



Ethical Integration of Augmented Intelligence in Indian Courts: Analyzing its Predictive Challenges and Perspectives in Adoption

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Abstract. The Augmented Intelligence emphasizes on collaboration between humans and Artificial Intelligence (AI), considering the guidelines to ensure responsible and ethical use, design and deployment of critical applications that enhance human capabilities with technology induced AI. The use of augmented intelligence have been introduced in the Indian Court Systems as a method to translate judicial documents in regional languages in August, 2024, while its use in legal research is common since 2020. The pressing issues like increasing judicial pendency, lack of judges, delay in access to justice, lack of infrastructure and other socio-political issues poses a formidable challenge to those awaiting timely resolution at various Indian courts. As AI driven transformative tools have emerged to rectify such issues, however its integration raises significant ethical concerns of bias, accountability, data privacy, misuse of data, over reliance on AI and degradation of Judicial Independence. Adopting a mixed methodology of research, this paper combines qualitative and quantitative approach to access the ethical considerations and challenges associated with AI in courts. The primary data was collected through a structured questionnaire to evaluate the concerns and acceptance to Augmented Intelligence in Indian Court system. This study analyses the responses to identify prevailing attitudes, highlight barriers of acceptance and propose ethical framework to guide implementation. The findings reveal cautious optimism with concerns about risk of algorithmic bias, diminished human oversight and potential misuse of data.

Keywords: Artificial Intelligence, Augmented Intelligence, Courts, Ethicality, Judicial Transformation.

1. Introduction

Artificial Intelligence (AI) is reshaping our lives and has become one of the most promising technologies of our times. William Ross Ashby introduced the concept of ‘intelligence amplification’ in his seminal work *Design for a Brain* introduced in 1952 [1]. This concept was further developed by Douglas Engelbart and reproduced in his paper of 1962, ‘Augmenting Human Intellect: A Conceptual Framework’ [2]. It was in the year 1956, during the Dartmouth Conference, John McCarthy coined the term ‘Artificial Intelligence’ that marked the foundation of this field in 1959 through ‘Pro-

grams with Common Sense’ [3]. It was from the second decade of 21st century, wherein the concerns about AI replacing the human roles was discussed and showcased widely through social media, and the term ‘Augmented Intelligence’ became known with frameworks like Gartner’s Augmented Intelligence model in 2017 [4].

India’s Judicial system is rooted in the ancient scriptures like the Dharma Shastra, later influenced by colonial invaders supporting common law and post 1947, adapting modern constitutional principles [5]. The Indian Judiciary follows a three tier hierarchy of courts, at the apex being the Supreme Court of India, followed by High Courts of various states and at the district level supported by the subordinate courts [6]. These courts were reformed and unified with time to adhere to the principles of Justice. The technological advancements started to reshape the Indian courts since 2007, through the E-courts Mission Mode Project[7] aimed at digitizing the records and implementing in 2017 the ICNIS (Integrated Case Management Information System) in the Supreme Court to enable digital case filing and tracking [8].

It was during the covid-19 pandemic that began a new era of inclusivity by introducing virtual hearings. The year 2019 saw the establishment of Supreme Court’s AI Committee and in 2021, enabling AI driven case analysis tools like SUPACE (Supreme Courts Portal for Assistance in Court’s Efficiency) [9]. It was in 2023 when a groundbreaking initiative was taken up by Supreme Court to translate an extensive collection of 36,000 judgments into 22 scheduled languages of India through the AI translation tool SUVAS (Supreme Court VidhikAnuvaad Software) [10].

On 13th April, 2024, the former CJI of India, D.Y. Chandrachud in the Indo-Singapore Judicial Conference, highlighted the importance of augmented intelligence in the realm of legal practice and judicial decision making in India. He highlighted that, “sophisticated legal argumentation continues to remain in the exclusive realm of human lawyers. However, several routine tasks such as case law research, filing of pleadings, reviewing contracts, and conducting due diligence can deeply benefit from artificial intelligence and automation. In fact, relegating such tasks to artificial intelligence leaves lawyers with more time and bandwidth. They can focus their time on high-value activities such as legal strategy, innovative argumentation and personalized client services” [11].

