

Dr. Vinayak Parshuram Karande,
Assistant Professor,
ICLES' Motilal Jhunjhunwala College of Arts, Science & Commerce, Vashi, Navi
Mumbai.
vinayakkarande9@gmail.com, 9821275057.

**Digital Road to Justice in India using Artificial Intelligence (AI) & Machine Learning
(ML)**

Abstract

The Indian judicial system attracts criticism due to the claim that its increasing number of pending cases (more than 55 million) has created an obstacle to socio-economic development. The administrative inefficiencies associated with judicial delays have now become a systematic constraint on the national system. They are impacting individuals, businesses, and the government's ability to govern effectively. This paper provides a critical analysis of the causes, extent, and economic impact of judicial delays in India with respect to how they impact economic growth, ease of doing business, enforceability of contracts, and the welfare of citizens. The research employs a doctrinal and analytical methodology and utilizes secondary sources of information collected from institutional reports, research studies, and government policy documents. The findings suggest that systemic inefficiencies in India's legal environment are resulting in low levels of productivity, decreased investor confidence, and limited access to justice. The paper concludes with recommendations for policymakers, which also include suggestions applying Digital technology, Artificial Intelligence (AI) & Machine Learning (ML) to reform India's judiciary. Through this research we are proposing something called "SMART JUDICIARY".

Keywords – Obstacle, Justice, Technology.

JEL classification – Primary – K41. Secondary – K40, O33, C45.

1. Introduction

One of the key roles the judiciary plays in upholding the rule of law, protecting rights, and facilitating economic transactions. However, the ability of the judiciary to fulfil these roles is hindered significantly by numerous delays that result from the large number of cases pending in the courts throughout India (GNLU, 2024). As many of you have heard, "justice delayed is

justice denied". Chief Justice Surya Kant of India stated recently that "Justice delayed is not justice denied, it is justice destroyed" when he spoke at the Fali Nariman Memorial Lecture on January 24, 2026 in Mumbai. He reported that, in addition to the backlog of over 80,000 cases in the Supreme Court, there were approximately 63 lac or 63 lakh cases pending in the High Courts and over 4 crore or 4.6 crore cases pending at the District Court level. That adds up to over 5.5 crore pending cases in all courts throughout the country (NJDG G. o.). Given that the backlog of pending cases in India is greater than 55 million and is among the busiest judicial systems in the world today, most businesses experience an economic loss due to lack of timely access to the judicial system. Delaying access to justice not only adversely affects the efficiency of business operations, it also negatively impacts the ability of government to operate efficiently, resulting in many people experiencing negative consequences on their daily lives (IAS D. , 2025).

2. What's Behind the Delay of Cases?

There are structural reasons such as there are fewer judges than the number of people in the country (1 judge per about 21 million) and many still existing positions in courts that have not yet been filled and also need to have the appropriate equipment (India, 2022). There are procedural reasons such as attorneys continuing to postpone proceedings; legal rules can be very complicated; there usually is a lag in the time frame of getting evidence for the case or completing investigations. There are institutional reasons such as the case management system can be improved; nobody holds the system accountable; and much case work is still done using the old paper methods (International, 2025). There are policy issues including government at all levels being the greatest amount of litigation; there is too much criminality for minor offences; and many times there are laws that aren't written well (ForumIAS, 2024).

3. How Individuals Are Affected

- **The right to access justice:** Many people will never receive the justice they are entitled to because of these delays; evidence gets lost, and witnesses have different stories when it's taken real long to get to justice (Peace, 2021).
- **Undertrial crisis:** 75% of the people in the jails of India have not been tried or convicted yet. On average, they spend years waiting in jail for their cases to progress through the judicial process.

- **The socio-economic consequences may include:** The expense associated with acquiring legal assistance; the extraordinary degree of stress and uncertainty created for all persons involved; and the potential loss of the ability to earn an income while a case is pending final determination (NJDG, 2025).

4. **Impact on Government and Governance**

- **Policy Implementation** — many large-scale infrastructure projects become stuck in judicial proceedings for long periods, creating regulatory uncertainty and hindering implementation.
- **Financial Impact** — as the amount of money spent on litigation increases substantially, so does the financial outlay for resolving litigation and settling claims arising from litigation.
- **Administrative Burden** — Government agencies spend a disproportionate amount of resources on litigation rather than using these same resources productively (International, 2025).

