

HUMAN RESOURCE MANAGEMENT IN THE DIGITAL ERA: CHALLENGES AND SOLUTIONS FOR ROMANIA AND THE EU

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Abstract: *Digitalisation has become one of the main forces reshaping Human Resource Management. This paper examines how Artificial Intelligence, e-recruitment and HR Analytics are changing the way organisations attract, assess, develop and retain talent, with particular attention to the situation in Romania.*

Based on an integrative literature review of academic and institutional sources, the study analyses four key areas: the benefits and limitations of AI in HR decision-making, the impact of digital recruitment and online interviews on candidate experience, the factors influencing the adoption of HR Analytics, and approaches to reducing digital skills gaps while promoting inclusion.

The findings indicate that these technologies can generate significant improvements in efficiency, speed and consistency. At the same time, they introduce notable risks – algorithmic bias, privacy concerns, perceived surveillance and the potential to widen inequalities when digital competencies vary widely.

The paper argues that successful digital HRM in Romania goes well beyond the simple adoption of new technologies. Real progress depends on sound governance, effective human control, sustained investment in digital skills and genuine inclusion measures, all aligned with European standards.

Keywords: *Digital HRM; Artificial Intelligence; HR Analytics; E-Recruitment; Digital Skills; Inclusion*

JEL Classification: *M12; M15; O33*

1. Introduction

Human Resource Management is currently undergoing a significant transformation. This shift goes well beyond simply introducing digital tools into existing routines. The changes are deeper: they are altering how organisations view their employees, structure their processes and reach decisions that shape people's careers and daily working lives.

Recruitment, performance appraisal, training, workforce planning and retention now rely increasingly on digital platforms, algorithms and automated systems. These tools sort, compare, predict and sometimes recommend specific actions. As a result, HR has moved beyond routine administrative tasks such as record-keeping and compliance. It is gradually evolving into a strategic function capable of shaping competitiveness, adaptability and organisational culture (DiRomualdo et al., 2018).

This growing reliance on technology raises difficult questions. Who ultimately controls these algorithmic mechanisms? Who assumes responsibility when they produce flawed or biased results? And how can the human side of work be protected as processes become more automated?

Digital HRM has been widely discussed as a transformation of traditional HR practices through information technologies, digital platforms and data-driven systems (Bondarouk & Ruël, 2009; DiRomualdo et al., 2018).

At EU level, digitalisation forms a central element of broader policy objectives around productivity, innovation, resilience, inclusion and data protection. Yet beneath the modernisation drive, real tensions exist. Faster processes do not automatically produce fairer outcomes. Standardised decisions are not necessarily more equitable. And systems built mainly for efficiency can, without proper governance, generate distrust, opacity and unintended exclusion.

Romania offers a particularly relevant case because enterprise digitalisation and digital skills still lag behind broader EU targets (European Commission, 2025; Eurostat, 2025). Competitive pressures and the push to align with European standards are encouraging many organisations to move quickly. At the same time, levels of preparedness remain very uneven. Some companies are already testing advanced solutions, while others continue to work with fragmented procedures, inconsistent infrastructure and widely different digital competencies among staff. This produces a paradoxical situation: the same technologies can drive genuine progress in digitally prepared organisations but widen gaps elsewhere.

This paper contributes to the literature in three ways. First, it brings together research on AI-enabled HR systems, e-recruitment and HR Analytics into one analytical framework centred on responsible digital HRM. Second, it links these debates to the Romanian context, where digital transformation is shaped by uneven organisational maturity, digital skills gaps and the need to align with European standards. Third, it proposes a practical action framework that connects technological adoption with governance, human oversight, digital skills development and inclusion.

The paper explores how digitalisation is reshaping Human Resource Management, with special emphasis on Artificial Intelligence, online recruitment and HR Analytics. It addresses four main questions: To what extent do AI-driven systems improve both efficiency and the quality of HR decisions? How do digital recruitment tools and virtual interviews affect candidate experience? What explains organisations' readiness or reluctance to adopt machine learning-based HR Analytics? And what kinds of interventions are needed to close digital skills gaps and support genuine inclusion in Romanian organisations working under European expectations?

