



Artificial Intelligence in Bangladesh's Legal System: Pathways to Smart and Efficient Justice

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Abstract: This study examines the integration of Artificial Intelligence (AI) into Bangladesh's judicial system, aiming to identify pathways toward achieving Smart and Efficient Justice under the Smart Bangladesh Vision 2041. The escalating case backlog, which rose from approximately 3.68 million in 2021 to over 4.65 million by mid-2025, underscores the pressing need for timely, accessible, and efficient judicial services. The study employs a normative policy analysis combining document review and comparative literature, including the draft National Artificial Intelligence Policy (2024), the National Strategy for Artificial Intelligence (2020), and international benchmarks such as India's e-Courts Project, the UK's ethical AI guidelines, and Nepal's e-justice initiatives. This approach evaluates institutional readiness and identifies gaps in policy, human resources, and technological infrastructure. Findings reveal a disconnect between ambitious AI policy frameworks and practical implementation, with key barriers including regulatory limitations, insufficient AI literacy among judicial actors, workforce shortages, and ethical concerns such as algorithmic bias, data privacy risks, and multilingual processing challenges. The study contributes a contextualized roadmap for AI adoption in Bangladesh's judiciary, integrating global ethical standards, including UNESCO's Recommendation on the Ethics of Artificial Intelligence, with local institutional realities. Recommendations encompass investment in multilingual AI systems, capacity-building programs, public-private partnerships, and robust governance mechanisms. These measures are expected to reduce case backlogs, enhance access for marginalized populations, and promote a more efficient, inclusive, and responsive judicial system, advancing Smart Justice in Bangladesh.

Keywords: Artificial Intelligence; Bangladesh Judiciary; Smart Justice; Ethical AI; Judicial Reform.



Introduction

The administration of justice constitutes one of the fundamental pillars of a democratic state, ensuring that legal rights are protected, and disputes are resolved in a fair and timely manner. However, in many developing countries, the judicial system faces significant structural challenges that hinder its effectiveness and accessibility.¹ One of the most pressing examples can be observed in the judiciary of Bangladesh, where an overwhelming number of pending cases, combined with limited institutional resources, has created a persistent crisis in the delivery of justice. As of June 30, 2025, more than 4.65 million cases remained pending across all levels of courts, reflecting a judicial backlog that has accumulated over decades and continues to grow each year.² Such conditions not only delay the resolution of legal disputes but also weaken public trust in the legal system and undermine the broader principles of justice and the rule of law.

The magnitude of this challenge becomes more apparent when examining the structural limitations within the judiciary. With approximately 2,307 judges serving a population exceeding 170 million people, the judge-to-population ratio in Bangladesh stands at roughly 1:78,000, one of the lowest in South Asia. This imbalance between judicial demand and institutional capacity places immense pressure on courts, resulting in prolonged litigation processes that often extend for years or even decades. Land disputes, family cases, and criminal proceedings are particularly affected, creating social and economic consequences for litigants who rely on the judicial system to resolve conflicts.³ In rural communities, where legal awareness and access to legal assistance remain limited, these delays further deepen social inequalities and restrict citizens' access to justice.

Beyond the shortage of judicial personnel, many of the inefficiencies in the Bangladeshi legal system stem from administrative and procedural limitations. A significant portion of judicial processes still relies on manual documentation, paper-based record keeping, and traditional case management practices. These outdated mechanisms increase the likelihood of procedural delays, administrative errors, and inefficiencies in case tracking. Consequently, judges and court staff spend considerable time performing routine administrative tasks rather than focusing on substantive legal analysis and adjudication.⁴ Such systemic constraints highlight the urgent need for institutional reforms capable of enhancing judicial efficiency while maintaining the principles of fairness and due process.

¹ Md Jahirul Islam, Masahiro Suzuki, and Nurunnahar Mazumder, 'Promoting Access to Justice in Bangladesh: Towards a Hybrid Justice Model', *International Journal of Law, Crime and Justice* 77 (June 2024): 100655, <https://doi.org/10.1016/j.ijlcj.2024.100655>.

²The Daily Star, *Courts Grapple with Shortage of Judges*, (bangladesh), 8 September 2025, <https://www.thedailystar.net/news/bangladesh/news/courts-grapple-shortage-judges-3981411>.

³ Mohammad Saiful Islam, 'Fundamental Values of Administration of Justice: An Appraisal of the Dispensation of Justice in Bangladesh', *IIUC Studies* 21, no. 1 (2024): 67–90, Bangladesh, <https://doi.org/10.3329/iiucs.v21i1.85085>.

⁴ Mohammad Abu Taher and Siti Zaharah Jamaluddin, 'Enhancing Access to Justice Through E-Judiciary In Bangladesh: A Study', *UUM Journal of Legal Studies* 13, no. 2 (July 2022): 317–44, <https://doi.org/10.32890/uumjls2022.13.2.13>.

