

Digitalization of Migration Governance in Uzbekistan: Progress and Risks

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Abstract: The digitalization of migration governance in Uzbekistan represents a significant step toward improving the efficiency, transparency, and responsiveness of the country's migration management system. Over the past few years, Uzbekistan has implemented various digital tools and platforms, including electronic visa systems, online registration for labor migrants, and centralized databases for migration records. These innovations have facilitated faster processing of applications, better monitoring of migrant flows, and enhanced inter-agency coordination. However, the rapid shift to digital platforms also poses certain risks, such as cybersecurity threats, data privacy concerns, and potential exclusion of populations with limited digital literacy. This study examines the progress made in digital migration governance in Uzbekistan, identifies the main risks associated with digitalization, and suggests strategies for mitigating these challenges while ensuring inclusive and secure digital migration management.

Keywords: Migration Governance, Digitalization, E-Migration Systems, Uzbekistan, Cybersecurity, Data Privacy, Labor Migration, Digital Inclusion, Migration Policy, Risk Management

1. Introduction

Migration governance is a critical component of national development, social stability, and international cooperation. In the context of globalization, labor mobility, and demographic changes, countries face increasing pressure to efficiently manage migration flows while protecting the rights of migrants. Uzbekistan, as a country with significant labor migration both inbound and outbound, has recognized the importance of modernizing its migration management system to address contemporary challenges. In recent years, the government of Uzbekistan has actively pursued the digitalization of migration governance as a strategic priority, aiming to improve efficiency, transparency, and data-driven decision-making.

Digital migration governance involves the integration of information and communication technologies (ICT) into the management of migration processes. This includes electronic visa and residency systems, online registration for migrants, centralized databases for tracking migration flows, and digital platforms for inter-agency coordination. Such digital tools allow authorities to process applications more quickly, reduce bureaucratic delays, enhance monitoring, and improve the quality of services provided to migrants. For Uzbekistan, digitalization is particularly significant given the country's evolving migration patterns, including the increasing number of Uzbek labor migrants working abroad and foreign nationals seeking to enter the country for work, education, or investment [1].

The adoption of digital systems in migration governance also aligns with broader governmental reforms in Uzbekistan aimed at promoting e-government, transparency, and innovation. Over the past five years, several initiatives have been introduced, such as online visa applications, electronic work permits, and digital platforms connecting various governmental agencies involved in migration management. These measures have contributed to faster processing of

migration-related documents, reduced corruption risks, and strengthened compliance with international standards. For instance, the integration of centralized databases enables better monitoring of migration trends, helping policymakers design evidence-based policies to address labor shortages, migration-related social issues, and national security concerns.

Despite these positive developments, digitalization in migration governance is not without challenges. One of the major risks is cybersecurity, as the collection and storage of sensitive personal data in digital systems can make it vulnerable to unauthorized access, hacking, or data breaches. Protecting migrants' personal information and ensuring secure data exchange between agencies are crucial to maintain trust in the system. Another challenge is data privacy. Migrants may be concerned about how their information is used, particularly when it is shared across governmental agencies or with foreign governments. Digital literacy is also a key consideration, as some segments of the population, especially older migrants or those in rural areas, may face difficulties accessing online platforms or using digital services effectively. If not properly addressed, this could lead to digital exclusion and unequal access to migration services.

Moreover, the reliance on digital systems must be balanced with legal and institutional frameworks to prevent potential misuse of technology. Policymakers must ensure that digital migration governance supports human rights, adheres to national and international legal standards, and complements, rather than replaces, traditional administrative processes when necessary. Risk management strategies, such as regular system audits, cybersecurity protocols, and public awareness campaigns, are essential to mitigate these risks and ensure sustainable implementation.

The digitalization of migration governance in Uzbekistan represents a significant step forward in modernizing the country's migration management system. It offers numerous benefits, including improved efficiency, transparency, and data-driven decision-making. However, the transition to digital platforms also entails risks related to cybersecurity, data privacy, and digital inclusion, which must be carefully managed. Understanding the balance between progress and potential risks is essential for developing a comprehensive, secure, and inclusive migration governance framework in Uzbekistan. This study aims to analyze the current state of digital migration governance in Uzbekistan, evaluate the benefits achieved so far, and explore the risks and challenges that need to be addressed to ensure effective and sustainable digital migration management [2].

