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## INTELLIGENT INFORMATION TECHNOLOGIES WITHIN THE FRAMEWORK OF INNOVATIVE EDUCATION MANAGEMENT IN TIMES OF CRISIS

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**Abstract.** Crisis phenomena — pandemics, military conflicts, economic shocks — place special demands on education systems. In these conditions, it is necessary to move from traditional forms of administration to innovative management, which is based on flexibility, digitalization, intellectualization and adaptability. This management should not only support the functioning of the educational system, but also develop it even in conditions of instability. Innovative education management during a crisis is not only a response to challenges, but also a strategic resource for the future. It ensures sustainability, adaptability, inclusiveness and quality education regardless of external circumstances. In conditions of constant uncertainty, this approach becomes the key to the survival and development of educational systems.

In these conditions, the focus is on intelligent information technologies that transform approaches to the management and support of educational processes. It is intelligent information technologies that play a key role in ensuring the sustainability and effectiveness of education management in times of crisis. They provide flexibility, speed and a personalized approach to management, making education more adaptive and accessible.

**Key words:** management of education, innovative management, crisis management, knowledge-based information technologies, data-driven information technologies, hybridization of methods & algorithms

### Introduction.

1). Innovation management is a special area of management activity aimed at organizing, planning, implementing and controlling innovation processes in an organization or in the economy as a whole [1]. It covers the introduction of new technologies, products, processes, organizational structures, business models and strategies that ensure sustainable development, competitiveness and adaptability of an enterprise or institution to environmental changes [2]. In the era of global instability of pandemics, geopolitical conflicts, financial crises and climate threats, traditional management models are losing their effectiveness. Modern challenges require flexible, adaptive and non-standard solutions. In the conditions, innovative management, capable of quickly responding to changes and creating sustainable

forms of functioning of organizations, becomes a key factor for survival and development [3].

2). Innovative crisis management is a set of strategies, methods and management decisions aimed at preventing, overcoming and transforming crisis situations in an unstable external and internal environment through the use of innovations - technological, organizational, digital and behavioral [4]. This is a modern management paradigm based on both reactive measures and proactive transformation of a business or organization using new approaches, models and technologies [5].

3). In conditions of global crises - economic, political, environmental and epidemiological - business resilience and adaptability become critically important. Classical models of crisis management are insufficient. It is information technologies integrated into innovative crisis management that allow organizations to quickly respond to challenges, minimize losses and transform the development model [6]. They provide rapid collection, analysis and processing of data, decision-making support, process automation and increased management flexibility [7].

Crisis management in the 21st century has ceased to be a reactive process, as modern crises — fast, multi-layered and unpredictable — require predictive, adaptive and intelligent management based on data, knowledge and technology [8]. In this, knowledge-based and/or data-driven information technologies act not as an auxiliary tool, but as the core of innovative crisis management [9].

4). The modern education system is undergoing radical transformations caused by digitalization, globalization, changing requirements for professional competencies and growing uncertainty (measured by probability for mass events and vagueness for specific cases/projects) [10]. In these conditions, innovative educational management becomes a key tool for ensuring the efficiency, sustainability and competitiveness of educational institutions.

Innovative educational management is a system of strategic and operational management of an educational organization, focused on continuous development, implementation of new technologies, adaptation to environmental changes and improving the quality of the educational process. Innovative management (including

in the field of education) combines traditional management functions (planning, organization, control, motivation) with the following intellectual information concepts and technologies: knowledge-based [11] and data-driven paradigms DSS [12], big data [13], predicative and generative AI [14].

**The Main Part.** The modern education system is undergoing radical changes under the influence of digital transformation, globalization of knowledge, growth in data volumes and new learning models. Under the influence of these new factors, the need for more accurate, flexible and intelligent management is growing. A key role in this process is played by intelligent information technologies - digital tools based on artificial intelligence, machine learning, analytics and knowledge [15]. At the same time, modern education (especially Ukrainian) is facing many crises: pandemics, military conflicts, digital inequality, staff turnover, reduced motivation of students and teachers, insufficient funding. In the conditions, traditional methods of managing educational organizations are insufficient. That is why innovative approaches that integrate INTELLECTUAL information technologies for CRISIS management in the field of education are becoming urgently relevant.

*The goals of implementing intelligent information technologies in ANTI-CRISIS educational management:* ensuring the stability of the educational process in crisis conditions; increasing the efficiency and flexibility of management; forming a digital educational environment; predicting risks and modeling response scenarios.

*The main tasks of implementing intelligent information technologies in ANTI-CRISIS educational management:* automation of management and monitoring processes; intelligent analytics of educational data; remote and hybrid transformation of educational formats; digital support for decision-making at the administration level; building scenarios and digital twins of educational institutions.

*Directions for implementing intelligent information technologies in ANTI-CRISIS educational management:* Machine Learning (monitoring progress and student engagement, identifying lagging groups); Artificial Intelligence (personalization of learning (selection of programs, analysis of student needs), schedule automation, support chatbots, forecasting withdrawals); Big Data (digital

footprint analysis, student attrition forecast, identifying bottlenecks, assessing training load and resources); Expert Systems (supporting management decisions in crisis situations, planning for failures, school closures, military operations); DSS platforms (choosing development and response strategies, supporting management decisions, scenario modeling); Digital twins of organizations (development planning, testing reforms in the digital environment); NLP and chatbots (student support, FAQ automation, accepting applications); Cybersecurity (ensuring the protection of educational platforms and students' personal data).

*Advantages of using intelligent information technologies in CRISIS education management:* increased transparency and manageability of the system through improved quality of management decisions; more efficient management of personnel, workload, finances and resources; predictive approach - proactive management; personalization of educational process and career management, in other words - the possibility of individualizing learning even in a crisis; saving time and resources; high adaptability to external changes (crisis, reforms); stability and continuity of the educational process (even during crises).

*Limitations and challenges of using intelligent information technologies in CRISIS education management:* digital inequality and lack of infrastructure in a number of regions; low level of digital literacy of personnel; ethical issues and protection of personal data; difficulties in integrating intelligent information technologies into traditional educational structures; risk of algorithmic bias; lack of investment resources for projects on intelligent information technologies in education management.

*Prospects and development of intelligent information technologies in CRISIS management of education:* transition to hybrid intelligent management: combination of human experience and machine intelligence; use of cognitive agents and human-machine interfaces for decision-making by the administration; implementation of adaptive AI-systems for managing educational workloads; development and implementation of digital twins of schools and universities for modeling management scenarios; development of national intelligent platforms for education management

(creation of a single intelligent educational platform at the state level); increasing the role of ethics and transparency of AI in educational policy management, integration of ethical AI into education with respect for human rights and academic freedom.

**Summary and Discussion.** As a promising direction of his future research, the author puts forward the following debatable thesis: Hybrid technologies for education management are a strategic tool for ensuring the sustainability, flexibility and efficiency of education systems in times of crisis. Their application allows to overcome the limitations of both purely algorithmic (data-only) and exclusively expert (knowledge-only) approaches [16]. Such hybrid technologies allow to make informed management decisions even in conditions of shortage of time and resources [17]. Combining data and knowledge is the way to intellectually rich and adaptive management, capable of resisting external challenges and shaping a sustainable future of education.

Crisis phenomena - pandemics, military conflicts, economic shocks or climate disasters - acutely raise questions about the viability and flexibility of traditional management systems [18]. In the case of high uncertainty, traditional approaches to management become ineffective [19]. This requires the implementation of hybrid management technologies that combine data analytics (data-driven) and knowledge-based models.

So, this is promising part of the author's future scientific R&D will be reflected in future publications.

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