In recent years, technological innovation has emerged as a promising avenue for addressing structural inefficiencies in judicial systems around the world.⁵ Among these innovations, Artificial Intelligence (AI) has gained particular attention for its potential to transform legal administration and judicial governance.⁶ AI refers to computational systems capable of performing tasks that typically require human intelligence, such as pattern recognition, data analysis, natural language processing, and predictive modeling.⁷ Within the legal domain, AI technologies can support case management automation, legal document analysis, digital evidence organization, and predictive analytics that assist judges and legal professionals in evaluating legal patterns and precedents.⁸ Importantly, the role of AI in judicial systems is not to replace human decision-making but rather to augment judicial capacity by providing data-driven insights that improve efficiency and transparency.⁹

The potential integration of AI into Bangladesh's legal system aligns with the broader national development agenda articulated in the Smart Bangladesh Vision 2041.¹⁰ This strategic initiative seeks to transform Bangladesh into a technologically advanced and knowledge-based society through digital governance, innovation, and data-driven public services.¹¹ Within this framework, the concept of "Smart Justice" has emerged as a key component of institutional modernization. Smart Justice refers to the integration of digital technologies—including AI, big data, and automated systems—into judicial administration to improve efficiency, transparency, accountability, and accessibility. For Bangladesh, the adoption of such technologies represents not only a technical reform but also a broader institutional transformation aimed at strengthening the rule of law in the digital era.

Despite the increasing global interest in AI-assisted justice systems, academic research examining their application within the Bangladeshi judicial context remains limited and fragmented. Several studies have begun exploring the role of technology in legal services and judicial administration, yet these investigations often focus on narrow aspects of technological implementation rather than providing a comprehensive analysis of systemic transformation.

⁵ Edi Mulyono and Mahmoud Mohamed Ali Mahmoud Edris, 'From Jurisprudence to Algorithms: The Role of Artificial Intelligence in Contemporary Sharia Financial Decision-Making', *Nusantara: Journal of Law Studies* 4, no. 2 (October 2025): 129–142, <https://doi.org/10.5281/zenodo.17341980>.

⁶ Muh Fadli Faisal Rasyid et al., 'Cybercrime Threats and Responsibilities: The Utilization of Artificial Intelligence in Online Crime', *Jurnal Ilmiah Mizani: Wacana Hukum, Ekonomi Dan Keagamaan* 11, no. 1 (April 2024): 49–63, <https://doi.org/10.29300/mzn.v11i1.3318>.

⁷ Engkos Kosasih, Mohammad Rindu Fajar Islamy, and Rizzaldy Satria Wiwaha, 'Artificial Intelligence in the Era of Society 5.0: Compromising Technological Innovation Through the Wasathiyah Approach within the Framework of Islamic Law', *Al-Istinbath: Jurnal Hukum Islam* 9, no. 2 (September 2024): 551–72, <https://doi.org/10.29240/jhi.v9i2.9596>.

⁸ Hamza Abed Al-Karim Hammad, 'Artificial Intimacy and Islamic Jurisprudence: Legal and Ethical Perspectives on Sex Robots', *JURIS (Jurnal Ilmiah Syariah)* 24, no. 1 (February 2025): 29–38, <https://doi.org/10.31958/juris.v24i1.11432>.

⁹ Sukindar et al., 'Legal Innovation in Religious Courts: The Potential Utilization of Artificial Intelligence (AI) in Resolving Contemporary Cases', *MILRev: Metro Islamic Law Review* 3, no. 2 (December 2024): 388–410, <https://doi.org/10.32332/milrev.v3i2.8199>.

¹⁰ UNESCO, 'Recommendation on the Ethics of Artificial Intelligence', UNESCO, 23 November 2021, <https://unesdoc.unesco.org/ark:/48223/pf0000381137>.

¹¹ The Daily Star, *Courts Grapple with Shortage of Judges*.

For example, Pal and Sarker (2023) examined digital governance initiatives within Bangladesh and highlighted the potential of technological tools to enhance public service delivery, including judicial administration.¹² However, their study primarily focused on policy frameworks rather than the operational implications of AI adoption within court processes. Similarly, Tusher (2025) explored the use of AI in legal assistance and summary judicial procedures, demonstrating how algorithmic tools could assist legal professionals in managing large volumes of legal data. While valuable, this research concentrated mainly on specific legal applications and did not fully address the broader institutional challenges associated with AI integration in judicial decision-making.¹³

International scholarship has also examined AI-based judicial systems in several countries, such as Estonia's experimental AI judge for small claims disputes and Brazil's use of predictive analytics for case classification and judicial workload management. These studies highlight the transformative potential of AI technologies in improving judicial efficiency and reducing case backlogs. However, most of this literature focuses on technologically advanced jurisdictions with relatively strong digital infrastructures and institutional capacity. As a result, the insights derived from these contexts may not be fully transferable to developing judicial systems such as Bangladesh, where infrastructural limitations, regulatory gaps, and concerns about algorithmic bias remain significant challenges. This discrepancy reveals an important research gap in the existing literature. While previous studies have examined technological innovations in judicial systems and discussed the theoretical potential of AI in legal governance, few have provided a holistic and context-sensitive analysis of how AI could be responsibly integrated into Bangladesh's judiciary. Specifically, there is limited scholarly attention to the intersection between technological innovation, institutional capacity, ethical considerations, and national policy frameworks in the Bangladeshi legal context. Addressing this gap requires a comprehensive analytical approach that not only examines the opportunities offered by AI technologies but also critically evaluates their potential risks, including algorithmic bias, lack of transparency, accountability concerns, and the possibility of reinforcing existing inequalities in access to justice.

