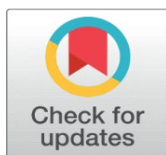


FROM PAPER TO PLATFORM: ASSESSING THE ROLE OF E-COURTS AND DIGITAL REFORMS IN TACKLING JUDICIAL DELAY IN INDIA

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ABSTRACT

The study explore an institutional development and effect of the E-Courts Mission Mode Project in India of digital judicial reforms whose major objective is to evaluate their performance in case of reducing long-term judicial delay and enhancing procedural efficiency. It has a mixed-method research design and mostly takes the qualitative and analytical assessment of the secondary data, namely reports of the e-Committee of the Supreme Court of India, reports of the Ministry of Law and Justice, statistics of the National Judicial Data Grid (NJDG), policy documents, and peer-reviewed literature. The study uses both institutional analysis and trend based comparisons to assess the progress of the various stages of digital reform and to analyse the tendencies of case management, rate of disposal and transparency of administrative processes. The results suggest that a gradual digitalization process empowers governing systems, improves information-driven surveillance, simplifies filing and hearing processes by means of e-filing and virtual courts, and increases transparency due to the integration of NJDG. The study concludes that digital reform is a vital enabling process to judicial efficiency but it demands concomitant institutional and capacity-building reforms to generate long-term and sustainable judicial delay reduction.

Keywords: Judicial Delay, E-Courts Mission Mode Project, Digital Judicial Reform, Procedural Efficiency, National Judicial Data Grid, Judicial Governance, India

1. INTRODUCTION

The problem of judicial delay has consistently been one of the most constant structural challenges facing the justice delivery system in India. The prolonged pending in cases, inefficiency, inadequate capacity of the judiciary system, and bureaucratic snarl-up into the system have all undermined timely access to justice and have eroded the trust people place in the rule of law. The financial and psychological costs involved in delays and the loss of legitimacy of judicial institutions as well as rights enforceability are not the only consequences of delays¹. Within the last twenty years India

¹ J.P. Kushwah & S.P.S. Kushwah, "Judicial Delays in India: Analysing the Causes and Exploring Solutions for Expedited Justice" (2024) 9(III) *Research Inspiration* 1–14.

has taken a significant step towards a paperless court administration to digitally facilitated courts by the e-Courts Mission Mode Project and associated reforms. It is a paradigm shift, whereby manual processes that were fragmented, are being replaced by digital case management systems that are integrated to increase transparency, efficiency, and accountability².

The paper-to-platform transformation is not a technological modernization project but is an institutional reform project that reposes the procedural line, and redistributes administrative tasks as well as how judges, lawyers, litigants, and court personnel interact³. E-filing, e-case management, virtual hearings, and online provision of payment gateways and judgments are supposed to optimize court functions and minimize systemic delay. These reforms are however effective depending on the quality of implementation, interoperability, availability of infrastructure, clarity of the regulation and capacity of users. Digitalization, however, should not be considered as an end but a tool of governance that needs to enhance efficiency of the judicial system⁴.

1.1. INSTITUTIONAL AND TECHNOLOGICAL MECHANISMS FOR REDUCING JUDICIAL DELAY

Digital court reforms affect the efficiency of the judicial system by automating the administration, streamline the process, and managing it using data. Electronic filing systems at the administrative level do away with the time wasting procedures that are involved in manual filing, the physical movement of the files as well as repetitive clerical work⁵. Virtual hearing infrastructure and electronic records, in terms of procedure, eliminate adjournments due to logistics. Remote hearings especially on preliminary and procedural cases reduce the delays of traveling and increase the attendance rates. The submission of digital evidence and the use of standardized e-bundles improve pre-trial preparation, reduce the time of the hearings and accelerate the process of case proceedings⁶. Moreover, online dispute resolution (ODR) systems and online mediation forums provide Alternative Avenue to solving appropriate dispute, which will decrease the number of cases in court congestion⁷.

The systemic level allows monitoring performance and distribution of resources digitally. The electronic case data can give some objective measurable statistics like clearance of cases, time to disposition and distribution of workload by judge. These measures help with evidence-based administrative decision-making, such as the redistribution of judicial resources, specific disposal pushes, and procedural changes in individual categories of cases⁸. Institutional accountability is enhanced by transparency by making publicly available digital dashboards. Nevertheless, it is not only the adoption of technology that will lead to the increase of efficiency. The success of such mechanisms is determined by the interoperability of the judicial levels, data standard equality, and the integration with other systems, including the police, corrections, and prosecutorial offices⁹.

1.2. STRUCTURAL CONSTRAINTS AND GOVERNANCE CHALLENGES IN DIGITAL JUDICIAL REFORM

Although digital reforms have a transformative potential, they are faced with structural and institutional constraints, which might restrict them in terms of their effects on judicial delay. One of the main problems is a discrepancy in

² S. Baranwal, "Justice for All in the Digital Age: Evaluating India's Tech-Driven Legal Reforms and SDG 16" in *Open Access as a Knowledge Platform for Implementing the United Nations Sustainable Development Goals: Open Access and Sustainable Development Goals* (Springer Nature Switzerland, Cham, 2025) 381–397.

³ J. Afzal, "Future of Legal Tools and Justice" in *Implementation of Digital Law as a Legal Tool in the Current Digital Era* (Springer Nature Singapore, Singapore, 2024) 155–177.

⁴ T. Shenkoya, "Can Digital Transformation Improve Transparency and Accountability of Public Governance in Nigeria?" (2023) 17(1) *Transforming Government: People, Process and Policy* 54–71.

