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CUTTING-EDGE PROFESSIONAL CAREER MANAGEMENT TECHNOLOGIES IN THE PUBLIC SERVICE

НОВІТНІ ТЕХНОЛОГІЇ УПРАВЛІННЯ ПРОФЕСІЙНОЮ КАР'ЄРОЮ В ПУБЛІЧНІЙ СЛУЖБІ

Summary. The article examines the latest technologies in career management within the public service, focusing on their role in enhancing operational efficiency and employee well-being during both stable and crisis periods. The author identifies the growing need for adaptive, human-centered digital tools under wartime conditions in Ukraine. The research contributes to solving the problem of aligning technological innovation with institutional resilience and sustainable governance. Scientific novelty lies in proposing a context-sensitive evaluation radar for technology-driven career management in public institutions that balances efficiency and well-being. The practical significance is the development of evaluation metrics applicable to crisis environments. The conclusions emphasize the necessity of digital transformation and the use of advanced HR technologies to strengthen public service resilience.

Keywords: career management, public service, digital transformation, cutting-edge technologies, digital HR tools, professional development, wartime resilience, employee well-being, evaluation metrics, innovation in HR, sustainability, crisis management.

Анотація. У статті досліджено сучасні тенденції впровадження інноваційних технологій управління кар'єрою в системі публічної служби, які формують нову парадигму розвитку людського капіталу в умовах цифрової трансформації та глобальної нестабільності. Акцент зроблено на визначенні ролі технологічних рішень у забезпеченні операційної ефективності, гнучкості та підвищенні рівня добробуту працівників як у стабільних умовах функціонування, так і під час кризових випробувань, зокрема воєнного стану. Автор обґрунтовує актуальність упровадження людиноцентричних цифрових інструментів управління кар'єрою, які сприяють підвищенню стійкості публічних інституцій, забезпеченню безперервності виконання службових функцій і збереженню професійного потенціалу державних службовців. Метою статті є розроблення концептуальної моделі технологічно орієнтованого управління кар'єрою в публічних інституціях, що поєднує інструменти підвищення ефективності діяльності з механізмами підтримки психологічної стійкості, професійного розвитку та мотивації працівників. Проведено аналіз наукових підходів вітчизняних і зарубіжних дослідників до проблем цифровізації кадрового менеджменту, зокрема досвіду країн Балтії, Польщі, Румунії, Канади та Сінгапуру у сфері розвитку цифрової публічної служби. Наукова новизна роботи полягає у формуванні контекстно-чутливої системи оцінювання технологічно орієнтованого управління кар'єрою, побудованої за допомогою радарної моделі, що дає змогу комплексно оцінювати рівень ефективності, інноваційності, безпеки, гнучкості та орієнтованості на людину. Практична значущість дослідження полягає у запропонуванні набору метрик і показників, які можуть бути використані для моніторингу результативності

цифрових HR-рішень у державному секторі, зокрема в кризових умовах воєнного часу та під час післявоєнного відновлення. У висновках підкреслено, що цифрова трансформація та впровадження передових технологій управління людським капіталом є ключовими чинниками зміцнення інституційної стійкості, підвищення рівня довіри громадян і забезпечення сталого розвитку публічної служби України.

Ключові слова: управління кар'єрою, державна служба, цифрова трансформація, передові технології, цифрові HR-інструменти, професійний розвиток, стійкість у воєнний час, добробут працівників, оціночні метрики, інновації в HR, сталість, управління в кризових умовах.

Problem statement. Career management in the public service is currently undergoing a profound transformation. The growing complexity of governance, the demands of digitalization, and the need for transparent and effective public institutions require new approaches to managing human capital. Modern public institutions face persistent challenges such as workforce skill gaps, high employee mobility, and the demand for efficiency in HR processes. Yet, under conditions of war, these challenges become even more acute.