Building upon this gap, the novelty of the present study lies in its integrated analytical framework that combines three key perspectives. First, it situates the discussion within Bangladesh's national digital transformation agenda, particularly the Smart Bangladesh Vision 2041 initiative, thereby linking technological innovation with broader governance reforms. Second, it examines the ethical and regulatory dimensions of AI adoption in judicial systems, drawing upon international standards such as those outlined by UNESCO in its global framework for ethical AI governance. Third, the study incorporates empirical and contextual insights regarding the structural realities of Bangladesh's judiciary, including case backlog dynamics, institutional capacity limitations, and access-to-justice concerns. Through this multidimensional approach, the research provides a more comprehensive understanding of how AI can be implemented responsibly and effectively within the Bangladeshi legal system.

¹² Pramath Chandra Sarker Subrata Kumer Pal, *SMART Bangladesh Vision 2041: Concept of a Sustainable Developed Country*, 12, no. 1 (2023): 67–81, <https://doi.org/10.5296/emsd.v12i1.20666>.

¹³ Tanvir Ahmed Tusher, *Cost-Effective and Accessible Justice: AI Integration in Summary Trials of Bangladesh*, 2 September 2025, <https://doi.org/10.2139/ssrn.5487026>.

Based on these considerations, the central research question guiding this study is: How can artificial intelligence be responsibly integrated into Bangladesh's judiciary to address systemic inefficiencies and enhance equitable access to justice while navigating ethical, institutional, and practical constraints? This question seeks to explore not only the technical feasibility of AI integration but also the broader governance and policy implications associated with the digital transformation of judicial institutions. The significance of this research lies in its potential contributions to both academic scholarship and policy development. From an academic perspective, the study expands the growing body of literature on technology-enabled judicial reform, particularly in the context of developing countries where institutional constraints and digital transformation intersect in complex ways. By providing a context-specific analysis of AI integration in Bangladesh's judiciary, the research contributes to comparative discussions on digital justice and legal innovation. From a policy standpoint, the findings offer insights for policymakers, legal practitioners, and judicial administrators seeking to design technology-driven reforms that improve efficiency while safeguarding fundamental legal principles such as fairness, transparency, and human oversight. Ultimately, the integration of artificial intelligence into judicial systems should be understood not as a replacement for human judgment but as a supportive mechanism that enhances the capacity of legal institutions to deliver justice more efficiently and equitably. When implemented responsibly, AI technologies can empower judges, lawyers, and citizens by improving case management, reducing administrative burdens, and facilitating greater access to legal information. For countries like Bangladesh, where judicial delays continue to challenge the realization of timely justice, the strategic adoption of AI may represent a crucial step toward building a smarter, more transparent, and more inclusive legal system in the digital age.

Method

This study adopts a qualitative, normative policy research approach to critically analyze the integration of Artificial Intelligence (AI) into Bangladesh's judicial system within the broader framework of Smart Justice. The research emphasizes a documentary and comparative literature analysis, drawing on policy documents such as the draft National Artificial Intelligence Policy (2024), the National Strategy for Artificial Intelligence (2020), judicial reports, and relevant scholarly articles from both local and international contexts. This approach allows the study to systematically explore institutional readiness, technological infrastructure, ethical considerations, and the alignment of AI applications with national digital transformation agendas.

Data were collected through document review and content analysis, focusing on policy texts, official reports, and peer-reviewed journal articles that discuss AI implementation in judiciaries worldwide and in Bangladesh. Data analysis employed thematic coding, where key themes such as institutional capacity, ethical challenges, human resource readiness, and technology adoption were identified, compared, and synthesized to develop a contextualized understanding. Validation of findings was ensured through triangulation by cross-checking multiple sources, including government reports, international benchmarks, and academic literature, to maintain credibility, reliability, and relevance.¹⁴ The methodology ensures a

¹⁴ Matthew B. Miles and A. Michael Huberman, *Analisis Data Kualitatif: Buku Sumber Tentang Metode-Metode Baru* (Jakarta: Universitas Indonesia Press, 2014).

comprehensive, evidence-based assessment of AI's potential to enhance efficiency, accessibility, and equity in Bangladesh's judicial system.

