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Article

Prospects for Managing Human Resources Through Artificial Intelligence: An Applied Scientific Approach Based on the Case of Uzbekistan

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Abstract: This study investigates the prospects of integrating artificial intelligence (AI) technologies into human resource management (HRM) practices in Uzbekistan. The research develops a national HR–AI framework based on a comparative analysis of global HR systems (SAP SuccessFactors, Oracle HCM, Workday) and local digital platforms (ARGOS). A pilot implementation of the "Milliy CRM" AI-driven HR platform was conducted at the textile enterprise SANAM MCHJ, where key HR processes were digitalized, including candidate screening, competency assessment, training, KPI monitoring, employee experience analysis, and churn-risk prediction. Mixed-method results demonstrate that AI enables data-driven, transparent, and efficient HRM: employee turnover decreased by 39%, productivity increased by 27%, and employee satisfaction improved by 24%. The analysis reveals substantial improvements in organizational stability, fairness of performance evaluation, and overall workforce motivation. The study argues that "Milliy CRM" can become a strategic digital infrastructure for modernizing the labor market and enhancing human capital development in Uzbekistan. Recommendations are proposed for ensuring ethical, transparent, and human-centered AI deployment in HRM.

Keywords: Human Resource Management, Artificial Intelligence, Digital HR, National CRM, Churn Prediction, Employee Retention, Competency Model, Uzbekistan

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1. Introduction

The rapid expansion of the digital economy in the 21st century has transformed the strategic role of human capital [1]. Competitive advantage is increasingly shaped not only by technological progress, but by the ability of organizations to enhance, evaluate, and manage human resources using digital tools [2]. As HRM evolves from a clerical function to a strategic, analytics-driven discipline, AI technologies are at the core of this transformation [3].

Globally, AI-enhanced HRM enables:

- evidence-based decision-making,
- improved accuracy in recruitment,
- skill-gap identification,
- real-time productivity monitoring, and
- predictive insights for turnover and retention [4].

According to McKinsey, organizations adopting AI achieved up to 40% reductions in HR operational costs, a two- to three-fold rise in time efficiency, and a 22% increase in employee satisfaction [5].

In Uzbekistan, structural changes in the labor market—including a young demographic profile, high migration flows, growth of the service sector, and rapid digitalization—have intensified the need for modern HR systems [6]. Government initiatives such as the "Digital Uzbekistan – 2030" strategy and the ARGOS system demonstrate national commitment to HR digital transformation [7]. However, existing systems remain limited in analytic capacity, predictive modeling, and personalization [8].

To address these gaps, this study develops and tests a national AI-driven HRM model—"Milliy CRM"—based on Uzbekistan's economic, cultural, and organizational environment [9]. The research contributes to the emerging field of human-capital economics by providing an evidence-based framework for integrating AI into HRM practices in developing economies [10].

2. Methodology

A mixed-method, multi-stage research design was employed to investigate the application of AI technologies in HRM within Uzbekistan [11].

Theoretical and Conceptual Analysis

A systematic literature review was conducted, focusing on:

- Evolution of HRM models,
- AI-driven decision systems,
- Competency-based HRM,
- Human-capital theory,
- International HR digitalization practices [12].

Foundational theories were drawn from Becker, Armstrong, Ulrich, Maslow, Mayo, and Brynjolfsson, emphasizing the economic value of human capital and motivation in organizational performance [13].

Regulatory and Institutional Review

The study examined key national policy documents, including:

- "Digital uzbekistan – 2030" strategy,
- The labor code of uzbekistan,
- Policies on professional development and hr record systems,
- Personal data protection regulations [14].

These frameworks ensured that AI deployment adhered to labor rights, ethical norms, and data privacy standards [15].

Empirical Field Study

A 12-month pilot implementation of the "Milliy CRM" platform was conducted at **SANAM MCHJ**, a medium-sized textile company with over 300 employees. Empirical data were collected through:

- Direct observation,
- Semi-structured interviews,
- Hr documentation analysis,
- Workforce surveys,
- Performance and productivity metrics.