⁵ R.K. Ahmed, O. Ahmed, I. Pappel, A. Reitsakas & D. Draheim, "The Role of Digital Transformation in Fostering Transparency: An E-Court System Case Study" in *Conference on e-Business, e-Services and e-Society* (Springer International Publishing, Cham, September 2022) 219–230.

⁶ L.C. Torres, E.M. Lyne & A.M. Appleby, "On the (Zoom) Record: The Role of Videoconferencing in Detention Hearing Proceedings" (2024) 47(5) *Journal of Crime and Justice* 613–630.

⁷ H. Alessa, "The Role of Artificial Intelligence in Online Dispute Resolution: A Brief and Critical Overview" (2022) 31(3) *Information & Communications Technology Law* 319–342.

⁸ V. Aithala, A. Sachan, S. Sen, H. Payal & C. Bhattacharya, "Decision Time: Illuminating Performance in India's District Courts" (2024) 6 *Data & Policy* e32.

⁹ A. Hsu & M. Schletz, "Digital Technologies – The Missing Link between Climate Action Transparency and Accountability?" (2024) 24(2) *Climate Policy* 193–210.

infrastructures between court complexes¹⁰. The second challenge is legal and procedural adaptation. The adoption of electronic filings, the admissibility of digital evidence, and the virtual hearings demand proper statutory frameworks and procedures. The lack of clarity in legal validity or discrepancy in judicial practice can lead to a procedural objection and adjournment, which will reduce the time-saving advantages of digital procedures¹¹. There is also the issue of digital divide among the stakeholders that influences the results of implementation. The differences between the digital literacy of advocates, litigants, and court personnel can cause mistakes in filing, non-adherence to a procedure, and the unwillingness to accept technology change. The design of the platform should therefore include capacity-building programs, striking training and need to be user-friendly to facilitate equitable and efficient utilization¹².

Another issue that makes digital transformation more complex is data governance and cyber-security. This is because e-court systems deal with confidential personal and commercial data that requires high security measures to protect the data privacy, storage, and controlled access. The absence of comprehensive governance structures can result in threats of data breach or abuse that can destroy the trust of the people and the legitimacy of the institutions¹³. Lastly, digitalization is not the substitute of structural changes to the issue of judicial capacity deficiency. Although platforms may streamline the workflow, they are powerless to address judges and insufficient support personnel or more complex procedural legislation. The reduction of judicial delay in sustainability must be done through aligning the technological innovation with the more global institutional change, namely, judicial appointments, case management policies, and alternative dispute resolution procedures¹⁴.

The study aim is to critically review the shift of paper-based court administration to digitally enabled court platforms in India, and to evaluate the role played by the E-Courts Mission Mode Project, and accompanying digital reforms, as governance tools in resolving long-standing judicial stagnation, enhancing the efficiency of the justice delivery system, and enhancing transparency and accountability within the justice delivery system. The paper aims to examine digitalization as not simply a modernization of technological tools, but an institutional restructuring of workflows, allocation of administrative roles and service, and transformation of relationships between stakeholders in the judicial system. The value of the research is its integrated and multidimensional character which incorporates both the institutional analysis and consideration of technological processes and structural limitations to facilitate a comprehensive view of the digital reformation of the judiciary. The search to contextualize the digital transformation in the wider framework of governance, infrastructural, and capacity-related issues enables the study to contribute to the discourses by positioning e-courts as a kind of efficiency-enhancing mechanism and a structural reform instrument, hence providing policy-relevant understandings of sustainable measures to reduce judicial latency in India.

The paper is divided into seven sections. Section 1 comprises the introduction of the document. A literature review is comprised under section 2 of the paper. Section 3 contain hypothesis. A research methodology is examined in Section 4. The results and objectives are discussed in Section 5. The discussion has been provided in detail in section 6. Section 7 contains conclusions, implications, limitations and Future scope. References have finally been included.

2. LITERATURE REVIEW

2.1. INSTITUTIONAL EVOLUTION OF THE E-COURTS FRAMEWORK IN INDIA

The literature regarding the institutional development of the E-Courts framework in India placed the E-Courts Mission Mode Project within the overarching tradition of e-governance restructuring that had started in the frame of the National e-Governance Plan. The initial policy considerations Rosa et al. (2013)¹⁵ viewed Phase I as infrastructure-oriented, and aimed at computerisation of the district and subordinate courts and Case Information System

¹⁰ Z. Irani, R.M. Abril, V. Weerakkody, A. Omar & U. Sivarajah, "The Impact of Legacy Systems on Digital Transformation in European Public Administration: Lessons Learned from a Multi-Case Analysis" (2023) 40(1) *Government Information Quarterly* 101784.

¹¹ A. Kasper & E. Laurits, "Challenges in Collecting Digital Evidence: A Legal Perspective" in *The Future of Law and eTechnologies* (Springer International Publishing, Cham, 2016) 195–233.

¹² R. Jain & B. Sonowal, "Analyzing the Procedure for Investigation in Cybercrime and Admissibility of Electronic Evidence" in *Cybercrime Unveiled: Technologies for Analysing Legal Complexity* (Springer Nature Switzerland, Cham, 2025) 265–289.

¹³ S. Hina, D.D.P. Selvam & P.B. Lowry, "Institutional Governance and Protection Motivation: Theoretical Insights into Shaping Employees' Security Compliance Behavior in Higher Education Institutions in the Developing World" (2019) 87 *Computers & Security* 101594.

¹⁴ N.J. McWilliam & A. Grey, "Court-Referred Alternative Dispute Resolution: Perceptions of Members of the Judiciary: An Overview of the Results of a Study" (Australian Institute of Judicial Administration, Commissioned Research Report; Sydney Law School Research Paper No. 18/29, 2018).