Results and Discussion

Global and Regional Benchmarking of AI in Judicial Systems

Globally, AI in legal systems has progressed from basic automation to advanced predictive tools, offering lessons for institutional readiness, regulatory frameworks, and human resource capacity. For instance, India's e-Courts Project Phase III employs machine learning (ML) and natural language processing (NLP) for case management and timeline forecasting, significantly reducing administrative burdens despite ongoing concerns about algorithmic bias (Ministry of Law and Justice, India, 2023; Surden, 2019).¹⁵ In contrast, the United Kingdom permits AI for drafting and summarization but prohibits its use in core judicial analysis to ensure human oversight.¹⁶ The European Union's AI Act classifies legal AI as high-risk, mandating bias checks and transparency,¹⁷ while predictive justice studies highlight opacity issues in algorithms trained on historical data (Kleinberg et al., 2018).¹⁸ In South Asia, Pakistan's Supreme Court requires fairness testing for AI, signaling a regional emphasis on accountability.¹⁹

Benchmarking Bangladesh against its neighbors reveals gaps in institutional readiness and implementation. India demonstrates stronger execution with operational AI tools in the judiciary, outpacing Bangladesh's policy-focused but weakly implemented approach.²⁰ Nepal's draft Digital Judiciary Strategy (2023) proposes AI and blockchain for dispute resolution, though implementation lags.²¹ Sri Lanka advances with AI-driven tools such as Ceylon LawMate to support justice.²² These comparisons position Bangladesh as trailing in regulatory maturity and capacity, underscoring the need for tailored AI adoption that addresses local cultural and linguistic contexts while building on global best practices to enhance institutional effectiveness.

¹⁵ Harry Surden, 'Artificial Intelligence and Law: An Overview', *Georgia State University Law Review* 35, no. 4 (2019): 1305–1337.

¹⁶ 'Judiciary of England and Wales, Artificial Intelligence (AI) Judicial Guidance', 12 December 2023.

¹⁷ 'European Union, Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act)', in *Official Journal of the European Union* (EU, 2024), 1–144.

¹⁸ Jon Kleinberg, 'Discrimination in the Age of Algorithms', *Journal of Legal Analysis* 10 (2018): 113–74, <https://doi.org/10.1093/jla/laz001>.

¹⁹ *Nuance, Moral Judgment and Equity: AI Must Not Replace Critical Human Role: SC*, n.d.

²⁰ 'Artificial Intelligence (AI) in Indian Judiciary', *Drishiti Judiciary*, 28 May 2024, <https://www.drishitijudiciary.com/editorial/artificial-intelligence-ai-in-indian-judiciary>.

²¹ 'Digital Justice in Nepal: A South Asian Perspective on Legal-Tech Integration', *Research Trends Journal*, 2025, <https://researchtrendsjournal.com/counter/d/3-2-6/3-2-6.1.pdf>.

²² S. Perera N. Wickramasinghe, 'Artificial Intelligence-Driven Digitization of Legal System in Sri Lanka', *researchgate*, 2025, https://www.researchgate.net/publication/393172618_Artificial_intelligence-driven_digitization_of_legal_system_in_Sri_Lanka_-_A_challenging_approach.

Empirical Challenges in Bangladesh's Judicial System and Justification for AI Adoption

Bangladesh's judiciary, rooted in British Common Law and governed by the Constitution, faces systemic interconnections among case backlogs, corruption, unequal access to justice, and digital constraints—empirical findings that strongly justify the use of AI as a supportive tool. Over 3.7 million pending cases create chronic delays, compounded by corruption affecting 56.8% of dealings.²³ Unequal access disproportionately impacts rural populations due to language barriers (Bangla-dominant lower courts) and costs.²⁴ The COVID-19 pandemic exposed these vulnerabilities but accelerated virtual hearings via the "Use of Information and Communication Technology by Courts Ordinance" (2020), disposing of thousands of cases while revealing digital divides and limited technological enhancement.²⁵ These findings demonstrate that manual processes and infrastructure deficits erode public confidence and efficiency.²⁶ AI adoption is thus empirically warranted as a decision-support mechanism to alleviate backlogs, improve triage, and bridge access gaps, provided it maintains human judicial authority.

Feasibility, Risks, and Normative Boundaries of AI Applications in Bangladesh

AI holds transformative potential for Bangladesh's judiciary through targeted applications, balanced by feasibility assessments, risk trade-offs, and the normative principle that AI serves as a decision-support system rather than a substitute for judicial authority. Legal Research and Document Automation — Large language models (LLMs) like GPT2-UKIL-EN, trained on 595 Bangladeshi acts, enable efficient semantic analysis and contract review in hours rather than days.²⁷ Feasibility is high due to localized training, but risks include data bias and over-reliance; human validation mitigates these while respecting judicial independence. Predictive Analytics and Case Management — Pattern-based outcome predictions aid triage and backlog reduction, drawing from

²³ '3.7 Million Cases in Backlog in Bangladesh Courts', *Dhaka Tribune*, 16 July 2020.

