

Virtual Justice: The Role of Technology in Transforming Criminal Administration

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Abstract: The contemporary landscape of criminal administration is undergoing a paradigm shift with the integration of advanced technologies. The concept of "Virtual Justice" encapsulates this transformative journey, where cutting-edge technologies play a pivotal role in reshaping the landscape of criminal administration. This evolution is not merely confined to the digitization of legal processes but extends to a comprehensive reimagining of the entire justice system. Virtual Justice encompasses a spectrum of technological interventions, from artificial intelligence-driven case management systems to virtual courtrooms and online dispute resolution mechanisms. These innovations have the potential to streamline and enhance the efficiency of criminal proceedings, providing unprecedented accessibility and transparency. The role of technology is not just confined to expediting administrative tasks; it has become an integral component in evidence collection, crime analysis, and even predictive policing. However, this intersection of technology and justice also raises ethical and legal considerations, prompting a critical examination of the balance between efficiency and due process. As we delve into the intricate web of Virtual Justice, this exploration seeks to unravel the multifaceted impact of technology on criminal administration, offering insights into the promises, challenges, and ethical dimensions that characterize this technological revolution in the pursuit of justice. This paper explores the profound impact of technology on the justice system, focusing on its transformative role in shaping virtual justice. As society becomes increasingly digitized, the infusion of technology into criminal administration processes has led to a redefinition of traditional legal frameworks, evidentiary procedures, and court proceedings. This abstract provides a glimpse into the key themes covered, including the utilization of artificial intelligence, virtual courts, electronic evidence management, and the challenges and opportunities arising from this technological evolution.

Keywords: *Virtual Justice, Technology, Criminal Administration.*

1. Introduction

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The Indian criminal justice system has its roots in the British colonial period when India was under British governance until 1947. This system, rooted in English Common Law, remains under the jurisdiction of the central government in New Delhi post-independence. The central government retains control while simultaneously distributing power to state governments for the administration of justice. The Indian Penal Code (IPC), enacted in 1860¹ and currently in force, outlines criminal law in India, including a wide range of offenses from severe crimes like homicide and sexual assault to lesser ones like breaking and stealing, all considered violations of cultural norms.²

Internationally, the acknowledgment of the criminal justice system increased in the mid-20th century, particularly with the 1967 inquiry conducted by the President's Commission on Law Enforcement and the Administration of Justice in the United States, which focused on statewide crime concerns. The increasing need to deal with crime led to the creation of criminal justice as a separate field, which concentrates on activities such as investigation, collecting evidence, apprehending, prosecuting, and punishing offenders, which may involve imprisonment and other penalties specified by the law.³

The criminal justice system's responsibilities go beyond responding to crimes, including crime prevention, defining legal boundaries, offering community service for rehabilitating offenders, and collecting penalties as needed. Siegel and Worrall outline that the criminal justice system functions primarily through three key processes: investigating crimes and capturing suspects, prosecuting, and punishing criminals, and rehabilitating individuals requiring correctional assistance. Management in ancient criminal justice systems used different behavioural approaches to improve the efficiency of trial proceedings. Modern problem-solving courts aim to enhance trial processes by adopting comprehensive methodologies. These courts in India utilize technology to handle concerns like time management and trial delays.⁴ Trial presentation tools are a type of technology that organizes important material from legal databases to be presented in court. This entails summarising material into case issues to present them to a jury. Recording witness testimony during trial proceedings is crucial but might be time-consuming due to witnesses' unavailability on specified dates. Such absenteeism may result in trial postponements and the accumulation of pending cases.

¹ The Indian Penal Code 1860.

² N Prabha Unnithan, *Crime and Justice in India* 13 (SAGE Publications, 2013).

³ B. Gibson and P. Cavadino, *The Criminal Justice System: An Introduction* 228 (Waterside Press, 2008).

⁴ Randall G. Sheldon, William B. Brown, et.al., *Crime and Criminal Justice in American Society* 191 (Waveland Press, 2nd edn., 2015).

