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TECHNOLOGY AND COURTS: VIRTUAL COURTS AND ARTIFICIAL INTELLIGENCE IN THE JUSTICE SYSTEM

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ABSTRACT

The adoption of technology in courts is a revolutionary shift in the dispensation of justice. The COVID-19 pandemic accelerated this shift towards virtual courts, online filing systems, and video-conferencing facilities, without which the judiciary in India would have ceased to work under lockdown. Simultaneously, AI has also emerged as a game-changing tool for conducting legal analytics, decision-making, and case management. This article critically looks at the growth, mechanics, and challenges thrown up by the functioning of the virtual courts and AI in courts, with particular reference to India. Constitutional concerns and the limitations imposed by ethical considerations, international best practices, and processes followed in other jurisdictions will be discussed. The conclusion reached is that while technology enhances efficiency and accessibility, it must work under human oversight to ensure fairness, accountability, and the rule of law.

Keywords: Virtual Courts, Artificial Intelligence, Judicial Reforms, E-Governance, E-Courts Project, Judicial Ethics, Data Protection, Justice Delivery, Legal Technology.

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INTRODUCTION

Justice administration has always been a human-oriented process, essentially based on physical presence, oral advocacy, and judicial discretion. The 21st century, however, has seen an unprecedented integration of law and technology. From electronic filings of documents to digital hearings to AI-assisted research, the contours of judicial functioning are fast changing.

The Indian judiciary is among the largest in the world, which has a dual challenge: managing a heavy backlog and dispensing timely justice. As of 2025, over 5 crore cases were pending in different courts across India. Technological innovation can provide solutions to make the processes more streamlined, transparent, and efficient.

Thus, virtual courts, born out of necessity during the COVID-19 pandemic, are now a sustainable model for modern justice. In the same way, Artificial Intelligence, once considered a concept of the future, is now being integrated into case management, legal research, and predictive analytics.[2]

However, such adoption also gives rise to some complicated legal, ethical, and constitutional questions: Does digitization ensure inclusiveness, or does it widen the digital divide? Can AI ever replicate human reasoning, empathy, and justice? This article evaluates these questions through the prism of recent Indian and global legal developments.

EVOLUTION OF TECHNOLOGICAL REFORMS IN THE INDIAN JUDICIARY

A. Early Stages of Judicial Computerisation

The path towards judicial digitization started in the early 2000s with the E-Courts Mission Mode Project under the National e-Governance Plan, 2005. This aimed to computerize the district and subordinate courts and put in place an integrated judicial information system.

The Supreme Court of India, by 2015, launched Phase-II of the e-Courts Project to usher in e-filing, cause-list generation, and case tracking systems. The National Judicial Data Grid became

[2]In Re: Guidelines for Court Functioning through Video Conferencing during COVID-19, (2020) SCC OnLine SC 343.

a central repository that provided case information in real time, aiming at ensuring transparency and accountability.[3]

B. The Pandemic Catalyst: Virtual Courts

The outbreak of COVID-19 in 2020 turned virtual hearings from an experimental feature into an institutional necessity. The Supreme Court, through its order in In Re: Guidelines for Court Functioning through Video Conferencing during COVID-19 (2020), directed all High Courts to adopt video-conferencing systems under Article 142 of the Constitution.

So far, by the end of 2021, e-Courts conducted over 18 lakh hearings through video-conferencing, making it the biggest judicial digitization exercise in Indian history.

Terraform - Terraform lets you declaratively describe infrastructure using configuration files that you can version, reuse, and share.

VIRTUAL COURTS: CONCEPT, DEVELOPMENT, AND FUNCTIONING

A. Definition and Objective

A virtual court denotes a digital platform for conducting proceedings online by audio-visual link without the physical presence of litigants or advocates. It enables filing of pleadings, payment of fees, recording of evidence, and delivery of judgments electronically.

The main goals include:

1. Ensuring access to justice irrespective of geographical constraints.
2. Reducing pendency by saving procedural time.
3. Encouraging transparency and accountability.
4. Supporting environmental sustainability through reduced paper usage.

[3]Government of India, Ministry of Law and Justice, E-Courts Mission Mode Project Phase II Report, 2022.

B. Key Judicial Initiatives

- Virtual Court (Traffic Case Project) started in Delhi for online disposal of challans, 2019.
- SUPACE, Supreme Court Portal for Assistance in Court Efficiency, was created in 2021 to help judges with AI-based legal research.
- Interoperable Criminal Justice System (ICJS) connects police, prisons, and courts for real-time data exchange.