Martial law significantly affects the public service sector. Skilled professionals are often forced to relocate, join the armed forces, or experience mental burnout due to heightened stress. Public servants are required to make urgent decisions under uncertainty, manage crisis situations, and ensure the uninterrupted provision of critical services. At the same time, financial and technological constraints hinder the rapid implementation of modern career management tools. As a result, career management must incorporate mechanisms for supporting employee well-being, stress management, and adaptation to extreme conditions.

These factors emphasize the urgent need for cutting-edge career management technologies that can function not only in stable times but also during crises. In the context of adaptation to extreme conditions, digital transformation, globalization, and the rapid evolution of public service demands, traditional HR approaches are no longer sufficient. The scientific significance of this problem lies in identifying innovative mechanisms that ensure continuity of public service, support employee development, and safeguard institutional stability under extreme circumstances. From a practical perspective, effective career management in wartime becomes a matter of national security, resilience, and sustainable governance.

Analysis of recent research and publications. The contemporary literature on career management technologies in public administration can be grouped into two broad streams: international research focused on digital HR, AI, and HR analytics in the public sector; Ukrainian scholarship examining digitalization and innovations in public-service HR, often in the context of reforms and wartime pressures.

Contemporary publications emphasize both opportunities and challenges when AI is introduced into HR functions. Fenwick et al [6] stress the need to preserve a human-centric HR role as AI automates routine tasks; they call for governance that balances efficiency gains with fairness and employee dignity. Other government playbooks -such as the Canadian AI strategy and OPM guidance – illustrate how states are moving from experimentation to formal strategies for responsible AI in the public service (policy frameworks, governance, talent pipelines.)

Recent reports and case studies (e.g., analyses of AI exposure in Canada and localized pilots) have shown that public-sector occupations are often highly exposed to AI and that careful, phased adoption is necessary to avoid adverse impacts on jobs and public-service quality. These works recommend upskilling, clear governance, and employee-centered implementation plans [8].

Several international studies [4] argue that HR analytics provides a structured process for integrating people data into workforce planning, succession and career management. Researchers propose a practical five-step process for HR analytics in public personnel management: define → collect → analyze → share → reflect, showing that analytics can enable more strategic career planning and internal mobility if systematically applied.

Emerging literature has begun documenting how large language models and conversational AI are used experimentally for HR tasks, such as: drafting job descriptions, training materials, and onboarding adaptation plans; while cautioning about accuracy, bias, and accountability [1; 2; 16].

Ukrainian researchers and practitioners have produced a growing body of literature on the digitalization of public services and HR management. Studies published in national journals and conference proceedings examine the stages of e-government development (including platforms such as Diia), and propose frameworks for introducing digital HR tools in the civil service. These works document reforms, pilot projects, and institutional barriers to adoption [10; 14; 17].

Ukrainian authors have proposed practical models for implementing innovative HR technologies in the civil service. For example, Balan & Shepel [3] offer a model for deploying innovative HR management technologies adapted for Ukrainian public institutions, outlining institutional prerequisites and phased implementation steps. Such local models are particularly attentive to Ukrainian administrative realities (legacy systems, decentralization, funding constraints).

Recent conference collections and journal issues (post-2022) increasingly discuss public administration

under martial law – emphasizing human capital disruption, staff mobility, and psychological resilience as urgent research themes. Ukrainian publications tend to highlight practical constraints (infrastructure damage, staff displacement) and stress the need for context-sensitive digital solutions [5; 7; 11].

Highlighting previously unresolved parts of the overall problem. Despite substantial progress, the literature reveals several important unresolved areas that should be addressed:

1. Empirical evidence on wartime effectiveness of technologies.

There is a lack of systematic empirical studies assessing how specific career-management technologies perform during armed conflict – especially longitudinal evidence on retention, redeployment, and mental-health outcomes

2. Integration with strategic planning and governance.

Many studies describe technology capabilities, but fewer examine how career-management systems are operationally integrated with organizational strategy and crisis governance (decision rights, data-sharing protocols, interoperability with emergency management systems.)