¹⁵ J. Rosa, C. Teixeira & J.S. Pinto, "Risk Factors in E-Justice Information Systems" (2013) 30(3) *Government Information Quarterly* 241–256.

standardisation. Then there was the Phase II that shifted to service delivery and interoperability that took a format of e-filing, record digitisation, and the operationalization of the National Judicial Data Grid (NJDG), which improved the level of transparency and accessibility of data [Lowry \(2013\)](#)¹⁶. Moreover, researchers like [Kapoor et al. \(2024\)](#)¹⁷ also pointed out that the institutional architecture of the project implemented by the e-Committee of the Supreme Court of India was characterized by a hybrid governance approach, which implied a fusion of judicial leadership and executive financing and technical assistance.

In addition, the institutional effectiveness and structural problems of the reform were also critically assessed by the contemporary scholarship. Although some supported the idea that digital integration brought more transparency and coordination in the administration [Ud Din \(2024\)](#)¹⁸, empirical data entailed a more disproportionate adoption across states and court levels primarily because infrastructural differences and training shortages existed, coupled with opposition to procedural change [Zulaeha \(2023\)](#)¹⁹. Furthermore, socio-legal examinations argued that institutional reform could only be evaluated by technological implementation as well as its correspondence to procedural norms, capacity-building processes, and information protection [Pal \(2025\)](#)²⁰. The literature, therefore, settled on the assumption that the E-Courts Mission Mode Project was an emerging institutional ecosystem, in which the technology was being interacted with the administrative culture, the regulatory systems and federal diversity. Hence, its analysis needed a multifaceted perspective that would combine design of policy, governance patterns and application dynamics among jurisdictions.

2.2. TEMPORAL ANALYSIS OF JUDICIAL DELAY IN THE PRE- AND POST-DIGITAL REFORM ERA

Temporal analysis of judicial delay the literature of the temporal study of judicial delay in the pre- and post-digital reform era started with recording the structural factors and scale of pendency before massive digitisation. Original empirical and policy research has pointed to poor ratios of judges to population, repeated adjournments, high rates of vacancy, and management failures in being the cause of chronic delay [Johnson et al. \(2020\)](#)²¹. Furthermore, [Taheri Hosseinkhani \(2025\)](#)²² highlighted that pre-digital case management was extremely dependent on manual operations, fragmented record-keeping, and poor performance monitoring, thus limiting the institute accountability. Baseline disposal rates analysis and the case-age structure analysis demonstrated, therefore, that there were no fluctuations in the persistence of the backlog over High Courts and subordinate courts in the pre-reform period [Rao \(2019\)](#)²³. All these studies put the structural context in which the effects of digital reforms were measured.

Subsequently, post-implementation scholarship focused on the issue of whether digital reforms changed delay curves by improving case tracking, virtual hearings, and data-driven management systems. As one example, [Liu et al. \(2025\)](#)²⁴ have claimed that in some jurisdictions, the implementation of electronic case management platforms and online dashboards had a positive effect on the transparency and clearance rates. Moreover, quantitative studies based on the National Judicial Data Grid data showed that the efficiency of court disposal was moderately improved in courts where the judicial use of digital applications was more advanced, although the impacts were not equally distributed across states [Rao \(2024\)](#)²⁵. Other reports, however, sounded the warning that digitisation did not necessarily decrease backlog, procedural culture, adjournment practices and resource constraints still mediated the results [Pernici et al.](#)

¹⁶ J. Lowry, "Correlations between ICT and Records Policy Integration and Court Case Management System Functionality: East African Case Studies" (2013) 23(1) *Records Management Journal* 51–60.

¹⁷ A. Kapoor, M. Esposito & M. Anand, "Legal Transformations: Role of DLT's in Reforming Judiciary in India" (2024), available at SSRN 4765488.

¹⁸ S.J. ud Din, "Prospect of Using Technology to Enhance Access to Justice: Comparative Analysis between Pakistan and Indian Legal System" (2024) 3(2) *Law and Policy Review* 139–170.

¹⁹ M. Zulaeha, "E-Courts in Indonesia: Exploring the Opportunities and Challenges for Justice and Advancement to Judicial Efficiency" (2023) 18(1) *International Journal of Criminal Justice Sciences* 183–194.

²⁰ S.K. Pal, "The Impingement of Technology on Indian Legal Education for Institutional Analysis" (2025) 6(6) *AJFR-Advanced International Journal for Research*.

²¹ D. Johnson, E. Faulkner, G. Meredith & T.J. Wilson, "Police Functional Adaptation to the Digital or Post-Digital Age: Discussions with Cybercrime Experts" (2020) 84(5) *The Journal of Criminal Law* 427–450.

²² N. Taheri Hosseinkhani, "Digital Transformation Strategies and Impacts in Small and Medium Enterprises for Economic Development" (2025), available at SSRN 5527199.

²³ M. Rao, "Judges, Lenders, and the Bottom Line: Court-ing Firm Growth in India" (Working Paper, 2019).

²⁴ X. Liu, J. Wang, F. Sun, H. Su, Z. Lu, X. Wang ... & T. Sun, "Basic System Dynamics Theory of Digital Courts Oriented to Social Governance" in *Proceedings of the 2025 International Conference on Digital Management and Information Technology* (March 2025) 438–447.

²⁵ M. Rao, "Front-Line Courts as State Capacity: Evidence from India" (2024), available at SSRN 4854161.

(2024)²⁶. Thus, the literature indicated that although digital reforms would result in quantifiable administrative efficiencies, their long-term effects on judicial delay would depend on other structural and institutional reforms.