5. **Challenges we are facing today:**

- The backlog continues to grow despite reform efforts;
- Digital technology has not been adopted sufficiently;
- The current level of court infrastructure is severely deficient; and
- The number of commercial disputes continues to increase (GNLU, 2024).

6. **Research Methodology**

This analysis is technically based on diverse academic resources such as different local and state departments' reports, the National Judicial Data Grid, and academic research papers. This analysis has been conducted in mostly a historical way which involves analyzing numerical data with descriptive reports. Softwares Used are SPSS & Technique like Multiple Linear Regression is used applying Normality Test, Multicollinearity (VIF), Heteroscedasticity & ANOVA significance.

7. **Empirical Framework**

The purpose of this study is to provide a quantitative assessment about the economic effect of delays in the court system on economic growth through the following regression analysis.

Model Specification

$$[GDPG_t = \alpha + \beta_1 JD_t + \beta_2 INV_t + \beta_3 GEXP_t + \beta_4 INF_t + \epsilon_t]$$

Where:

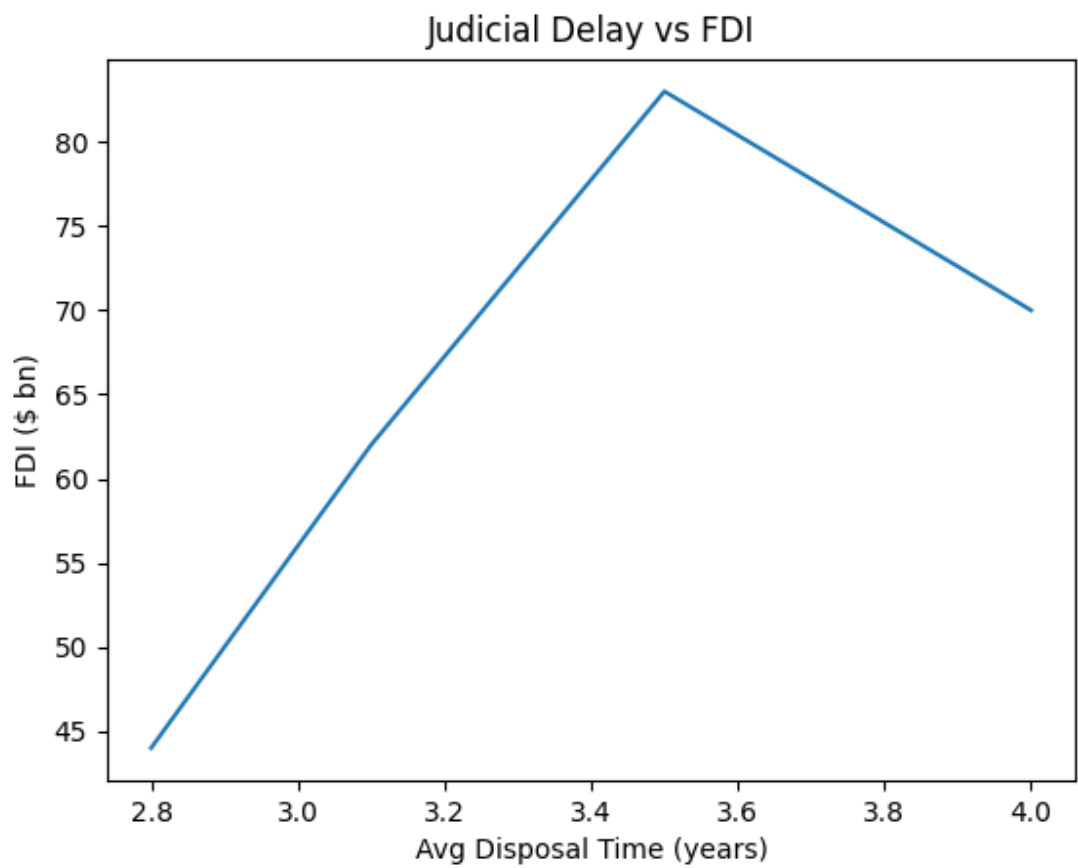
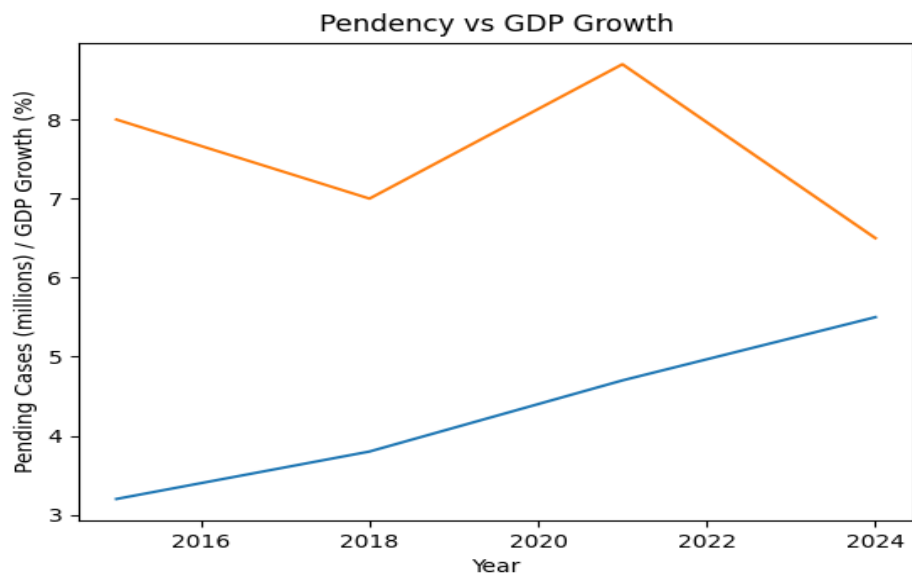
- GDPG = GDP Growth Rate
- JD = Judicial Delay Indicator (pendency per million cases / avg disposal time)
- INV = Investment (FDI inflows)
- GEXP = Government expenditure
- INF = Inflation rate
- ϵ = Error term

