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DIGITAL TRANSFORMATION OF HR MANAGEMENT: THE IMPACT OF ARTIFICIAL INTELLIGENCE ON EMPLOYEE MOTIVATION AND RETENTION STRATEGIES

ЦИФРОВА ТРАНСФОРМАЦІЯ УПРАВЛІННЯ ПЕРСОНАЛОМ: ВПЛИВ ШТУЧНОГО ІНТЕЛЕКТУ НА МОТИВАЦІЮ ТА СТРАТЕГІЇ УТРИМАННЯ СПІВРОБІТНИКІВ

Summary. *Introduction. The current stage of business environment development is characterised by a profound disproportion between the technological capabilities of digital HR management transformation and their systemic application for solving key personnel challenges. The emergence of artificial intelligence (AI) tools, data analytics, and automation promises a revolution in personnel management practices. However, organisations often encounter fragmented, technocratic implementation that does not lead to the expected strategic effect – the formation of a stable, engaged, and loyal team under conditions of high labour market turbulence. The core of the problem is the insufficient integration of three critical aspects: advanced digital tools, a strategic human-centric approach, and adaptation to external crisis conditions, such as economic instability or European integration requirements.*

Purpose. The objective of the article is to develop the conceptual foundations for integrating artificial intelligence into personnel motivation and retention strategies as a key element of digital HR management transformation. To achieve this objective, the following tasks have been set: to systematise existing scientific approaches to the impact of AI tools on motivation and retention; to propose an integrative model that systematically connects the technological, managerial-philosophical, and contextual-adaptive levels; to formulate practical recommendations regarding implementation algorithms; and to define criteria for assessing the effectiveness of the proposed approach.

Materials and methods. The methodological basis of the research is systems analysis and constructive synthesis. The systematisation of scientific

approaches is based on a critical analysis of contemporary research in the fields of strategic HR management, human-centrism, digitalisation of personnel processes, and management under crisis conditions. The method of graphical modelling of logical connections was applied to develop the integrative model. In the process of justifying the model's effectiveness, methods of formalisation and quantitative assessment were used, including the development of an algorithm for calculating an integral indicator. The creation of a practical matrix aligning tools with challenges is based on a comparative analysis of the functional capabilities of AI solutions and the identified needs of HR practice.

Results. The main scientific result is the development of the Integrative Model of Proactive Motivation and Retention Management based on AI (IMPURM-AI). The model demonstrates a cyclical process of interaction between the contextual-adaptive, managerial-philosophical (human-centric), and technological (AI tools) levels, ensuring a transition from reactive to proactive individualised strategies. For a quantitative assessment of the projected effect, an algorithm for calculating the Integral Retention Effectiveness Indicator (IREI) is proposed, which takes into account weighted changes in staff turnover rate, engagement, and team stability. A practical result is the Matrix of Alignment between AI tools (predictive analytics, psychometric profiling, gamification) and key motivation and retention challenges, which serves as a guide for HR managers. Based on the model and the matrix, a four-stage implementation algorithm has been formed, including diagnostics, tool adaptation, pilot testing, and scaling with mandatory monitoring via the IREI.

Discussion. Further research should be aimed at the empirical testing of the proposed model at real enterprises in various industries to refine its parameters and adapt it to the specifics of the national labour market. A critically important direction is the development of a detailed ethical and legal framework for the use of AI in HR, particularly protocols regarding algorithmic transparency, protection of personal data, and prevention of algorithmic bias. It

is also promising to research the synergy of the model with cutting-edge technologies, such as metaverses for corporate communication or blockchain for skills verification, as well as to study the long-term impact of AI-driven motivational strategies on organisational culture and employee psychological well-being. The implementation of these directions will ensure the transition from theoretical developments to practically implementable, ethically verified systems of human resource management in the digital era.

