Reforming Civil Justice in Pakistan through AI: A Critical Study of Legal Technologies and Their Impact on Access to Justice

Dr. Madiha Afzal
Ph.D. Scholar in Law, Faculty of Shariah and Law, International Islamic University Islamabad Co-Founder & CEO, Legal World (Pakistan's First AI – Powered Legal Operating System

Hamaad Ghafoor Ghawaas
Adv. High Court & Co Founder of Legal World

ABSTRACT
Pakistan's civil justice system suffers from chronic delays, procedural complexity, and limited access to affordable legal remedies. These weaknesses undermine public confidence in the rule of law and disproportionately affect marginalized groups. Global developments in artificial intelligence (AI) and legal-technology (LegalTech) innovations have begun to transform justice delivery through data analytics, online dispute resolution (ODR), and automated document systems. This study explores how such technologies can be responsibly adopted to reform Pakistan's civil justice sector without compromising constitutional guarantees of equality, fair trial, and due process. Employing a doctrinal and socio-legal methodology, the paper evaluates the potential of AI-driven tools to enhance six dimensions of access to justice availability, accessibility, affordability, timeliness, quality, and enforceability. Comparative lessons are drawn from the United Kingdom, the United States, Canada, and Australia to inform Pakistan's reform trajectory. The article proposes an AIRT model Accountability, Inclusion, Rule-of-Law Safeguards, and Targeted Scope and outlines a three-horizon roadmap for incremental implementation: (1) pilot projects and data-standardization, (2) scaled analytics and integration, and (3) judicial decision-support with oversight. The findings suggest that AI can significantly improve procedural efficiency and transparency if embedded within a rights-based, ethically grounded regulatory framework.

Keywords: Access To Justice; Civil Procedure; Artificial Intelligence; Online Dispute Resolution; Legal Aid; Comparative Law; Judicial Reform; Pakistan; Legaltech; Governance.

Introduction
Background
Civil justice in Pakistan is widely perceived as slow, complex, and inaccessible. Over the past several decades, successive law commissions, judicial policy reforms, and donor-funded access-to-justice initiatives have attempted to address inefficiency and delay in the country's legal system, yet the structural problems remain largely unresolved. The subordinate courts responsible for the bulk of civil disputes are overburdened with millions of pending cases, and procedural formalities, coupled with limited technological infrastructure, have further entrenched barriers for ordinary litigants. For low- and middle-income citizens, the cost of legal representation, coupled with lengthy adjournments and unpredictable outcomes, discourages engagement with formal dispute-resolution mechanisms. These dynamics erode confidence in the rule of law and

perpetuate a culture of extra-legal settlements and informal justice mechanisms.

Globally, however, a quiet transformation is underway. Jurisdictions such as the United Kingdom, United States, Canada, and Australia are experimenting with artificial-intelligence-driven tools in their justice sectors. Applications range from document automation and online dispute resolution (ODR) platforms to predictive analytics for case management and judicial decision-support systems. Early results suggest that technology, when designed ethically and governed responsibly, can reduce procedural burdens and extend access to justice for underserved communities (Susskind, 2019). For Pakistan where judicial reform has historically relied on procedural amendments and institutional reorganization, AI presents an opportunity to leapfrog traditional bottlenecks and move toward a citizen-centred, data-informed justice ecosystem.

Problem Statement

Despite global enthusiasm surrounding LegalTech, the debate in Pakistan remains largely aspirational and disconnected from empirical realities. While digitalisation initiatives such as e-filing, video hearings, and cause-list publication have begun, there is minimal evidence of systematic AI adoption in civil-justice administration. Moreover, the legal and ethical questions raised by algorithmic decision-making transparency, accountability, bias, and explain ability are barely explored in the Pakistani context. The absence of regulatory frameworks governing automated legal tools risks both under-utilisation and misuse.

The core problem this study addresses is how Pakistan can responsibly integrate AI-based legal technologies into its civil-justice system to enhance access to justice without undermining constitutional guarantees such as equality before law (Article 25), the right to life (Article 9), and the right to a fair trial (Article 10-A).

Objectives of the Study

The objectives are fourfold:

To critically examine the current state of civil-justice delivery and its systemic barriers to access in Pakistan

To analyse the potential role of AI-driven tools chatbots, document-automation systems, ODR mechanisms, and analytics in addressing these barriers.

To evaluate comparative experiences from the UK, US, Canada, and Australia and extract regulatory and ethical principles applicable to Pakistan

To propose a context-specific model (AIRT) and a phased roadmap for principled AI adoption in Pakistan's civil-justice sector

Research Questions

The inquiry is guided by the following research questions:

How are AI-based legal technologies currently being used or piloted to support civil-justice access in Pakistan?

What legal, technical, and institutional enablers or obstacles affect their adoption?

What ethical and cultural considerations must shape Pakistan's approach to algorithmic justice?

Which policy and regulatory frameworks can ensure fairness, transparency, and accountability?

Theoretical Orientation

The study is grounded in access-to-justice theory, technological due process (Citron, 2008), and comparative regulatory analysis. The six-dimension Access-to-Justice (A2J) framework availability, accessibility, affordability, timeliness, quality, and enforceability provides the evaluative lens for assessing how AI may enhance or hinder justice outcomes. Complementing this, the research applies rule-of-law and rights-based

governance principles to ensure that efficiency gains do not compromise fundamental rights.