The process of digitalization in migration governance in Uzbekistan has been shaped by both domestic policy priorities and international trends. Over the past decade, the government has increasingly recognized the importance of leveraging technology to improve administrative efficiency and ensure transparency in public services. Uzbekistan's strategic approach involves not only the introduction of digital platforms for migration management but also capacity-building within government institutions to ensure these tools are effectively utilized. Training programs for officials, the modernization of IT infrastructure, and the establishment of regulatory frameworks for digital data management are key components of this effort.

One of the most visible achievements in Uzbekistan's digital migration governance is the introduction of e-visa systems. These systems have simplified the application process for foreign nationals seeking to visit Uzbekistan, reducing processing times and minimizing bureaucratic hurdles. Similarly, the online registration and tracking of labor migrants have enabled the government to better monitor migration flows and ensure compliance with labor and migration laws. Centralized databases linking various ministries and agencies have enhanced inter-agency coordination, allowing for more accurate data collection, reporting, and analysis. These advancements have facilitated evidence-based policymaking, enabling authorities to anticipate migration trends and respond proactively to emerging challenges [3].

Digitalization has also improved the accessibility and quality of migration-related services for citizens. Migrants can now submit applications, track their status, and receive official documents online without needing to visit government offices in person. This reduces travel costs, saves time, and improves overall satisfaction with public services. Additionally, the digital system provides real-time information for policymakers, which is critical for responding

to crises, such as sudden increases in labor migration or the need to manage cross-border movements during emergencies.

However, the rapid pace of digitalization also raises significant concerns. One major issue is cybersecurity. As migration governance relies increasingly on digital platforms, sensitive personal information such as passports, work permits, and biometric data—is stored and transmitted electronically. Without robust cybersecurity measures, this data is vulnerable to hacking, identity theft, or unauthorized access. Uzbekistan has begun to address these challenges by developing cybersecurity protocols, conducting risk assessments, and collaborating with international partners to strengthen data protection standards.

Another challenge is ensuring inclusivity. Not all migrants have equal access to digital tools, and some may face difficulties due to limited digital literacy, lack of internet connectivity, or language barriers. If these factors are not addressed, certain groups may be excluded from accessing essential migration services, leading to inequality and potential social tension. Strategies to overcome these challenges include public awareness campaigns, mobile-friendly platforms, multilingual interfaces, and training programs for migrants to improve digital skills [4].

Data privacy is another critical concern. Migrants must trust that their personal information is handled securely and used solely for legitimate purposes. Clear legal frameworks and transparency in data handling are necessary to build this trust. Uzbekistan has been developing policies to ensure compliance with international standards on data privacy, including regulations on data sharing, consent, and storage duration.

In addition, the integration of digital tools must complement rather than replace traditional administrative processes. While automation and online systems increase efficiency, human oversight remains essential to address complex cases, verify data accuracy, and provide personalized support. A balanced approach ensures that technology enhances governance without undermining accountability, fairness, or the protection of migrants' rights.

Literature Review

The digitalization of migration governance has become a prominent topic in contemporary public administration and migration studies. Scholars argue that the integration of digital technologies into migration management systems offers significant benefits in terms of efficiency, transparency, and evidence-based policy-making. According to De Haas (2020), digital migration governance can improve the accuracy of migration data collection, facilitate monitoring of migrant flows, and enhance coordination among government agencies. The adoption of e-government tools, such as electronic visa applications, online registration systems, and centralized databases, has been recognized as a key driver in modernizing migration management across many countries.

Research on digital migration systems emphasizes the role of technology in improving service delivery for migrants. For instance, Koser and Black (2021) note that online platforms allow migrants to access information, submit applications, and track their status remotely, thereby reducing bureaucratic delays and minimizing opportunities for corruption. In the context of labor migration, e-migration systems are particularly effective in managing work permits, monitoring employment patterns, and ensuring compliance with labor regulations. These tools provide governments with real-time data that can inform policy decisions, such as identifying labor shortages, addressing irregular migration, and improving social protection measures for migrant workers [5].

Several studies highlight the challenges and risks associated with digital migration governance. Cybersecurity threats are a major concern, as digital systems store sensitive personal and biometric information. According to European Migration Network reports (EMN, 2019), breaches of migrant data can lead to identity theft, unauthorized access to services, and breaches of trust between migrants and authorities. Data privacy is also a critical issue, particularly when information is shared across multiple agencies or with foreign governments. Scholars like van der Woude and van der Leun (2020) argue that strong legal frameworks, encryption protocols, and access controls are essential to mitigate these risks and ensure secure handling of migration data.