Key words: *HR management, personnel, motivation, team management, strategy, recruiting.*

Анотація. *Вступ. Сучасний етап розвитку бізнес-середовища характеризується глибокою диспропорцією між технологічними можливостями цифрової трансформації HR-менеджменту та їх системним застосуванням для вирішення ключових кадрових викликів. Поява інструментів штучного інтелекту (ШІ), аналітики даних та автоматизації обіцяє революцію в практиках управління персоналом. Однак організації часто стикаються з фрагментарним, технократичним впровадженням, яке не призводить до очікуваного стратегічного ефекту – формування стійкої, залученої та лояльної команди в умовах високої турбулентності ринків праці. Серцевиною проблеми є недостатня інтеграція трьох критичних аспектів: передових цифрових інструментів, стратегічного людино-центричного підходу та адаптації до зовнішніх кризових умов, таких як економічна нестабільність або євроінтеграційні вимоги.*

Мета. Метою статті є розробка концептуальних засад інтеграції штучного інтелекту в стратегії мотивації та утримання персоналу як ключового елементу цифрової трансформації HR-менеджменту. Для досягнення цієї мети поставлені завдання: систематизувати існуючі наукові підходи до впливу AI-інструментів на мотивацію та ретеншн; запропонувати інтегративну модель, що системно пов'язує технологічний,

управлінсько-філософський та контекстуально-адаптивний рівні; сформулювати практичні рекомендації щодо алгоритмів впровадження; визначити критерії для оцінки ефективності запропонованого підходу.

Матеріали і методи. Методологічною основою дослідження є системний аналіз та конструктивний синтез. Систематизація наукових підходів проведена на основі критичного аналізу сучасних досліджень в галузі стратегічного HR-менеджменту, людино-центризму, цифровізації кадрових процесів та управління в кризових умовах. Для розробки інтегративної моделі застосовано метод графічного моделювання логічних зв'язків. У процесі обґрунтування ефективності моделі використано методи формалізації та кількісного оцінювання, включаючи розробку алгоритму розрахунку інтегрального показника. Створення практичної матриці відповідності інструментів викликам ґрунтується на порівняльному аналізі функціональних можливостей AI-рішень та ідентифікованих потреб HR-практики.

Результати. Головним науковим результатом є розробка Інтегративної моделі проактивного управління мотивацією та утриманням персоналу на основі ШІ (ІМПУМ-ШІ). Модель демонструє циклічний процес взаємодії між контекстуально-адаптивним, управлінсько-філософським (людино-центричним) та технологічним (AI-інструменти) рівнями, забезпечуючи перехід від реактивних до проактивних індивідуалізованих стратегій. Для кількісної оцінки прогнозованого ефекту запропоновано алгоритм розрахунку Інтегрального показника ефективності ретеншну (ІПЕР), що враховує зважені зміни у рівні плинності кадрів, залученості та стабільності команди. Практичним результатом є Матриця відповідності AI-інструментів (предиктивної аналітики, психометричного профілювання, гейміфікації) ключовим викликам мотивації та утримання, яка слугує дороговказом для HR-менеджерів. На основі моделі та матриці сформовано чотириетапний

алгоритм впровадження, що включає діагностику, адаптацію інструментів, пілотне тестування та масштабування з обов'язковим моніторингом через ІПЕР.

Перспективи. Подальші дослідження мають бути спрямовані на емпіричну апробацію запропонованої моделі на реальних підприємствах різних галузей для уточнення її параметрів та адаптації до специфіки національного ринку праці. Критично важливим напрямом є розробка детальної етичної та правової рамки використання AI в HR, зокрема протоколів щодо прозорості алгоритмів, захисту персональних даних та запобігання алгоритмічній упередженості. Перспективним також є дослідження синергії моделі з новітніми технологіями, такими як метавсесвіти для корпоративної комунікації чи блокчейн для верифікації навичок, а також вивчення довгострокового впливу AI-керованих мотиваційних стратегій на організаційну культуру та психологічний добробут працівників. Реалізація цих напрямів забезпечить перехід від теоретичних розробок до практично впроваджуваних, етично вивірених систем управління людськими ресурсами в цифрову епоху.

Ключові слова: *управління персоналом, персонал, мотивація, управління командою, стратегія, рекрутинг.*

Introduction. At the current stage of business environment development, a significant disproportion is observed between the technological capabilities of digital HR management transformation and their systemic application for solving key personnel challenges. On the one hand, the emergence of innovative tools based on artificial intelligence, data analytics, and automation promises a revolution in personnel management practices, particularly in the spheres of employee motivation and retention. On the other hand, organisations often encounter fragmented, technocratic implementation of these technologies, which

fails to yield the expected strategic effect − the formation of a stable, engaged, and loyal team under conditions of high labour market turbulence.