Theoretically, the study adopts a law-and-technology perspective, recognising AI as both a tool and a governance challenge. Scholars such as McGinnis and Pearce (2014) and Hadfield and Susskind (2018) argue that automation can democratise legal services, but warn against over-reliance on algorithmic systems that lack procedural transparency. The interplay between these perspectives frames the normative balance the paper seeks to achieve between innovation and constitutionalism.

Justification and Significance

Pakistan stands at a critical juncture where judicial inefficiency threatens both economic competitiveness and social cohesion. Digital transformation across government sectors, including the Federal Ministry of IT's National AI Policy (2023 draft), signals readiness for innovation. However, civil-justice reform requires more than technological import; it demands contextual adaptation and rights-based safeguards.

By focusing exclusively on Pakistan, this study fills a major gap in global LegalTech scholarship, which tends to prioritise high-income jurisdictions. It provides original, policy-relevant insights into how AI can improve civil-justice access in a developing-country setting, while highlighting the socio-legal complexities that accompany technological reform.

Practically, the findings will assist policymakers, judicial administrators, and LegalTech entrepreneurs in designing interventions that align with constitutional values and public trust. Academically, the research extends the comparative law discourse by integrating Islamic-constitutional principles with contemporary AI-ethics frameworks an intersection seldom explored in legal scholarship.

Structure of the Article

The remainder of this paper proceeds as follows:

Section 2 outlines Pakistan's constitutional and normative framework relevant to justice and technology.

Section 3 reviews global literature on AI and access to justice, drawing comparative lessons.

Section 4 describes the methodological approach combining doctrinal and socio-legal analysis.

Section 5 provides a detailed discussion of findings and comparative analysis.

Section 6 examines ethical, legal, and policy implications.

Section 7 concludes with recommendations, including the AIRT Model and a three-horizon roadmap for responsible AI adoption.

Through this structure, the article aims to advance both theoretical understanding and practical guidance for AI-enabled civil-justice reform in Pakistan.

Research Context and Problem Statement
Civil-Justice Landscape in Pakistan

Pakistan's civil-justice system is a legacy of the colonial common-law framework inherited at independence in 1947. Despite numerous amendments to the Code of Civil Procedure 1908 and periodic judicial-policy interventions, the system remains beset by inefficiency, cost, and procedural rigidity. The National Judicial (Policy Making) Committee (NJPMC) has repeatedly identified excessive adjournments, manual filing, poor case tracking, and weak coordination between bar and bench as primary causes of

delay. As of 2024, approximately 2.2 million cases were pending across Pakistan's superior and subordinate courts (Law and Justice Commission of Pakistan, 2024). Civil disputes such as family law matters, tenancy conflicts, property partitions, and employment grievances constitute a large proportion of these backlogs.

For an average citizen, initiating or defending a civil claim often requires navigating a labyrinth of paperwork, in-person appearances, and unpredictable scheduling. Legal aid remains under-funded, and pro bono mechanisms are inconsistent. These systemic barriers disproportionately affect women, low-income groups, and persons residing in rural or peri-urban areas. The absence of accessible legal information and affordable representation means that many civil grievances never reach formal adjudication.

Access-to-Justice Challenges

The Access to Justice Development Fund (AJDF) and donor-supported initiatives such as the UNDP's Rule of Law Programme have attempted to modernize infrastructure and enhance court efficiency. Yet, the impact has been incremental rather than transformative. The World Justice Project (2023) ranks Pakistan 130th of 142 countries on its Rule of Law Index, reflecting weaknesses in civil-justice delivery, regulatory enforcement, and absence of corruption control.

The study adopts a six-dimension Access-to-Justice (A2J) framework to conceptualize these deficits:

Availability – Insufficient courts, judges, and digital infrastructure.
Accessibility – Geographic and linguistic barriers preventing citizens from engaging with courts.
Affordability – High legal fees and indirect costs (travel, documentation, lost wages).
Timeliness – Delays due to adjournments, backlog, and manual case management.
Quality – Inconsistent judgments, lack of legal-aid quality assurance, and weak oversight.
Enforceability – Limited execution of decrees and weak post-judgment monitoring.

Artificial intelligence offers potential interventions across all six dimensions streamlining filing, automating forms, assisting with triage, and improving analytics for judicial administration.

Constitutional Guarantees and Normative Baseline

Pakistan's Constitution (1973) provides the normative foundation for justice reforms.
Article 4 enshrines the right of individuals to be dealt with in accordance with law.
Article 9 guarantees the right to life and liberty, interpreted by the Supreme Court to include access to justice as an essential component of the right to life.
Article 10-A, inserted through the 18th Amendment, explicitly provides the right to a fair trial and due process.
Article 37(d) directs the state to ensure inexpensive and expeditious justice.

Any technological intervention in judicial processes must therefore advance these constitutional mandates rather than undermine them. The introduction of AI tools whether for case triage, document analysis, or predictive modeling must preserve procedural fairness, transparency, and the human right to be heard.