Expected Relationship

- $\beta_1 < 0 \rightarrow$ Judicial delays negatively impact GDP growth

Table 1: Suggested Dataset Structure

Year	Pending Cases (millions)	Avg Disposal Time (years)	GDP Growth (%)	FDI (\$ bn)	Inflation (%)
2015	3.2	2.8	8	44	5.9
2018	3.8	3.1	7	62	4.9
2021	4.7	3.5	8.7	83	5.1
2024	5.5	4	6.5	70	5.4



8. What Are Possible Solutions?

- **Structural Reforms** - More judges, fill all vacant judicial and court positions, and build additional courts.
- **Procedural Reforms** - Eliminate unnecessary adjournments, streamline procedures, and hold parties to adherence with timelines;
- **Policy Reforms** - Reduce government litigants, eliminate some felonies, decriminalize certain minor offences, and utilize ADR processes like mediation and arbitration to reduce the number of disputes requiring court resolution.
- **Technological Reforms** - Choose courts by using an AI-based method; improve the quality of e-Courts and electronic court proceedings; and develop and populate a complete set of digital documentation.

As our research is titled “Technological Solutions”, we will explore further the various types of Technology Reforms.

9. Proposed Framework for a Smart Judiciary

A more modern-type solution is to develop an integrated AI-assisted court system which will consist of a Judicial Case Management System that integrates Predictive Analytics, Intelligent Automation, NLP/Report Writer, and other digital support systems (e-Courts). A new way to create a Judicial System that no longer reacts to conditions that have developed by taking a proactive approach based upon knowledge generated by data collection and continuous improvement in all areas (IAS D. , 2025).