The central argument of this paper is that digitalisation in HR creates lasting value only when technological capabilities are accompanied by proper governance, managerial accountability and employee trust. Speed and efficiency alone are not sufficient. The systems also need to be understandable, legitimate and subject to real human oversight.

2. Conceptual Background: Digital HRM and the Changing Role of HR

Digital HRM refers to the application of digital technologies to support, redesign or fundamentally transform traditional human resource management activities. It covers a wide range of tools – applicant tracking systems, online assessment platforms, predictive analytics, AI-assisted screening, automated communication

and digital learning environments. What sets the current phase apart is the growing ability of these systems not only to store and organise data but also to analyse large volumes of information, spot patterns, generate recommendations and actively shape decisions.

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This evolution has clear consequences for the place of HR inside organisations. For many years, HR was mainly seen as an administrative function focused on keeping records, handling contracts, ensuring compliance and managing day-to-day personnel matters. Today, however, HR is increasingly expected to take a strategic role – anticipating workforce needs, identifying skills gaps, reducing turnover risks and helping the organisation stay agile. Digital technologies make this shift possible, but they also demand new skills from HR professionals: they must combine traditional people-management expertise with technological literacy, data interpretation and change management.

This shift confirms the broader argument that HR functions are moving from administrative support roles toward strategic, technology-enabled organisational functions (DiRomualdo et al., 2018).

Digital tools also create tension between standardisation and personalisation. They enable consistent criteria across recruitment, onboarding and performance monitoring, which can reduce variability and some forms of bias. At the same time, advanced platforms can offer more tailored experiences through adaptive learning or predictive models. Yet this same duality can increase surveillance and give employees the impression that their behaviour is being watched in opaque ways.

However, people analytics and digital monitoring may also create risks related to surveillance, opacity and employee resistance (Giermindl et al., 2022).

In the European context, discussions about Digital HRM are shaped by wider concerns around data privacy, algorithmic fairness and human dignity at work. Because HR decisions affect people's access to jobs, career progression and sense of belonging, they carry significant ethical implications. That is why evaluating digital solutions cannot focus only on efficiency or cost savings. A full assessment must also consider their impact on equality, autonomy, trust and alignment with legal and ethical standards.

3. Research Methodology

This study uses an integrative literature review methodology to examine how digital transformation is reshaping Human Resource Management, with particular attention to AI-enabled HR systems, e-recruitment, HR Analytics and digital inclusion. This approach was selected because the topic cuts across several disciplines and is developing too quickly for conventional empirical studies to keep pace. Integrative literature reviews are suitable for synthesising fragmented research fields and for developing conceptual understanding across multiple disciplines (Torraco, 2005; Whittemore & Knafl, 2005).

The review followed four stages: identification of relevant literature, screening of sources, thematic classification and analytical synthesis. Sources were drawn from peer-reviewed journals, academic books and institutional reports published mainly between 2015 and 2025. Priority was given to studies addressing digital HRM, AI in

recruitment and selection, people analytics, employee reactions to digital systems, algorithmic governance, digital skills and inclusion.

The search strategy combined keywords such as “digital HRM”, “electronic HRM”, “AI in HR”, “AI recruitment”, “e-recruitment”, “online interviews”, “HR Analytics”, “people analytics”, “algorithmic management”, “digital skills”, “digital inclusion”, “Romania” and “European Union”.

Inclusion criteria focused on relevance to the research questions, academic or institutional credibility, conceptual contribution and applicability to the Romanian or European context. Sources were excluded when they dealt with digitalisation only in a general technological sense without clear HRM links, when they lacked analytical depth, or when they did not contribute to the four main themes of the paper.

The reviewed material was organised around four analytical dimensions: the benefits and limitations of AI in HR decision-making; the effects of e-recruitment and online interviews on candidate experience; the organisational conditions influencing the adoption of HR Analytics; and the role of digital skills and inclusion in responsible HR digitalisation.

The study does not claim to provide a systematic review of every available publication. The aim is to synthesise relevant theoretical, empirical and policy evidence in order to develop a structured interpretation of the digital HRM challenges facing Romanian organisations.