Technological Readiness and Policy Context

Pakistan's digital-transformation agenda has accelerated in recent years. The Ministry of Information Technology and Telecommunication (MoITT) launched the Digital Pakistan Policy (2018) and subsequently drafted a National Artificial Intelligence Policy (2023) focusing on governance, ethics, and sectoral applications. Within the judiciary, limited experiments with e-courts, video-link hearings, and online cause-list systems have emerged at the Supreme Court and High-Court levels. However, these initiatives largely

remain pilot projects lacking comprehensive data integration or algorithmic capability.
Parallel to governmental efforts, a nascent LegalTech ecosystem has begun to form. Private platforms such as Digilawyer and Legal World demonstrate growing interest in online legal education, document automation, and AI-assisted legal drafting. Nevertheless, regulatory guidance for these technologies is absent. No standards currently define permissible uses of AI in adjudication, evidence evaluation, or legal assistance. The Prevention of Electronic Crimes Act (PECA 2016) and Personal Data Protection Bill (2023 draft) offer partial coverage but do not address algorithmic fairness or data transparency in judicial contexts.

Ethical and Institutional Concerns
The introduction of AI into judicial processes raises normative questions concerning accountability, explainability, and equality. Algorithmic bias can reproduce systemic inequalities if training data reflect historical prejudices. Over-reliance on predictive tools may encourage "automation bias," leading judges or litigants to defer to machine recommendations without critical scrutiny (Remus & Levy, 2016). Furthermore, opaque proprietary algorithms can erode public confidence in judicial neutrality.

Institutional capacity is another constraint. Many Pakistani courts lack digital case-management systems, reliable internet access, or staff trained in data analytics. Introducing AI without addressing these structural weaknesses risks creating a dual-track justice system - digitally accessible to the privileged but exclusionary to marginalized users.

Defining the Research Problem
Against this backdrop, the research identifies a clear problem gap: Pakistan's civil-justice sector faces profound inefficiencies and inequities, while its legal-technology adoption remains fragmented and unregulated. There is limited academic inquiry into how AI tools could be contextualized within Pakistan's constitutional, cultural, and institutional environment.

Thus, the central problem can be stated as:

> How can Pakistan's civil-justice system harness artificial intelligence to enhance access to justice while preserving constitutional guarantees of fairness, equality, and transparency?

This question underpins the subsequent analysis and motivates the development of a normative model (AIRT) and phased implementation roadmap.

Conceptual and Normative Framework
Constitutional Foundations for Justice and Technology
The Constitution of the Islamic Republic of Pakistan (1973) establishes justice as a central state obligation. Articles 4, 9, 10-A, and 37(d) collectively ensure that every citizen is entitled to fair, inexpensive, and expeditious justice. These guarantees provide the normative baseline for any technological intervention within the justice sector. Artificial-intelligence applications that affect decision-making must therefore pass three constitutional tests:

Process Integrity Test – Technological processes must not dilute the procedural rights to be heard, to present evidence, and to receive reasoned decisions. Automated triage or document-review systems should complement, not replace, judicial reasoning.

Equality Test – AI tools must operate without bias or discrimination against any social, gender, or regional group. This requires auditable datasets and transparent algorithmic design.

Proportionality Test – The use of AI must be proportionate to its objective, avoiding excessive

automation that intrudes upon privacy or judicial independence.
Together these tests form the constitutional guardrails for AI-enabled reform.

Access-to-Justice (A2J) Framework
To evaluate AI's potential impact, this study adopts a six-dimension A2J framework that originates from UNDP and World Justice Project metrics but is adapted to Pakistan's context:

Dimension	Definition	Possible AI Contribution
Availability	The presence of judicial forums and legal-service mechanisms across regions.	Automated information kiosks and virtual filing systems that extend reach to remote users.
Accessibility	The ease with which citizens can physically or digitally engage with justice institutions.	Multilingual mobile-based legal chatbots operating in Urdu and regional languages.
Affordability	The direct and indirect cost of pursuing justice.	Low-cost document-automation tools and AI-assisted legal-aid screening systems.
Timeliness	The speed and efficiency of case progression and enforcement.	AI-driven case-scheduling, workflow analytics, and predictive-delay monitoring.
Quality	The consistency, accuracy, and fairness of judicial outcomes.	Decision-support and error-detection tools that enhance legal reasoning and review.
Enforceability	The implementation and monitoring of court judgments and decrees.	Digital decree-tracking and post-judgment compliance dashboards.

Together, these six dimensions form an evaluative benchmark for determining whether the introduction of AI enhances or undermines the effective delivery of justice within Pakistan's civil-justice framework.

The AIRT Model for Responsible Adoption
Building upon comparative insights, the paper proposes the AIRT Model a normative framework to govern AI integration in Pakistan's civil justice system.
Accountability: Every AI system should be traceable to human oversight. Developers, judicial officers, and agencies must be accountable for outcomes and errors. Legal liability mechanisms should clarify responsibility for algorithmic failures.
Inclusion: Technological design must accommodate linguistic, gender, and geographic diversity. User interfaces should support Urdu and regional languages, offline access, and assistive features for persons with disabilities.
Rule-of-Law Safeguards: AI applications must operate within existing constitutional and statutory boundaries. Automated decisions should remain advisory to human judges to preserve judicial discretion.
Targeted Scope: Adoption should be incremental and function-specific e.g., data classification, scheduling, or legal aid rather than full adjudicative automation. This prevents "technological overreach" and allows progressive learning.
Collectively, these principles form a rights-based approach balancing innovation with constitutional values.