On a similar front, it was on the first anniversary of ‘i-Amicus’ an AI based knowledge sharing platform created by ICICI Bank to resolve disputes, where Justice HimaKohlif of the Supreme Court commented that AI presents an opportunity, not a threat, to the legal field. She highlighted AI’s potential to boost efficiency by automating tasks and analyzing data, ultimately improving client outcomes and creating new business opportunities. However, Justice Kohli stresses the importance of ethical considerations and cautions against overlooking potential biases or risks to transparency and accountability. She advocated for the responsible integration of AI, guided by clear guidelines to ensure equitable justice [12].

Speaking at the launch of six new applications developed by the Patna High Courts e-committee for technical advancement, the Patna High Court’s Chief JusticeK. Vinod

Chandra, raised skepticism upon the use of Generative AI for judgment writing and said that, “Essentially what we have to realise when we go into computerization, is that there are certain things where human interference cannot be avoided, like writing judgments, for one. I don't know how fruitful it would be to have AI write judgments. I hear a lot about that all over, but I do not think the time has come yet to speak about what you call AI judgments” [13]. While it was in the case of *Md. Zakir Hussain v. State of Manipur* (2024 LiveLaw (Man) 4), Justice A Guneshwar Sharma of the Manipur High Court, while addressing an issue pertaining to the service conditions of the Village Defence Force (VDF) and getting no explanation from the government counsel regarding the procedure of disengagement of a VDF personnel, had taken assistance through ChatGPT 3.5 to gather pertinent information [14].

This research aims to explore the effective use of augmented intelligence in Indian Courts and analyze the ethical implications that can impact judicial efficiency. It seeks to examine the key ethical concerns observed in various countries upon incorporating AI technology in court management, like algorithmic bias, transparency, accountability and data privacy. This research shall delve into stakeholders' perspective to assess trust levels and perceived risks of AI technologies. It shall address the following questions in this study, with an aim to propose a framework for ethical adoption of augmented intelligence in Indian courts:

1. What are the contemporary AI technologies employed in courts and their accessibility in the legal system?
2. What are the key ethical concerns associated with the use of AI in judicial decision-making?
3. What are the perceptions of different stakeholders about the incorporation of AI in Indian courts?
4. What framework or guidelines may be adopted, amended or formulated to ensure ethical application of AI in the Indian Courts?

2. Case Study

The integration of Augmented Intelligence into court room system have benefits, accompanied with certain ethical challenges as faced in the recent times. AI tools for language interpretation, translation, legal research and transcription have been adopted to uphold the principles of fairness and due process in the courts. The integration of AI in court procedure stems towards significant ethical challenges which can impact fairness, accountability and confidentiality in judicial proceedings. One of the major ethical concerns have been witnessed in the studies carried out in the US, showcasing “Algorithmic Bias”. In the COMPAS algorithm concerns over disproportionately labelling African American defendants as high risk was recorded in 2019.

These concerns of racial bias in sentencing for a trained AI model perpetuating historical data lead to unfairly skewed demographics outcomes [15]. Another famous instance of Xenophobia emerged in 2019 the Dutch Childcare Benefits Scandal (Toeslagenaffaire), when the Dutch Tax Authorities augmented self-learning AI algorithm to create risk profiles to spot child care frauds. This AI led the authorities to

penalize over many families based upon foreign ethnicity and low income that ruined thousands of lives and brought down the Dutch Government in 2021 [16].

Another critical issue is with the transparency and accountability, as AI’s “Black Box” nature can obscure decision making processes. The lack of sufficient explanations upon evaluation by EVAAS (Educational Value Added Assessment System), an AI powered tool augmented by schools to evaluate teachers performance was held to be opaque in providing explanation and following a due Process[17]. The legitimacy of the Gen AI in courts is currently one of the major challenges been faced in many courts of the world. The submission of legal briefs with the help of Gen AI, has led to fictitious citations that raised primary concern over accuracy and reliability[18]. Moreover, the authentication and chain of custody of AI generated evidence present significant hurdles, that poses as challenge for the parties in dispute to prove the integrity of the evidence [19]. In Puloka case a Washington state superior court judge rejected the admission of video exhibits of a triple murder case stemming in 2021 were enhanced by AI, to which the forensic video analysis community denied it as a reliable source of evidence [20].