4. AI-Enabled HR Systems: Efficiency and Decision Quality

Efficiency is frequently cited as one of the main reasons organisations adopt AI in HR. Screening CVs, scheduling interviews, sending messages to candidates or running initial assessments can now be handled with much less manual effort. This frees HR teams to focus on more strategic work such as workforce planning and real organisational development. In larger companies handling thousands of applications, the time savings can be substantial.

Many also expect AI to bring greater consistency to decision-making. Human decision-makers may be influenced by fatigue, time pressure or unconscious preferences. A well-designed system, at least in theory, applies the same criteria to everyone and produces more predictable outcomes.

AI-enabled HR systems are increasingly used in recruitment, screening, assessment and decision support processes (Rodgers et al., 2023; Horodyski, 2023).

This expectation needs to be approached with caution. Algorithms learn from historical data, and that data often carries the marks of past biases and unfair practices. When this occurs, the system can reproduce those problems more systematically – and in ways that are harder to detect. Sometimes the appearance of neutrality actually makes the situation more difficult to challenge.

Since algorithmic systems often learn from historical data, they may reproduce or amplify previous organisational biases (Rodgers et al., 2023).

Meaningful human oversight therefore remains essential. Decisions that have a major impact on someone’s career should not be left entirely to the algorithm. A human-in-the-loop approach is recommended, where managers keep real accountability and can review, question or override algorithmic suggestions. Without this, organisations risk abdicating responsibility behind technological outputs.

Transparency and explainability are equally critical, especially under the GDPR and the new EU AI rules. Candidates and employees have the right to understand how

decisions about them were reached and to challenge outcomes that may involve discrimination. In practice this requires high-quality data, regular bias audits, staff training and clear governance rules about responsibility when adverse outcomes occur.

These concerns are particularly relevant in the European context, where automated decision-making, data protection and AI governance are regulated through the GDPR and the EU AI Act (European Parliament and Council, 2016; European Parliament and Council, 2024).

In Romania, these challenges are intensified by the uneven development of internal governance structures and digital competencies. Many organisations are bringing in advanced tools while internal governance and digital competencies are still catching up. As a result, AI is sometimes adopted more as a symbol of modernity than as a carefully managed instrument.

Overall, AI can support better HR decisions only when it remains an assistive tool backed by managerial accountability, transparent processes and ethical safeguards.

5. E-Recruitment, Online Interviews and Candidate Experience

Recruitment is one of the areas where digitalisation has changed HR practice most visibly. Organisations now rely heavily on job platforms, applicant tracking systems, online assessments and video interviews. These tools help reach a wider pool of candidates, cut costs and speed up the hiring cycle.

E-recruitment and digital selection methods have become central components of contemporary HRM, influencing both organisational efficiency and candidate perceptions (Folger et al., 2022; Horodyski, 2023).

Candidates may value the practical advantages of digital recruitment. Applying online is quicker and more convenient, and remote interviews save time and travel expenses. This can be particularly helpful for people living outside major cities or those with family responsibilities.

Nevertheless, the overall candidate experience is frequently less positive than hoped. Many processes feel cold and impersonal. Automatic replies, long waits for feedback, unclear scoring and highly standardised interviews can leave applicants feeling processed rather than genuinely considered. Over time this can damage employer branding – a poor digital experience shapes how the organisation is viewed by future talent.

Research shows that applicant reactions to digital selection tools are shaped by perceived fairness, transparency, feedback quality and procedural justice (Folger et al., 2022).

Accessibility and inclusion raise another important concern. Candidates do not start from equal digital conditions. Digital skills gaps, disabilities, unstable internet connections or living in rural areas can create real barriers. What appears modern and efficient from the employer's perspective may unintentionally exclude capable individuals who struggle with the technological format.

The growing use of chatbots and automated recruitment communication can improve speed, but may also reduce the perceived human quality of the process (Koivunen et al., 2022).