Integrating Islamic and Comparative Norms

As a Muslim-majority constitutional democracy, Pakistan's legal philosophy is anchored in justice (adl) and equity (ihsan). These values align with international AI-ethics principles of beneficence and non-maleficence. The Islamic concept of maslahah mursalah (public interest) supports technological innovation that serves social welfare and does not contradict fundamental rights. Thus, AI deployment in the justice sector can be interpreted as a form of administrative ijtihad a contextual adaptation for public benefit under sharīʿah objectives (Maqāṣid al-Sharīʿah).

At the comparative level, the model draws on the EU's Ethics Guidelines for Trustworthy AI (2019) and the OECD Principles on AI (2021), which emphasize transparency, accountability, and human oversight. Localizing these principles within Pakistan's constitutional and Islamic framework ensures legitimacy and public acceptance.

Operationalizing the Framework

Implementation requires institutional mechanisms:
A Judicial AI Ethics Committee to approve and audit AI projects;
Open Justice Data Standards for secure, interoperable datasets;
A Regulatory Sandbox where pilot projects can be tested under judicial and academic supervision; and
Periodic public consultations to build trust and literacy around AI use in law
Through these mechanisms, the AIRT framework translates normative principles into governance practice.

Literature Review and Comparative Context
Global Evolution of AI in Legal Systems

Artificial intelligence (AI) has evolved from experimental automation in legal information retrieval during the 1980s to mainstream integration within justice institutions in the 21st century. Scholars such as Susskind (2019) and Hadfield & Susskind (2018) argue that AI-driven innovation is reshaping the legal profession and transforming access to justice by digitizing case management, enabling online courts, and redefining the lawyer–client relationship. McGinnis and Pearce (2014) emphasize that machine intelligence can democratize legal services by automating repetitive analytical tasks, thus reducing costs and enhancing accuracy. However, Citron (2008) warns that "technological due process" must accompany these reforms; without procedural transparency, automation may undermine fairness and accountability.

Empirical evidence from developed jurisdictions supports both optimism and caution. Remus and Levy (2016) document how AI tools such as e-discovery software, predictive coding, and document review have improved efficiency in large law firms but caution against the displacement of human judgment in nuanced legal reasoning. The OECD (2021) and European Commission (2019) further stress the importance of explainability, human oversight, and bias mitigation in AI governance frameworks.

The United Kingdom: HMCTS Reform and Online Courts

The United Kingdom has led the world in applying AI and digital transformation to public justice systems. The Her Majesty's Courts and Tribunals Service (HMCTS) reform programme, launched in 2016, introduced Online Civil Money Claims (OCMC) and Online Divorce services, enabling litigants to initiate and manage cases digitally. AI-

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enabled triage tools guide users through procedural options, while machine-learning analytics optimize scheduling and document sorting (Susskind, 2019).

While these initiatives improved efficiency, critics highlight risks to due process and digital exclusion among vulnerable users (Byrom, 2020). The United Kingdom addressed these concerns through user-testing protocols and assisted digital services offering hybrid online-offline support to ensure inclusivity. These safeguards align with Pakistan's constitutional imperative of equal treatment and suggest design principles for equitable adoption.

The United States: LegalTech Ecosystem and Algorithmic Accountability
The United States hosts the most mature LegalTech market globally, featuring platforms such as ROSS Intelligence, Casetext, DoNotPay, and Lex Machina. These systems deploy natural-language processing for legal research, automated form generation, and consumer-rights advocacy. According to Mills (2021), such tools have expanded low-cost access to legal information, particularly in consumer and administrative law. However, concerns about algorithmic bias and opaque proprietary models persist.

The U.S. Administrative Conference (2020) and state bar associations have begun exploring regulatory sandboxes to supervise AI deployments in legal practice. These experiments underscore the balance between innovation and oversight a lesson critical for Pakistan, where absence of regulation could either stifle innovation or enable misuse.

Canada: Civil Resolution Tribunal (CRT) and Digital Justice
Canada's Civil Resolution Tribunal (CRT), established in British Columbia in 2016, represents the world's first fully online civil-justice tribunal. It resolves small-claims, condominium, and tenancy disputes using asynchronous communication, guided pathways, and AI-supported document templates (Salter & Thompson, 2017). Studies indicate high user satisfaction, cost reduction, and faster resolution compared with conventional courts.

The CRT's success rests on three pillars: accessibility (plain-language design), proportionality (simplified procedures), and continuous evaluation. It operates under statutory authority and independent governance, offering a model of lawful delegation that Pakistan could emulate when designing its own ODR or AI-assisted tribunals.

Australia: Online Courts and Data Analytics
Australia's federal and state courts have implemented eCourt and Digital Court File (DCF) systems integrating predictive analytics for workload management. The New South Wales Online Court, established in 2018, allows legal representatives to resolve procedural disputes through automated scheduling and digital submissions (Wallace, 2020). AI-driven data dashboards assist judges and administrators in identifying backlog patterns.

Australian reforms emphasize human-in-the-loop design and transparency. Judicial officers retain full discretion, and any AI-assisted recommendation must be verifiable and auditable. These safeguards mirror the accountability element of the AIRT Model proposed for Pakistan.