A law professor from the University of Surrey, Ryan Abbot in his book The Reasonable Robot: Artificial Intelligence and the Law, writes about the contemporary debate surrounding the use regulation of AI in judiciary raises caution about the stemming terminology of “Humans in Loop”, that might slowly disrupt the judicial activity [21]. This view can be approved by many scholars but its effective use cannot be denied in demographic studies conducted in other countries. The western countries like USA, UK, Estonia, France, Austria, Netherlands, Latvia and Australia have augmented AI into its judicial policies which can be understood through the Table 1.

Table 1: Use of Augmented Intelligence in Courts of Other Countries

Country	AI Project	Year	Key Uses	Ethical Concerns
USA	COMPAS	2000	Sentencing and Assessment Risk of Recidivism	Algorithmic Bias & Lack of Transparency
	CaseText	2013	Legal Research and document analysis	Reliability of Data Sourced
	ROSS Intelligence	2015	AI-powered legal research	Data Accuracy & Over Reliance on Lawyers
	Modria	2011	Online Dispute Resolution (ODR)	Technical Proficiency and Accessibility issue
UK	Her Majesty’s Online Court System	2019	Online courts for low-value claims	Transparency in decision making processes
	Luminance	2016	AI for legal document review and summari-	Ensuring un-biased analysis

			zation	
	National Data Analytics Solution (NDAS)	2018	Predictive Crime Analytics	Risks of over-reliance on AI predictions
Estonia	AI Judge	2019	Small Claims Adjudication	Balancing Efficiency with Fairness
	e-File System	2016	Case Management and secure document sharing	Data Privacy and security
	Kratt AI	2020	Virtual Assistants for Public Service Queries	Over simplification of legal information
France	Predictice	2016	Predictive Analytics for Case Outcomes	Judicial Independence & Public Trust
	Case Law Analytics	2017	Forecasts probabilities for legal strategies	Risk of misuse in high stakes cases
	Doctrine.fr	2014	AI driven legal research and case law discovery	Maintaining Data Accuracy
Netherlands	Judicial Algorithmic Systems	2020	Case analysis and sentence recommendations	Lack of Transparency in decision making
	e- Court (Rechtwijzer)	2013	Online Dispute Resolution (Civil Cases)	Accessibility & Fairness
Latvia	AI-LATGOV Project	2021	Automating legal translations and document analysis	Quality and accuracy of Tanslations
	Virtual Court Assistants	2020	AI bot for scheduling cases and notifying	Tech Failures
Australia	AI Dispute Resolution Tool	2020	Resolving disputes in Family Law and Civil Cases	Ensuring Fairness and Legal Compliance
	Harrison.ai Legal Pilot	2021	AI to assess medical negligence cases	Oversight in complex medico-legal cases

3. Methodology

This research adopts a mixed method approach to explore the ethical use of augmented intelligence in the Indian courts and its associated challenges. The study inte-

grates both qualitative and quantitative methodologies to ensure a comprehensive analysis of the subject.

3.1 Research Design

The research is structured as an analytical study combining primary and secondary data sources. The primary data is derived from a structured questionnaire targeting individuals associated with courts in India, while secondary data includes a review of existing literature, case study and published articles from India and the world. This dual approach allows a robust approach for both theoretical and empirical dimensions.

3.2 Sample Selection

The study focuses on individuals associated in the Indian Legal ecosystem, including law students, legal researchers, Academicians, Lawyers, Advocates and other legal professionals. A stratified random sampling technique is employed to engage respondents, ensuring a representative sample that captures diverse perspectives within legal fraternity.

3.3 Data Collection

The primary data is collected through a structured questionnaire designed to assess the approach to adopting AI in court administration. The questionnaire deals with key issues like awareness and understanding of augmented intelligence in judicial process, perceived benefits of AI integration in courts, ethical concerns, readiness and openness to AI-driven solutions in judicial decision making and management. The questionnaire includes both close-ended and open ended questions to gather quantitative data for statistical analysis and qualitative insights to explore nuanced perspectives.

