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Article

Foreign Experience of Digital Human Resource Management and the Possibilities of Its Application in Uzbekistan

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Abstract: This article examines international experience in digital human resource management (HRM) and the possibilities of applying it in Uzbekistan. Based on a comparative analysis of national models (market-driven, socially-regulated, digital-government, and state-led) and the experience of leading countries (the USA, Germany, Estonia, Singapore, South Korea, and China), the study identifies key success factors and lessons. Using the UN E-Government Development Index (EGDI) and related indicators, it assesses Uzbekistan's current position and finds that the largest gaps lie in telecommunications infrastructure, HR analytics, and systems integration. The article proposes a phased mechanism (foundation – integration – analytics – innovation) and a selective adoption approach for applying foreign best practices under national conditions.

Keywords: digital HRM, e-government, EGDI, foreign experience, Uzbekistan, HR analytics, digital transformation, human capital.

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1. Introduction

Digital HRM has developed significantly worldwide over the past decade. Studying the rich experience of developed countries and adapting it to national conditions is of strategic importance for developing countries such as Uzbekistan — not only to adopt proven solutions but also to correctly set the direction of national reforms. The relevance of studying foreign experience is grounded in several considerations: it helps identify effective, tested solutions; it allows learning from mistakes and avoiding their repetition; and it provides a benchmark for national reforms. At the same time, foreign experience should not be copied mechanically but critically adapted to local economic, social, and institutional conditions.[1][2]

Digital HRM today is not merely a matter of operational efficiency but an important factor of national competitiveness: the effective management of human capital shapes the innovation potential and sustainable development of both organizations and states. For developing economies, investment in digital HRM offers a pathway to narrow the gap with advanced countries and to strengthen their position in global competition, which makes the study of foreign experience a strategic necessity.

Accordingly, this article classifies the leading international models of digital HRM, analyzes the experience of selected countries, compares e-government indicators on the basis of real data, summarizes the lessons learned, and substantiates the mechanisms and possibilities for applying them in Uzbekistan.[3][4]

2. Materials And Methods

The comparative analysis relies on the following criteria: the level of e-government development (the E-Government Development Index, EGDI), the state of digital infrastructure, human capital and digital skills, the application of HR analytics and artificial intelligence, the legal framework, and the roles of the public and private sectors. Countries representing different institutional models were selected: the market-driven model (the USA), the socially-regulated model (Germany and the Nordic countries), the digital-government model (Estonia), and the state-led model (Singapore and South Korea). This approach covers diverse experiences and makes it possible to identify the elements most suitable for Uzbekistan.[5][6]

International Models of Digital HRM

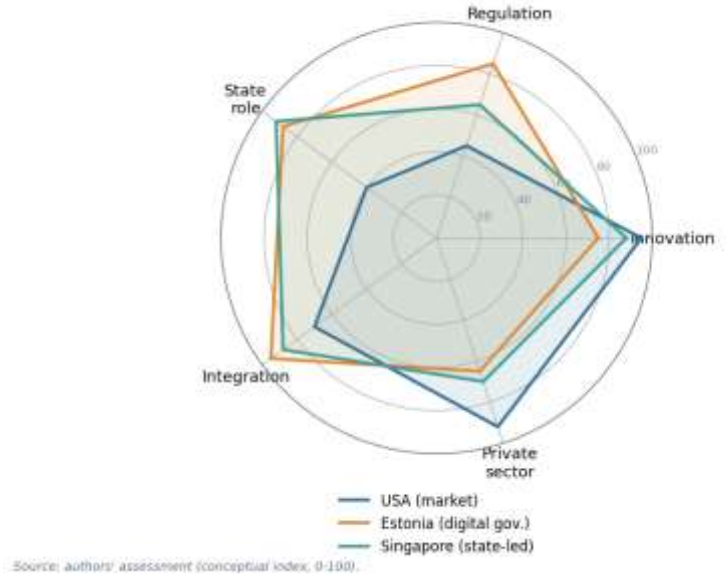
Several characteristic models of digital HRM have emerged in world practice, differing in the role of the state, the degree of regulation, and their orientation toward innovation (Table 1).