The most effective strategies are therefore likely to be hybrid. Digital tools work best when they are combined with genuine human contact – timely feedback, clear explanations and the possibility of personal interaction. Only this kind of balance builds both efficiency and trust while keeping the process inclusive.

6. HR Analytics and the Willingness to Adopt Data-Driven HR Tools

HR Analytics represents one of the most ambitious dimensions of digital transformation in HRM. Its central purpose is to use workforce data to spot patterns, anticipate future needs and support better decisions – from predicting turnover and tracking absenteeism to identifying skills gaps and evaluating training. In advanced cases, machine learning can generate predictions that help managers allocate resources more strategically.

HR Analytics refers to the systematic use of workforce data to support evidence-based decisions regarding talent management, performance, retention and workforce planning (Mayo, 2018; McIver et al., 2018).

Adoption, however, remains uneven. Having the right software is rarely enough on its own. Success also depends on data quality, organisational culture, managerial openness and employee trust. In many organisations HR data are scattered across different systems or recorded inconsistently, which reduces the reliability of analytical insights. Even when the technology exists, managers often hesitate if they do not fully understand the indicators or how to interpret the results.

Prior research shows that the success of HR Analytics depends not only on technology, but also on data quality, organisational culture, managerial capability and strategic alignment (McIver et al., 2018).

The willingness to use these tools is strongly shaped by how people perceive them. Employees and managers tend to support analytics when they see it improving planning and reducing arbitrary decisions. Resistance grows, however, when the same tools are perceived as instruments of surveillance or hidden control. The identical system can therefore be experienced as helpful support or as a source of anxiety, depending on how it is introduced.

People analytics may generate resistance when employees perceive it as a mechanism of surveillance or hidden control rather than as a legitimate decision-support tool (Giermindl et al., 2022; Milanez et al., 2025).

Trust is a central condition for the effective use of data-driven HR tools. For data-driven HR to work well, people need confidence that information is collected responsibly, interpreted fairly and used for legitimate purposes. Where trust is low – especially in more hierarchical settings – analytics can easily create fear instead of acceptance.

In Romania the obstacles are even more pronounced. Many organisations still lack qualified data specialists, integrated systems and managers who feel comfortable turning analytical outputs into action. There is a genuine risk that HR Analytics becomes only a superficial label of modernisation without the internal capacity needed for meaningful use.

Successful adoption therefore requires more than technical readiness. It also needs social legitimacy, clear explanations, employee participation and strong ethical safeguards. Without these, even sophisticated tools risk being underused, misunderstood or actively resisted.

7. Digital Skills, Inclusion and the Human Side of Transformation

The digitalisation of HR assumes that employees and managers across the organisation can work confidently with new systems. In reality, digital skills are distributed very unevenly – both between organisations and within them. This gap affects operational staff, line managers and HR professionals alike. A digital strategy

may therefore fail not because of technological limitations, but because users lack the capabilities required to apply it effectively.

These skill shortages create several practical problems. They reduce the effectiveness of new systems, increase resistance to change, especially when training feels inadequate, and can widen internal inequalities. Digitally confident employees may advance more easily, while others risk being marginalised.

This challenge is closely tied to workplace inclusion. Real digital inclusion goes beyond simply providing access to devices or platforms. It means employees from different backgrounds can actually participate meaningfully. Age, education, location, job role and socioeconomic situation all influence how people experience digital change.

In Romania, the issue of digital skills is particularly important. Recent European data show that Romania remains below the EU average in terms of basic digital skills and enterprise digitalisation (European Commission, 2025; Eurostat, 2025). This means that HR digitalisation cannot be treated only as a technological upgrade, but must also be approached as a process of capability development and inclusion. These disparities are especially relevant for SMEs, public institutions and organisations outside major urban centres, where digital infrastructure, managerial expertise and access to specialised HR technologies may be more limited.

Organisational modernisation in Romania often happens against a background of uneven development. Urban companies may adopt tools quickly, while public institutions, smaller firms and organisations in less developed regions face bigger constraints. Without deliberate action, digital HRM risks reinforcing existing inequalities instead of reducing them.