The secondary data is gathered from academic journals, published articles and government reports on adopting augmented intelligence in Indian courts. Particular emphasize has been placed upon case studies from different countries that have implemented augmented intelligence in courts such as Estonia, China and United States to draw parallels and identify lessons for India.

3.4 Data Analysis

Quantitative data from the questionnaire is analyzed using descriptive and inferential statistics. Statistical software like SPSS and Excel is used for data analysis. The Qualitative responses from open-ended questions are analyzed thematically to identify recurring themes and unique insights. The study adheres to ethical research practices, ensuring the anonymity and confidentiality of respondents.

4 Findings

A total of 120 respondents have participated in this research study, which comprised of 46 (Female) and 74 (Male) sharing their views through a structured questionnaire, towards incorporating Augmented Intelligence in court systems in India as classified under Table 2.

Table 2: Classification of Respondents

Designation	Female	Male	Total
Academician	18	20	38
Lawyer/Advocate	8	14	22
Court Administrators	3	5	8
Research Scholar	7	10	17
Student	10	25	35
Grand Total	46	74	120

4.1 AI Awareness and User Proficiency

The results indicated in Fig. 1 show that 78% respondents had a high level of familiarity with AI and its associated technologies while 22% reported a low level of familiarity, highlighting the need for targeted education and outreach to bridge the knowledge gap in AI proficiency.

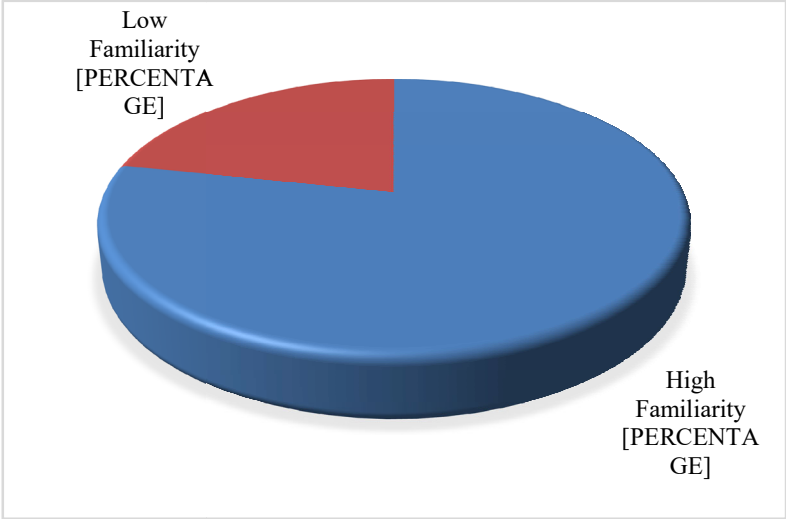


Fig. 1.Familiarity with AI and Related Technologies

4.2 Adoption of AI or Digital Tools in Courts

The findings in Fig. 2 reveal varied levels of AI adoption for the respective respondents, while an equal percentage of 50% has been reported towards acceptance

and denial towards awareness about adoption of use of AI or Digital Tools in Court Management Systems, these awareness rates vary unevenly across all stake holders group.