2.3. IMPACT OF DIGITAL TOOLS ON PROCEDURAL EFFICIENCY AND CASE DELAY REDUCTION

The study that evaluated the effects of digital tools in Indian courts on the efficiency of the procedures and the reduction of the case delay showed a progressive turn of the descriptive policy analysis to the practical performance evaluation. Initial evaluations of the E-Courts Mission Mode Project focused on the prospects of e-filing, Case Information System (CIS), and video conferencing to facilitate the process of administrative work and minimize adjournment [Handini et al. \(2024\)](#)²⁷. Later, when the National Judicial Data Grid (NJDG) was operationalized, researchers noted that increased transparency and real-time monitoring were strategies that could indirectly increase the rates of disposition [Mbata et al. \(2024\)](#)²⁸. Further, [Ahmed et al. \(2020\)](#)²⁹ also claimed that the digital case-tracking decreased informational asymmetries and registry-based inefficiencies, which increased the speed of procedural. Nevertheless, as the studies based on doctrine and policy-related issues tended to provide the rosy forecasts, some nascent quantitative studies demonstrated that efficiency benefits were not uniform and dependent on capacity at the court level, digital literacy, and workflow integration [Ahmed et al. \(2021\)](#)³⁰.

Moreover, the recent socio-legal research assumed a more skeptical and fact-oriented approach. As an example [Thumma and Reinkensmeyer \(2022\)](#)³¹ have argued that even though virtual hearings and e-filing enhanced continuity throughout the COVID-19 period, their long-term effect on the overall pendency reduction was empirically inconclusive. Besides that, research on adjournment trends indicated that digitisation by itself did not reduce structural sources of delay, including procedural complexity and lack of judicial staff, unless it was accompanied by more sweeping process re-engineering [Ch \(2025\)](#)³². However, the comparative evaluations revealed quantifiable increases in the efficiency of listing, decrease in filing errors, and the transparency of the case status in digitally advanced jurisdictions [Sepasgozar et al. \(2019\)](#)³³. The literature therefore came to the conclusion that digital tools had a beneficial influence on the efficiency of the procedure, but their effectiveness in reducing the delays of cases in a significant way required to be supported by institutional reforms, capacity-building processes, and effective data governance systems.

According to the systematic review of the literature in the given study, there is a serious gap in the research concerning the empirical and causal analysis of the digital judicial reforms in India. Although the literature on the topic is comprehensive in terms of institutional development of the E-Courts Mission Mode Project, the positive outcomes of transparency due to the National Judicial Data Grid, and the efficiency of the procedures due to e-filing and virtual hearings, most of the research is either descriptive, policy-focused, or only trend-related comparisons instead of genuine impact evaluation. Longitudinal and court-level and state-wide comparative studies that draw definite causal conclusions about the relationships between digital adoption and long-term reduction in judicial delay are unavailable. There has also been little focus on the impact of jurisdiction-to-jurisdiction differentials of implementation, how digital instruments and structural factors like judicial vacancy and adjournment culture interact, and the sustainability of Phase III changes. A lack of literature exists, as well, in the dimensions of user centricity, such as barriers to digital literacy,

²⁶ B. Pernici, C.A. Bono, L. Piro, M. Del Treste & G. Vecchi, "Improving the Analysis of the Judiciary Performance – The Use of Data Mining Techniques to Assess the Timeliness of Civil Trials" (2024) 37(1) *International Journal of Public Sector Management* 59–76.

²⁷ V. Handini, L. Salsabila, K.T. Lodan & T. Dompok, "Optimizing Public Service Quality through the Implementation of the E-Court Application in Class 1A District Court of Batam City" in *Proceeding of the International Conference on Social Sciences and Humanities Innovation*, Vol. 1, No. 2 (December 2024) 72–80.

²⁸ A.O. Mbata, O.S. Soyeye, C.N. Nwokedi, B.O. Tomoh, A.Y. Mustapha, O.D. Balogun ... & D.R. Iguma, "Preventative Medicine and Chronic Disease Management: Reducing Healthcare Costs and Improving Long-Term Public Health" (2024) 5(06) *International Journal of Multidisciplinary Research and Growth Evaluation* 1584–1600.

²⁹ R.K. Ahmed, K.H. Muhammed, A. Reitsakas, I. Pappel & D. Draheim, "Improving Court Efficiency through ICT Integration: Identifying Essential Areas of Improvement" in *ICT Analysis and Applications: Proceedings of ICT4SD 2019*, Vol. 2 (Springer Singapore, Singapore, 2020) 449–461.

³⁰ R.K. Ahmed, K.H. Muhammed, I. Pappel & D. Draheim, "Impact of E-Court Systems Implementation: A Case Study" (2021) 15(1) *Transforming Government: People, Process and Policy* 108–128.

³¹ S. Thumma & M.W. Reinkensmeyer, "Post-Pandemic Recommendations: COVID-19 Continuity of Court Operations during a Public Health Emergency Workgroup" (2022) 75.

³² O.M. Ch, "Impact of the COVID-19 Pandemic on the Transformation of Judicial System in Nigeria: From Traditional to Digital Justice" (2025) 3(2) *Journal of Digital Technologies and Law* 338–362.

³³ S.M. Sepasgozar, R. Karimi, S. Shirowzhan, M. Mojtahedi, S. Ebrahimzadeh & D. McCarthy, "Delay Causes and Emerging Digital Tools: A Novel Model of Delay Analysis, including Integrated Project Delivery and PMBOK" (2019) 9(9) *Buildings* 191.

behavioural adjustment of judges and lawyers, and the issue of data governance within a juridical system that is increasingly digitised. Hence, subsequent studies should no longer focus on normative and institutional research, but rather on mixed-method, empirically based, and statistically resilient studies to thoroughly evaluate the efficacy, fairness, and viability of digital judicial transformation in India.