The literature points to several practical ways forward. Continuous, role-specific training is essential and must be supported by the organisation. Inclusion improves when implementation is participatory and employees feel their concerns are heard. In the end, digital competence should not be seen only as an individual responsibility – organisations have a duty to design systems that are accessible, understandable and fair for a diverse workforce.

8. Ethical, Legal and Governance Challenges in Digital HRM

As digital technologies become central to Human Resource Management, ethical, legal and governance questions have moved from peripheral concerns to central organisational issues. When algorithms start influencing hiring, performance evaluation, promotion or retention, organisations can no longer evaluate these tools solely through efficiency or cost criteria. Fairness, accountability and individual rights become unavoidable.

Three dimensions are particularly important. The first concerns personal data protection. Digital platforms and analytics systems collect and process large volumes of sensitive information, which immediately brings in GDPR requirements around lawful basis, purpose limitation, data security and individuals' rights. In the European Union, the processing of personal data in employment-related contexts must comply with the principles of lawfulness, transparency, purpose limitation, data minimisation and accountability established by the GDPR (European Parliament and Council, 2016).

The second-dimension concerns fairness and non-discrimination. Many AI tools are trained on historical data that already contain past biases. They can therefore reproduce or even amplify inequalities while appearing neutral.

The EU AI Act further strengthens the governance relevance of AI systems, especially where such systems may affect access to employment, selection, evaluation or career opportunities (European Parliament and Council, 2024).

The third dimension involves transparency and the right to contest decisions. Employees and candidates often lack meaningful explanations about how automated systems reached conclusions that affect their professional lives.

At the governance level, the main challenge is making sure technological possibilities do not outrun organisational responsibility. Clear mechanisms for human oversight, review procedures, accountability chains and regular algorithmic audits are needed. Without them, managerial accountability can easily become diluted behind complex technical systems.

These risks are consistent with wider concerns in the literature regarding algorithmic bias, opacity and unequal treatment in data-driven HR systems (Rodgers et al., 2023; Giermindl et al., 2022).

This issue is particularly relevant in Romania. Many organisations are moving fast on digital solutions while governance structures, internal expertise and regulatory familiarity lag behind. In such conditions, the push for modernisation can easily create imbalances if ethical and legal safeguards are not developed at the same pace.

Responsible digital HRM therefore cannot be reduced to technological adoption. It requires the parallel development of a coherent framework that protects fairness, transparency and trust. Only on this foundation can the practical recommendations in the next section be put into practice effectively.

9. An Action Framework for Romania

Drawing on the reviewed literature and on Romania-specific evidence regarding uneven digitalisation and digital skills gaps, this section proposes a practical action framework tailored to the Romanian context (European Commission, 2025; Eurostat, 2025). The central premise is that acquiring digital tools represents only the initial stage of digital HRM transformation. The decisive issue is creating the organisational conditions that let these tools be used responsibly and effectively.

Four strategic directions are especially important. First, organisations need clear governance structures for digital HRM. This involves defining who is responsible for selecting and evaluating tools, how decisions are made, and what happens when employees or candidates want to challenge an outcome. AI-supported decisions cannot stay completely opaque.

Second, human oversight must remain essential. Technology can support screening and predictions, but decisions with major career impact must always involve real human judgement and accountability. A human-in-the-loop approach is recommended, where managers can review, question or override automated recommendations. This recommendation is consistent with the broader need to preserve managerial accountability in AI-supported HR decisions (Rodgers et al., 2023; European Parliament and Council, 2024).

Third, developing digital skills should be treated as a genuine strategic priority. Romania still has significant gaps in this area, especially between large companies and smaller ones, or between urban centres and other regions. Training programmes need to go beyond basic technical skills and help HR professionals and managers interpret data, recognise ethical risks and manage change. Partnerships

with universities, professional associations and public institutions can play a useful role.

Fourth, organisations should actively monitor digital inclusion. Simply declaring the process inclusive is not enough. Companies need practical indicators on access to tools, participation in training, employee feedback and outcome differences across groups. Regular checks can catch problems before they become structural.

