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Intelligent (hybrid: knowledge-based and data-driven) education management information system in times of uncertainty

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Introduction. In the modern world, organizations are constantly faced with changes in the external environment caused by economic globalization, digital transformation, technological development, and socio-political fluctuations [1–3]. Such conditions create a high level of uncertainty and risks, which significantly complicates the management process [4, 5]. Traditional methods of organizational management, which are based on strict regulations and standard procedures, often prove ineffective during crisis situations or rapid changes in market conditions [6–8].

In these conditions, intelligent management information systems become a critically important tool for ensuring the adaptability and stability of organizations [9]. They combine methods of collecting, processing, and analyzing large amounts of information, artificial intelligence algorithms, forecasting models, and scenario planning, which allows for timely identification of risks [10], modeling crisis situations, and ensuring the adoption of informed management decisions [11].

It is intelligent management information systems that provide not only the automation of routine management processes, but also form an analytical platform for strategic planning, forecasting the development of the organization and operational adaptation to changes in the external environment [12]. Thanks to such a system, managers are able to effectively manage resources, determine priorities, assess the consequences of their decisions and increase the competitiveness of the organization even under conditions of

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high uncertainty [13], [14]. In addition, the integration of intelligent technologies allows you to quickly respond to new challenges, form flexible management strategies and implement innovations, making the management process more dynamic and predictable.

Main Part. The modern educational sphere operates in conditions of rapid change and high uncertainty, which is due to the globalization of knowledge, digital transformation, technological development and socio-political fluctuations. Educational institutions are forced to quickly adapt to new challenges, change curricula, integrate distance and blended learning formats, and ensure the continuity of the educational process in times of crisis. Traditional approaches to managing educational organizations, based on standard regulations and formalized procedures, are often unable to provide sufficient speed, efficiency and accuracy of decision-making in such conditions.

In this context, intelligent information systems for education management are an effective tool for increasing the adaptability and resilience of educational organizations. They combine the collection, processing and analysis of large data sets about students, teachers, curricula and resources, the use of artificial intelligence algorithms and machine learning methods to predict the development of events, model crisis scenarios and form informed management decisions.

It is intelligent information systems for education management that allow you to automate routine administrative processes, create an analytical basis for strategic planning, predict learning success, and promptly adjust educational strategies in accordance with changes in the external environment. Thanks to such systems, heads of educational institutions are able to effectively manage resources, determine priorities, assess the consequences of their decisions, and increase the competitiveness of the institution even in periods of high uncertainty. The integration of intelligent technologies allows you to quickly respond to new challenges, support flexible management models, introduce innovations, and improve the quality of the educational process, making management processes more dynamic, predictable, and effective.

Conclusions. An intelligent information system for education management in times of uncertainty and crisis is of key importance for ensuring the stability, efficiency and adaptability of educational organizations and institutions.

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It allows integrating information from various sources, conducting its analysis in real time and forming forecasts of the development of educational processes, which increases the accuracy and validity of management decisions. The system contributes to the rapid adaptation of educational strategies to changing environmental conditions, identifying potential risks and preparing for crisis situations. In addition, the author emphasizes that it is the HYBRID intelligent information system for education management that provides automation of routine administrative procedures, optimization of resources, increases the efficiency of internal communication and stimulates the introduction of innovations [15]. It becomes not only a tool for supporting decision-making, but also a strategic resource that allows educational organizations to maintain stability, improve the quality of education and competitiveness even in difficult and unstable conditions.

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