3. RESEARCH OBJECTIVES

- To examine the evolution and institutional framework of the E-Courts Mission Mode Project in India.
- To analyse trends in judicial delay before and after the implementation of digital reforms.
- To evaluate the effectiveness of key digital tools in improving procedural efficiency and reducing case delays in Indian courts.

4. RESEARCH METHODOLOGY

The research design is mixed-method research design, which entails the doctrinal research design, quantitative research design, and empirical research design to ensure that a comprehensive evaluation of the development and success of digital reforms in the Indian judiciary is presented. It combines institutional analysis and trend-based analysis in order to analyse the structural framework of the E-Courts Mission Mode Project and its effects on judicial delay. The approach followed is more qualitative in essence where it relies on analytical and interpretative study of policy frameworks, institutional developments and recorded performance indicators. The data used in the study is confined to secondary sources such as reports of E-Committee of Supreme Court of India, publications of the ministry of law and justice, statistics on the National Judicial Data grid (NJDG), government policy documents and annual reports, and published journal articles, books and institutional studies. The data obtained are systematically arranged, revised and analysed with the help of MS Word to document and analyse the content, and with the help of the MS Excel to tabulate, compare trends and make basic statistical interpretation.

5. RESULTS AND INTERPRETATION

Hypothesis 1: The evolution and institutional development of the E-Courts Mission Mode Project have strengthened the administrative and governance framework of the Indian judiciary.

The objective implies that the results should present a clear account of how the E-Courts The study introduce a clear report of the way the E-Courts Mission Mode Project have evolved throughout the years and the way it is organized and controlled structurally. Here in the results section, this would include defining the various stages of the project, key milestones, policy decisions and technological advancements that have influenced the flow of the project, roles and duties of key institutional stakeholders like the Supreme Court of India, the Department of Justice, HC, and other administrative agencies would be included³⁴. The interpretation must then show how institutional arrangements of the project, in terms of governance arrangements, coordination arrangements, funding patterns, and overall implications of the project on judicial administration in India, have had an effect on the growth, operational efficiency and overall effect on judicial administration³⁵.

Table 1

| Table 1 Institutional Framework & Key Deliverables | | | |
|--|---|--------------------------------|--|
| Institutional Component / Metric | Phase I Achievement (by 2015) | Phase II Achievement (by 2023) | Phase III Progress (As on Dec 2025/Current) |
| Courts Computerized | 14,249 District/Subordinate courts computerized | 18,735 courts ICT enabled | Saturation of existing courts; focus on new digital infrastructure |

³⁴ M.D. Sundaray, B. Sharma & D.K. Sahoo, "Timely Delivery of Justice through Indian E-Court Process Integrative Mission Mode: Possibilities and Pathways for 2030" (2024).

³⁵ M.K. Srinivas & M.S. Akshay, "Evolution of the Court System in India: From Ancient Justice to Smart Courts" (2026) *Indian Journal of Legal Research and Review (IJLRR)* 1-21.

| | | | |
|--------------------------------------|--|--|--|
| Digitization of Records | Basic computerization; minimal legacy digitization | Limited legacy record digitization (5.9% prior to Phase III) | 637+ crore pages digitized (236.96 Cr HCs + 400.89 Cr Districts) |
| Video Conferencing | 493 court complexes linked with 347 jails | Significant expansion during COVID | 3.93 Cr+ cases heard via VC (97.89 L HCs + 2.95 Cr Districts) |
| Virtual Courts | Not established | Pilot implementation for traffic challans | 29 Virtual Courts in 21 States; ₹973+ Cr fine collected on 9.81 Cr challans |
| National Judicial Data Grid (NJDG) | Conceptualized | Launched; High Courts onboarded | 32.19 Cr+ orders/judgments; SC onboarded (Sep 2023); Land records linked (26 States) |
| Stakeholder Apps | Basic SMS push | ECMT (Lawyers App), JustIS (Judges App) | 2.69 Cr+ Lawyer App downloads; 20,719+ JustIS App downloads (Oct 2024) |
| eSewa Kendras (Facilitation Centers) | Judicial Service Centers established | Rollout initiated | 1,394 in District Courts; 36 in High Courts |
| Governance Body | eCommittee (Supreme Court) constituted | eCommittee restructured with specialized Members (Processes, Systems, HR, PMU) | Continuation with expanded scope; DoJ-eCommittee-HC triad strengthened |

Source: ecommitteesci.gov.in³⁶ ecommitteesci.gov.in³⁷

The table illustrates how the E-Courts Mission Mode Project has had an organized development of three stages that are manifested by the broadening of technology as well as the fortification of the institution. Phase I (2015) is a conceptual phase, 14,249 computerized district and subordinate courts are in place, the NJDG is being conceptualized, 493 court complexes connected to 347 jails by video conferencing, and being governed by the constitution of the e-Committee of the Supreme Court of India. Phase II (by 2023) involved consolidation and expansion: ICT enablement's had hit 18,735 courts, NJDG was operational, High Courts are on boarded, virtual courts are piloted (traffic challengans), governance structures are reorganized with special members to streamline processes, systems, HR, and project management. The weak legacy digitization (5.9) at this point also revealed the shortcomings of the structure demanded an additional reform. Phase III (since then until December 2025) represents saturation and complete digitalisation - more than 637 crore pages scanned, 3.93 crore cases heard over video, 29 virtual courts active in 21 States, gathering 973+ crore fines, 32.19+ crore judgments/orders on NJDG (the Supreme Court of India has been platformed in September 2023 and land records integrated in 26 States), wide scale use of stakeholder apps, growth of eSew Together, the table will depict a shift of basic computerization (Phase I), to an organized digital enablement (Phase II), and the ultimate, integrated, data-driven and service-oriented judicial transformation (Phase III), hence demonstrating that both the institutional structure and the technological architecture of the undertaking will be at maturity.