Table 1. Main international models of digital HRM

Model	Representative countries	Main feature	Key strength
Market-driven	USA, United Kingdom	Private-sector leadership, innovation orientation	High technological dynamism
Socially-regulated	Germany, France, Nordics	Strong regulation, data protection, social dialogue	Balance of employee rights
Digital-government	Estonia	Integrated e-services, digital identity	High integration and transparency
State-led	Singapore, S. Korea	National strategies, public investment	Systematic, rapid rollout
Scale (fast-growth)	China	Large-scale, platform-based	Scale and rapid diffusion

These models are not mutually exclusive; many countries use hybrid approaches, and a convergence trend is observed — market-driven states are strengthening data-protection regulation, while state-led states are actively attracting private-sector innovation. Figure 1 compares the profiles of three representative countries across five dimensions.

Fig. 1. Comparative profiles of national digital HRM models



As Figure 1 shows, the US model scores high on innovation and the private-sector role but low on regulation and the state role; Estonia leads on integration, while Singapore stands out for the state role and systematization. For Uzbekistan, selecting suitable elements from each model — for example, combining Estonia's integration principle with Singapore's state leadership — is advisable.[7][8]

Experience of Leading Countries

The United States leads globally in digital HRM, particularly in the private sector. Technology companies in Silicon Valley have shaped advanced practices in HR analytics, AI-based recruitment, predictive attrition modeling, continuous performance management, and employee-experience platforms; "people analytics" originated in American companies. At the same time, US experience has raised important debates on algorithmic bias and data privacy, underscoring the need for appropriate regulation.[9]

Germany and other European countries apply a socially-regulated approach, emphasizing data protection (the General Data Protection Regulation, GDPR) and the balancing of employee rights through social dialogue (works councils, or Betriebsrat). Under the Industrie 4.0 initiative, particular attention is paid to digital reskilling. The Nordic countries (Finland, Denmark, Sweden) demonstrate the highest level of public-sector digital HRM, enabled by strong infrastructure, high digital literacy, and transparent governance traditions.

Estonia is one of the world's most advanced examples of digital government. Under the "e-Estonia" concept, almost all public services (~99%) are provided online; the X-Road platform and digital identity (e-ID) have enabled full digitalization of public-sector HR processes on a single integrated platform. The "once-only" principle (not requesting the same data twice) is a key source of efficiency. Estonia's experience shows that even a small state can achieve high results through consistent policy and an integrated approach — a direct model for building a unified, secure HR information system in Uzbekistan.[10]

Singapore, under its "Smart Nation" strategy and Digital Government Blueprint, has systematically digitalized public administration; its Government Technology Agency (GovTech) and Civil Service College develop the digital competencies of civil servants. South Korea has long led e-government rankings, with public HR management conducted through unified electronic systems supported by AI and big-data analysis. Both cases show that an active state leadership role is key to accelerating digital transformation in developing countries. China, in turn, is implementing digital HRM at vast scale and high speed through large technology platforms and AI, offering lessons in rapid scaling, though its centralized data governance requires robust privacy safeguards.[11]

Table 2. Digital HRM experience of selected countries (summary)