²⁴ 'Can Bangladesh's Judiciary Get on the Right Track Under the Interim Government?', *The Diplomat*, n.d., <https://thediplomat.com/2024/11/can-bangladeshs-judiciary-get-on-the-right-track-under-the-interim-government/> (discussing ongoing issues of unequal access, rural-urban divides, language barriers in lower courts, and associated costs).

²⁵ 'Initiation of Virtual Court System during COVID-19 Pandemic and E-Judiciary: Challenges and Way Forward', *Daengku Journal*, 2021.

²⁶ *National Strategy for Artificial Intelligence – Bangladesh* (Dhaka, ICT Division: Government of the People's Republic of Bangladesh, Information and Communication Technology Division, 2020),

https://ictd.gov.bd/sites/default/files/files/ictd.portal.gov.bd/legislative_information/c2fafbbe_599c_48e2_bae7_bfa15e0d745d/National%20Strategy%20for%20Artificial%20Intelligence%20-%20Bangladesh%20.pdf (highlighting infrastructure deficits, manual processes, and the need for digital efficiency to restore public trust).

²⁷ Mst Rafia Islam Azmine Toushik Wasi, Wahid Faisal Mahathir Mohammad Bappy, 'Exploring Possibilities of AI-Powered Legal Assistance in Bangladesh through Large Language Modeling', *Computer Science* 2410.17210 Search..., no. 1 (October 2024), arXiv preprint arXiv:2410.17210, 2024, <https://arxiv.org/pdf/2410.17210.pdf> (describing GPT2-UKIL-EN trained on 595 Bangladeshi acts for semantic legal analysis).

India's experience.²⁸ Feasibility depends on quality data validation; risks involve bias amplifying inequalities, necessitating ethical safeguards and human oversight. E-Judiciary and Access Enhancement — AI chatbots and translation tools democratize access for marginalized litigants by providing Bangla translations and cost reductions.²⁹ Stakeholder benefits include reduced judicial workload and streamlined preparation for lawyers.³⁰ Risks center on digital divides and require infrastructure investments.

The Supreme Court's virtual hearings initiative (May 2020 onward) mitigated lockdown delays but highlighted structural limitations in regulatory preparedness, digital infrastructure, and access equity.³¹ This case analytically demonstrates the potential for AI to automate scheduling, transcription, and translation in future crises, while emphasizing post-pandemic lessons: strengthening digital readiness and addressing divides to enable sustainable AI integration. AI implementation risks perpetuating biases that could violate constitutional equality (Article 27) and due process (Article 31), while inadequate data protection threatens privacy (Article 43).³² The National AI Policy (2024) offers guidelines, but weak enforcement exacerbates vulnerabilities.³³ These challenges carry concrete legal implications, requiring robust safeguards that respect constitutional rights.

Discussion: Toward a Contextualized Smart Justice Framework for Bangladesh

Drawing from the findings, AI integration must be ethical, constitutional, and realistic. A tailored Smart Justice framework prioritizes decision-support AI, localized models, and phased reforms:

- Short-term — Pilot AI tools for legal research and virtual enhancements, building on existing datasets.³⁴
- Medium-term — Develop regulations, address skills gaps, and mitigate biases through transparency.
- Long-term — Achieve full e-judiciary integration by 2041, aligning with Smart Bangladesh Vision and SDGs for inclusive institutions.³⁵

²⁸ *AI in Judicial Processes: Transforming India's Legal System*, n.d.

²⁹ M. Hossain, 'An Overview of Bangladesh National Artificial Intelligence Policy 2024', *The Daily Star*, 2024, <https://www.thedailystar.net/law-our-rights/law-vision/news/overview-bangladesh-national-artificial-intelligence-policy-2024-3590351>.

³⁰ S. Rahman, *AI-Enhanced Legal Professionals in Bangladesh: The Time Is Now* (Dhaka Bar Association, 2024), <https://dhakabarassociation.com/site/news-details/94>.

³¹ 'Virtual Court: A Visual Ray of Responsive Judiciary in Bangladesh', *Lawyers Club Bangladesh*, 21 May 2020, <https://lawyersclubbangladesh.com/en/2020/05/21/virtual-court-a-visual-ray-of-responsive-judiciary-in-bangladesh/>.

³² 'Artificial Intelligence 2024 - Bangladesh', *Chambers and Partners Global Practice Guides*, 2024, <https://practiceguides.chambers.com/practice-guides/artificial-intelligence-2024/bangladesh/trends-and-developments> (discussing constitutional risks under Articles 27, 31, and 43).

³³ M. Hossain, 'An Overview of Bangladesh National Artificial Intelligence Policy 2024'.

³⁴ Azmine Toushik Wasi, Wahid Faisal, 'Exploring Possibilities of AI-Powered Legal Assistance in Bangladesh through Large Language Modeling'.

³⁵ *Chambers and Partners Global Practice Guides*, 'Artificial Intelligence 2024 - Bangladesh'.