Advanced technologies like as video and audio hearings can be used to tackle this difficulty. Moreover, the integration of digital evidence has grown significantly in contemporary legal proceedings. Promoting the extensive utilization of digital evidence in Indian criminal cases could greatly speed up proceedings and enhance efficiency. It is essential to identify chances for implementing these technologies to maximize their benefits in the Indian criminal justice system.⁵

The Indian judiciary system is facing significant challenges in key areas such as corruption, trial procedures, and justice delivery.⁶ The first issue that needs immediate attention is the widespread problem of delayed justice in the Indian judicial system, which has now become a basic weakness. The famous saying "Justice delayed is justice denied," commonly associated with William Ewart Gladstone and William Penn, strongly reflects the situation of Indian legal processes.⁷ Penn Williams stated that our legal system correctly affirms that delaying justice is a form of injustice. Indian courts have been overwhelmed by many unresolved cases, reaching over 30 million in different courts nationwide by 2012.⁸ In January 2015, the number of pending cases in India increased significantly to almost 4.75 crores, with most of these cases being held up in the subordinate judiciary, according to the Department of Justice.⁹

India faces a major difficulty due to slow trial procedures and insufficient technological implementation, leading to delays in justice delivery. Delay in the legal system occurs when the time taken to resolve a matter exceeds the acceptable period envisaged by the court.¹⁰ Delays in legal proceedings can cause litigants to lose faith and trust in the judicial system. According to Justice Adarsh Sen Anand, former Chief Justice of India, consumers of justice expect prompt, impartial, and affordable justice. Without it, people may turn to extrajudicial methods to resolve conflicts, which the legal system must prevent.¹¹ The High Court of Allahabad is taking steps to tackle these difficulties by prioritizing the implementation of a

⁵ A. Phillips, R. Godfrey, et.al., *E-Discovery: An Introduction to Digital Evidence* 65-67 (Cengage Learning, 2013).

⁶ The Judgment Information System, India, available at: <http://judis.nic.in/> (Visited on July 23 2016)

⁷ V. Ajay Kumar, *Judicial Delays in India: Causes and Remedies* 4 JLPG 16 (2012).

⁸ K. Sarda, *Law Ministry Proposes Video Recording of Court Trials* *The New Indian Express: The Sunday Standard*, 2015.

⁹ J.K. Krishnan and C Raj Kumar, *Delay in Process, Denial of Justice: The Jurisprudence and Empirics of Speedy Trials in Comparative Perspective* 42 GJIL 747 (2010).

¹⁰ *Inaugural Address of Hon'ble Dr. Justice A.S. Anand, Chief Justice of India at the Golden Celebrations of the Rajasthan High Court* 2 (1999) 7 SCC.

¹¹ Oshisanya and 'lai Oshitokunbo, *An Almanac of Contemporary and Comparative Judicial Restatements (ACCJRSupp. Ii Public Law): ACCJR Supplement ii (Almanac Foundation, 2015).*

'time-management' system to enhance the efficiency of judicial trial operations.¹² Multiple important factors contribute to the delays in trial procedures and judgments in Indian criminal courts. Here are several crucial factors:

- **Judicial Case Ratio:** Indian courts frequently have more cases pending than judges can adequately handle. The high number of cases in comparison to the limited number of judges presents a substantial difficulty, despite the judges' competency.¹³ In 2012, statistics show that India has approximately 50 judges per million individuals. As a result of this inequality, judges are overwhelmed with a high number of cases, which hinders their ability to effectively manage time and provide timely justice. Expanding the judiciary is crucial for improved time management and faster justice delivery.
- **Courts must administer justice by adhering to procedural laws to reach accurate conclusions.** These procedural laws are frequently intricate, causing trial delays and hindering the administration of justice.
- **Inadequate Infrastructure:** The Indian legal system has insufficient IT infrastructure, including computers, fax machines, and dicto-phones. Some district courts function without electricity due to frequent power outages. As a result, numerous courts are overwhelmed by pending case dockets maintained in record rooms, waiting for registration and decision. The lack of adequate infrastructure prevents the efficient use of new technologies to enhance time management in case disposal, notwithstanding its potential benefits.

