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Integration of artificial intelligence into projects: strategies and implementation problems

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Abstract: at present, humanity has made a breakthrough in the field of technological achievements, which has influenced the introduction and development of artificial intelligence. Artificial intelligence has firmly entered everyday life and now people do not hesitate to use it. Vivid examples are: voice assistant "Alice", self-service system in stores, maps for navigation, analysis of data on financial products and consumer demand in the banking system, applications for smartphones, and the list is not limited to this, because artificial intelligence is used in completely different spheres of society.

AI is a fairly general concept that includes neural networks, machine learning and computer vision. AI is a technology on which you can build a successful business. In reality, almost everyone is already facing AI.

According to the PwC report, by 2030, the contribution of AI to the global economy will amount to $15.7 trillion. In addition, the Russian market of AI solutions is expected to grow 80 times by 2024 - up to 160 billion rubles from 2 billion rubles. Gartner reports that by 2024, 50% of AI investments will be quantified and linked to specific key performance indicators to assess the return on investment.

In this connection, the main purpose of writing the article was to study strategies and problems that companies may face during the integration of artificial intelligence into projects.

The methodology is the scientific works of both domestic and foreign authors.

Keywords: AI, artificial intelligence, AI integration, AI integration strategies in projects, AI integration problems.

Introduction

Although many organizations express their readiness to implement artificial intelligence, there are still companies that have doubts about this technology. Some of them worry about the legal aspects and compliance, while others face difficulties in implementing this implementation. Below in Figure 1, the key problems preventing companies from integrating artificial intelligence into their business processes are presented.

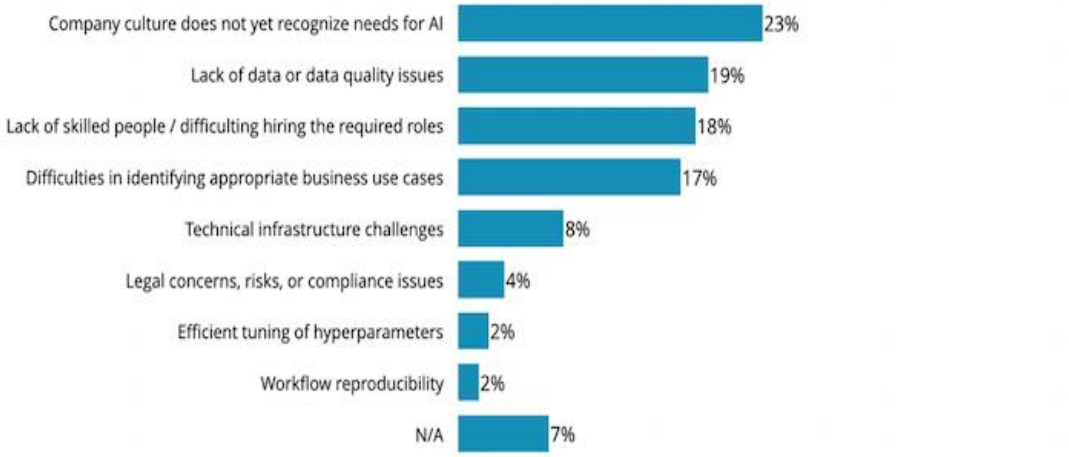

Fig.1. Problems preventing companies from integrating artificial intelligence into their business processes

There are many types of AI:

Machine Learning (MO), a part of AI that allows software to learn and improve its performance without explicit programming. This brings the idea of software closer to the idea of intelligent beings capable of self-improvement and adaptation.

Next comes Natural Language Processing (NLP), an AI element that gives software the ability to understand, process and generate human language.

And finally, deep learning is a complex type of machine learning that uses neural networks to simulate the human decision–making process. This adds a level of intelligence to the software.

Below in Table 1, the main advantages and disadvantages of integrating AI into projects will be considered.

Table 1.
Advantages and disadvantages of integrating AI into projects

Advantages	Disadvantages
Improving efficiency and productivity. AI frees employees from routine and time-consuming tasks by automating processes.	These companies may not be suitable. In this case, due to the fact that the AI analyzes the received data, then due to any inaccuracy that may be allowed in them, due to the human factor, the AI will process them and give inaccurate results, or make the wrong decision.
Improved decision-making process. AI algorithms are able to analyze huge databases and extract valuable information in them, which helps companies make informed decisions based on facts and analytics.	Lack of necessary skills. In this case, it should be noted that in order for AI to make decisions quickly, based on qualitative data, it needs to be constantly upgraded through training, which is a rather difficult and costly process, since there is no single learning mechanism for some types of AI.
Revenue growth and market expansion. AI's ability to analyze customer data helps identify new opportunities and adapt products to individual needs, which contributes to revenue growth.	The high cost of maintenance and implementation. When integrating AI, it is necessary to retrain employees under new conditions, which may require additional costs.
Improving the quality of customer service. Automated virtual assistants process requests around the clock, which increases customer satisfaction with the company [2,3].	The complexity of integrating AI programs. the integration of programs requires a huge amount of work, and therefore these developments become an obstacle for companies [4].