3. Standardized evaluation metrics.

The absence of widely accepted metrics to evaluate technology-driven career management – especially in the public sector – limits cross-case comparisons and evidence-based policymaking. Proposed HR-analytics frameworks exist, but standard indicators for wartime resilience and career continuity are missing.

4. Ethical, legal, and people-centered considerations in crisis contexts.

While AI governance documents exist, there is limited research on how ethical constraints (privacy, bias, algorithmic transparency) should be adapted for emergency conditions where rapid decisions are required. Ukrainian research flags resource and institutional constraints that complicate ethical governance in practice.

5. Workforce well-being and mental-health integration.

The literature increasingly recognizes the need to combine career management with psychological support mechanisms, but empirical guidance on tech-enabled mental-health supports integrated with career pathways remains sparse – this is a crucial gap in wartime contexts.

The purpose of the article. The primary objective of this article is to examine and systematize the latest professional career management technologies applied in public service institutions, with a particular focus on their adaptability under extreme conditions, including wartime challenges. To achieve this overarching aim, the article sets the following specific objectives:

– identify and classify cutting-edge career management technologies currently utilized in public administration, including digital HR platforms, AI-driven career tools, and e-learning systems;

– assess the effectiveness of these technologies in improving workforce planning, internal mobility, employee development, and overall HR efficiency within public institutions;

– analyze the challenges of implementing career management technologies under crisis conditions, particularly in contexts affected by war, such as workforce disruption, psychological stress, and resource constraints;

– compare international best practices with Ukrainian public sector experiences, identifying lessons that can be adapted to the local context;

– propose a context-sensitive evaluation radar for technology-driven career management in public institutions, emphasizing both operational efficiency and employee well-being in stable and crisis environments.

Summary of the main research material. The current situation in Ukraine's public administration clearly demonstrates both the urgency and the potential of technology-driven career management reform. According to the National Agency on Civil Service, as of mid-2024, only about 158 000 civil servants were employed out of more than 190 000 established positions, leaving approximately 35 000 vacancies nationwide. This shortage – combined with a reduction of nearly 7 000 public employees since 2022 – has intensified workloads and weakened institutional continuity. Furthermore, while only 2.5% of civil servants have been mobilized for military service, the broader impact of relocation, stress, and resource redistribution has been substantial. Surveys indicate that over 70% of public officials experienced a rise in workload and more than half faced salary reductions during martial law, deepening motivational challenges [12].

In response, the Ukrainian government has prioritized the implementation of the Human Resource Management Information System (HRMIS), aiming to digitize HR processes in roughly 65% of ministries and central executive bodies by the end of 2024 [13]. Parallelly, the overall digital maturity of public institutions continues to improve: around 55–60% of Ukrainians regularly use e-government services, and satisfaction with such platforms has reached 75%, suggesting high public readiness for further digital innovations in the civil service [15]. However, the well-being dimension remains alarming – recent national surveys reveal that only one-quarter of Ukrainians report being satisfied with their lives, while 43% experience heightened anxiety [9]. These figures underscore the need for integrated HR technologies that not only enhance operational efficiency but also provide systematic support for psychological resilience, workload balance, and professional development.

Modern public service institutions increasingly rely on innovative technologies to manage professional careers effectively. These technologies not only improve administrative efficiency but also support employee development, internal mobility, and resilience under crisis conditions. Overview of the main types of technologies, their functions, benefits, and practical examples is presented in Table 1.

The contemporary landscape of public administration, especially under the conditions of wartime, requires innovative approaches to career management that combine technological solutions with adaptive HR strategies. Cutting-edge career management technologies not only optimize personnel planning but also ensure resilience, flexibility, and employee motivation in crisis environments.

Digital HR platforms and E-Governance tools provide centralized databases of civil servants, streamline recruitment, evaluation, and promotion processes, and ensure transparency. In wartime, such platforms are vital for maintaining continuity of governance, rapid decision-making, and remote coordination of staff.