The lack of specified timetables for resolving cases in Indian laws and rules leads to delays. Without specific time limits, trial processes may be overlooked by judges, lawyers, advocates, and litigants, leading to significant delays in resolving cases. Efforts to incorporate technology into the justice system, especially in trial courts, have been ongoing since the National Informatics Centre assumed responsibility for computerizing the Supreme Court of India in 1990. Information technology applications have been successfully adopted in apex courts and high courts, despite hurdles and shortages. This marks progress in using technology to streamline trial procedures and enhance efficiency. The focus on digital evidence collection, such as DNA analysis, fingerprint identification, psychological profiling, and digital forensic technologies, demonstrates how criminal investigations are adapting to technological progress. The criminal justice system can improve its capacity to handle

¹² K. Prasad, *Indian Administration: Politics, Policies, and Prospects* 159 (Pearson Education India, 2006).

¹³ P. Thakur, *India Has 17 Judges for a Million People, 5,000 Posts Vacant* the Times of India, Apr. 17, 2016.

modern crime by adopting digital technologies to gather, analyse, and present evidence more effectively.¹⁴

The conversation about video and audio hearings, as well as the suggested implementation of audio-video records of court proceedings, highlights the significance of utilizing multimedia technology to enable remote participation, guarantee transparency, and enhance access to justice.¹⁵ As technology advances, it is crucial to establish clear standards and procedures to meet difficulties concerning the management and verification of digital evidence, as well as the disposal of electronic assets. Implementing standardized protocols for managing digital evidence and disposing of electronic assets can reduce possible problems and promote uniformity throughout the legal system.

1.1 Areas where Technology should be Implemented.

The use of information technology in the criminal justice system is highly revolutionary, but there is still progress needed to ensure broad adoption and fully utilize its potential. April Pattavina and other scholars stress the importance of increased involvement with technology throughout the entire criminal justice system. While some people and organizations excel in using sophisticated technologies, many continue to stick to conventional methods, resulting in a difference in practicality.¹⁶ Encouraging stakeholders to adopt technology through soft policies such as management and training programs can help narrow this gap. Soft technology, such as cultural diversity and gender sensitivity training, can make the criminal justice system more aware of emerging challenges like violence and terrorism. Additionally, developing proficiency in fields like crime investigation, intelligence, and information systems can stimulate growth within the system. Collaboration between governmental organizations and the criminal justice system is essential for digitization efforts, as recommended by specialists Alan Brown, Jerry Fishenden, and Mark Thompson. This method, as demonstrated in the United Kingdom, might also be implemented in cities such as Mumbai, India, due to its cosmopolitan character. Utilizing sophisticated technologies like image reconstruction equipment, AI systems for crime detection, and DNA analysis can improve the efficiency of law enforcement and legal processes.¹⁷

¹⁴ E. Casey, *Digital Evidence and Computer Crime: Forensic Science, Computers and the Internet* 7 (Academic Press, 2011).

¹⁵ D.W. Bennett, *The Challenges Facing Computer Forensics Investigators in Obtaining Information from Mobile Devices for Use in Criminal Investigations* 21 ISJ 159-168 (2012).

¹⁶ A. Pattavina, *Information Technology and the Criminal Justice System* 261-263 (Thousand Oaks, California, USA: SAGE Publications, 2004).

¹⁷ M.H. Moore, M. Sparrow, et al., *Innovations in Policing: From Production Lines to Jobs Shops* in A. A. Altshuler and R. D. Behn, (eds.), *Innovation in American Government: Challenges, Opportunities, and*

The legal validity of DNA testing in cases such as *Nandlal Wasudeo Badwaik vs Lata Nandlal Badwaik* highlights its importance in the Indian legal system.¹⁸ The government, Law Commission, and parliamentary authorities are making efforts to promote DNA technology, emphasizing its acceptance and importance. Creating institutions such as the Centre for Cellular and Molecular Biology (CCMB) shows a dedication to utilizing DNA and fingerprints for legal processes.¹⁹ Integrating information technology into judicial proceedings helps optimize processes, boost time management, and improve overall efficiency.