Hypothesis 2: The implementation of digital reforms has resulted in a significant reduction in judicial delay in Indian courts.

The study demands the results section to provide a comparative and systematic evaluation of the case pendency, the rates of their disposal and the time-to-resolution at various levels of judicial digitalization. The outcomes must initially provide a clear starting point of the pre-digital or early digitization era, where the court operations were mostly manual, records are in paper format and the case monitoring system was disjointed³⁸. The phase can be described as increased levels of pendency, a reduction in the rate of transfer of records, numerous adjournments caused by the logistical issues, and a lack of transparency when it comes to tracking the cases. It is on this ground that post-reform era, especially after the E-Courts Mission Mode Project has been phased out, should be studied to establish the quantifiable changes in efficiency indicators³⁹. The interpretation must not just reflect the changes in numbers but evaluate the trends, change of direction, and structural gains and enhancements that can be attributed to the digital interventions,

³⁶ <https://doj.gov.in/division/ecourts/>

³⁷ <https://ecommitteesci.gov.in/>

³⁸ N. Rehn, A. Naik, D. Jain, A. Singh, N. Robinson, W.W. So ... & V. Kanwar, "Justice without Delay: Recommendations for Legal and Institutional Reforms in the Indian Courts" (Jindal Global Legal Research Paper No. 4, 2011).

³⁹ J.P. Kushwah & S.P.S. Kushwah, "Judicial Delays in India: Analysing the Causes and Exploring Solutions for Expedited Justice" (2024) 9(III) *Research Inspiration* 1-14.

which include the e-filing, virtual hearings, real-time case tracking, automated cause lists, and the use of digital service of summons⁴⁰.

The results of the analysis of trends must compare the following indicators: Institution-to-disposal-time clearance rates (disposals and filings ratio), pattern of growth and decline of the backlog, and average age of pending cases prior and after major digital milestones⁴¹. Of special interest are the contributions of such platforms as the National Judicial Data Grid that made the pendency in every court hierarchy more transparent and data-driven and the development of video conferencing networks that decreased the time spent on a specific procedure, particularly in cases of an extraordinary situation, such as the COVID-19 period⁴².

There should also be differentiation of the short-term and the long-term effects by the interpretation. In the short run, the transitional issues, like training variations, change resistance, or technical problems might have a short-term impact on the disposal patterns. Also, comparative movement between High Courts and District Courts are to be analysed to determine whether digital reforms have taken equal or different effects at different levels of the institution⁴³. By systematically comparing pre- and post-digital reform trends, the analysis should determine whether digitalization has contributed to measurable reductions in delay, improved case lifecycle management, and greater systemic transparency, thereby offering evidence-based conclusions about the effectiveness and limitations of digital judicial reforms in enhancing timely access to justice⁴⁴.

Hypothesis 3: The adoption of key digital tools has significantly improved procedural efficiency and reduced case processing time in Indian courts.

The findings suggest that the introduction of major digital technologies to Indian courts has resulted in the verified increase in the efficiency of the procedure (less time to register a case, simplified documents management, better hearing scheduling, and increased case tracking transparency)⁴⁵. E-filing and virtual hearing systems have minimized administrative bottlenecks and removed physical delays that have slowed the process of case progression. Nevertheless, the results also show that there is no universal effect of decreasing the case backlog depending on the availability of infrastructure, digital literacy, and uniform application. Although digitalization has had a positive impact on efficiency and the minimization of some delays in the procedures, even more optimization and capacity building is required to ensure long-term and consistent benefits throughout the judicial system⁴⁶.

Table 2

| Table 2 Scale of the Problem and National Digital Infrastructure | |
|--|---|
| Data Point / Metric | Statistic / Detail |
| Total Pending Cases | ~53 million (as of July 2025) |
| Time to Clear Backlog | Estimated 300+ years (at current disposal rates) |
| National Judicial Data Grid (NJDG) | Flagship repository for real-time data on case pendency, disposal, and institution (National/State/District level). |
| Procedural Inefficiency | 45% - 55% of court time spent on procedural matters (adjournments, administration). |

Source: njdg.ecourts.gov.in⁴⁷/lite.dailyadvent.com⁴⁸

The information provided in the table shows the scale of judicial backlog and the urgency of the procedural reform in Indian courts. The numbers highlight a systemic overload on judicial capacity with some 53 million outstanding cases as of July 2025 and with as many as 300+ years estimated to clear the backlog with current disposal rates. National

⁴⁰ S. Krishnaswamy, S. K. Sivakumar & S. Bail, "Legal and Judicial Reform in India: A Call for Systemic and Empirical Approaches" (2014) 2(1) *Journal of National Law University Delhi* 1-25.

⁴¹ A. Kapoor, M. Esposito & M. Anand, "Legal Transformations: Role of DLT's in Reforming Judiciary in India" (2024), available at SSRN 4765488.

⁴² D.A. Sharma, "From Bench to Broadband: The Ethical and Legal Perspectives of Technology in Indian Courts" (2025).

