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Data-driven & knowledge-based artificial intelligence in cutting-edge educational management

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Introduction.

In today's rapidly changing management environment, artificial intelligence (AI) has become more than just a fashion trend, but a key tool for decision-making and workflow optimization [1]. There are two main approaches to AI that play a significant role: knowledge-based AI [2], [3] and data-driven AI [4, 5]. They represent two different but complementary concepts. Knowledge-based AI uses formalized rules and logic derived from human experience, while data-driven AI learns on its own, discovering hidden patterns in vast amounts of information [6], [7]. This combination allows managers to not only automate routine tasks, but also gain deep, previously unseen insights that are essential for competitiveness in today's marketplace. Understanding the differences and advantages of these two approaches is extremely important for any manager who seeks to effectively use the potential of innovative technologies, which is especially important in times of crisis [8].

Main Part.

Modern education is at the crossroads of global transformations driven by digitalization, globalization of knowledge, and the rapid development of technologies. In this context, artificial intelligence (AI) is becoming a key tool for improving the efficiency of educational process management. It allows not only to automate routine administrative tasks, but also to create innovative management models that can quickly adapt to changing learning conditions and individual needs of students.

Let's consider in more detail the role of AI in modern

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educational management:

1. Automation and optimization of processes. AI is able to analyze data on student learning activity, track attendance, success, and interaction with educational resources, which greatly facilitates administrative work.

2. Forecasting and analytics. The use of machine learning algorithms allows you to predict the risks of student attrition, determine the effectiveness of teaching methods, and optimize resource allocation.

3. Personalization of learning. Adaptive educational systems based on AI create individual learning trajectories, selecting materials and tasks according to the level of knowledge, learning style and pace of mastering the material of each student.

4. Decision support. AI provides analytical reports and recommendations to heads of educational institutions, which allows them to make informed strategic decisions regarding the development of curricula and the implementation of innovations.

Let us consider in more detail the innovative aspect of AI in modern educational management, in particular, it is emphasized that it is the use of AI that contributes to the creation of new models of educational management, such as:

- Hybrid educational platforms that combine traditional and distance learning.

- Intelligent education quality monitoring systems that automatically identify weaknesses in curricula.

- Virtual consultants and chatbots that provide students with personalized advice at any time.

Let us consider in more detail the aspect of AI adaptability in modern education management, in particular, AI allows you to create flexible educational systems that are able to quickly respond to changes: adapting curricula to the needs of the labor market; adjusting teaching methods for different categories of students; predicting educational trends and implementing innovations in real time.

Conclusions.

1. In practice, the most effective AI systems in modern management combine both approaches [9]. A hybrid AI system can use a knowledge-based expert system to establish strategic rules (for example, minimum profit), while a data-driven machine learning model dynamically adjusts prices in real time based on competitor prices, demand, and inventory levels. This synergy produces the best result: the reliability and

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structure of rule-based systems combined with the flexibility and predictive power of data-driven models.

Thus, in modern management, the question is not about choosing one of these approaches, but about combining them effectively. Understanding their capabilities and limitations allows managers not only to optimize current processes, but also to develop innovative strategies based on deep data analysis and formalized experience. This opens the way to a new, intelligent management, where technology becomes not just a tool, but a strategic partner in achieving business goals.

2. Therefore, artificial intelligence (and especially HYBRID AI) in modern educational management:

- ensures the efficiency of management processes, reducing the burden on administration;
- creates innovative learning models that combine digital technologies and traditional methods;
- ensures the adaptability of educational systems, allowing them to quickly respond to the needs of students and teachers;
- becomes a key factor in the digital transformation of education, opening up new opportunities for personalization and prediction of learning outcomes.

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