To operationalize the responsible integration of artificial intelligence within the judiciary, this study proposes a contextualized Smart Justice framework tailored to the institutional realities of Bangladesh. As presented in Table 1, the framework adopts a phased reform strategy consisting of short-term experimentation, medium-term institutionalization, and long-term systemic transformation. The short-term phase focuses on piloting AI-assisted tools for legal research and case management, enabling courts to adapt to technological innovation gradually. The medium-term phase emphasizes regulatory development, capacity building, and transparency mechanisms to ensure that AI adoption remains ethically accountable and institutionally sustainable. Finally, the long-term phase envisions a fully integrated e-judiciary ecosystem aligned with national digital governance initiatives and broader development agendas.

Table 1. Contextualized Smart Justice Framework for Bangladesh

Phase of Reform	Strategic Focus	AI Applications	Institutional Requirements	Expected Impact
Short-Term (Pilot Phase)	Introduction of AI-assisted judicial tools and digital experimentation in selected courts.	AI-assisted legal research tools, automated document classification, virtual court support systems, and AI-based case tracking.	Initial digital infrastructure, digitization of court records, collaboration with legal tech developers, and pilot training programs for judges and court staff.	Reduction in administrative workload, faster legal research processes, and improved management of case files and court documentation.
Medium-Term (Institutionalization Phase)	Development of regulatory frameworks and institutional capacity for responsible AI use in judicial processes.	Advanced case management systems, predictive analytics for case scheduling, and AI-assisted document summarization.	Establishment of legal regulations governing AI use, transparency and explainability mechanisms, bias mitigation protocols, and professional capacity building for judicial actors.	Improved judicial efficiency, more transparent decision-support processes, reduced procedural delays, and strengthened accountability mechanisms.
Long-Term (Smart Justice Ecosystem)	Full integration of AI within the national e-judiciary system is aligned with digital	Integrated AI-powered judicial platforms, national legal data repositories,	Comprehensive digital infrastructure, national judicial data governance framework,	A fully digitized and efficient judiciary capable of reducing case backlog,

governance strategies.	AI-supported legal assistance systems for citizens, and automated administrative processes.	continuous oversight mechanisms, and alignment with national digital transformation policies.	expanding access to justice, and supporting inclusive and transparent legal governance.
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Source: Author's interpretation

Table 1 presents a contextualized Smart Justice framework designed to guide the responsible integration of artificial intelligence within the judiciary of Bangladesh through a phased and adaptive reform strategy. The framework consists of three progressive stages. The short-term phase emphasizes pilot initiatives that introduce AI-assisted tools for legal research, document classification, and case tracking in selected courts, supported by initial digitization efforts and training for judicial personnel. The medium-term phase focuses on institutional consolidation through the development of regulatory frameworks, transparency mechanisms, and capacity-building programs to ensure that AI technologies operate ethically and effectively within judicial processes. Finally, the long-term phase envisions the establishment of a fully integrated digital judiciary ecosystem, where AI-supported platforms, national legal data infrastructures, and automated administrative systems enhance judicial efficiency and accessibility. This long-term transformation aligns with the national digital development agenda articulated in Smart Bangladesh Vision 2041, which seeks to strengthen inclusive, transparent, and technologically advanced public institutions. Together, these stages illustrate how AI can be gradually and responsibly implemented to reduce case backlogs, improve court administration, and expand equitable access to justice while maintaining strong ethical safeguards and human judicial oversight.

The persistent backlog of cases and procedural delays within the judicial system of Bangladesh have prompted increasing discussions about the role of technology in reforming legal institutions. While structural reforms such as increasing the number of judges and improving court infrastructure remain important, these measures alone may not be sufficient to address the scale and complexity of the challenges faced by the judiciary. In this context, artificial intelligence (AI) has emerged as a promising instrument capable of supporting judicial efficiency and improving access to justice. However, the successful integration of AI into judicial systems requires a cautious and responsible approach that balances technological innovation with ethical safeguards, institutional readiness, and the fundamental principles of justice.³⁶ A responsible integration strategy must begin by clearly defining the role of AI within the judiciary. Rather than replacing human decision-making, AI should function as a supportive tool that assists judges, lawyers, and court administrators in managing complex legal processes. The most immediate and practical application of AI lies in administrative and procedural functions that currently consume significant judicial resources. For instance, AI-driven case management systems can automatically classify cases, track procedural timelines, and flag delays in litigation. By organizing and prioritizing cases based on urgency and legal category, such

³⁶ Azmine Toushik Wasi et al., 'Exploring Possibilities of AI-Powered Legal Assistance in Bangladesh through Large Language Modeling', arXiv:2410.17210, preprint, arXiv, 22 October 2024, <https://doi.org/10.48550/arXiv.2410.17210>.

systems could significantly reduce the administrative burden on court staff and enable judges to devote more attention to substantive legal reasoning. In jurisdictions experiencing massive case backlogs, automated case-sorting technologies have proven effective in streamlining judicial workflows and minimizing procedural inefficiencies.³⁷