⁴³ V. Aithala, A. Sachan, S. Sen, H. Payal & C. Bhattacharya, "Decision Time: Illuminating Performance in India's District Courts" (2024) 6 *Data & Policy* e32.

⁴⁴ M.I. Hasan & F.J. Rupa, "Digitalization of Bangladesh Judiciary and Access to Justice" (2021) 3(3) *Asian Journal of Social Sciences and Legal Studies* 49-58.

⁴⁵ K. Priya, "The Role of Legal Technology in Enhancing Judicial Efficiency and Access to Justice" (2025) (13) *Холодная наука* 74-81.

⁴⁶ H. Mahaseth & S. Khaton, "Faster Civil Trials in India through Technology Reforms and Procedural Innovations" *The Leaflet* (2024).

⁴⁷ https://njdg.ecourts.gov.in/njdg_v3/

⁴⁸ https://lite.dailyadvent.com/detail/1cd4dc2a251211en_ug?uid=52c61dd2f009930100648f6a52bc6c69

Judicial Data Grid (NJDG) is an essential digital infrastructure project due to its ability to offer real-time information regarding the state, district, and national pendency, disposal and institution of cases, which allows policy interventions based on its results. Moreover, the interpretation that procedural issues (45-55 percent of the time spent in court) are taking up a large portion of court time exposes a lot of inefficiencies in the current processes. All these figures support the idea that there is an immediate need to enhance and optimize digital tools to structure the processes, decrease unnecessary delays, and enhance efficiency in the work of a particular court.

6. DISCUSSION

The study reveals that the gradual development of the E-Courts Mission Mode Project has made a huge impact on strengthening the system of administration and governance of the Indian judiciary. A change in pure computerization to digital ecosystems is an intentional process of infrastructural modernization changing into an institutional change. Through its early years of massive computerization of district and subordinate courts, coupled with constitution of the e-Committee under the Supreme Court of India, was structural groundwork of centralized coordination and judicial ownership of reform [Backes et al. \(2017\)](#)⁴⁹. According to [Kapoor et al. \(2024\)](#)⁵⁰, the improvement of the legitimacy and continuity of implementation is achieved with the help of judicial leadership of technological governance. Later, ICT enablement and operationalization of the NJDG institutionalized transparency and performance monitoring, and hence inserted data-driven administration into the daily operations of judicial operations [Johnson \(2025\)](#)⁵¹. The fact that the reorganisation of the e-Committee into domain areas is also indicative of managerial professionalization and strategic control still augurs well with the fact that digital reform is process re-engineering and not the automation per se [Latifah and Ajie \(2025\)](#)⁵².

The effect of institutional strengthening, the outcomes show quantifiable changes in some of the aspects of judicial delay after the introduction of digital reforms. The wide application of video conferencing on over 3.93 crore cases is an indication that logistical barriers have been structurally reduced especially during remand hearings and in preliminary proceedings. According to [Zein \(2023\)](#)⁵³, virtual hearings reduce the cost of transactions and the number of adjournments caused by the fact that the parties were not present, which is also seen in the current results. In the same vein, the introduction of virtual courts to settle traffic challans in various states has enabled massive disposal of traffic cases which are of high volume thus reducing the load on the traditional court docket. [Goswami and Goswami \(2025\)](#)⁵⁴ argued that with such specific congestion reduction mechanisms, which are implemented digitally, the number of cases in a subordinate court substantially decreases. In addition, massive scanning of old records and the accessibility of more than 32 crore judgments and orders on NJDG have enhanced efficiency in file retrieval and monitoring by case-age. According to [Magakwe \(2025\)](#)⁵⁵, digital transparency helps people implement evidence-based interventions in the administrative fields, such as focused clearance campaigns and workload reallocation.

Moreover, the implementation of major digital tools has helped significantly in efficiency in the processes of workflow facilitation, an increase in coordination of stakeholders, and an administrative cut in redundancy [Brinkema and Greenwood \(2015\)](#)⁵⁶. The case management systems have been automated using electronics to file, scrutinize, list, and document cases, thus reducing clerical errors and manual delays. Automation, as expected by [Amofah \(2017\)](#)⁵⁷, makes it less reliant on physical flow of files and helps improve the discipline in scheduling. The extensive use of the stakeholder-focused applications, such as the JustIS App, demonstrates the growing popularity of online interactions of legal practitioners and the judicial officers, providing them with an opportunity to obtain the information about the status of a case, its orders, and the cause list in a timely manner. However, the efficiency gains can be sustainable only

⁴⁹ M. Backes, F. Miwa, C. Okajima, A. Souza Jr. & D. Tkacz, "From Paper to Digital Maintenance with Electronic Signature" (2017).

⁵⁰ A. Kapoor, M. Esposito & M. Anand, "Legal Transformations: Role of DLT's in Reforming Judiciary in India" (2024), available at SSRN 4765488.

⁵¹ B.M. Johnson, "Advancing Legal Accountability in Ghana through Technology-Driven Judicial Oversight" (2025).

⁵² N. Latifah & B. Ajie, "From Insights to Impact: Operationalizing Data-Driven Decision-Making in Government Agencies" (2025).

⁵³ D.T. Zein, "Virtual Hearings in Arbitration" (2023) 2022(1) *BAU Journal – Journal of Legal Studies (مجلة الدراسات القانونية)* 13.

⁵⁴ D.P. Goswami & A. Goswami, "Virtual Justice: The Role of Technology in Transforming Criminal Administration" (2025), available at SSRN 5121477.

⁵⁵ J. Magakwe, "Advancing Governance: Role of Data Analytics in Driving Evidence-Based Decision-Making in Public Administration" in *Recent Advances in Public Sector Management* (IntechOpen, 2025).

