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METHODS OF USING ARTIFICIAL INTELLIGENCE IN THE ANALYTICAL MECHANISMS FOR DETERMINING THE RISKS OF LAW VIOLATIONS IN THE FIELD OF STATE EXPENDITURES AND REVENUES

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Abstract: The article describes the role of artificial intelligence technologies in identifying the risks of violations of the law in the field of public expenditure and revenue, and details the definition, functions, differences and interrelationships of artificial intelligence, machine learning and neural networks.

Key words: budget funds, risks, information technologies, artificial intelligence, machine learning, neural networks.

Introduction. Artificial intelligence has become one of the main tools of modern society and has a significant impact on various areas of human life, including public administration in developed countries. With the help of artificial intelligence, it is possible to perform financial forecasting of budget income and expenses and to increase their effectiveness, to reduce the risk of making mistakes and errors, to carry out risk analyzes without the human factor, and to continuously monitor budget expenses and income.

It is worth emphasizing that artificial intelligence is able to quickly adapt to innovations and changes introduced in legislation and by-laws and can become an important element in creating a transparent and stable state financial control mechanism.

Let's look at a few examples:

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1. Using artificial intelligence to forecast budget expenditures:

- expenditures of previous years;

- Presidential resolutions and decrees;

- makes it possible to forecast the expenses that should be carried out in connection with state programs and identify inefficient expenses through training.

2. Budget revenue forecasting uses artificial intelligence to estimate budget and non-budgetary revenue based on various algorithms and scenarios, which helps in more accurate budget revenue forecasting.

3. Monitoring anomalies in budget fund transactions, i.e. artificial intelligence analyzes financial transactions and helps identify suspicious or anomalous operations. This makes it possible to detect cases of embezzlement of budget funds.

4. In automated auditing, artificial intelligence automatically analyzes accounting data and reports to identify errors or irregularities. This allows errors to be detected without inspections.

5. With the help of artificial intelligence, the data required for audit activities is automatically collected. Based on this information, errors and omissions and violations of the law are automatically detected, as well as reducing the duration of audit activities.

6. By using artificial intelligence to analyze large amounts of data, internal audit staff will be able to monitor the required statistical and other indicators online and identify any uncertainties.

7. Artificial intelligence makes it possible to assess risk levels by taking into account many factors such as external and internal economic conditions, government project costs, deadlines and past mistakes.

8. Economic trends and investment opportunities are analyzed through the use of artificial intelligence in the management of state assets and liabilities, which helps in effective management of state assets and liability forecasting, as well as in modeling the expected future state (debt, pension, etc.) based on historical data.

9. By processing contracts related to budget expenditures, it analyzes risks using artificial intelligence, helping to analyze potential violations of contract terms or deadlines, and the amount.

It is clear that artificial intelligence is a powerful tool for increasing the efficiency of state financial control bodies and internal audit structures, helping to process large amounts of data, identify risks, and optimize processes.

Today, artificial intelligence, machine learning, and neural networks are widely used to process large amounts of data in unconventional ways.

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The differences between neural networks, machine learning, and artificial intelligence are reflected in their levels of abstraction, functions, and technologies. All of them are interconnected and are used in different ways in the development of intelligent systems.

Below is a definition of artificial intelligence, machine learning and neural networks, their functions, examples, differences and interrelationships:

1. Artificial Intelligence (AI)

Definition: This is a broad field that focuses on creating machines or programs that perform tasks that require intelligence, such as understanding language, recognizing objects, making decisions, and solving problems.

Function: Used to create systems that mimic the human mind, such as logical thinking, planning, and data collection or processing.

Examples: Virtual assistants, autonomous vehicle control systems, or chess-playing programs.

2. Machine learning (ML)

Definition: Machine learning is a specific area of AI that focuses on creating algorithms that "learn" from data. Instead of programmed rules, ML systems use statistical methods to improve their decisions as new data comes in.

Task: machine learning is used to analyze data, classify it, make predictions, and automate the decision-making process.

It is divided into several types:

- teaching with a teacher;

- teaching without a teacher;

- strengthening knowledge through re-learning.

Examples: recommendation systems (YouTube, Netflix, etc.), fraud detection algorithms, market demand forecasting, etc.

3. Neural networks

Definition: Neural networks are a type of machine learning technology. Inspired by the structure and function of biological brain neurons, they consist of artificial neurons arranged in multiple layers. They are trained on large amounts of data and can solve complex tasks such as image recognition or voice recognition.

Purpose: Neural networks are particularly effective for tasks involving large and complex data sets, where traditional machine learning algorithms are not very accurate. Deep neural networks (deep learning), which use a multi-layer architecture, allow for efficient and fast solutions to tasks related to processing images, sounds, and text.

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Examples: Facial recognition systems, voice assistants like Google Assistant, processing of different languages (e.g. translations or chatbots).

The main differences:

Category	**Artificial Intelligence (AI)**	**Machine learning (ML)**	**Neural networks**
Definition	Intelligent systems of creation wide field	SI's information based on taught part	Complicated tasks solution to do for of neurons many multi-story modeling method
Purpose	Human mind imitation to do	Decisions reception to do for in the data teaching	Many multi-story neurons through complicated patterns modeling
Information - from useful - what	From the data use possible , but mandatory not	Big in volume information demand will be done	Big in volume information in deep trouble used
Example	Virtual assistants , autonomous vehicles management system	Recommendation to do systems , forecasting	Face familiar , voice orders understanding

Dependencies:

Artificial intelligence is a general concept of creating intelligent systems.