Another important area where AI can contribute to judicial modernization is legal document analysis. Courts in Bangladesh continue to rely heavily on paper-based documentation and manual record-keeping, which often leads to inefficiencies in document retrieval and evidence examination. AI-powered natural language processing tools could assist in scanning, organizing, and summarizing legal documents, thereby allowing judges and lawyers to identify relevant legal arguments more quickly. In complex litigation involving extensive evidence and documentation, these technologies could reduce the time required for case preparation and facilitate more informed judicial deliberation. Importantly, such systems should be designed to function as analytical assistants rather than decision-makers, ensuring that final judgments remain firmly within the authority of human judges.³⁸

AI technologies may also enhance access to justice by expanding legal assistance services, particularly for marginalized communities. In rural areas of Bangladesh, many citizens face significant barriers to legal information, including geographic distance from courts, limited financial resources, and low levels of legal literacy. AI-based legal information platforms could provide simplified explanations of legal procedures, help individuals understand their rights, and guide them through basic legal processes. Chat-based legal assistance systems, for example, could offer preliminary guidance on filing complaints, preparing legal documents, or accessing mediation services. While such systems cannot replace professional legal advice, they can serve as an important first point of contact for individuals who might otherwise be excluded from the formal justice system. Despite these potential benefits, the integration of AI into judicial systems raises significant ethical concerns that must be carefully addressed. One of the most widely discussed risks is algorithmic bias. AI systems trained on historical legal data may unintentionally reproduce patterns of bias that exist within past judicial decisions. If not carefully monitored, such biases could influence case classification, risk assessment, or legal predictions in ways that disadvantage certain groups. To mitigate this risk, the design and deployment of judicial AI systems must adhere to internationally recognized ethical frameworks, including those promoted by organizations such as UNESCO in its global guidelines on artificial intelligence governance. These frameworks emphasize principles such as transparency, accountability, fairness, and human oversight, all of which are essential in safeguarding the integrity of judicial processes.³⁹

³⁷ Razwan Ahamed, *Delays in the Criminal Justice System in Bangladesh: A Study on Criminal Case Delays and Solutions*, 13 December 2025.

³⁸ Deng Lie and Manjurul Alam, 'Analyzing the Challenges and Opportunities for Implementing a Comprehensive Case Management System in Bangladeshi Courts', *International Journal of Research and Innovation in Social Science* VIII, no. XI (2024): 1018–1038, <https://doi.org/10.47772/IJRISS.2024.8110082>.

³⁹ 'Item - Promoting Access to Justice in Bangladesh: Towards a Hybrid Justice Model - CQUniversity - Figshare', accessed 14 March 2026, https://acquire.cqu.edu.au/articles/journal_contribution/Promoting_access_to_justice_in_Bangladesh_Towards_a_hybrid_justice_model/28899740?file=54077120.

Transparency is particularly critical when AI tools are used in legal decision-support systems. Judges and legal practitioners must be able to understand how an AI system generates its recommendations or analytical outputs. Black-box algorithms that provide results without clear explanations can undermine judicial accountability and erode public trust in the legal system. Therefore, any AI tools implemented within courts should incorporate explainable AI mechanisms that allow users to trace how specific conclusions or predictions were generated. Such transparency ensures that judges retain full control over their decisions and can critically evaluate the information provided by technological systems. Institutional readiness also represents a crucial factor in the responsible adoption of AI within Bangladesh's judiciary. Technological solutions cannot function effectively without adequate infrastructure, regulatory frameworks, and professional training. Many courts in Bangladesh still operate with limited digital infrastructure, and the transition toward AI-supported systems will require significant investments in technological capacity. This includes digitizing court records, establishing secure data management systems, and ensuring reliable internet connectivity across judicial institutions. Equally important is the need to provide specialized training for judges, lawyers, and court administrators so that they can effectively interact with and supervise AI tools. Without such institutional preparation, the introduction of advanced technologies may create additional challenges rather than solving existing problems.⁴⁰

Legal and regulatory frameworks must also evolve to accommodate the emerging role of AI in judicial governance. Clear guidelines are needed to define the permissible scope of AI use within courts, establish accountability mechanisms for technological errors, and protect sensitive legal data from misuse. Data protection regulations should ensure that information used to train and operate AI systems is handled securely and ethically. Moreover, oversight bodies may be required to monitor the deployment of judicial technologies and evaluate their long-term impact on fairness and access to justice. Such regulatory safeguards are essential in preventing technological innovations from compromising fundamental legal rights. Beyond institutional and ethical considerations, the integration of AI into Bangladesh's judiciary must also remain sensitive to broader social realities.⁴¹ Technology alone cannot resolve all challenges associated with access to justice, particularly in societies where socio-economic inequalities and legal awareness gaps persist. Therefore, AI-based reforms should complement rather than replace existing legal support mechanisms, including legal aid programs, community mediation initiatives, and public legal education campaigns. By combining technological innovation with inclusive justice policies, Bangladesh can ensure that digital transformation benefits all segments of society rather than reinforcing existing disparities.