1. Prerequisites for implementing AI in projects:

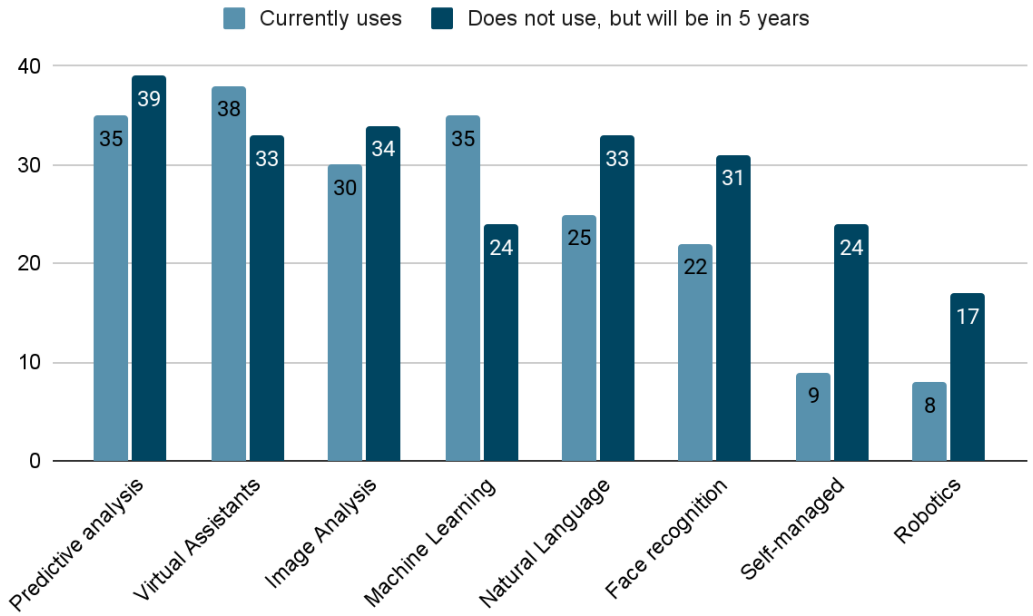

Fig.2. Technologies and in Russian companies

From Figure 2, we can observe what abilities AI has, thanks to which it can expand the capabilities of any organization through automation or expansion. At the same time, automation and expansion is a scale covering four strategies,

- An efficiency strategy in which activities are optimized through automation.
- An efficiency strategy in which actions are performed without problems, which simplifies communication.
- An expert strategy in which AI makes it possible to make decisions.
- An innovative strategy in which AI provides an opportunity for creativity [5,6].

2. Implementation Steps

1. **Identify opportunities:** At the beginning, it is necessary to determine in which specific activities AI may be required to automate routine tasks assigned to employees.
2. **Prepare the data:** A high-quality database is the key to successful AI work.
3. **Train an artificial intelligence model:** Use the data to train artificial intelligence models. The choice of a suitable model for the project depends on the specific requirements and goals. In turn , AI training methods are divided into three main categories:

Teaching without a teacher: In this case, the training data is not accompanied by labels, and the neural network operates without feedback about its performance. The network searches for statistical correlations in the data and adjusts based on them.

Training with a teacher: Here, the data is labeled (target values), and the goal of the network is to find a match between the input data and the target output data. In case of an error between the actual and the target result, the network is corrected by updating its parameters.

Reinforcement learning: In this training mode, the system receives a generalized error signal, known as a "reward", which indicates how successfully it completed the task. The system adjusts its parameters to maximize the reward.

Learning with a teacher allows you to directly adjust parameters based on known goals, while reinforcement learning is focused on maximizing rewards without explicitly indicating the correct answers. The boundary between these two types of learning can be blurred in practical applications [7].

4. **Testing:** In this case, the AI should be subjected to a variety of parameters and scenarios during testing. Use different inputs to see how the model responds to different conditions, including anomalies. This kind of testing can identify areas where the model is superior to others and areas that require additional calibration.
5. **Deployment and monitoring:** The final stage includes the integration of the artificial intelligence model into the project and constant monitoring of its performance [8].

Conclusion

Based on the above, it should be said that the potential provided by the integration of artificial intelligence into the field of projects opens the door to a new era of transformation. By introducing artificial intelligence functionality into projects, it is possible to significantly expand opportunities, optimize processes and create new horizons for innovation. However, it should be remembered that with all the advantages, there may be difficulties in implementation.

The introduction of artificial intelligence into project management, despite some slowness, is becoming an increasingly important aspect for many companies. Artificial intelligence becomes an indispensable assistant to project managers, providing optimal results in a timely manner. The capabilities of artificial intelligence have a huge potential for improving project management, helping to solve a wide range of tasks, from identifying project problems to determining the training needs of the team.

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