.

By 2027, global demand for AI may require as much water as a country like Denmark uses in a year. A similar situation is with image generation: to create just one thousand pictures, neural networks spend as much energy as an average electric car on a 10-kilometer trip. Not to mention ecology. In China, it was calculated that carbon dioxide emissions from large artificial intelligence models released from 2020 to 2024 reach more than 100 million tons annually. Moreover, the bulk of the emissions are associated not with training the models, but with their subsequent operation - almost 1000 times more than from training neural networks.

The solution is to move to fundamentally new nature-like models of neural networks. In living nature, the main thing is the principle of least action and minimum resource costs. Previous neural network models were created

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by mathematicians for ease of presentation and efficient calculations with digital images of pictures, texts and sounds, but they are not similar to the human brain. In fact, these are "crammers" that make up texts, images or melodies by sorting and sifting through trillions of words and phrases to "find meaning." But this is like trying to assemble a car from molecules. Theoretically possible, but practically expensive and time-consuming. The human brain requires only 30 watts of energy (like a small light bulb) to perform complex transformations of information from the external environment based on our internal characteristics, needs and states. We think in words and volumetric images, not digital tokens. We take linguistic constructions and then select the right words, and not vice versa. This is the principle used in the well-reasoned Chinese modern neural network, the creator of which emphasizes in his interviews that the essence of human intelligence lies in language, and human thinking, in fact, is a complex linguistic process that requires the development of both a theory of thinking and complex practical mathematics. Based on this, we can confidently assume that the success of Chinese AI specialists was influenced by the results of research by the outstanding Belarusian scientist Viktor Martynov on calculating meanings in natural and written speech. His work was more than 50 years ahead of modern approaches to solving the central problem of artificial intelligence - the problem of languages and algorithms with which intelligent devices make logical calculations and conduct dialogue with humans. In 2024, the 100th anniversary of Viktor Martynov's birth was celebrated. Today, his works are of global significance, are successfully developed by his students in Belarusian universities, in the institutes of the Academy of Sciences of Belarus and have great prospects not only for the development of neural networks, but also for the creation of new knowledge architectures in various fields.

And if the recent Nobel laureate in physics - British-Canadian scientist J. Hinton, who applied the law of heat dissipation in physical systems to train neural networks, is called the "father of AI", then along with him and other researchers of artificial intelligence technologies, the name of the Belarusian scientist - linguist Viktor Martynov should also be included, who laid the foundations for the creation of nature-like algorithms for calculating meanings in AI - the technology of the new millennium.

Naturally, the Belarusian experience and technologies of linguistic analysis can be used by Iraqi scientists to create effective training algorithms for national neural networks.

Brief description of the importance of digital culture.

Digital culture as a new phenomenon is under active discussion and understanding by theorists and practitioners of the global digital transformation of the economy and society. In his speech at the meeting "On measures to solve the problems of developing culture and art" on February 1, 2001, the President of Belarus A.G. Lukashenko noted that there can be no effective economy without high culture. This confirms the law of the priority of culture in social development and fully applies to the digital development of Belarus and the formation of an effective digital economy in the country. Digital culture is a set of competencies that characterize the ability to use information and communication technologies for a comfortable life in a digital environment, for interaction with society and solving digital problems in professional activities. The economic meaning of cultural costs lies in the loss of time and efficiency due to insufficient qualifications, knowledge and skills of employees and users and their communication. New technologies reduce these costs, making network approaches possible, and the self-correction function is built into organizational charts and algorithms. This general desire to improve the result is transformed into economic instruments using algorithms that work with the initial data.

In the context of global digitalization, the main factor for success is high enterprise productivity, rather than control over resources and administrative levers. In essence, in digitalized production, almost

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autonomous management of the simultaneous interaction of employees and production systems involved in the implementation of a particular business task is carried out, which is more efficient compared to a linear value chain, where orders sequentially pass through participants. As a result, the enterprise reduces internal and external transaction costs, maximizes the use of available resources and creates additional value for customers and partners. That is, new technologies reduce these costs, making network approaches possible, and the self-correction function (digital culture) is built into organizational charts and algorithms.

The relevance of digital culture is evidenced by a 2016 McKinsey study, which showed that over 30% of obstacles to successful digital transformation are due to cultural and behavioral problems of enterprise personnel.

Therefore, the success of digital transformation is, to a large extent, the result of the control action that comes "from within" the system (from the cultural predisposition to change of employees, and not only from the outside), by creating conditions for the maximum use of the skills and enthusiasm of enterprise personnel (the energy of human culture), which allows achieving synergistic effects from the interaction of employees (self-assembly and self-organization of individuals and communities) in the production of popular goods and services. For this reason, digital culture can be considered as an institution for achieving excellence in the creation and application of digital technologies in order to create a digital environment that is as comfortable as possible for interaction, self-assembly and self-organization of enterprises and individuals. The initial and most important stage of the formation of digital culture should be the training of specialists to form high-quality databases and create a national data market. Since it is high-quality data that are a fundamental condition for the effective interconnection of the real and virtual sectors of the economy, which is the essence of digital transformation.

Suggestions and recommendations:

In planning and implementing strategic digitalization projects to achieve sustainable development goals, as in other complex projects, it is important to rely on national culture, traditions and values and be inspired by the deeds of national geniuses, as well as key conditions for their success: a high level of trust in project progress assessments; effective management of strategic projects; scientific support for the processes of planning, design and implementation of a strategic project "from the idea to its implementation and guaranteed economic effect".

In solving problems of socio-economic development, the most effective is an integrated ecosystem approach, following which it is necessary to balance the macro- and micro-levels of the economy, taking the ecosystem capital of the territory as a basis and increasing the role of public administration.

In the implementation of digitalization projects, the application of artificial intelligence technologies and the personnel training system, a critical assessment of popular neural networks and the formation of a new approach to effective digital culture (EDC) are necessary, which involves a transition from discussing various aspects and examples of the influence of culture on the application of digital technologies to the concept of forming a digital environment based on certain and proven principles, rules, institutions and practices that can be measured both qualitatively and quantitatively and presenting an effective digital culture in the form of a formula: EDC = "digital literacy (hard skills) + skills of social relations in the digital environment (soft skills"). Modern Iraq, as a Middle East country, is the most important component of the world's "energy core", and its historical heritage is part of the treasury of basic ideas of sustainable development. We can be firmly convinced that the digital transformation of the economy and society of Iraq will give a powerful impetus to further improving life in the country and will serve, as almost 4,000 years ago, as an invaluable contribution to the development of modern civilization.

Data Availability:

The data used to support the results of this study has been included in the article.

Conflict of Interest:

The authors declare that they have no conflicts of interest.

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