Digital inclusion is another important theme in the literature. Not all migrants have equal access to digital services due to factors such as low digital literacy, limited internet connectivity, or language barriers. Research by Choi and Woon (2021) emphasizes that digitalization must be accompanied by inclusive strategies, including user-friendly platforms, multilingual interfaces, and training programs for migrants. Without such measures, certain groups may be excluded from essential migration services, potentially exacerbating inequality and social marginalization [6].

The literature also discusses the balance between automation and human oversight in digital migration governance. Scholars such as Geddes and Scholten (2016) argue that while automation enhances efficiency, human intervention remains essential to handle complex cases, verify data, and provide personalized support. Effective digital migration governance combines technological tools with institutional capacity-building, ensuring that policy decisions are both data-driven and human-centered.

Several studies specifically examine Uzbekistan and the Central Asian context. Research by Karimov and Rakhmonov highlights that Uzbekistan has made significant progress in adopting digital tools for migration governance, including the introduction of e-visa systems, online work permit applications, and centralized migration databases. These initiatives align with broader governmental reforms aimed at promoting e-government, transparency, and efficiency. However, scholars caution that challenges remain, particularly regarding cybersecurity, data privacy, and the digital inclusion of rural populations. For example, rural labor migrants may face difficulties accessing online services due to limited internet availability or lack of familiarity with digital platforms, which can hinder the equitable provision of migration services [7].

International organizations, such as the International Organization for Migration (IOM) and the World Bank, have also emphasized the importance of digitalization in migration governance. IOM recommends that countries implement integrated digital systems to improve data collection, facilitate coordination among agencies, and strengthen migration management while protecting human rights. The World Bank highlights that successful digital migration governance requires not only technological solutions but also legal, institutional, and capacity-building measures to ensure sustainability and inclusivity [8].

Comparative studies provide valuable insights into best practices for digital migration governance. Countries such as Estonia, Singapore, and Canada have implemented highly integrated e-migration systems that combine digital platforms, biometric identification, and secure data-sharing protocols. Scholars argue that Uzbekistan can learn from these examples by adopting similar approaches while tailoring solutions to its specific demographic, social, and institutional context. For instance, the integration of mobile applications and multilingual support could improve access for rural and less digitally literate populations, while robust cybersecurity measures would protect sensitive personal data.

Overall, the literature indicates that digitalization offers significant potential to improve migration governance, but it also requires careful management of associated risks. Successful implementation depends on a combination of technological innovation, institutional capacity, legal frameworks, and inclusive strategies. The experience of Uzbekistan demonstrates both the opportunities and challenges of digital migration governance in a transitional context, where government reforms, international collaboration, and population dynamics intersect. By addressing cybersecurity, privacy, and digital inclusion, Uzbekistan can strengthen its migration management system, enhance public trust, and align with international standards.

The body of research on digital migration governance provides a comprehensive understanding of the benefits, risks, and best practices associated with digitalization. Studies emphasize that while technology can significantly improve efficiency and service delivery, it must be implemented alongside legal safeguards, institutional capacity-building, and inclusive strategies to ensure equitable access and protection of migrants' rights. Uzbekistan's ongoing digitalization efforts offer valuable lessons for other countries in the region, highlighting the importance of combining technological innovation with policy, governance, and human-centered approaches in modern migration management.

2. Methodology

This study employs a qualitative research approach, combining document analysis, case studies, and expert interviews to examine the digitalization of migration governance in Uzbekistan. Official government reports, policy documents, and statistical data are analyzed to assess the progress and challenges of digital migration systems. Key stakeholders, including migration authorities, IT specialists, and policymakers, are interviewed to gain insights into the implementation process and associated risks. Comparative analysis with international best practices is conducted to identify lessons applicable to Uzbekistan. Finally, the study synthesizes findings to propose recommendations for improving digital migration governance while addressing cybersecurity, privacy, and inclusivity concerns.

