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KDD IN CRISIS MANAGEMENT OF EDUCATION

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Abstract. *It should be noted that it is the innovative management of modern education in times of crisis that emerges as a mechanism for sustainable development, contributing to the formation of an adaptive, mobile and technologically advanced educational environment. It requires not only the modernization of management practices, but also deep structural transformations that ensure the readiness of the education system to function in conditions of uncertainty and a rapidly changing external environment.*

In addition, the author emphasizes that the integration of intelligent technologies into anti-crisis management of modern education is the most important condition for increasing its adaptability, efficiency and sustainability. These technologies form a new paradigm of management activity - scientifically based, technologically saturated and future-oriented.

As the main conclusion, the author argues that KDD becomes an integral element of anti-crisis management in education, providing the basis for the transition from reactive to predictive and adaptive strategies. Its use allows to increase the stability of educational systems, improve the quality of management and form new approaches to ensuring educational security in conditions of instability.

Key words: *management of education, crisis management, intelligent technologies, knowledge discovery in DB*

Introduction.

Modern education in the context of global challenges – economic, political, technological and sanitary-epidemiological – is faced with the need to transform traditional management models. Crisis phenomena have exacerbated the problem of sustainability of education systems and revealed a lack of flexibility in administrative structures. In this context, innovative management, based on strategic adaptability, digitalization and cooperation between participants in the educational process, is of particular relevance.

Innovative management in education is a set of concepts, methods and practices aimed at implementing innovative solutions to improve the efficiency, accessibility and quality of education. In times of crisis, this management requires a special emphasis on anti-crisis strategies focused on rapid response and the ability to structurally develop educational institutions.

Digitalization of the educational space has become a key direction of innovative

development. The introduction of e-learning, distance learning platforms, as well as artificial intelligence and big data analytics have not only allowed us to maintain the continuity of education in conditions of restrictions, but also laid the foundation for the formation of new learning models - hybrid, personalized and competency-based.

Modern education operates in conditions of increasing uncertainty caused by global crisis phenomena - from economic and political upheavals to pandemics and man-made risks. In this situation, the key factor in the stability of systems (including educational systems) is the effectiveness of anti-crisis management, which should be based on modern technological solutions, in particular, on the use of intelligent, knowledge-oriented technologies [1].

Modern intelligent technologies are a set of methodological, algorithmic and software-hardware solutions based on statistical analysis algorithms [2], EDA, classical explicit and implicit (using ANN) machine learning, big data technologies, KDD and knowledge-oriented decision support systems [3]. Their application in management (including in the management of educational institutions) allows for the implementation of flexible, predictable and scientifically sound strategies for adaptive intelligent response to crisis challenges [4].

One of the central directions is the use of analytical platforms for monitoring key indicators of the effectiveness of educational processes, operational risk diagnostics and forecasting the consequences of management decisions. Such tools provide proactive management, which contributes to the timely adaptation of educational policy and the organization of the educational process.

In addition, intelligent technologies allow for the personalization of educational trajectories, which is especially important in conditions of disrupted stability. Adaptive learning systems, automated advisory modules and recommendation algorithms help maintain the continuity and quality of education, despite external constraints.

Within the framework of anti-crisis management, intelligent systems can perform the functions of (knowledge-oriented) decision-making support, modeling various scenarios of the situation and suggesting optimal management actions [5].

This is especially valuable in times of time shortage and the need to respond quickly to a rapidly changing environment.

It is also worth noting the potential of intelligent technologies in the field of strategic planning and reform of educational systems. They allow not only to respond to current challenges, but also to build long-term models of sustainable development of education, taking into account global trends and national priorities.

Main Part.

Modern education is in a state of constant transformation, caused by the impact of global and local crises. In these conditions, the need for analytically based management is growing, capable of promptly identifying risks, predicting consequences and forming adaptive strategies. One of the most promising tools for implementing such tasks is KDD technology.

KDD is the process of obtaining non-obvious, previously unknown and practically significant patterns from large amounts of data using statistical methods, machine learning and artificial intelligence. In the context of anti-crisis management of educational systems, this tool allows you to significantly increase the accuracy and validity of management decisions.

The use of KDD in educational management covers a wide range of tasks:

1). Monitoring educational risks: identifying patterns that indicate a decrease in academic results, an increase in the number of expulsions, a decrease in the involvement of students and teachers.

2). Predicting student behavior: based on the analysis of students' digital footprint (activity in distance learning systems, attendance, task completion), it is possible to predict the likelihood of their academic failure and take corrective measures in a timely manner.

3). Assessing the effectiveness of anti-crisis measures: KDD algorithms allow you to assess the impact of implemented changes (for example, the transition to distance learning, digital platforms, new forms of teaching) on the quality of education.

4). Optimization of management processes: analysis of data on resources,

staffing, financing and infrastructure contributes to a more effective allocation of resources in conditions of limited budget and time frames.

KDD not only strengthens the functions of diagnostics and forecasting, but also contributes to the transition to a proactive model of education management. Systems based on such technologies are able to timely signal deviations from normal functioning, model alternative scenarios of events and support decision-making at all levels of management - from local (school, university) to regional and state.

However, for the effective implementation of KDD in educational management, the following conditions are necessary: the availability of high-quality, structured, and reliable data; trained specialists in the field of educational analytics; and institutional readiness to use data as the basis for management decisions.

Summary and conclusions. It should be noted that it is the innovative management of modern education in times of crisis that emerges as a mechanism for sustainable development, contributing to the formation of an adaptive, mobile and technologically advanced educational environment. It requires not only the modernization of management practices, but also deep structural transformations that ensure the readiness of the education system to function in conditions of uncertainty and a rapidly changing external environment.

However, the effectiveness of innovative management is impossible without changes in the organizational culture of educational institutions. The formation of a culture of innovation involves stimulating the professional growth of teachers, the development of horizontal management relationships and the integration of the principles of project and scenario thinking. In addition, it is necessary to provide regulatory and legal support and resource support for innovations, which requires coordinated actions at the level of state policy.

In addition, the author emphasizes that the integration of intelligent technologies into anti-crisis management of modern education is the most important condition for increasing its adaptability, efficiency and sustainability. These technologies form a new paradigm of management activity - scientifically based, technologically saturated and future-oriented.

As the main conclusion, the author argues that KDD becomes an integral element of anti-crisis management in education, providing the basis for the transition from reactive to predictive and adaptive strategies. Its use allows to increase the stability of educational systems, improve the quality of management and form new approaches to ensuring educational security in conditions of instability.

Discussion.

As a promising direction of his future research, the author puts forward the following debatable thesis: hybrid KDD technologies are becoming the most important tool for crisis management in the education system, providing a comprehensive, flexible and scientifically based approach to the analysis and management of educational processes. Hybrid KDD technologies represent the integration of several methods of data mining [6] — for example, clustering, classification, associative analysis, neural network modeling and logical inference — in order to achieve a synergistic effect [7]. Such technologies make it possible to take into account the multidimensionality of educational processes, the complexity of social interactions and the dynamics of crisis changes. Their use contributes to the formation of sustainable educational ecosystems capable of functioning and developing in conditions of instability and uncertainty. It is this promising direction of the author's future scientific research that will be reflected in future publications.

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