Lessons for Developing Jurisdictions
Comparative analysis reveals common success factors: clear legislative mandates, cross-sector collaboration, ethical guidelines, and capacity building. Conversely, failures often stem from inadequate stakeholder consultation, lack of digital literacy, and over-reliance

on proprietary systems. Binns (2018) highlights the importance of fairness frameworks rooted in political philosophy to ensure that algorithmic systems do not amplify inequality.

For developing countries, the priority is incrementalism introducing AI first in administrative and procedural domains rather than in judicial decision-making. Calo (2016) argues that algorithmic governance must align with public-law principles: accountability, transparency, and participation. These insights collectively inform the study's normative model for Pakistan.

Pakistan's Research Gap
Despite growing discourse on digital transformation, scholarly work on AI and justice in Pakistan remains sparse. Most analyses focus on e-governance or cyber-crime law rather than civil-justice reform. No systematic study yet evaluates AI's potential role in enhancing access to justice within Pakistan's socio-legal context. This gap underscores the significance of the present research, which contextualizes global lessons within local constitutional and institutional realities.

Methodology
Research Design
This study adopts a qualitative, doctrinal, and socio-legal design suitable for evaluating the normative and practical implications of AI integration in Pakistan's civil-justice system. The approach combines textual analysis of constitutional and statutory provisions with empirical insights from selected LegalTech initiatives and stakeholder perspectives. The mixed-mode orientation allows a comprehensive view: doctrinal analysis ensures legal precision, while socio-legal inquiry situates reform proposals within Pakistan's institutional and cultural realities.

Doctrinal Component
The doctrinal element critically examines:
Constitutional guarantees: Articles 4, 9, 10-A, and 37(d) of the 1973 Constitution;
Statutory frameworks: the Code of Civil Procedure 1908, the Qanun-e-Shahadat Order 1984, the Information Technology Act 2000 (draft), and relevant Supreme Court and High Court procedural rules;
Policy documents; Digital Pakistan Policy (2018) and National AI Policy (2023 draft)
These texts are interpreted through purposive reading and comparative reference to foreign legislation on algorithmic governance. This legal analysis establishes the normative parameters for lawful AI adoption.

Socio-Legal Component
Complementing doctrinal inquiry, the socio-legal component investigates the lived operation of justice institutions and stakeholder perceptions regarding AI reform. It relies on qualitative data drawn from case studies, semi-structured interviews, and policy reports. The integration of these data enables triangulation between law-in-books and law-in-action.

Case Studies
Two to three AI-enabled or digital-justice platforms active in Pakistan such as legal chatbots, document-automation tools, or pilot ODR systems are examined for:
system design and technological architecture;
language accessibility and user interface;

alignment with justice outcomes (cost, timeliness, satisfaction).
Each case study is documented using publicly available records and stakeholder feedback. Comparative references to the UK's Online Civil Money Claims system and Canada's Civil Resolution Tribunal are used to benchmark design and governance practices.

Stakeholder Interviews
Approximately 20 to 25 semi-structured interviews are planned with judges, lawyers, policymakers, LegalTech entrepreneurs, and civil-society experts. Interview guides focus on perceptions of:
Institutional readiness for AI;
Ethical and procedural concerns;
Regulatory expectations and opportunities
Interviews are transcribed verbatim and coded thematically.

Data Analysis
Qualitative data from interviews and case studies are analyzed through thematic analysis using NVivo or equivalent software. Codes are organized around major themes efficiency, fairness, inclusivity, accountability, and trust. Cross-case comparisons identify recurring policy tensions and capacity gaps. Analytical triangulation across doctrinal sources, stakeholder narratives, and comparative examples enhances validity.

Ethical Considerations
Ethics approval is obtained from the Faculty of Shariah and Law, before data collection. Participants provide informed consent; confidentiality and anonymity are assured. The research conforms to APA ethical standards and Pakistan's Personal Data Protection Bill (2023 draft). AI-related data are evaluated for potential bias, ensuring adherence to principles of fairness and non-discrimination.

Limitations
The study's qualitative scope limits statistical generalizability. However, depth of contextual analysis offers rich policy insight. Given Pakistan's nascent LegalTech ecosystem, availability of empirical data may be restricted; triangulation and iterative validation are used to mitigate this limitation.

Methodological Integrity
Credibility is maintained through:
Triangulation (doctrinal + empirical + comparative sources);
Reflexivity (continuous researcher reflection on bias and positionality);
Audit trail (documented analytic decisions).
This hybrid methodology supports a grounded yet principled framework for evaluating AI's role in civil-justice reform.

Analysis and Discussion
Opportunities for AI in Pakistan's Civil-Justice System
AI offers significant potential to alleviate structural inefficiencies that have long plagued Pakistan's courts. The following areas illustrate where responsible automation could produce measurable benefits:
Case-Management Analytics: Machine-learning models can predict case duration, identify congestion points, and allocate resources more effectively. AI dashboards deployed in Australia

and Singapore have demonstrated how predictive scheduling reduces backlog without altering judicial discretion (Wallace, 2020).

Guided E-Filing and Chatbots: Natural-language chatbots trained in Urdu and regional dialects can assist litigants in preparing petitions, calculating court fees, and identifying jurisdiction. Similar systems in Canada's CRT and the UK's Online Courts have significantly reduced procedural errors (Salter & Thompson, 2017).