IT technologies can help decrease the number of pending cases, streamline legal hearings, and enhance the efficiency of trial processes. There is a requirement for well-organized systems and multi-layered strategies to guarantee smooth integration and optimize advantages.²⁰ In the future, progress in computer and information technology will keep influencing the legal system, with the Indian Information Technologies Act being crucial. Utilizing modern technologies and promoting data exchange can improve court proceedings and information processing. Nevertheless, there is an acknowledgment of the possibility for technology to bring about new intricacies and offenses, requiring continuous adjustment and creativity.²¹

The Indian judiciary may fully utilize information technology by encouraging knowledge sharing, fostering an information culture, and adopting system integration. It is crucial to address issues like time management and guaranteeing prompt justice delivery to improve the efficiency and effectiveness of the system. Utilising new technologies is crucial for improving the Indian criminal justice system and building public confidence in the administration of justice.

2. Criminal Justice System in India

The criminal justice system is based on fundamental concepts and includes elements such as technology, economics, administration, and management. Technology is essential for

Dilemmas 274(Washington, D.C., USA: Brookings Institution Press, 1997).

¹⁸ L. Srivastava, *Law & Medicine* 129 (Universal Law Publishing, 2010).

¹⁹ L. M. Atul, *An Appraisal of The Judicial System In India: A Critical Study On Judicial Independence Vis-À-Vis Judicial Accountability* 510 (Laxmi Book Publication, 1st edn., 2015).

²⁰ A. Pattavina, 'The Future of Information Technology in Criminal Justice: Prospects and Challenges' in April Pattavina(ed), *Information Technology and the Criminal Justice System* 8-10 (Thousands Oak, California, US: SAGE Publications 2004).

²¹ Express News Service, *Make Use of Technology: Supreme Court Judge Tells Young Lawyers The Indian Express*, Jan. 18. 2016.

enabling the sharing of information among stakeholders in the criminal justice system. Economic incentives and disincentives are used to encourage the prompt completion of judicial tasks. Administration sets disciplinary guidelines for everyone involved in the legal process, while management works on improving procedures from before the trial to the final resolution to ensure smooth operations.²²

The primary goal of the criminal justice system is to identify perpetrators, prevent reoffending, and safeguard society. It differs from civil, family, or administrative cases in terms of concepts, methods, and practices. Modern concepts of the criminal justice system originated in the 19th century but saw substantial advancements in the 20th century, especially in nations such as the United States. India, along with other countries, has implemented comparable ideas and goals in its criminal justice system. Despite modernization attempts, the Indian criminal justice system in Maharashtra encounters issues related to trial procedure errors, delays in conviction, and justice delivery. Efforts to implement modern technology and digitalization have been continuous since the 1990s, such as the computerization of the Supreme Court of India by the National Informatics Centre.²³

Several software including List of Business Information System (LOBIS), FCC, COURTNIC, JUDIS, and Interactive Voice Response (IVR) have been utilized to automate procedures in criminal and civil court systems. Digitization is essential in areas such as Mumbai, where cybercrime is increasing. Moreover, the implementation of cutting-edge technologies such as videotapes, artificial intelligence systems for tackling complex crimes, and advanced DNA technology can lead to substantial enhancements. Improving the criminal justice system in India, especially in Mumbai, is crucial for elevating its standards and maintaining efficient operation. The Indian criminal justice system can enhance its ability to identify and prosecute offenders and protect society by adopting technology and modernization efforts.²⁴

The criminal justice system's importance has caused it to become an academic field known for its varied, interdisciplinary approach. When analysing the worldwide criminal system, it is evident that society structures are not only internal but also influenced by multiple elements, institutions, and forces that impact the operation of criminal justice. International Criminal Justice has become a significant worldwide concern, with international criminal

²² Peter Joyce, *Criminal Justice: An Introduction* 102-110 (Routledge, 2nd edn., 2013).

²³ L. Siegel and J. Worrall, *Introduction to Criminal Justice* 490 (Cengage Learning, 2015); B. Gibson and P. Cavadino, *The Criminal Justice System: An Introduction* (Waterside Press, 2008).