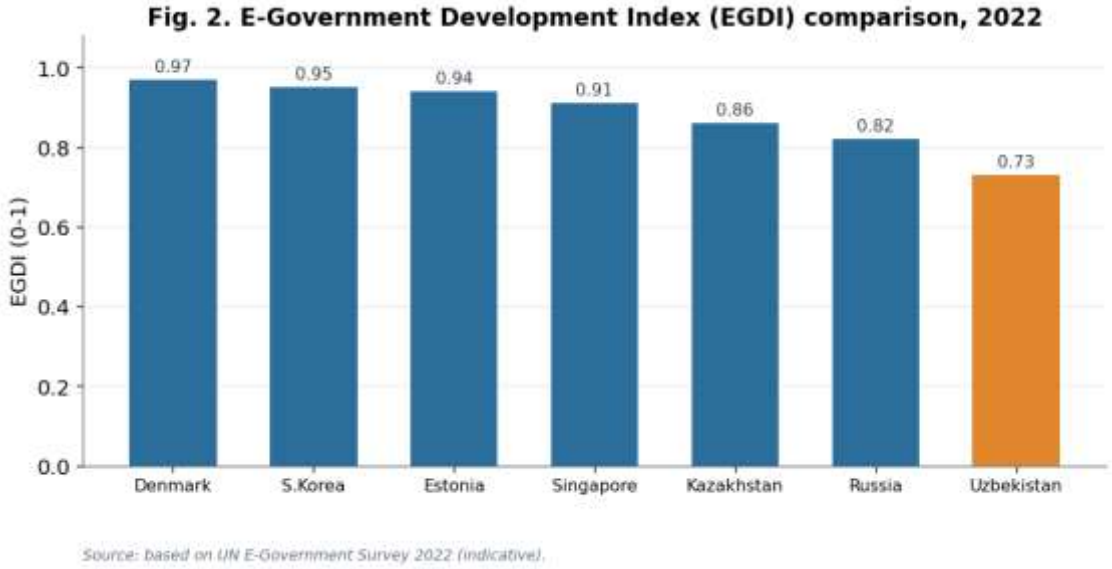
Country	Main initiative / platform	HR focus	Key outcome
USA	Private sector, HR-tech ecosystem	People analytics, AI recruitment	Rapid diffusion of innovation
Germany	Industrie 4.0, GDPR	Reskilling, data protection	Balance of technology and equity
Estonia	e-Estonia, X-Road, e-ID	Full digitalization of public HR	~99% of services online
Singapore	Smart Nation, GovTech	Civil-servant competencies	Systematic digital governance
S. Korea	Digital-government strategies	Digital skills, automation	E-government leadership
China	Platforms, artificial intelligence	Large-scale automation	Fast and wide diffusion

3. Results

Comparative Analysis of E-Government Indicators

The UN E-Government Development Index (EGDI) is one of the most widely used international indicators of digital development. It comprises three sub-indices: the Online Service Index (OSI), the Telecommunication Infrastructure Index (TII), and the Human

Capital Index (HCI). Figure 2 compares the EGDI values of selected countries and Uzbekistan.



As Figure 2 shows, Denmark (0.97), South Korea (0.95), and Estonia (0.94) are world leaders. With a score of 0.73 in 2022 (ranked around 69th), Uzbekistan lags behind some regional peers (e.g., Kazakhstan — 0.86) but has demonstrated significant growth in recent years (from about 0.52 in 2016), indicating a real opportunity to gradually close the gap (Table 3).[13]

Table 3. EGDI values of selected countries (2022)

Country	EGDI (0-1)	World rank	Key strength
Denmark	0.97	1	Fully integrated e-services
South Korea	0.95	3	Digital infrastructure and services
Estonia	0.94	8	Digital identity, X-Road
Singapore	0.91	12	Smart Nation strategy
Kazakhstan	0.86	28	Digitalization of public services
Russia	0.82	36	Broad network of e-services
Uzbekistan	0.73	69	High growth rate

Analysis of the sub-indices clarifies Uzbekistan's strengths and weaknesses. Figure 3 compares Uzbekistan with the leading country (Denmark) across the three components.