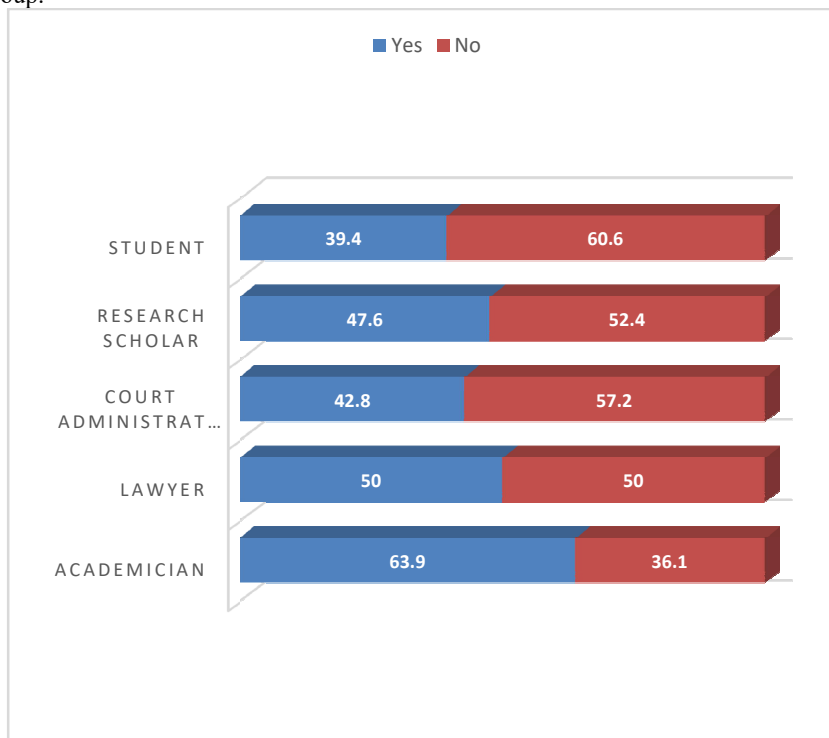


Fig. 2. Adoption of AI or Digital Tools in Courts

4.3 Perceived Impact of AI on Efficiency

The findings under Fig. 3 reveal that 64.2% of respondents believe AI could improve efficiency in the Indian Judicial System, while 31.7 % expressed uncertainty, indicating cautious optimism, while only 4.1% disagreed reflecting minimal skepticism. These findings varied for the different stake holder groups, while only few of the students and academicians respondents disagreed, the others reflected a high level of acceptance.

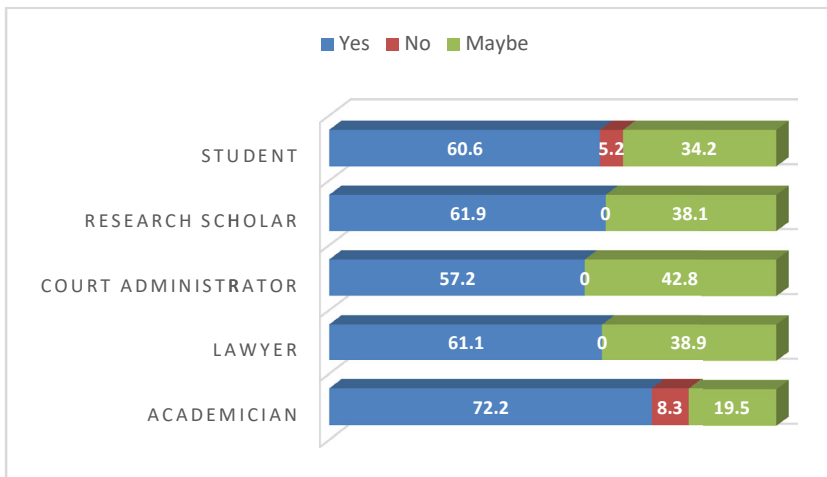


Fig. 3. Perceived Impact of AI on Efficiency

4.4 Perceived AI Applications in Improving Court Operations

The findings in Fig. 4 indicate a significant support for Augmented Intelligence in operations towards Legal Research (79.2%) being the highest, followed by Case Management (74.2%), highlighting their perceived utility in streamlining workflow. While significantly moderate acceptance was showcased towards Online Dispute Resolution (46.7%) and the least towards assistance in Sentencing/Bail Recommendations (24.2%). Only 1.7% respondents denied AI potential, underscoring broad acknowledgment of its transformative role in judicial processes.