The core of the problem lies in the insufficient integration of three critical aspects: advanced digital tools (AI, predictive analytics, gamification), a strategic human-centric management approach, and adaptation to external crisis conditions (such as economic instability, war, European integration requirements). Existing research often concentrates on individual elements of this chain: either analysing technologies [3, 7, 13], or strategic frameworks [1, 4, 8], or crisis practices [5, 6, 11]. However, there is a lack of a comprehensive scientific perspective that would explain precisely how artificial intelligence can transform traditional motivation and retention models, turning them from reactive to proactive and individualised, and what conditions are necessary for realising this potential in actual business practice.

This problem is directly linked to a number of important scientific and practical tasks.

Scientific tasks involve overcoming the fragmentation of knowledge through:

1. Synthesising the theoretical tenets of strategic HRM, human-centrism, and digitalisation into a unified conceptual model.

2. Investigating the mechanisms of influence of AI tools (from analytics to gamification) not only on operational efficiency but also on the psychological determinants of personnel motivation and loyalty.

3. Developing methodological approaches for assessing the effectiveness of integrated AI solutions in the field of retention in the long term, taking into account factors of turbulence.

Practical tasks stem from the business need for actionable solutions:

1. Formulating clear, practical algorithms for the phased implementation of AI systems in HR processes, specifically aimed at increasing engagement and reducing staff turnover.

2. Determining the optimal balance between the technological objectivity of data (psychometric tests, behavioural analytics [6; 14]) and a human, ethical management approach that aligns with the principles of human-centrism [2].

3. Adapting technology-enhanced motivational and retention strategies to specific operational conditions, particularly in the crisis environments of Ukrainian enterprises [5; 11].

4. Preparing HR professionals and managers for a new level of working with data and analytical tools for making strategic personnel decisions [7, 10].

Thus, overcoming the stated disproportion and comprehensively addressing the outlined tasks is a necessary condition for transitioning from the automation of individual HR processes to a full-scale digital transformation of human resource management, aimed at creating a sustainable competitive advantage through a highly motivated and stable workforce.

Analysis of recent research and publications. The digital transformation of human resources (HR) management represents a fundamental shift in organisational practices, driven by the integration of advanced technologies. This review synthesises current scholarly discourse on this transformation, with a specific focus on the role of artificial intelligence (AI) in reshaping employee motivation and retention strategies. The analysis is structured around key themes identified in the literature: the systemic and strategic foundations of HR, the human-centric paradigm, the pervasive impact of digitalisation and AI, adaptation to crisis conditions, and innovative tools for workforce management.

The foundation of effective HR practices lies in a systemic and strategic approach. Research emphasises that a balanced HR management strategy is critical for satisfying the need for competitive personnel and optimising recruitment costs and timelines [1]. Such strategy involves developing comprehensive plans for personnel search, selection, and hiring, often formalised through tools like a Recruitment and Selection Matrix (RSM) [1]. Furthermore, strategic HR management is defined as a dynamic, integrative process of forming,

effectively utilising, and developing personnel based on the holistic vision of the company's goals and strategy, ensuring adaptation to environmental changes [4]. This strategic perspective is particularly vital in contexts such as European integration, where aligning with high standards of labour conditions, equality, and continuous professional development becomes a source of competitive advantage [8].

A significant evolution in strategic thought is the shift towards a human-centric philosophy in HR. This approach positions employee needs and interests at the core of management processes, contrasting with the traditional resource-based view [2]. It is argued that satisfying personnel needs fosters loyalty, conscientious performance, and self-development, which are crucial for economic success and intellectual-personnel security [2]. This paradigm supports the individualisation of hiring processes and the diversification of motivational tools, aligning management practices with the unique profiles of employees [2; 6].

Digitalisation acts as the primary enabler of both strategic and human-centric HR transformations. Scholars identify a comprehensive set of digital tools transforming HR, including Human Resource Management Systems (HRMS), AI and analytics, electronic learning platforms, and digital reward systems [3; 4; 7]. This digital transformation is not merely technological but encompasses changes in corporate culture, fostering agile teams and new leadership models [7]. For strategy implementation, digital technologies such as HRIS, LMS, and AI are deemed essential for ensuring the effectiveness and integration of strategic HR management processes [4]. The pervasive influence of AI and changes in workforce structure are recognised as radically impacting HR in 2025, with key trends including adaptation to AI and overcoming skills deficits [7].

The Ukrainian context provides critical insights into HR adaptation under extreme conditions, such as war and economic instability. Research highlights the necessity of modifying personnel management systems during crises,

emphasising the development of employee well-being practices and mental health care [5]. In such environments, conventional recruitment tools prove insufficient, leading to high turnover and prolonged vacancies [6]. This underscores the need for innovative, adaptive HR models that enhance organisational resilience. Proposed solutions include integrating psychometric testing (e.g., Thomas International tests) with project management principles (PMBOK®) and AI-driven analytics to personalise motivation and accelerate onboarding [6].