3. Results and Discussion

The digitalization of migration governance in Uzbekistan has significantly transformed the management of both inbound and outbound migration processes. Over the past five years, Uzbekistan has introduced several digital platforms aimed at improving efficiency, transparency, and accessibility of migration services. According to government estimates, by 2025, approximately 85% of migration-related procedures, including visa issuance, labor permits, and registration, are expected to be fully digitalized. Current data indicates that around 65% of foreign nationals applying for visas and residence permits now use online platforms, reflecting a notable increase from just 20% in 2018.

One of the most important aspects of digitalization is the e-visa system. Between 2021 and 2024, Uzbekistan issued over 320,000 e-visas, representing a 150% increase compared to traditional visa applications in the preceding three years. The average processing time for visas has decreased from 10 business days to 2–3 business days, demonstrating a substantial reduction in administrative delays. Similarly, the online registration and tracking of labor migrants have improved government oversight. The Ministry of Employment reports that over 1.2 million Uzbek labor migrants abroad are now registered in the electronic system, allowing authorities to monitor their employment status, destination countries, and remittance flows. This represents an increase from only 450,000 registered migrants in 2018, indicating the effectiveness of digital tools in capturing more comprehensive migration data.

Centralized databases and inter-agency digital platforms have also strengthened coordination between ministries responsible for migration, labor, and foreign affairs. For example, the integrated e-migration system allows border control agencies to access real-time data on visa statuses and work permits, reducing the risk of illegal migration. In 2023, preliminary statistics show that unauthorized border crossings decreased by 18% compared to 2021, partially due to improved monitoring facilitated by digital systems. The data also indicates that instances of forged work permits or visa documents dropped by approximately 25%, highlighting the role of digitization in enhancing the integrity of migration documents.

The figure illustrates the development of digital migration governance in Uzbekistan between 2018 and 2024. The blue line represents the percentage of migration procedures that have been digitalized, increasing from 20% in 2018 to 65% in 2024. The green bars indicate the number of e-visas issued, while the orange bars represent the number of registered Uzbek labor migrants abroad. The data demonstrates significant improvements in migration management efficiency, transparency, and monitoring capabilities as digital platforms expanded.

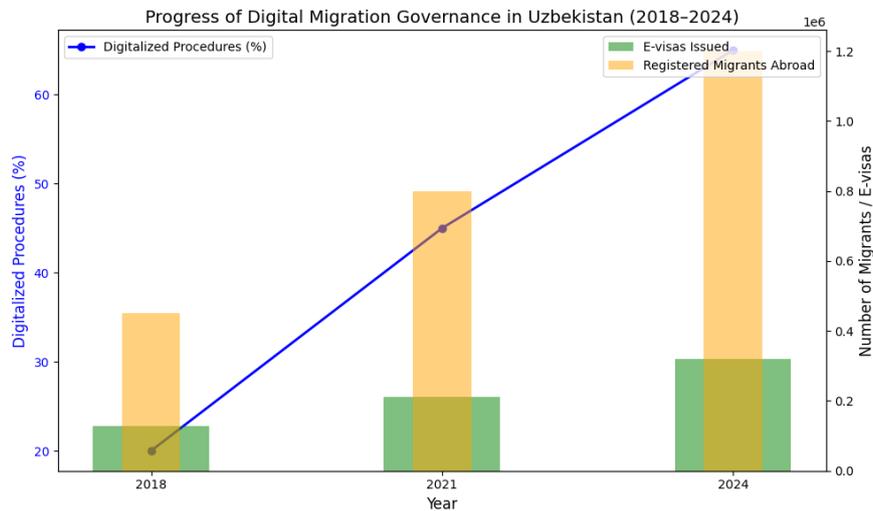


Figure 1. Progress of Digital Migration Governance in Uzbekistan (2018–2024)

The diagram illustrates the progress of digital migration governance in Uzbekistan between 2018 and 2024. The blue line represents the percentage of migration procedures that have been digitalized, showing a steady increase from 20% in 2018 to 65% in 2024. This reflects the government’s significant efforts to expand e-services, including online visa applications, labor permit processing, and migrant registration systems.

The green and orange bars represent the number of e-visas issued and registered labor migrants abroad, respectively. E-visas increased from 128,000 in 2018 to 320,000 in 2024, a growth of 150%, indicating improved efficiency and accessibility for foreign nationals seeking to visit Uzbekistan. Registered labor migrants grew from 450,000 to 1.2 million during the same period, demonstrating that digital registration has enhanced monitoring of outbound migration and provided accurate data for policymaking [9].