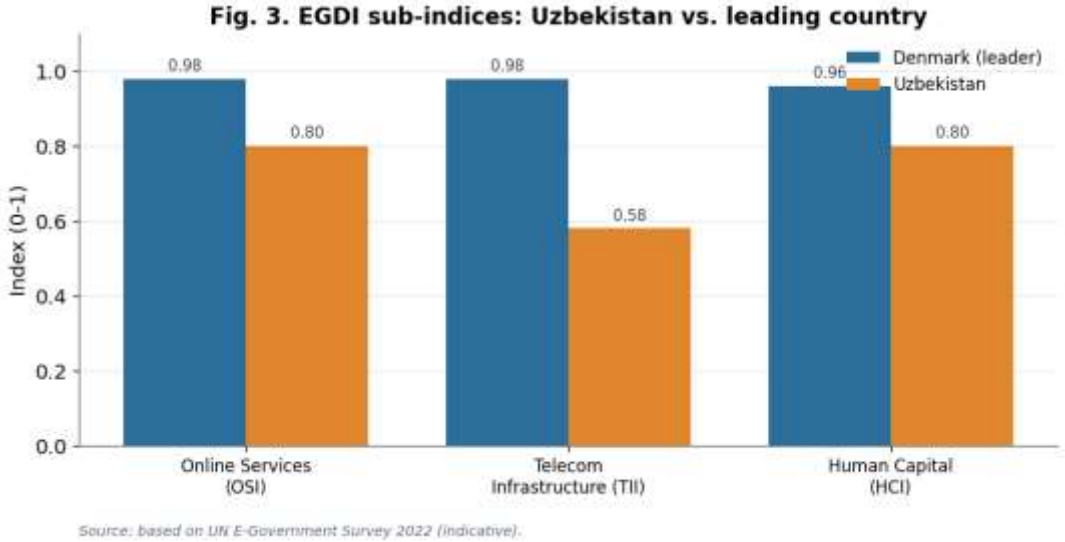


Figure 3 shows that Uzbekistan performs relatively well on the Human Capital Index (owing to high literacy), while the largest gap is in the Telecommunication Infrastructure Index. National priority should therefore be directed toward developing and expanding digital infrastructure, since advanced HR analytics or AI solutions cannot operate effectively on a weak infrastructure.[14] **Lessons Learned and Gap Analysis**

Summarizing the experience of leading countries yields several key lessons for Uzbekistan: consistent state policy and long-term strategy; an integrated approach (a single platform and the "once-only" principle); investment in human capital and digital skills; data protection and cybersecurity standards; phased implementation through pilot projects; and public–private partnership. The common thread is that the success of digital transformation depends not only on technology but on the supporting institutional environment — skilled personnel, a clear legal framework, a data culture, and the digital maturity of management.

Comparison with foreign experience reveals Uzbekistan's relative position across key dimensions (Figure 4). The largest gaps are in HR analytics (35 vs. 85) and systems integration (50 vs. 92), whereas the legal-framework gap is relatively small (Table 4). Given the country's high recent growth rate, resources should be concentrated on analytics and integration while leveraging the already relatively strong human-capital base.[15]

Fig. 4. Gap analysis: Uzbekistan vs. leading countries

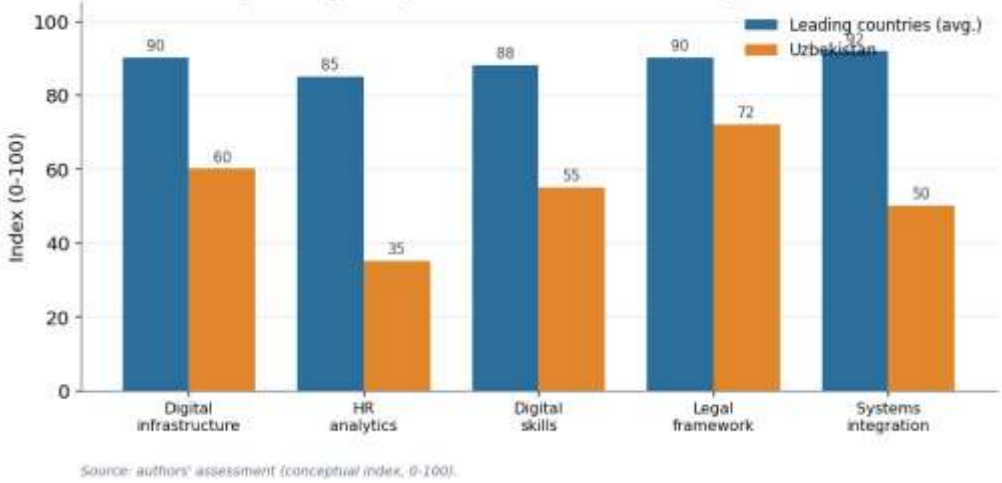


Table 4. Gap analysis: Uzbekistan vs. leading countries

Dimension	Leading countries	Uzbekistan	Priority task
Digital infrastructure	High	Medium	Expand infrastructure
HR analytics	Developed	Initial	Build analytical capacity
Digital skills	High	Medium	Upgrade workforce skills
Legal framework	Complete	Emerging	Refine the regulatory base
Systems integration	High	Low	Create a unified platform