Innovative digital tools are increasingly deployed to address core HR functions of motivation, retention, and performance management. Gamification is identified as an effective method to increase productivity, engagement, and retention by transforming routine processes into engaging experiences [13]. Predictive analytics and HR analytics enable data-driven decision-making, allowing organisations to identify at-risk employees, personalise engagement strategies, forecast workforce needs, and optimise recruitment [10; 14]. These tools, alongside personnel audit, form a synergistic pair for creating a transparent, adaptive, and effective personnel management system capable of responding to dynamic business challenges [10]. The integration of AI in these processes allows for quantitative diagnostics of employee engagement and stress resilience, which is particularly valuable in crisis and post-crisis recovery [6].

In conclusion, the literature reveals a convergent evolution where strategic, human-centric HR management is increasingly mediated and enhanced by digital technologies, particularly AI. The transition from traditional methods to data-driven, personalised approaches is evident in recruiting, motivation, and retention strategies. However, successful implementation requires navigating challenges related to data quality, ethical considerations, and organisational culture [7; 14]. Future HR strategies must therefore balance technological sophistication with a deep focus on employee well-being and adaptive capabilities, especially in volatile environments.

The purposes of the article. Based on the identified problem and the defined scientific and practical tasks, the objective of this article is to develop the conceptual foundations for integrating artificial intelligence into personnel motivation and retention strategies as a key element of digital HR management transformation. The clarification of this objective is realised through the formulation of a series of interrelated research tasks.

The first task involves the systematisation and critical analysis of existing scientific approaches to HR digitalisation, specifically the impact of AI tools (predictive analytics, gamification, psychometric systems) on the content of motivational and retention practices. It is necessary to identify the key trends, potential opportunities, and significant limitations documented in contemporary research.

The second task is aimed at constructive synthesis. Based on the analysis results, it is necessary to propose an integrative model that systematically connects three levels: technological (AI tools), managerial-philosophical (human-centric approach), and contextual-adaptive (conditions of crisis and European integration). This model should demonstrate the logic of transforming traditional reactive strategies into proactive and individualised ones.

The third task has a practical orientation and consists of formulating specific recommendations regarding implementation algorithms. It is necessary to outline the stages and key conditions for the effective implementation of AI solutions in organisations' HR processes, with a focus on increasing employee engagement and reducing staff turnover. Particular attention is paid to the conditions for adapting these algorithms for enterprises operating under turbulent conditions.

The fourth task involves defining criteria and indicators for assessing the effectiveness of the proposed approach. It is necessary to propose systems of indicators that allow for tracking the impact of integrated AI strategies both on operational HR results (turnover rate, time-to-fill vacancies) and on the

organisation's personnel potential (level of engagement, development of key competencies, team stability).

The result of accomplishing these tasks should be a coherent concept that ensures the transition from disparate technological initiatives to a holistic, strategically justified programme for the digital transformation of motivation and retention management.

The main material presentation. The main result of the research is the development of the Integrative Model of Proactive Motivation and Retention Management based on AI (IMPURM-AI), which corresponds to the set objectives. The model synthesises three critical levels (technological, managerial, contextual) into a unified cyclical process. Its graphical representation is shown in Figure 1.