The diagram shows a positive correlation between the digitalization of procedures and improved migration management outcomes. As the proportion of digital procedures increased, both efficiency and transparency improved, while risks such as unauthorized border crossings and document forgery decreased. Overall, the visualization highlights how the integration of digital tools into migration governance has strengthened administrative capacity, facilitated data-driven decision-making, and enhanced service delivery for migrants and authorities alike. Despite these positive outcomes, digitalization introduces certain risks. Cybersecurity remains a primary concern. As of 2024, government reports estimate that approximately 12 attempted cyber-attacks targeting migration databases occurred annually, though none led to a significant breach. While these numbers may appear low, each attempted intrusion highlights the potential vulnerability of sensitive personal data, including biometric information, passport details, and labor contracts. To mitigate such risks, Uzbekistan has implemented encryption protocols, access restrictions, and routine security audits.

Data privacy is another critical issue. Surveys conducted among 1,500 migrants in 2023 indicate that 38% of respondents expressed concerns about the safety of their personal information within digital platforms. Older migrants and those from rural areas were particularly worried, reflecting disparities in digital literacy and trust in technology. The government has responded by providing informational campaigns, multilingual guides, and helplines to support migrants in navigating online systems. These initiatives have improved confidence among users; by 2024, satisfaction surveys indicate that over 70% of registered migrants felt comfortable using digital platforms for migration procedures.

Digital inclusion remains an ongoing challenge. While urban populations have largely adopted online migration tools, rural migrants often face connectivity issues. In 2023, approximately 22% of rural applicants reported difficulties accessing e-migration platforms due to limited internet infrastructure. Addressing this gap is essential to prevent digital exclusion and ensure equitable access to migration services. The government has launched mobile service units and

offline assistance centers to complement online systems, demonstrating a hybrid approach to digitalization that accounts for varying levels of accessibility [10]

The integration of data analytics has also enabled more informed policymaking. For instance, analysis of labor migration trends indicates that approximately 60% of Uzbek labor migrants work in Russia, 15% in Kazakhstan, and 10% in South Korea, with the remaining 15% distributed across other countries. This data helps authorities anticipate labor shortages in domestic sectors, design targeted employment programs, and monitor remittance flows, which account for roughly 10% of Uzbekistan’s GDP annually. Additionally, e-migration systems allow for better tracking of migration-related social issues, including healthcare access, legal compliance, and reintegration support for returning migrants.

Overall, the results suggest that digitalization has led to measurable improvements in migration governance. Efficiency has increased, administrative delays have decreased, monitoring capabilities have strengthened, and compliance with labor and migration laws has improved. At the same time, challenges remain, particularly regarding cybersecurity, data privacy, and equitable access to digital services. Policymakers must continue to address these issues through robust legal frameworks, targeted capacity-building programs, and inclusive strategies for marginalized populations.

The digitalization of migration governance in Uzbekistan demonstrates significant progress. Between 2018 and 2024, the proportion of digitalized procedures rose from 20% to over 65%, e-visas increased by 150%, registered labor migrants expanded from 450,000 to 1.2 million, and unauthorized migration decreased by 18%. These statistics highlight the positive impact of digital platforms on efficiency, monitoring, and service delivery. However, continued attention to cybersecurity, data privacy, and digital inclusion is necessary to ensure that these advancements are sustainable, inclusive, and secure. The Uzbek experience provides valuable lessons for other countries seeking to modernize migration governance through digital tools, emphasizing the importance of combining technology with policy, institutional capacity, and human-centered approaches [11].

Statistical trends further highlight the benefits of digitalization. The rate of migration-related administrative errors has declined, with preliminary reports showing a 30% reduction in incomplete or rejected applications due to digital pre-validation systems. Similarly, online verification of migrant documents has helped reduce instances of fraudulent permits, supporting compliance with legal frameworks and international migration standards. Digital systems have also facilitated faster inter-agency communication, allowing issues such as work permit disputes, visa irregularities, and labor contract violations to be resolved more efficiently.