10. Artificial Intelligence (AI) & Machine Learning (ML) Solutions

- Using machine learning models to triage and prioritize cases based on urgency, complexity and type will allow for automated priority assignments. Solving the problems of case backlog/inadequate/not prioritized correctly will allow for cases to be disposed of more efficiently/reduce pending cases.
- **Predictive Models** - By using past case decisions to create predictive models of how long a particular case will likely take to resolve, how likely it is to settle, etc., will provide case participants with more certainty about resolution outcomes, thus shortening the overall length of the litigation process/Potentially leading to an increased rate of early resolution (through ADR) and reduced likelihood of case litigating unnecessarily.
- **AI-based intelligent scheduling system:** Using an AI-based intelligent scheduling system, the courts can create their calendars based on the availability of judges, complexities of cases, historical durations of cases, etc. Having improved efficiency in scheduling and reduced adjournments will positively affect court productivity.
- **NLP – Natural Language Processing:** Using natural language processing to summarize petitions, extract the core fact and identify the valid legal issues will help to eliminate the burden of manually performing these tasks, freeing up resources and reducing the potential for human errors.
- **AI-Powered Legal Research Assistants:** will solve the slow legal research problem. We can develop AI tools which will be similar to ROSS Intelligence providing related case laws instantly & suggest precedents which will lead to faster judgments & better quality of judgments.
- **Online Dispute Resolution (ODR) Platforms:** This mainly addresses the burden on the court from minor cases. Digital platforms created for Consumer disputes & Small commercial cases. It will impact by diverting 30-40% cases from courts leading to faster resolution.
- **Blockchain for Evidence & Records:** This is going to solve the problem of Evidence tempering & record loss. It will help to secure digital storage of Case files & Evidence trails impacting Transparency & Trust in judicial process (Dalmia, 2023).
 - **Access of citizens to AI Chatbots:** This will result in digital legal awareness. AI assistants can help Citizens with Filing cases, Legal rights, Court procedures etc. This will Decrease reliance on middlemen, Improves access to justice.

11. Integrated Architecture

Input - E-filing, digital evidence, case data, judicial data, external data.

Processing - AI models Case classification Predictive analysis NLP ADR Legal research assistance intelligent scheduling

Output - Decision support for judges, smart scheduling, ODR resolution, Analytics and dashboards

Data & technology infrastructure should back the above process to achieve fast, transparent, accessible & technology driven justice for all. Only then we can expect reduced pendency of cases, lower cost of litigation, better access to justice, transparency & accountability and confidence of investors'

12. Worldwide Best Practices

- **Estonia** – Courts completely digital
- **Singapore** – AI based case management system
- **China** – AI judges in online courts

These models may be adopted by India within its constitutional framework.

13. Strategy for Implementation in India Digitize legacy case records

- Phase 1: Digitization: E-filing in all courts
- Phase 2: AI implementation: Implement AI for case triage Scheduling & Legal Research
- Phase 3: Automation: Smart courts with minimum human intervention
- Phase 4: Policy & Regulation: Data privacy laws, AI ethics in the judiciary, Judicial Oversight

14. Problems & Risks

- Ethical concerns Bias in artificial intelligence models
- Concerns about transparency
Legal Issues
- Admissibility of AI Output
- Responsibility for the decisions
Infrastructure problems

- Digital divide
- Training of judges and lawyers

15. Expected Results

- Reduce case closure time by 30-50%
- Pendency to fall significantly.
- Reduction in litigation cost by 20-40%.
- substantially improve Ease of doing business
- Access to justice will be more inclusive & fast.

16. Conclusion

The overall conclusion drawn from this research is that, despite its constitutional strength, the Indian judiciary has been transformed into a large structural bottleneck due to the huge numbers of cases that are pending and the lack of progress in dealing with them because of the procedural delays and inefficiencies of the various institutions involved. These delays are not only detrimental to people who do not receive justice in a timely manner, but they also negatively affect the ability of businesses to conduct business properly due to poor enforcement of contracts, and they also severely limit the ability of the government to carry out its functions and implement policies. In combination, these problems prevent economic growth and diminish public confidence in the judicial system, leading to many negative consequences for society (IAS P. , 2025).

17. Findings from the study

The findings from this study indicate that judicial inefficiency, as a hidden constraint to economic growth, affects levels of investment, productivity, and the ability of nations to develop. However, emerging technologies, such as artificial intelligence, machine learning, and digital courts, present a unique opportunity to create efficiency in the Indian judicial system, improve the backlog of cases, and enhance access to justice. Consequently, it is imperative that a comprehensive reform strategy — encompassing structural expansion, procedural simplification, and policy reform, as well as the use of advanced technologies — is needed to convert the judiciary from being an impediment to economic and social progress into a catalyst for such progress.

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