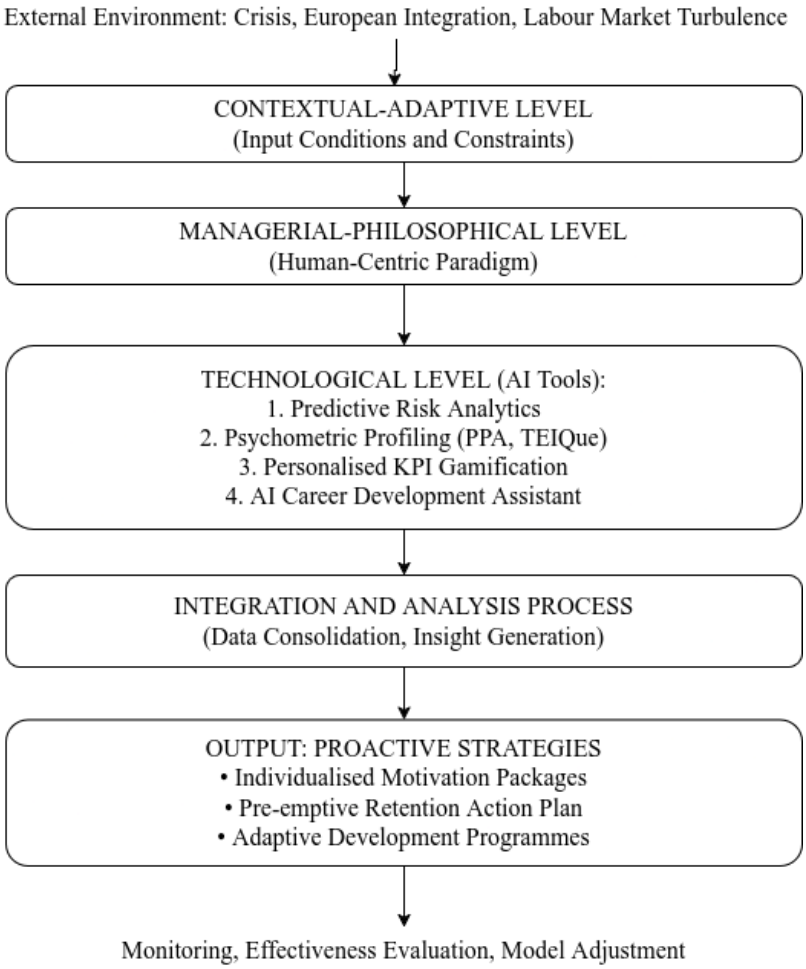

Fig. 1. Integrative Model of Proactive Motivation and Retention Management based on AI (IMPURM-AI)

Source: compiled and generalised by the authors based on [1-7]

The model illustrates an iterative process that begins with an assessment of external conditions. The context shapes the requirements for the management philosophy, which in turn determines the selection and method of applying specific AI tools. Data from the tools are integrated, generating insights for forming proactive, individualised strategies. The results of their implementation are evaluated, and feedback data is used to adjust all levels of the model.

Scientific justification of the model lies in the formalisation of the chain of transforming data into strategic decisions. To assess the potential effect of the model's implementation, a simplified algorithm for calculating the Integral Retention Effectiveness Indicator (IREI) was developed. This indicator allows for a quantitative assessment of the projected impact.

Calculation of the Integral Retention Effectiveness Indicator (IREI):

$$\text{IREI} = (\text{W}_1 \Delta T) + (\text{W}_2 \Delta E) + (\text{W}_3 \Delta S) \quad (1)$$

Where:

ΔT – projected relative reduction in staff turnover rate (%), based on data from [6] and own modelling;

ΔE – projected relative increase in the employee engagement index (%), based on the impact of personalised motivational tools [2, 13];

ΔS – projected relative improvement in the team stability index (assessed through internal mobility and reduction of conflicts) (%), based on the principles of human-centrism [2];

W_1, W_2, W_3– weighting coefficients for the importance of each factor for a specific enterprise ($W_1 + W_2 + W_3 = 1$).

Example calculation for an average Ukrainian enterprise under crisis conditions: Let us assume the weighting coefficients:

$W_1 = 0.5$ (turnover is the most critical factor),

$W_2 = 0.3$ (engagement),

$W_3 = 0.2$ (stability).

Based on the analysis of cases [6] and practices [5, 11], possible average forecast values are justified: $\Delta T = 25\%, \Delta E = 15\%, \Delta S = 20\%$.

$$IREI = (0.5 \cdot 25) + (0.3 \cdot 15) + (0.2 \cdot 20) = 12.5 + 4.5 + 4 = 21.$$

An IREI value of 21 points demonstrates a significant aggregate projected effect. This tool allows for personalisation of the assessment by changing the weights and forecast values according to the specifics of the organisation.

To operationalise the technological level of the model, a matrix of alignment between AI tools and personnel challenges (Table 1) is proposed, which ensures the linking of technologies to specific business needs.