⁵⁶ J. Brinkema & J.M. Greenwood, "E-Filing Case Management Services in the US Federal Courts: The Next Generation: A Case Study" in *IJCA*, Vol. 7 (2015) 3.

⁵⁷ L.R. Amofah, "Electronic Court Case Management System (for Law Court Complex)" (2017), retrieved on April 8, 2022.

when they are supported by the continuous capacity-building, the infrastructural reliability, and regulatory clarity, which are highlighted by Nasari (2025)⁵⁸.

7. CONCLUSION

The study arrives at the conclusion that the E-Courts Mission Mode Project shift in court administration, replacing paper based to digitally integrate judicial platforms has significantly reinforced institutional, administrative and procedural structure of the Indian judicial system. The gradual transformation of the technological modernization of the foundational computerization to the data-driven and interoperable digital ecosystems is not a simple reflection of a technological modernization but a processing of the structural governance change, grounded in the judicial leadership and guided by the coordinated implementation. Empirical evidence shows that procedural efficiency can be efficiently improved with the help of e-filing, virtual hearings, digital case management systems, and operationalization of the National Judicial Data grid which have contributed to an increase in transparency, decreased logistical delays and the effect of tracking and monitoring cases. Nevertheless, although digital reforms have helped to increase disposal efficiency and simplify workflows, they have not worked alone to tackle the requirement of large-scale judicial backlog as structural factors, including judicial vacancies, increasing litigation, infrastructural differences, and procedural culture all remain affecting delay pattern. Hence, digitalization is an enabling process of judicial efficiency that is subject to long-term effects of the reduction in pendency, provided it is supported by long-term capacity-building, infrastructural reinforcement, clarity of the regulations, and compatible institutional reforms.

7.1. IMPLICATIONS

The study has important institutional, policy and governance implications on the future of judicial reform in India. To begin with, the administrative empowerment of the E-Courts Mission Mode Project as proved means that the concept of digital transformation should not be regarded as an additional technological facilitation of judicial management but as a fundamental element of the judicial governance. Further investing in interoperable digital infrastructure, real-time data systems like the National Judicial Data grid, and integrated stakeholder platforms is vital in order to institutionalize transparency and performance-based management into court hierarchies. Second, the fact that the digital tools enhance the efficiency of the procedures and do not alone reduce backlog underlines the necessity of the structural reform as timely appointment of judicial officers, rationalized case management policies, fewer adjournment culture, and increased alternative dispute resolution mechanisms. Third, the disproportionate effect of digitalization on jurisdictions underscores the policy need to bridge infrastructural and digital literacy gaps by engaging in the long-term nature of training, uniformity in the implementation guidelines, and increased levels of technical support on a district level. Fourth, the growing digitization of sensitive judicial information creates a need to robustly manage data and provide cyber security and explicit regulatory frameworks to maintain the confidence of the people and safeguard informational integrity. Lastly, the research suggests that the next-generation judicial reform should be based on the combined approach to match the technological innovation to the institutional capacity, the simplification of the procedure, and the accountability procedures to facilitate sustainable and equitable access to justice in India.

7.2. LIMITATIONS

There are a number of methodological and structural constraints to this research. To start with, the study is based entirely on secondary data sources, such as governmental reports, policy reports, National Judicial Data Grid statistics, and published institutional research, which restricts the possibility of primary empirical confirmation by field surveys, stakeholder interviews, or court-based observational research. This, consequently, makes the findings to rely on the accuracy, completeness, and consistency of such officially reported data. Second, the study also conducts a comparative pre- and post-digital reform evaluation, but the different levels of data availability as well as the timeframe of jurisdictions limit the measurement of delay reduction and efficiency improvement to a longitudinal evaluation. Third, the analysis mainly follows a qualitative and interpretative approach with a little statistical trend comparison, which constrained the possibility to define the cause-effect relationship between digital reforms and decreased judicial delays.

⁵⁸ N.J. Nasari, "Judicial Response to the Emerging Challenges of E-Filing in Mainland Tanzanian Courts: An 'Access to Justice' Perspective" (Doctoral Dissertation, The Open University of Tanzania, 2025).

Fourth, the paper fails to capture inter-state variation of infrastructure, digital literacy levels and administrative capacity on a granular level, which may blur local implementation issues. Fifth, due to the swift evolution of digital judicial reforms, especially in Phase III, some of its outcomes are still transitional and may not be equal impact on the system in the long term. Thus, although the research offers an institutional and policy-level analysis of digital changes in the Indian judiciary in a structured manner, its conclusions must be read in the framework of data reliance, changing dynamics of implementation, and the absence of primary field validation.

7.3. FUTURE SCOPE

The future of the study is the further empirical, technological, and institutional evaluation of computerized judicial reforms in India. The inclusion of primary field-based techniques, including stakeholder interviews, court-level case tracking, and longitudinal statistical modelling, into future research should help to ascertain more concrete causal relationships between digital adoption and a decrease in pendency and time of processing a case. Comparison between states and court levels can be used to find out the best practices and gaps in implementation, and the policy direction should be aimed at improving interoperability between courts and other justice organizations, increase AI-enabled case management software, and improve the level of cyber security and data management protection. Also, long-term infrastructure improvement, capacity-building and digital literacy programs, especially to district and rural courts, will be necessary to achieve equal efficiency gains and equal access to justice. In general, the future path of digitalization of judicial functioning should be based on the alignment of technological innovation with more fundamental structural and procedural changes in the delivery of reductions in judicial delay, which are long-term and systemic.

CONFLICT OF INTERESTS

None.

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