A phased approach is also recommended. Starting with pilot projects in selected departments lets organisations test tools in real conditions, identify unexpected effects and make adjustments before wider rollout. Continuous monitoring and periodic reviews should become standard practice.

The framework is designed for Romania's current realities – uneven digital maturity, resource constraints in many organisations and the pressure to meet European standards. Rather than copying the most advanced models from highly digitalised countries, Romanian organisations would benefit from a more balanced path that combines technological progress with institutional learning and genuine attention to people. Only this kind of approach can create lasting value for both organisations and employees.

10. Discussion

This study highlights a central tension in contemporary Human Resource Management. Digital technologies such as Artificial Intelligence, e-recruitment and HR Analytics can improve efficiency, consistency and strategic decision-making. At the same time, they create real risks around fairness, transparency, accountability and the possibility of increasing inequalities – especially where digital maturity is uneven.

The benefits of these tools do not emerge automatically. Success depends heavily on the quality of governance, employee trust, existing digital competencies and the organisation's ability to handle the wider social implications. In Romania this tension is particularly visible. Organisations need to modernise quickly, stay competitive and align with European standards while dealing with persistent skills and infrastructure gaps. There is often a temptation to treat technology as an immediate solution for deeper structural problems. Yet the literature suggests that digital tools rarely compensate for weak organisational culture or poor communication – and in many cases they can actually amplify existing organisational weaknesses.

The main contribution of this paper is to show that responsible digital HRM cannot be reduced to the adoption of advanced technologies. It requires the simultaneous development of governance capacity, digital skills, employee trust and inclusion mechanisms. This is particularly relevant for Romania, where digital transformation is shaped by both European policy pressure and uneven organisational readiness. From a theoretical perspective, the paper contributes by showing that digital HRM should be understood not only as a technological shift, but as a broader managerial and institutional transformation shaped by governance quality, human capabilities and regulatory alignment. Romania offers a relevant case study for other countries facing similar patterns of uneven digitalisation.

Several limitations should be mentioned. As an integrative literature review, the study relies on the quality and availability of existing research, much of which comes from more highly digitalised economies. The rapid pace of technological change also means some conclusions may need updating as new tools and regulations appear. Another limitation is that the paper relies mainly on secondary sources and does not

include interviews or survey data from Romanian organisations. Future studies should therefore test the proposed framework empirically.

In the end, the future of digital HRM will not be decided by technological sophistication alone. It will depend on how successfully organisations integrate these powerful tools into a responsible, transparent and human-centred management model.

11. Conclusions

Digital transformation is changing Human Resource Management across Europe and, increasingly, in Romania. Artificial Intelligence, online recruitment and HR Analytics are reshaping how organisations attract, evaluate, develop and retain talent. These technologies clearly offer opportunities for faster processes, more consistent decisions and better planning.

At the same time, they raise serious concerns about bias, privacy, surveillance, exclusion and resistance. This paper has shown that the opportunities and the risks need to be considered together. An effective digital HR strategy cannot focus only on efficiency. It also needs trust, transparency, human oversight and inclusive implementation.

The paper contributes by linking the literature on AI in HR, e-recruitment and HR Analytics with the specific challenges of Romanian organisations operating within the European digital and regulatory framework. This balanced approach matters especially for Romania, where digitalisation often happens in conditions of uneven preparedness. The review suggests that Romanian organisations should adopt these tools in ways that strengthen employee confidence and organisational legitimacy rather than weaken them.

Transparent governance, human-in-the-loop mechanisms, investment in digital skills, measurable inclusion and strong data accountability should form the foundation.

From a practical point of view, these findings point to the need for coordinated efforts that go beyond simply adopting technology and also address the human and institutional side of change. As this study is an integrative literature review, its conclusions naturally depend on the existing research. Future empirical research should examine how Romanian employees, managers and HR professionals actually experience AI-supported recruitment, HR Analytics and digital monitoring in practice.

In the end, the future of HRM in the digital era will depend not only on what technology can do, but on the values and safeguards that organisations choose to preserve. When guided by responsibility and fairness, digitalisation can create real value. When driven mainly by speed and control, it risks undermining the human dimension that HR is supposed to defend.

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