C. Legislative and Policy Support

The Information Technology Act, 2000 gives legal recognition to electronic records, e-signatures, and digital evidence. Section 65B of the BharatiyaSakshya Adhiniyam, 2023, popularly called the Evidence Act, further legitimized the admissibility of electronic documents as evidence.

The virtual hearings also draw their legitimacy from the Constitution's Articles 21 and 39A, which guarantee the right to life and access to justice.

This is in contrast to other types of polycarbonate resin available in the market, which might contain up to 30% of their composition contributed by non-polymerized bisphenol A.

ADVANTAGES OF VIRTUAL COURTS

1. Accessibility: Litigants from far-flung areas can participate without the need to travel and bear expenses.
2. Efficiency: Fewer adjournments, speedier disposal of cases.
3. Transparency: Electronic recording ensures accountability and minimizes procedural manipulation.
4. Eco-Friendly: The consumption of paper and physical infrastructure is considerably reduced.
5. Judicial Productivity: E-filing and scheduling systems allow judges to manage dockets efficiently.

The Supreme Court's Annual Report of 2022 reported that the benches which adopted hybrid hearing mechanisms saw a 25% increase in disposal rates.

CHALLENGES AND LIMITATIONS OF VIRTUAL COURTS

A. Digital Divide

These wide socio-economic disparities in India imply that a large section of the litigants, particularly those in rural and semi-urban areas, do not have even decent access to the Internet, devices, or digital literacy. This undermines the constitutional promise of equal access to justice.

B. Procedural Fairness

Virtual hearings may affect the judge's ability to perceive demeanour, particularly when a witness is examined. Counsel have found difficulties in conducting cross-examination and consulting confidentially with clients.

C. Data Privacy and Cybersecurity

The handling of sensitive data in the digital domain exposes the court to the threat of cybersecurity. The absence of a comprehensive Data Protection Law pending implementation of the Digital Personal Data Protection Act, 2023, poses grave concerns over judicial data storage and third-party access.

D. Judicial Training and Infrastructure

It requires extensive training for judges, lawyers, and staff. Inequality in courts' infrastructure further complicates its uniform implementation.

E. Open Court Principle

Article 145(4) of the Constitution requires that Supreme Court proceedings be held in an open court. Virtual hearings, unless relayed live, would undermine the transparency requirement. The Supreme Court in Swapnil Tripathi v. Supreme Court of India (2018) 10 SCC 639[4]recognised that live-streaming is an extension of the principle of an open court.

[4]Swapnil Tripathi v. Supreme Court of India (2018) 10 SCC 639.

ARTIFICIAL INTELLIGENCE IN THE JUSTICE SYSTEM

A. Understanding AI in Judicial Context

- Artificial Intelligence-or AI-represents computational systems that can simulate human reasoning, prediction, and decision-making. Artificial intelligence in judicial use is deployed for:
- Examine case law databases.
- Identify precedents and relevant provisions.
- Predict case outcomes based on statistical patterns.
- Manage case allocation and scheduling

B. SUPACE: India's First AI Judicial Tool

- SUPACE, launched in 2021, is an initiative of the Supreme Court Artificial Intelligence Committee, headed by Justice D.Y. Chandrachud. SUPACE helps judges collate case summaries, analyze precedents, and point out conflicting judgments.
- Crucially, it does not deliver verdicts, only functioning as an analytical assistant.
- Justice Chandrachud underscored the fact that SUPACE is "not a substitute for human discretion but a supplement to human intelligence.[5]

C. Predictive Justice: Global Experiences

- United States: Tools like COMPAS assess risk of recidivism during sentencing.
- United Kingdom: AI supports case triage in administrative courts.
- Estonia uses AI "judges" to decide on small claims disputes below €7000.

These experiments raise questions about algorithmic bias and accountability. India, mindful of constitutional guarantees, is adopting a cautious approach that prioritizes human oversight.

[5]Government of India, Ministry of Law and Justice, E-Courts Mission Mode Project Phase II Report, 2022.

LEGAL AND ETHICAL CONCERNS WITH AI INTEGRATION

A. Algorithmic Bias and Discrimination

AI systems trained on historic judicial data may inherit biases, therefore perpetuating systemic inequalities. If the prejudices of gender, caste, or class exist in datasets, the algorithmic outputs could well reinforce them, violating Articles 14 and 15 of the Constitution.

B. Accountability and Transparency

Who is liable for a faulty AI recommendation: the coder, the judiciary, or the algorithm? The European Commission's AI Act of 2024 classifies judicial AI as "high-risk" and thus in need of transparency and human oversight.