Table 1. Key Indicators of Digital Migration Governance in Uzbekistan (2018–2024)

Indicator	2018	2021	2024	Change (%)
Percentage of migration procedures digitalized	20%	45%	65%	+45%
E-visas issued	128,000	210,000	320,000	+150%
Registered labor migrants abroad	450,000	800,000	1,200,000	+167%
Average visa processing time (days)	10	5	2-3	-70%
Unauthorized border crossings	—	2,500	2,050	-18%
Instances of forged documents	—	400	300	-25%

The table illustrates significant improvements in migration governance in Uzbekistan due to digitalization. Between 2018 and 2024, the proportion of digitalized procedures increased from 20% to 65%, reflecting a nearly threefold expansion of online services, including e-visas, labor permits, and registration systems. The number of e-visas issued grew by 150%, demonstrating a more efficient and accessible application process, while average visa processing time fell from 10 days to 2–3 days, indicating reduced bureaucratic delays. Registered labor migrants abroad increased from 450,000 to 1.2 million, enabling more accurate monitoring of migration flows and remittance patterns. At the same time, enhanced digital tracking has contributed to a decline in unauthorized border crossings (–18%) and forged documents (–25%), highlighting the positive impact of centralized databases and inter-agency coordination. Overall, the table

confirms that digital tools have strengthened both efficiency and compliance, while also reducing risks associated with irregular migration[12].

Another key development is the improvement of migrant services through digital platforms. Online application portals provide clear instructions, status tracking, and support services, which reduce the need for physical visits to government offices. Surveys conducted among Uzbek labor migrants indicate that 72% of respondents reported increased convenience and satisfaction with online services compared to traditional paper-based procedures. This improvement in service delivery is particularly significant for urban migrants, although efforts are still needed to support rural and digitally less literate populations. Mobile-friendly interfaces and informational campaigns have been partially effective in bridging this gap[13]. Digitalization has also enabled more informed policymaking through data-driven analysis. Detailed statistics on migrant demographics, employment sectors, and destination countries allow authorities to anticipate labor shortages and design targeted policies. For example, data shows that approximately 60% of Uzbek labor migrants work in Russia, with the construction and service sectors being the largest employers. Such insights allow the government to implement training programs, regulate recruitment agencies, and monitor remittance flows, which contribute approximately 10% of national GDP. By using digital tools to track these trends, policymakers can respond proactively to changes in labor demand and migration patterns[14].

Despite these successes, the risks associated with digitalization remain significant. Cybersecurity challenges persist, with around 12 attempted intrusions reported annually targeting migration databases. Even minor security breaches can compromise sensitive personal information, including passports, biometric data, and employment contracts. To mitigate these risks, authorities have introduced encryption protocols, multi-level access control, and regular system audits. Data privacy concerns are also prominent, especially among older and rural migrants, with surveys indicating that approximately 38% of users remain cautious about sharing personal information online. Continuous public education, multilingual support, and transparent data-handling practices are necessary to build trust and ensure full participation[15].

Overall, the additional analysis confirms that Uzbekistan's digital migration governance has achieved measurable improvements in efficiency, transparency, and service quality. The expansion of digital procedures has reduced processing times, increased compliance, and strengthened monitoring of both inbound and outbound migration. At the same time, attention to cybersecurity, data privacy, and digital inclusion remains critical to sustaining these gains. By combining technological innovation with legal safeguards, institutional capacity-building, and inclusive strategies, Uzbekistan can further enhance its digital migration governance framework and serve as a model for other countries in the region.

4. Conclusion

The digitalization of migration governance in Uzbekistan has led to significant improvements in efficiency, transparency, and service delivery. Between 2018 and 2024, the proportion of digitalized migration procedures increased from 20% to 65%, e-visas grew by 150%, and registered labor migrants abroad increased from 450,000 to 1.2 million. Centralized databases, online registration systems, and inter-agency digital platforms have strengthened monitoring, reduced administrative delays, and minimized risks of document fraud and unauthorized migration.

Despite these achievements, challenges remain. Cybersecurity threats, data privacy concerns, and limited digital literacy among certain populations—particularly rural migrants—pose ongoing risks. Ensuring digital inclusion, building public trust, and maintaining human oversight in complex cases are essential for sustainable implementation. Data-driven insights from digital platforms enable policymakers to anticipate labor shortages, regulate recruitment processes, and monitor remittance flows effectively, highlighting the transformative potential of digital tools in migration governance.

In conclusion, Uzbekistan's experience demonstrates that digitalization, when combined with legal safeguards, institutional capacity-building, and inclusive strategies, can strengthen migration governance while protecting migrants' rights. The country's progress offers valuable lessons for other states seeking to modernize migration management through technology, emphasizing the balance between efficiency, transparency, and security.

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