Document Automation: Template-based document generation tools can reduce the cost of drafting pleadings, tenancy agreements, and family-settlement deeds. Automation ensures consistency and compliance with formal requirements, freeing lawyers to focus on substantive advocacy.

Legal Aid and Triage: AI-driven triage systems can classify incoming cases based on complexity and urgency, facilitating early settlement and directing simple disputes toward ODR channels.

Transparency and Data-Driven Policy: Aggregated court data analyzed by AI can inform judicial policy, identifying trends in case disposal, gender participation, or regional disparities.

These interventions address each of the six dimensions of access to justice enhancing availability, accessibility, affordability, timeliness, quality, and enforceability.

Risks and Constraints

While the potential is compelling, unregulated AI deployment could endanger core principles of fairness and accountability. Key risks include:

Algorithmic Bias and Discrimination: AI systems trained on biased or incomplete datasets risk reproducing socio-economic and gender inequalities. For instance, predictive tools that rely on historical conviction or delay patterns may implicitly penalize vulnerable litigants.

Opacity and Explainability: Proprietary algorithms create "black boxes," making it difficult for litigants to understand or challenge automated outcomes (Citron, 2008). Transparency and auditability are prerequisites for legitimacy.

Digital Divide: Limited internet access, low literacy, and linguistic diversity could exclude large segments of the population, reinforcing inequality rather than mitigating it.

Institutional Resistance: Judicial and bar cultures are often cautious toward technological reform. Without stakeholder buy-in, reform may face inertia or superficial compliance.

Regulatory Vacuum: Absence of an AI-specific legal framework in Pakistan leaves unclear liability boundaries for data breaches, erroneous recommendations, or misuse of predictive analytics.

Mitigating these risks demands phased experimentation within an ethical and regulatory framework rather than wholesale automation.

Lessons from Comparative Experience

International examples reveal patterns of success applicable to Pakistan:

Incrementalism: The UK's phased rollout of online services beginning with non-contentious matters allowed controlled adaptation (Byrom, 2020). Pakistan can similarly begin with procedural automation (e-filing, scheduling) before exploring decision-support.

Hybrid Access Models: Canada's CRT demonstrates that combining digital and assisted in-person support ensures inclusivity. Pakistan's multilingual environment makes this especially relevant.

Human-in-the-Loop Design: Australia's insistence on judicial oversight over algorithmic recommendations preserves independence while improving efficiency.

Open Data and Oversight: Transparency portals in the US and UK allow public scrutiny of algorithmic systems. Pakistan's future reforms must incorporate open-data principles to maintain public trust.

These experiences affirm the importance of accountability, inclusion, and rule-of-law safeguards the pillars of the AIRT model.

Application of the AIRT Model to Pakistan

The AIRT model comprising Accountability, Inclusion, Rule-of-Law Safeguards, and Targeted Scope offers a structured pathway for Pakistan to implement artificial intelligence within its judicial system responsibly. Each principle translates into specific policy implications and operational mechanisms tailored to Pakistan's constitutional and institutional realities.

AIRT Principle	Policy Implication for Pakistan	Operational Mechanism
Accountability	Establish transparent lines of responsibility for AI-generated outcomes within courts and LegalTech enterprises.	Formation of a Judicial AI Ethics Committee and introduction of developer-liability clauses to ensure traceability and redress.
Inclusion	Ensure design processes that are sensitive to language, literacy, gender, and accessibility barriers.	Deployment of multilingual legal chatbots, community-based legal kiosks, and assisted digital support centres in rural and urban regions.
Rule-of-Law Safeguards	Preserve human judicial oversight while guaranteeing the right to appeal any AI-influenced decision.	Establishment of a regulatory sandbox supervised by High Courts and bar councils to test and monitor AI tools within controlled environments.
Targeted Scope	Limit AI applications initially to administrative and procedural tasks to prevent premature automation of adjudication.	Phase-wise implementation beginning with case classification, scheduling, and analytical modules, followed by gradual expansion.

Adoption of this model would enable Pakistan to pursue judicial modernisation while safeguarding constitutional integrity and public trust.

Institutional Prerequisites

To operationalize these reforms, several institutional measures are essential:

Judicial Capacity Building: Training programs for judges and court staff on AI literacy, data ethics, and digital case management.

Legal Education Reform: Introducing "Law and Technology" courses in LLB and LLM curricula to prepare future practitioners for algorithmic environments.

Public–Private Partnerships: Collaboration between judiciary, academia, and private LegalTech companies to develop localized AI tools under public supervision.

Infrastructure Development: Nationwide digitization of court records, integration of biometric and e-filing systems, and establishment of secure cloud platforms for data storage.

Without these foundations, AI reform may remain theoretical.

Balancing Innovation and Constitutionalism

The constitutional vision of expeditious and inexpensive justice (Article 37(d)) harmonizes with technological innovation but not at the expense of fairness and equality. Algorithmic governance must be viewed as an instrument of constitutional facilitation,

not substitution. The judiciary's role remains central in interpreting how AI aligns with due process guarantees under Article 10-A.