Machine learning is one of the methods used to implement artificial intelligence, where systems are trained on data.

A neural network is a machine learning technique used to work with big data.

These concepts are related, but they differ in their tasks, methods, and applications.

Let's consider these technologies in the context of detecting violations in public procurement.

According to Article 46 of the Law of the Republic of Uzbekistan "On Public Procurement", it is prohibited to illegally select non-competitive methods of public procurement during the public procurement process, to influence public procurement entities, Disclosure of information about the participation of participants in public procurement, unreasonably limiting their number or increasing the requirements for their qualifications, and other forms of preventing, restricting, or eliminating competition are not permitted.

Article 21 of the Law of the Republic of Uzbekistan "On Competition" prohibits unfair competition by business entities or other persons acting in their interests against competitors,

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It is prohibited to take actions that would hinder the entry of a competing economic entity into the commodity or financial market or lead to its exclusion from the market.

For example, a budget customer who had previously colluded with a criminal organization concluded a contract No. 1 for the purchase of "ryazhenka" (product code 123456789) through an electronic store with LLC "Product Supplier" for 1.1 million soums (the product characteristics, which were not available for selection in the electronic system and were filled at the discretion of the supplier, were indicated as yogurt).

Based on invoice No. 1 under this contract, 100 percent payment was transferred by the customer to the supplier company.

Option 1:

When the goods were received on the spot, the supplier delivered the "yogurt" product in the invoice instead of the "ryazhenka" product in the contract, and the customer accepted this product.

The following proposals have been developed to prevent this situation:

1. using artificial intelligence to compare the product names entered by suppliers in electronic procurement systems with the established product codes, identify discrepancies and implement a mandatory correction mechanism by the system;
2. Identify discrepancies in subsequent control measures by comparing the products specified in the contract with the products specified in the invoice using artificial intelligence.

The algorithm of the practical application of the above suggestions is given below:

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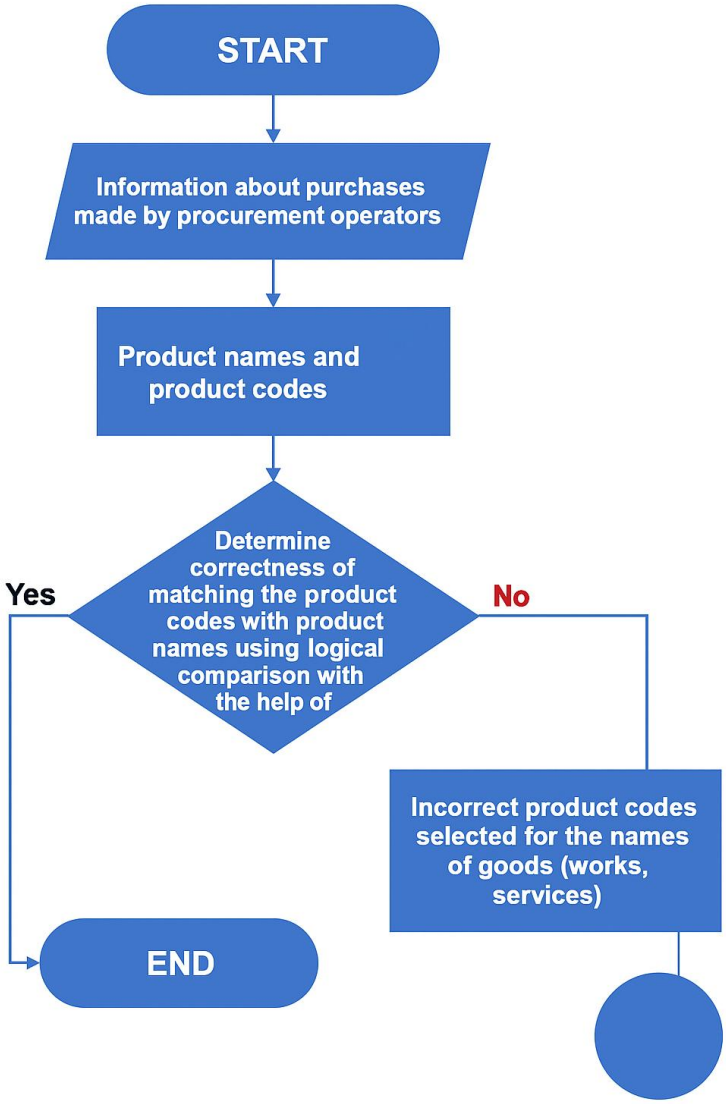

Conclusion. In order to effectively use the possibilities of artificial intelligence in the planning of the state budget, in the process of state projects and procurement, the following is suggested:

Consolidation of information available in ministries and agencies into a single database, bringing it to a systematic structured view;

Identify cases of violations of the law by performing risk analysis of the collected data with the help of artificial intelligence;

Sending to relevant ministries and agencies and law enforcement agencies in order to eliminate identified risks.

At the same time, the above proposals and mechanisms are reflected in Appendix 3 to the Decree of the President of the Republic of Uzbekistan No. PF-100 dated July 10, 2024 “On

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additional measures to strengthen financial control over the use of budget funds", The Accounts Chamber of the Republic of Uzbekistan has approved a list of 84 ministries and departments that are allowed to use databases and information systems in real time and upon electronic request.

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