Talent AI-driven analytics support evidence-based personnel decisions, helping identify employees with high potential (HiPo), forecast staffing needs, and evaluate performance objectively. In wartime, predictive analytics assists in reallocating limited resources, prioritizing essential positions, and ensuring effective human capital deployment.

E-Learning and digital training systems offer continuous professional growth through online courses, simulations, and interactive modules. In wartime conditions, these tools guarantee uninterrupted learning despite geographical displacement or security threats, thus preserving the professional competencies of public servants.

Career path modeling and individual development plans enable the creation of personalized career trajectories, aligning individual aspirations with institutional priorities. In a wartime environment, career path modeling supports employee engagement, provides psychological stability, and reinforces the sense of long-term prospects despite uncertainties.

Career management in the public service increasingly incorporates well-being platforms, stress management applications, and feedback tools. During wartime, these technologies are crucial for maintaining psychological resilience, preventing burnout, and supporting personnel working under extreme stress.

Digital collaboration platforms (e.g., cloud-based project management systems, secure communication channels) ensure effective teamwork and flexible working models. For public administration during wartime, they maintain operational functionality, enhance adaptability, and reduce risks related to physical office work.

In summary, the integration of these technologies in public administration enhances the stability of

Table 1 – Summary of latest career management technologies and their applications in public administration

Technology	Functions	Benefits	Practical example
E-HR Platforms (HRIS, HRM systems)	Automating personnel records, career tracking, performance monitoring	Reduces paperwork, ensures transparency, improves decision-making efficiency	Implementation of SAP SuccessFactors or Oracle HCM in public institutions
E-Learning & Career Development Platforms	Providing online training, professional development courses, skill tracking	Increases accessibility to education, supports continuous learning, reduces training costs	Use of Coursera, Prometheus, or internal e-learning systems in civil service training
Competency-Based Career Management	Mapping career paths based on competency models	Ensures merit-based promotion, develops targeted skills, supports succession planning	Civil service competency frameworks for career growth and promotion decisions
Talent Analytics (HR Analytics)	Collecting and analyzing employee data, forecasting career development trends	Data-driven HR decisions, identifying high-potential employees, optimizing training investments	Use of People Analytics tools for workforce planning in ministries or local councils
Mentoring and Coaching Technologies	Digital platforms for mentorship and professional guidance	Enhances leadership skills, supports knowledge transfer, improves employee engagement	Mentorship programs in public service academies or local government institutions
Gamification Tools	Using game-based techniques for motivation, training, and career development	Increases engagement, improves learning outcomes, creates innovative work culture	Online gamified training modules in public administration schools
Career Portals and Mobility Platforms	Offering career opportunities, internal mobility, vacancy postings	Improves transparency, supports mobility between departments, accelerates recruitment	National civil service career portals (e.g., Ukraine's career.gov.ua)

Source: generated by the authors

governance systems, ensures continuity of essential services, and strengthens trust in institutions. Moreover, they support a people-centered approach to career management by aligning employee needs with public service priorities. In wartime, this not only secures the functionality of government structures but also fosters resilience, innovation, and loyalty among public servants.

The adoption of career management technologies varies significantly across countries and institutions. International experience shows that countries with stable digital infrastructure and investment in HR modernization are able to implement cutting-edge solutions more effectively. European countries – such as Poland, Lithuania, and Romania – demonstrate notable progress in digital HR transformation, yet they also face challenges similar to those encountered in Ukraine, such as financial limitations, bureaucratic inertia, and the need to train public servants in new digital competencies. Comparative analysis of adoption levels, key achievements, and challenges is described in Table 2.

These empirical findings clearly demonstrate the fragility of Ukraine's human capital system under wartime conditions, reinforcing the need to adapt best international practices and to implement an integrated, technology-driven model of career management tailored to crisis realities.