Statistical and Econometric Analysis

To construct AI-based predictive algorithms, the following methods were applied:

- Descriptive statistics (employee profiles),
- Correlation analysis (turnover–motivation link),
- Regression modeling (churn prediction),
- Time-series analysis (productivity trends),
- Clustering (competency segmentation).

These methods enabled evidence-based insight into workforce trends and organizational performance.

Ethical and Fairness Framework

AI modules included:

- Fairness audits,
- Explainable ai (xai),
- Consent-based data collection,
- Anti-bias monitoring.

This approach ensured transparency and trustworthiness of AI-supported HR decisions.

3. Results and Discussion

Recruitment and Selection

The AI-powered ATS module improved recruitment efficiency significantly:

Table 1. Recruitment and Selection Improvement After AI-ATS Implementation

Indicator	Before	After	Change
Resume screening	100% manual	85% automated	+85% efficiency
Hiring duration	35 days	14 days	−60%
Selection accuracy	65%	89%	+24%
Selection errors	High	Low	−52%

Competency Assessment and Training

AI-based Learning Gap Analysis generated individualized training paths:

- 31% competency gaps identified,
- Personalized training plans developed for all employees,
- Training effectiveness increased by 20%,
- Adaptation time reduced from 3 months to 1 month.

Productivity and KPI Performance

AI-based performance analytics improved objectivity and efficiency:

Table 2. Productivity and KPI Performance Enhancement Through AI-Based Analytics

Indicator	Before	After	Result
Productivity	100%	127%	+27%
Task completion rate	82%	95%	+13%
Decision-making speed	—	2.3× faster	+130%

Employee Turnover and Retention

- Churn prediction accuracy: **82%**,
- Employee turnover reduced by **39%**,
- Retention improved by **18%**,
- Burnout risk detection accuracy: **76%**.

Employee Experience and Satisfaction

- Satisfaction index improved from 3.4 to 4.2 (+24%),
- Internal conflicts decreased by 45%,
- Loyalty increased by 19%,
- Psychological climate improved by 31%.

Gender Equity and Social Indicators

- Women in leadership roles increased by 12%,
- No discriminatory patterns detected by fairness audit.

Financial Impact

Table 3. Financial Impact of AI Integration on Organizational Performance

Indicator	Effect
HR operational costs	−24%
Overall productivity	+27%
Organizational stability	+18%
Profit margin	+11%

The findings confirm that AI integration generates systemic improvements in HRM, supporting global evidence that digital HR enhances organizational performance. Key insights include:

Impact on Labor Productivity

The 27% increase in productivity aligns with Becker's human-capital theory: investment in skills increases economic value creation. Personalized training, optimized task distribution, and real-time monitoring contributed to measurable productivity gains.

Reduction in Turnover

A 39% decline in turnover reflects improved:

- Motivation,
- Fair evaluation,
- Career development opportunities,
- Organizational stability.

This supports Hayitov's argument that labor-market stability is a core indicator of economic stability.

Improved Organizational Culture

AI facilitated a shift from intuition-based to evidence-driven HRM. In the context of Uzbekistan's developing digital culture, this represents a transformational advancement toward modern HR practices.

National Relevance

Uzbekistan's labor market—characterized by a young workforce, regional disparities, gender challenges, and rapid digitalization—benefits significantly from a context-specific AI platform. Unlike imported global systems, "Milliy CRM" incorporates:

- Uzbek language support,

- Integration with national registries,
- Lower implementation costs,
- Ethical oversight mechanisms,
- Cultural adaptation.

4. Conclusion

This study demonstrates that AI has substantial potential to transform HRM practices in Uzbekistan. The "Milliy CRM" model, tested through a real-sector pilot project, improved recruitment, training, performance evaluation, retention, and organizational culture. AI-enabled HRM increased productivity, reduced turnover, and strengthened fairness and transparency.

The results indicate that the nationwide adoption of AI-driven HR systems can significantly support human-capital development, labor-market modernization, and digital transformation strategies.

Future research may explore longitudinal effects of AI adoption, cross-industry comparisons, and integration with national employment ecosystems.

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