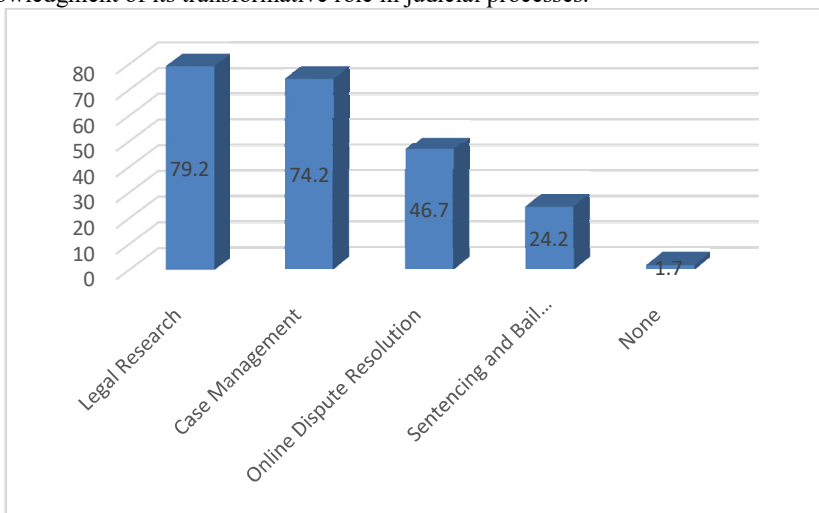


Fig. 4. Perceived AI Application in Improving Court Operation

4.5 Concerns Over Adoption of AI and Compromising Human Judgment

The findings in Fig. 5 reveal that 42.5% of respondents are concerned that AI adoption could compromise human judgment in legal decisions. While, 38.5% remain uncertain indicating mixed opinions. Only 19.2% respondents disagreed with this concern. This analyses suggests a cautious approach towards accepting AI’s and its impact on judicial decision making.

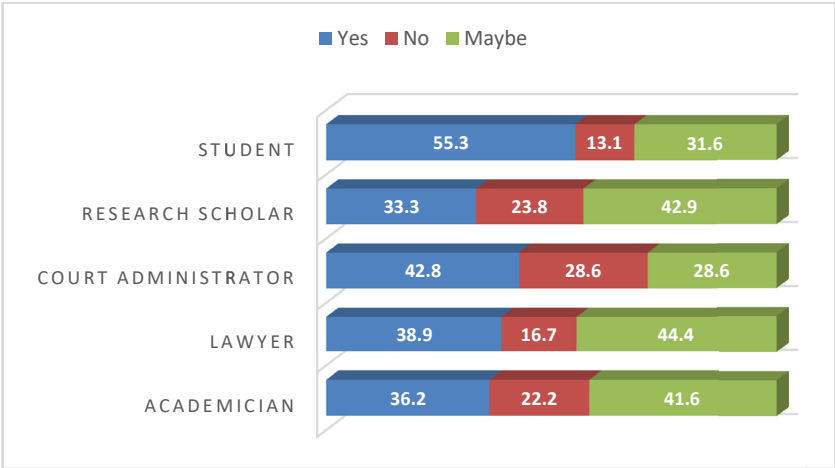


Fig. 5. Compromised Human Judgment over Adoption of AI

4.6 Ethical Concerns Regarding AI in Courts

The findings in Fig. 6 reveal notable concerns about ethicality of augmented intelligence in courts. The most significant ethical issue is over-reliance on AI (59.2%), followed by Potential Misuse of Judicial Data (55.8%) and Violation of Data Privacy (52.5%). Lack of Accountability also ranks high at 50.8%, suggesting fear of diminished responsibility in AI-driven decisions. Bias in Sentencing (30.8%) and Degrading Judicial Independence (37.5%) are concerns which are less prevalent. Only 8.3% of respondents denied the predictable occurrence of any of the above ethical issues, underscoring widespread recognition of the risks AI might pose to judicial integrity.