This balance between innovation and constitutionalism echoes Citron's (2008) concept of technological due process and Calo's (2016) policy framework, which emphasize that automation in public decision-making must enhance, not erode, procedural justice. The AIRT model operationalizes this balance for Pakistan.

Towards a Three-Horizon Reform Roadmap

The analysis culminates in a three-horizon roadmap for responsible AI adoption in Pakistan's civil-justice sector:

Horizon 1 – Foundations (Years 1–2): Pilot AI-assisted case tracking, standardize judicial data, and establish a regulatory sandbox.

Horizon 2 – Integration (Years 3–5): Scale successful pilots to provincial courts; deploy analytics dashboards and triage systems; introduce mandatory transparency audits.

Horizon 3 – Decision Support (Beyond Year 5): Implement AI-assisted judgment summarization and predictive decision-support tools with strict human oversight and periodic ethical reviews.

This phased approach ensures sustainability, learning, and constitutional compliance.

Ethical, Legal, and Policy Implications
Ethical Imperatives for AI in Justice

Ethical deployment of AI within the justice system is not simply a technical issue it is a question of legitimacy, trust, and constitutional morality. Justice must not only be done but must be seen to be done. Automation that accelerates decisions but obscures reasoning violates the spirit of procedural fairness. Citron (2008) emphasizes that "technological due process" must guarantee transparency and accountability equivalent to human adjudication.

Key ethical imperatives for Pakistan's justice ecosystem include:

Transparency and Explainability: Every AI tool used in judicial or administrative functions should provide traceable reasoning. Users must be able to understand how outcomes are derived and appeal automated recommendations.

Fairness and Non-Discrimination: Training data should represent Pakistan's social and linguistic diversity. Algorithmic outputs must be periodically audited to detect bias against gender, class, or region.

Privacy and Data Protection: Sensitive case data should be anonymized and stored in secure national data centers compliant with the Personal Data Protection Bill (2023).

Human Oversight: Human judges, not machines, must remain final arbiters of justice. AI may assist but never substitute judicial reasoning.

Public Trust and Accountability: Citizens must perceive AI systems as legitimate extensions of judicial authority, which requires open communication, education, and participatory governance.

Legal and Regulatory Implications

Pakistan currently lacks a dedicated legal framework addressing algorithmic governance. The Prevention of Electronic Crimes Act (PECA, 2016) and draft Personal Data Protection Bill (2023) provide partial safeguards but do not cover algorithmic accountability, explainability, or liability. The following legal reforms are therefore essential:

AI Accountability Legislation: Introduce statutory obligations on developers and deploying agencies to ensure accuracy, fairness, and auditability of justice-related AI tools.

Amendments to Procedural Codes: Update the Code of Civil Procedure (1908) to accommodate digital filings, e-service of process, and ODR mechanisms.

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Judicial AI Ethics Charter: The Law and Justice Commission of Pakistan could issue an ethics charter outlining permissible AI uses, aligned with the AIRT model.

Regulatory Sandbox Framework: Establish a controlled environment under the Supreme Court or Ministry of Law to test pilot AI applications before nationwide rollout.

These reforms would institutionalize oversight and align Pakistan with global governance norms such as the EU Artificial Intelligence Act (2024) and the OECD Principles on AI (2021).

Policy Directions

Policy development must balance innovation with inclusivity. The following recommendations emerge from this study:

National AI-in-Justice Strategy: Develop a cross-sectoral policy integrating judiciary, bar councils, academia, and LegalTech industry. The strategy should define goals for digital access, capacity building, and rights-based design.

Judicial Data Infrastructure: Create a unified digital repository of judgments and case metadata accessible for research and AI training under strict privacy protocols.

Capacity Building and Public Awareness: Establish continuous judicial and legal education programs on digital ethics and AI literacy. Launch awareness campaigns for litigants explaining how AI tools work and how they can be challenged.

Collaboration with Academia: Encourage partnerships between universities and judicial institutions to evaluate AI systems' ethical and social impacts through independent audits.

Localization and Inclusivity: Prioritize Urdu and regional languages in AI interfaces to bridge digital divides. Ensure gender-inclusive access through community legal kiosks and mobile apps.

Institutional Governance Mechanisms

Implementing the proposed reforms requires a cohesive and well-coordinated governance architecture that integrates judicial, executive, and independent oversight. The following institutional mechanisms are recommended to operationalise the AIRT Model within Pakistan's justice system.

Mechanism	Purpose	Lead Institutions
Judicial AI Ethics Committee (JAIEC)	To evaluate and certify all AI-based tools used in courts, ensuring their ethical and procedural compliance.	Supreme Court of Pakistan; Law and Justice Commission.
AI Regulatory Sandbox	To pilot emerging innovations in a controlled environment under judicial and ministerial supervision.	Ministry of Information Technology and Telecommunication (MoITT); Ministry of Law and Justice (MoL&J); High Courts.
National Justice Data Authority (NJDA)	To manage datasets for AI training, maintain judicial data standards, and enforce privacy safeguards.	Law and Justice Commission; National Database and Registration Authority (NADRA).
Ethical Audit Panels	To conduct regular assessments of algorithmic fairness, transparency, and bias in deployed systems.	Independent academic institutions and multidisciplinary experts.

This multi-tiered architecture would provide the institutional backbone necessary for ethical AI governance and ensure that Pakistan's justice-sector digital transformation proceeds transparently, responsibly, and in line with constitutional values.