The experience of both regional European neighbors and global leaders provides valuable insights for Ukraine's adoption of career management technologies.

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Phased digitalization (Poland): Instead of attempting full-scale implementation at once, gradual adoption of e-learning and digital HR records can reduce resistance and allow smoother integration with existing systems.

Centralization and transparency (Lithuania): A unified digital HR system supports transparent recruitment and reduces corruption risks, an approach relevant for strengthening trust in Ukrainian public institutions.

Leveraging external funding (Romania): EU-funded projects played a critical role in accelerating Romania's HR modernization. For Ukraine, international financial and technical assistance can also serve as a driver of digital transformation, especially under wartime resource constraints.

AI-based talent analytics: Singapore has pioneered AI-driven platforms for succession planning and workforce forecasting. Ukraine can adapt simplified predictive analytics to better allocate scarce human resources during wartime.

Future-oriented HR strategy: Singapore emphasizes lifelong learning and continuous upskilling of public servants. Ukraine could integrate this principle by prioritizing flexible online training and reskilling for displaced or reassigned civil servants.

Integrated digital platforms: Canada's federal administration uses centralized systems for performance evaluation and career progression tracking. Ukraine can learn to consolidate fragmented HR databases into a more unified platform.

Employee-Centered Approach: Canada emphasizes career counseling, mentorship, and flexible career paths within the public sector. This approach is vital for Ukraine, where employee well-being and motivation are under extreme pressure during the war.

These lessons highlight that while Ukraine faces unique wartime challenges, regional best practices demonstrate that strategic planning, gradual

Table 2 – Comparative analysis of career management technology adoption in selected public institutions

Country / Institution	Technology adoption level	Key achievements	Challenges
Singapore Public Service	High	AI-based talent analytics, effective succession planning	Staff training, change management
Canada Federal Administration	Medium-High	Integrated digital platforms, career progression tracking	Integration with legacy systems
Poland Public Administration	Medium	Expansion of e-learning platforms for civil servants, HR digital records	Legacy systems, uneven regional adoption
Lithuania Civil Service	Medium-High	Implementation of centralized digital HR system, transparent recruitment	Limited financial resources, need for upskilling
Romania Public Institutions	Medium	Use of EU-funded HR digitalization projects, online training modules	Bureaucratic resistance, insufficient interoperability
Selected Ukrainian Institutions	Low-Medium	Initial HR digitalization, online training modules	Limited infrastructure, resistance to change

Source: generated by the authors

implementation, and international support can create a viable pathway for the adoption of career management technologies in public service.

Thus, effectiveness of technology-driven career management in public institutions must be assessed through a context-sensitive radar, especially under crisis conditions such as war, economic shocks, or pandemics. Traditional efficiency-based indicators should be complemented with adaptive, human-centered metrics reflecting resilience, digital maturity, and employee well-being.

Figure 1 illustrates the multidimensional evaluation framework for technology-driven career management systems in crisis conditions. The proposed metrics reflect both the operational and human dimensions of performance. The Continuity Index (CI) and Digital Adaptation Rate (DAR) assess the system's ability to sustain HR functions under disruptions and integrate digital solutions effectively. The Mobility Agility Score (MAS) and Learning Continuity Ratio (LCR) capture flexibility in personnel reallocation and continuous upskilling. The Employee Resilience Index (ERI) and Digital Trust & Security Parameter (DTSP) measure psychological stability and cybersecurity reliability, which are critical during crises. Meanwhile, Inclusiveness Score (IS) and Strategic Alignment Score (SAS) evaluate equity in access to career tools and alignment with institutional goals. Finally, the Crisis Innovation Index (CII) and Public Trust & Transparency Rate (PTTR) represent adaptive innovation capacity and public confidence.

Collectively, these indicators provide a balanced toolset for assessing how effectively public institutions combine operational efficiency with employee well-being during instability.