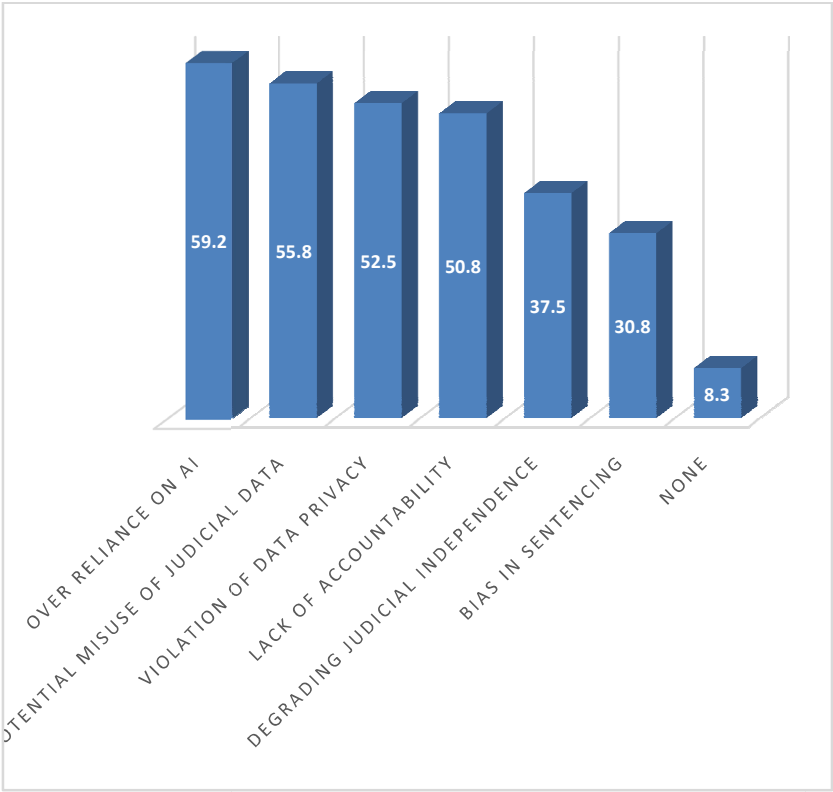


Fig. 6. Predicting Ethical Concerns through AI in Courts

4.7 Human Review of AI Decisions to Ensure Ethical Compliance

The findings in Fig. 7 indicate strong support for human oversight for AI generated decisions, with 79.2% of respondents affirming to ensure ethical compliance, while 13.3% expressing uncertainty. A minimal opposition of 7.5% is reported towards the inception of maintaining human accountability in AI-assisted Judicial Processes. Although the rate of acceptance varied among different stakeholders, it was reported that few students (13.1%), academicians (8.3%) and Lawyers (5.6%), denied the need of human review in AI assisted Judicial Decisions.

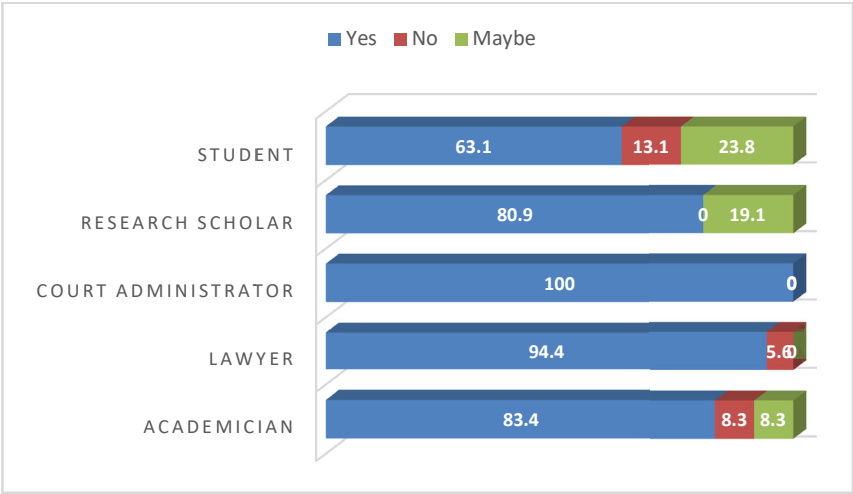


Fig. 7. Human Review of AI Decisions for Ethical Compliance

4.8 Ethical Preparedness for AI Integration in Indian Judicial System

The findings reveal a significant skepticism about the ethical readiness of the Indian Judiciary for AI adoption, with 78% of respondents expressing concerns, while only 22% stakeholders believe that the judiciary is prepared to ethically implement AI, highlighting for greater focus on ethical guidelines, training and regulatory development.