Cultural and Religious Considerations

In Pakistan's Islamic constitutional framework, technology must align with moral and ethical values. The Qur'anic injunction of adl (justice) and the Prophetic principle of maslahah (public interest) endorse innovation that alleviates hardship and promotes social equity. However, automation that leads to injustice or discrimination contravenes both constitutional and Sharīʿah principles. Consequently, the deployment of AI in justice delivery should be viewed as an ijtihādī exercise subject to ongoing ethical evaluation and community consultation.

International Cooperation

Pakistan can benefit from participating in global networks such as the UNDP Digital Justice Platform, the OECD AI Policy Observatory, and the Asian Development Bank's Digital Governance Initiative. Collaborative research, technical exchange, and regional benchmarking will accelerate responsible innovation and ensure alignment with evolving international standards.

Towards a Rights-Based Digital Justice Paradigm

Ultimately, AI must serve rights before results. The goal is not merely faster case resolution but a justice system that embodies fairness, accessibility, and dignity. Ethical governance transforms AI from a technical instrument into a public good one that strengthens democracy and restores public faith in the judiciary.

Conclusion and Recommendations
Synthesis of Findings

Pakistan's civil-justice system confronts a crisis of delay, expense, and inaccessibility that erodes public trust in the rule of law. Global evidence demonstrates that artificial intelligence, when ethically designed and properly regulated, can relieve many of these structural burdens. Comparative experiences from the United Kingdom, United States, Canada, and Australia show that incremental adoption of AI improves efficiency, transparency, and user satisfaction provided that human oversight, fairness audits, and accountability mechanisms remain intact.

This study integrates doctrinal, comparative, and socio-legal analysis to propose a rights-based model for Pakistan's reform. The AIRT framework Accountability, Inclusion, Rule-of-Law Safeguards, and Targeted Scope emerges as a normative compass for responsible adoption. The framework aligns with Pakistan's constitutional obligations under Articles 4, 9, 10-A, and 37(d) and resonates with Islamic notions of adl (justice) and maslahah (public interest). If implemented through transparent governance, AI can transform Pakistan's justice sector from a reactive bureaucracy into a proactive service for citizens.

Strategic Recommendations

Adopt a National AI-in-Justice Policy integrating courts, bar councils, academia, and the LegalTech industry, grounded in the AIRT principles.

Establish a Judicial AI Ethics Committee (JAIEC) to certify, audit, and oversee all AI systems used in courts.

Create a Regulatory Sandbox under the Law and Justice Commission and Ministry of IT for pilot

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projects involving e-filing, triage, and analytics.

Digitize and Standardize Court Data through a secure National Justice Data Authority (NJDA) ensuring interoperability and privacy.

Launch Capacity-Building Programs for judges, lawyers, and clerical staff on AI literacy and ethical governance.

Localize Technology by developing Urdu and regional-language interfaces and hybrid access models (online + assisted centers).

Mandate Algorithmic Transparency each deployed system must publish documentation of its purpose, logic, and evaluation metrics.

Institutionalize Ethical Audits conducted annually by independent universities to detect bias and recommend improvements.

Encourage Public-Private Partnerships to develop indigenous LegalTech solutions under judicial supervision.

Ensure Continuous Public Engagement so that citizens, bar associations, and civil-society groups co-own reform outcomes.

Three-Horizon Implementation Roadmap

To ensure responsible and sustainable integration of artificial intelligence in Pakistan's civil-justice system, a three-horizon implementation roadmap is proposed. This phased strategy aligns with international best practices while remaining sensitive to Pakistan's socio-legal and institutional context.

Horizon	Time Frame	Key Actions	Expected Outcome
Foundations	1–2 years	Establish the Judicial AI Ethics Committee (JAIEC) and the AI Regulatory Sandbox; digitise court registries; initiate pilot AI dashboards in select jurisdictions.	Development of legal groundwork and institutional capacity for responsible AI adoption.
Integration	3–5 years	Expand pilot projects to provincial courts; enact the AI Accountability Act; introduce national data standards, transparency audits, and cross-agency data interoperability mechanisms.	Demonstrable improvements in judicial timeliness, cost efficiency, and procedural transparency.
Decision Support	5+ years	Deploy AI-assisted judgment summarisation, legal research automation, and predictive analytics under continuous human oversight.	Establishment of a mature, ethically governed digital-justice ecosystem anchored in constitutional safeguards.

This staged approach ensures that Pakistan's transition toward AI-enabled justice remains gradual, evidence-based, and ethically sound, balancing innovation with accountability.

Contribution to Knowledge

The research advances scholarship in three ways:

It contextualizes global AI-justice debates within a developing-country, Islamic-constitutional

framework.
It synthesizes comparative insights into an indigenous governance model (AIRT).
It offers a structured roadmap that operationalizes constitutional values through technology.

Final Reflection

Artificial intelligence is not a panacea for Pakistan's judicial backlog; it is a catalyst for institutional introspection. When guided by ethics, inclusivity, and constitutionalism, AI can bridge the chasm between law on paper and justice in practice. The ultimate challenge is not technological but moral ensuring that every innovation reaffirms the principle that justice remains a human endeavor, enhanced but never replaced by machines.

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