C. Data Protection and Privacy

Judicial AI tools rely on massive data sets, raising a raft of privacy concerns under Article 21. In Justice K.S. Puttaswamy v. Union of India (2017) 10 SCC 1,[6] the Supreme Court held that a citizen's right to privacy is a fundamental right, entailing strict data protection.

D. Ethical Limits

Judges are supposed to exercise independence and impartiality, but the overreliance on AI tools also undercuts judicial reasoning and ethical accountability. The Bangalore Principles of Judicial Conduct require that 2002 decisions be made upon the law and not by algorithmic prediction.[7]

INTEGRATION OF VIRTUAL COURTS AND AI: TOWARDS A SMART JUDICIARY

In the future, the judiciary will probably integrate virtual hearings with AI-based decision support systems. For example, integration of AI with e-Courts can:

- Generate intelligent cause lists.
- Auto-classify cases based on urgency and subject matter.

[6]K.S. Puttaswamy v. Union of India (2017) 10 SCC 1.
[7]Bangalore Principles of Judicial Conduct, United Nations, 2002.

- Suggest precedents to judges.
- Facilitate the translation of judgments into regional languages using NLP.

The Digital India Vision 2030 of India envisages the judiciary as paperless, citizen-centric, accessible, transparent, and speedy.

CONSTITUTIONAL AND HUMAN RIGHTS DIMENSIONS

A. Access to Justice (Article 39A)

Technology enables access, yet must be inclusive: virtual courts need to facilitate 'assisted kiosks' and 'public digital centres' in order not to exclude marginalised litigants.

B. Right to Fair Trial (Article 21)

The right to be heard encompasses the right to effective participation. Courts must ensure that virtual hearings do not compromise any fairness or rights regarding cross-examination.

C. Judicial Independence (Article 50)

AI systems should be under judicial control, not executive agencies, in order to maintain independence and prevent manipulation.

D. Right to Privacy

All digital judicial records shall be encrypted, retained only as long as necessary, and anonymized.

COMPARATIVE PERSPECTIVES

A. United States

The U.S. Federal Courts utilize the CM/ECF (Case Management/Electronic Case Files) system for standardized e-filing and access. However, predictive tools like COMPAS have been criticized for racial bias (State v. Loomis, 2016 WI 68).[8]

B. United Kingdom

The Online Court Project in the UK allows remote filing, online mediation, and AI triage for small claims, though judicial supervision is still required to make the decisions.

C. Singapore

It introduces the balanced innovation of electronic litigation systems and an AI sentencing assistant in Singapore, with strict data protection and judicial oversight.

D. European Union

The Artificial Intelligence Act of the European Union from 2024 puts in place strict liability for the use of AI in justice; it is founded on openness and accountability.

While the models may be inspired by these systems, what India's model must do is adapt to the particular socio-economic realities.

RECOMMENDATIONS

1. Legislative Framework for Virtual Courts: Enact a Virtual Courts Act specifying procedures, jurisdiction, and evidentiary rules for online trials.
2. AI Governance Guidelines: Establish judicial standards of ethics regarding AI, guaranteeing fairness, transparency, and accountability.

[8]State v. Loomis, 2016 WI 68.

3. Digital Infrastructure Development: Invest in broadband access, cybersecurity, and digitization of courts at the district level.
4. Judicial Capacity Building: Introduce continuous training programs in digital literacy for judges and lawyers.
5. Public Legal Education: Establishment of legal aid clinics that assist underprivileged litigants in preparing for virtual proceedings.
6. Data Protection and Privacy: Use robust encryption. Comply with the Digital Personal Data Protection Act, 2023.
7. Free Judiciary Software: Avoid dependence on private vendors; adopt open standards to guarantee transparency.
8. AI Oversight Board: A national body under the Supreme Court would examine AI tools prior to judicial adoption.
9. Hybrid Model of Justice: Encourage blended hearings combining physical and virtual modes based on case nature.
10. Periodic Review: Regular auditing of the performance of virtual courts, cybersecurity, and ethical compliance.

CONCLUSION

Technology has irreversibly altered the judicial landscape. Virtual courts have shown that justice can be extended beyond physical walls, and Artificial Intelligence opens up new possibilities for enhancing efficiency and consistency. But there are moral and empathetic dimensions of human adjudication that technology can never replace.

Innovation in the judiciary is welcome, but its use has to be informed by constitutional principles-fairness, equality, and transparency. AI and virtual systems are means to an end and not an end in themselves. As Justice D.Y. Chandrachud so aptly said, Technology must serve justice, not dictate it.

The future judiciary of India would be one where digital empowerment coexists with human wisdom, where the light of justice illuminates every citizen, not through machines alone but through an enduring conscience carried by the human judges.