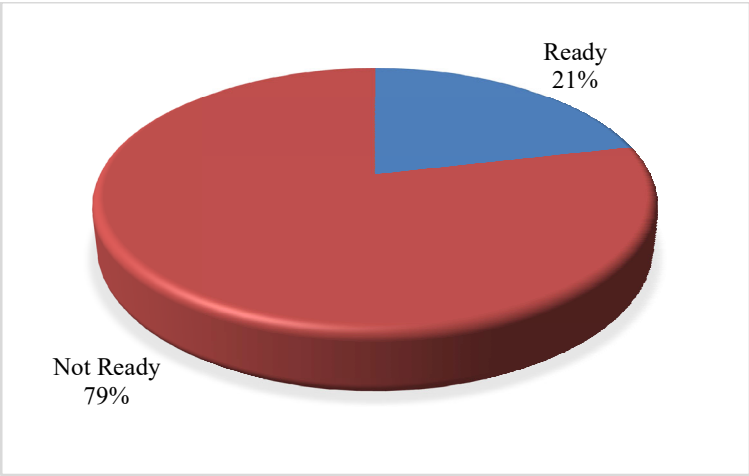


Fig. 8. Ethical Preparedness for AI Integration in Indian Judicial System

4.9 Expected Benefits of Augmented Intelligence in Courts

The findings in Fig. 9 highlight the most significant benefit anticipated from Augmented Intelligence in courts is a Faster Resolution of Cases (70%), followed by Cost-Effective Processes (62.5%). While Reduced Human Error and Improved Access to Justice For Citizens both received 49.2%, reflecting a high perception for AI's potential to enhance judicial efficiency and fairness.

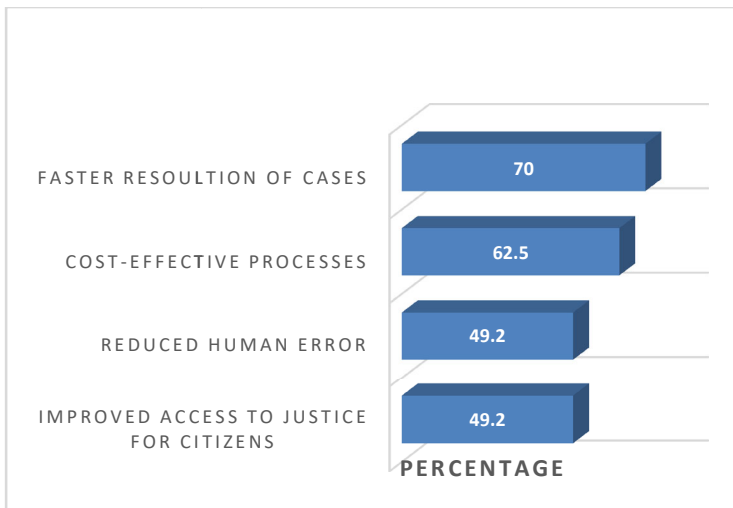


Fig. 9. Expected Benefits of Augmented Intelligence in Courts

Overall, these results underscore a strong belief in AI's potential to streamline court operations, enhance efficiency and improve accessibility, though careful implementation and ethical considerations remain crucial for its successful integration.

5. Conclusion

The study highlights the AI's potential to enhance court efficiency and improve access to justice. However the findings underscore significant concerns over risks of bias, fear of diminished judicial independence and accountability. They also portray the importance of ensuring human oversight and review of AI driven decisions to maintain ethical compliance in the judicial process. There is a considerable skepticism about augmented intelligence in the Indian Judiciary and the readiness to ethically manage such integration. The recognized need for comprehensive regulations, better training for legal professionals and framework to address the ethical concerns has been analyzed from this study.

Legislations like EU Artificial Intelligence Act passed in 2023 have been a step forward in addressing ethical concerns over AI. The European Parliaments legislative

resolution, adopted on 13th March, 2024 lays down harmonized rules for mandating transparency and accountability particularly with high risk AI systems. Similarly, The Algorithmic Accountability Act, 2023 of United States proposes impact assessments for high risk automated decision systems used in sensitive domains such as the judiciary to ensure they do not compromise ethical standards. In the near future, the study of such international legislations could benefit India, for adopting a similar regulation to mitigate risks associated with augmenting AI in Indian judicial system and aligning with ethical principles to enhance the quality of Justice. The focus of such research studies shall be pivotal to regain the efficacy of augmented Intelligence that will be incorporated in Indian courts, while justifying the realms of equality, equity and fairness in the halls of Justice.

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