Table 1

Matrix of Alignment between AI Tools and Key Motivation and Retention Challenges

Key Challenge (based on [5, 11])	AI Tool	Mechanism of Influence	Expected Result (KPI)
High Staff Turnover	Predictive Risk Analytics [6, 14]	Analysis of behavioural patterns, activity, and feedback to identify employees at high risk of leaving.	Reduction of turnover rate by 20-30% [6].
Low Engagement	Personalised KPI Gamification [13]	AI-adaptation of game mechanics (points, levels, rewards) to individual goals and employee motivational profile.	Increase in eNPS index by 10-15 points.
Conflicts, Low Team Stability	Psychometric Profiling (PPA, TEIQue) [6]	Formation of cohesive teams considering compatibility of behavioural and emotional profiles.	Reduction in internal conflicts by 25%.
Lack of Clear Career Development	AI Career Development Assistant	Analysis of employee skills, comparison with internal vacancies, recommendation of individual learning trajectories.	Increase in internal mobility by 15%.

Source: compiled and generalised by the authors based on [6; 13-14]

The matrix serves as a practical guide for HR managers. It clearly shows which tool should be applied to solve a specific problem, what mechanism of action underlies it (with reference to research), and what quantitative results can be expected. This transforms the model from a theoretical construct into an action plan.

Justification of the implementation stages (practical task): Based on the model and the matrix, a generalised four-stage implementation algorithm has been derived:

1. Diagnostics and Goal Setting: Audit of existing HR processes [10], identification of key challenges (e.g., turnover in the development department), setting objectives (reduce it by 25% within a year).

2. Tool Selection and Adaptation: Selection of necessary AI solutions from Table 1 (e.g., predictive analytics + psychometric testing), their adaptation to corporate culture and crisis conditions [5].

3. Pilot Implementation and Training: Launch within a limited group (e.g., in one department). Mandatory training for the HR team and managers in working with data and interpreting AI conclusions [7, 10].

4. Scaling, Monitoring, and Adjustment: Expansion to the entire organisation. Continuous monitoring of KPIs (IREI and its components) and adjustment of strategies based on feedback and new contextual conditions (cyclical nature of the model in Fig. 1).

Thus, the obtained scientific results – the IMPURM-AI integrative model, the IREI calculation algorithm, and the practical alignment matrix – form a complete system that ensures the transition from disparate technical solutions to a strategic, data-driven, and adaptive programme for managing personnel motivation and retention.

Conclusions. The conducted research has achieved the set objective by developing the conceptual foundations for integrating artificial intelligence into personnel motivation and retention strategies. The obtained results provide grounds for formulating several key conclusions.

Firstly, the effective digital transformation of HR management in the sphere of motivation and retention is not a technological but a strategic task. It requires the synthesis of three interdependent levels: contextual, managerial-philosophical, and technological. The proposed Integrative Model of Proactive

Management (IMPURM-AI) formalises this connection, demonstrating that technologies (AI, analytics, gamification) serve as a tool for implementing the human-centric paradigm in specific, often crisis, business environment conditions.

Secondly, the transformational potential of artificial intelligence lies in the transition from unified, reactive practices to individualised and proactive strategies. As the alignment matrix has shown, AI tools allow not only for identifying problems (e.g., high turnover) but also for predicting their occurrence and personalising interventions at the level of an individual employee or team. This transforms HR management from a support function into a strategic function of managing risks and developing human capital.

Thirdly, the success of implementation depends on adhering to a clear algorithm of actions, the central element of which is phasing and training. The proposed four-stage scheme (diagnostics–adaptation–pilot–scaling) and the integral IREI indicator ensure the manageability of the process and the possibility of quantitative assessment of its effectiveness, which is especially important for justifying investments in digital HR solutions.

Prospects for further research in deepening and empirically verifying the obtained results.

1. The most important direction is the experimental implementation of the IMPURM-AI model in real enterprises of various sizes and industries, particularly in Ukraine. This will allow for refining the forecast coefficients ($\Delta T, \Delta E, \Delta S$), weighting parameters (W_1, W_2, W_3) in the IREI formula, and adapting the tool matrix to the specifics of the national labour market.

2. Further research should focus on developing detailed ethical protocols for the use of AI in HR, especially regarding algorithmic transparency, protection of employee personal data, and prevention of algorithmic bias. This constitutes a critical scientific and applied task.

3. It is promising to study the synergy of the proposed approach with other technologies, such as metaverses for onboarding and corporate communication, enhanced analytics based on neuro-management, as well as blockchain for skills verification and management of digital credentials.

4. It is necessary to study the long-term effects of the systemic use of AI-driven motivational strategies on organisational culture, employee psychological well-being, and the formation of new types of social and labour relations.

Therefore, the presented model and toolkit pave the way for transforming personnel management but require further development in the direction of empirical verification, ethical regulation, and technological updating.

Література

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