Conclusions. The conducted research confirms that technology-driven career management in the public service represents a key determinant of institutional resilience and sustainability in both stable and crisis environments. The integration of digital tools – such as data analytics, AI-based career guidance systems, and e-learning platforms – allows public institutions to optimize workforce planning, strengthen transparency, and foster continuous professional development. These technologies not only increase operational efficiency but also support employee well-being through personalized career trajectories, stress-management tools, and flexible development pathways.

The study demonstrated that under wartime conditions, digitalization becomes not merely a trend but a survival mechanism for the public sector. The Ukrainian experience underscores the necessity of balancing technological innovation with human-centered policies. Ensuring psychological resilience, digital trust, and inclusiveness must remain at the core of any modernization strategy. Lessons from regional best practices illustrate that strategic alignment

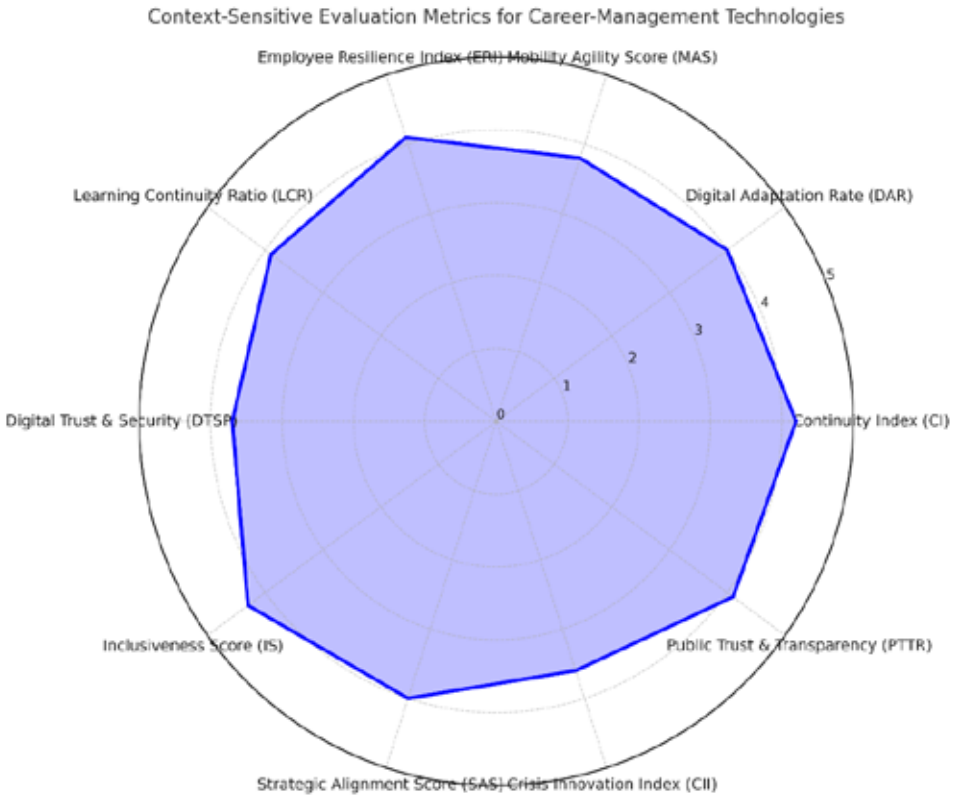

Figure 1 – Radar of evaluation metrics for professional career management technologies

Source: generated by the authors

between technology, governance, and human resource policy significantly enhances adaptability and service continuity.

Further research should focus on developing context-sensitive evaluation models of digital HR practices, emphasizing the measurement of long-term impacts on motivation, innovation culture, and social trust in public institutions. Future investigations may also address the role of artificial intelligence and predictive analytics in building anticipatory models of career growth and resilience during prolonged crises. Strengthening cross-country collaboration and knowledge exchange will contribute to shaping a new paradigm of adaptive, human-centric, and technology-integrated public service in the post-war recovery phase.

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