The national digital transformation agenda embodied in the Smart Bangladesh Vision 2041 provides an important strategic foundation for such reforms. This initiative envisions a technologically advanced governance system that leverages digital innovation to improve public service delivery. Within this broader framework, the concept of "Smart Justice" offers a pathway for modernizing judicial institutions through responsible technological adoption. AI, when implemented within this vision, can serve as a powerful catalyst for improving efficiency,

⁴⁰ Georg Wenzelburger, Karen Yeung, and Kathrin Hartmann, "Smart Justice? Making Sense of the Rise of Algorithm-Based Pre-Trial Risk Assessment in Criminal Justice Through "Legal Models", *Digital Society* 4, no. 2 (June 2025): 48, <https://doi.org/10.1007/s44206-025-00194-7>.

⁴¹ Ajnin Begum and Nirmal Kumar Saha, "Women's Access to Justice in Bangladesh", *Journal of Malaysian and Comparative Law* 44, no. 2. Dec. (December 2017): 45–64.

transparency, and accessibility within the legal system. Ultimately, the responsible integration of artificial intelligence into Bangladesh's judiciary requires a balanced approach that recognizes both the transformative potential and the inherent limitations of technological solutions. AI should be understood not as a substitute for judicial reasoning but as an instrument that enhances institutional capacity and supports human decision-making. When guided by strong ethical principles, transparent governance, and adequate institutional preparation, AI technologies can contribute to reducing case backlogs, improving administrative efficiency, and expanding access to legal services. Through such a carefully designed approach, Bangladesh has the opportunity to develop a more responsive, equitable, and technologically empowered justice system capable of meeting the demands of a rapidly evolving society.

Conclusion

This study demonstrates that Artificial Intelligence (AI) holds significant potential to transform Bangladesh's judicial system into a model of smart, efficient, and equitable justice. The findings indicate that AI can do more than automate routine tasks; it can catalyze structural reforms that improve efficiency, promote inclusivity, and uphold fundamental constitutional rights, including equality before the law, protection under the due process clause, and privacy safeguards. The persistent backlog of cases—rising from 3.68 million in 2021 to over 5.3 million in 2025—underscores the urgency of AI-driven interventions to address chronic inefficiencies and restore public trust in the judiciary. Ethical and context-sensitive AI adoption, guided by frameworks such as the Diffusion of Innovation Theory and UNESCO's Recommendation on the Ethics of Artificial Intelligence, can accelerate justice delivery while ensuring transparency, non-discrimination, human oversight, and compatibility with institutional norms. Structural lessons from COVID-19-induced virtual hearings, along with emerging localized AI tools, highlight both opportunities for resilience and the ongoing challenges posed by infrastructure gaps, digital divides, language barriers, and regulatory shortcomings. The study provides actionable policy recommendations to advance AI integration responsibly, including establishing AI ethics oversight, enacting comprehensive data protection laws, developing bilingual AI models, and implementing judicial AI sandbox projects with training programs for legal stakeholders. These steps, coupled with public-private partnerships, can enhance accessibility, reduce backlogs, and support Bangladesh's Smart Bangladesh Vision 2041. Future research should focus on longitudinal empirical studies, including surveys and case studies of judges, lawyers, and litigants, to assess real-world AI adoption, ethical outcomes, and impact on efficiency. Comparative studies with other developing countries and investigations into bias mitigation in Bangla-centric AI models would further strengthen evidence-based judicial reform. By integrating these insights, this research not only guides immediate policy and institutional action but also lays the foundation for sustained academic and practical inquiry into AI-enabled justice in Bangladesh.

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Author Contributions Statement

Mohammad Khabbab Taki contributed significantly to the conceptualization and design of the study, including the development of the research framework and formulation of the central research question. He was responsible for conducting the literature review, analyzing policy documents, and synthesizing international benchmarks relevant to AI integration in the judicial system. He also contributed to the interpretation of findings, drafted substantial sections of the manuscript, and revised the content critically for intellectual accuracy, clarity, and coherence. Additionally, he actively participated in discussions on methodology, data validation, and policy implications, ensuring the research adhered to high academic and ethical standards.

AI Usage Statement

The authors declare that artificial intelligence (AI) tools were used only in a limited capacity for language editing, grammar correction, formatting, and improving the clarity of the manuscript. The use of these tools did not influence the intellectual content of the research. All ideas, research design, data analysis, interpretations, and conclusions are entirely the authors' original work. The authors take full responsibility for the accuracy, integrity, and originality of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this study. The research was conducted independently and objectively, without any financial, commercial, or personal influences affecting the study design, data analysis, interpretation of results, or the decision to publish. All findings and conclusions reflect the authors' independent scholarly judgment and adhere to principles of academic integrity and ethical research practices.

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