4. Discussion

Application in Uzbekistan

Uzbekistan has advanced digitalization under the "Digital Uzbekistan 2030" strategy (Presidential Decree PF-6079, 2020), improving its international rankings; its EGDI rose from about 0.52 in 2016 to 0.73 in 2022. Modern digital HR solutions are adopted more actively in the banking, telecommunications, and IT sectors than in the public sector, where

unified standards, systems integration, and analytical capacity remain pressing tasks. Applying foreign experience therefore requires a phased, systematic approach (Table 5): foundation → integration → analytics → innovation, with continuous capacity building throughout.

Table 5. Mechanisms and phases for applying foreign experience in Uzbekistan

Phase	Key measures	Expected outcome	Horizon
1. Foundation	Legal base, standards, infrastructure	A single, solid basis	Short
2. Integration	Unified HR platform, linking systems	Data integrity	Medium
3. Analytics	HR analytics and dashboards	Evidence-based decisions	Medium
4. Innovation	Artificial intelligence and automation	Predictive management	Long
Continuous: capacity	Ongoing upgrading of digital skills	Sustainable development	Ongoing

A selective approach allows combining the best elements of different models: systems integration and the "once-only" principle from Estonia; state leadership and civil-service digital training from Singapore and South Korea; data-protection standards and social balance from Germany and the Nordics; and private-sector innovation and HR-analytics practices from the USA. Risks — misfit with local conditions, high initial cost, technological dependency, and workforce unpreparedness — should be mitigated through pilot projects, phasing, and localization. A SWOT analysis (Table 6) summarizes the internal and external factors.

Table 6. SWOT analysis: developing digital HRM in Uzbekistan

Strengths (S)	Weaknesses (W)
High literacy and a young population; strong political will; the "Digital Uzbekistan 2030" strategy.	Weak HR analytics and systems integration; shortage of skilled IT/HR specialists; infrastructure constraints.
Opportunities (O)	**Threats (T)**
Availability of advanced foreign experience; inflow of investment; regional digital cooperation and international support.	Cybersecurity risks; the digital divide; rapidly changing technological requirements.

At the institutional level, several measures can be recommended: designating a single body to coordinate digital HRM; developing unified HR-information-system standards for public bodies; introducing specialized higher-education programs in HR analytics and digital management; and expanding cooperation with international organizations and advanced countries for the exchange of experience. Together, these measures create a solid institutional foundation for digital transformation and should be implemented on a realistic timeline — foundation and legal reform in the short term (1–2 years), integration and analytics in the medium term (3–5 years), and AI-based solutions in the long term (5+ years).

5. Conclusions

The International practice has produced several models of digital HRM (market-driven, socially-regulated, digital-government, state-led, and scale-based) that differ mainly in the role of the state and the degree of regulation. The experience of leading countries demonstrates diverse approaches; Estonia's integrated digital-government model and Singapore's state leadership are among the most relevant for Uzbekistan. On

the EGDI, Uzbekistan (0.73 in 2022) still trails the leaders and some regional peers but has shown a strong growth trajectory, with the largest gap in telecommunications infrastructure. The gap analysis identifies HR analytics and systems integration as the priority areas for concentrating national resources.

Overall, the key to successfully applying foreign experience lies in critically analyzing it, adapting it to national conditions, and implementing technological, institutional, and human-capital measures in an integrated, systematic manner. A phased mechanism (foundation – integration – analytics – innovation) combined with continuous capacity building and a selective, hybrid model offers Uzbekistan a realistic pathway toward an effective digital HRM system.

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