²⁴ J. M. Williams, 'The National Securitization of Traditional Criminal Justice' *The Hampton Institute*, Jun. 27, 2013.

tribunals prosecuting influential individuals to guarantee responsibility. Several nations have set up centres to tackle human rights violations and corruption, spurred by the significant advancement of legal systems throughout the years.²⁵

The criminal justice system, developed throughout time, is interconnected with multiple social institutions, and is positioned at various points within society, such as economics, politics, and government. The success of the system is intricately connected to economic fluctuations and the government's principles and beliefs. The criminal justice system is influenced by several types of evidence and validity, which are supported by religion, morality, law, and science. These elements collectively influence the social ecology of the criminal justice system.²⁶ The historical development of criminal justice, marked by different types of punishment, changes in policy, and improvements in the rights of offenders and victims, mirrors different economic realities, governmental systems, religious beliefs, philosophies, and cultures.²⁷ Early human societies utilized forms of punishment predating current criminal justice systems, as shown in nomadic tribes like the Huns in Mongolia. The formation of codified laws and legal codes, like the Hammurabi Code in ancient Babylon, was a result of agriculture and the establishment of property systems. In pre-modern Europe, criminal justice generally entailed private dispensation, with systems such as trial by ordeal and blood feuds reigning during the Middle Ages.²⁸

In the 17th century, the establishment of policing systems represented a notable change in the management of criminal justice, with individuals such as Nicolas Delamare and Louis XIV setting the foundation for contemporary policing methods. Under the leadership of Sir Robert Peel, the formation of the Metropolitan Police in Britain significantly influenced modern law enforcement practices.²⁹ Corruption has been a significant issue in police departments, prompting the development of CompStat in the United States. CompStat is an information-driven system designed to monitor and address organized crime.³⁰

Advancements in technology have significantly changed the landscape of crime and criminal justice in the contemporary day, especially in dealing with cybercrimes, money laundering, human trafficking, and worldwide terrorism. Globalization and improvements in information

²⁵ L. Siegel and J. Worrall, *Introduction to Criminal Justice*, 490 (Cengage Learning, 2015).

²⁶ R. J. Terrill, 'Introduction', *World Criminal Justice Systems: A Comparative Survey* 809 (Lexis Nexis, 7th ed., 2009).

²⁷ A. Neier, *Developing into a Deterrent Open Society Initiative for Southern Africa*.

²⁸ S. M. Shahidullah, *Comparative Criminal Justice Systems* 17 (Jones and Bartlett Learning, 2014).

²⁹ Jane Blunden, *Mongolia* (Bradt Travel Guides, 2014).

³⁰ M. Jones and P. Johnstone, *History of Criminal Justice* (Elsevier, 2012); Mitchel P Roth, *Crime and Punishment: A History of the Criminal Justice System* 22 (Cengage Learning 2010).

technology have led to crimes that present intricate issues for criminal justice systems globally. Developed nations like the United States have implemented programs like CompStat to improve their capacity to address changing crime challenges. Comparative studies of crime rates highlight the necessity of efficient criminal justice systems, especially in impoverished

nations with elevated crime rates.³¹ Individuals have played crucial roles in influencing the development of criminal justice. Individuals such as Allan Pinkerton, Juan Vucetich, and Charles Bonaparte have made notable advancements by founding detective services and innovating forensic methods. Legal advancements like the Racketeer Influenced and Corrupt Organisations Act (RICO) and technological progress such as DNA analysis have enhanced the realm of criminal justice.³²

The study of criminal justice covers various disciplines and historical events, showing the intricate relationship between law, society, and governance. Studying these aspects allows researchers and professionals to understand the difficulties and possibilities that criminal justice systems worldwide encounter, guiding initiatives to advance justice, equity, and human rights. The effectiveness of political structures and ideologies in upholding the rule of law, democracy, development, and human rights in today's world depends significantly on their capacity to administer justice efficiently. Many countries aiming for prosperity and growth prioritize building a strong criminal justice system. The main goals of such a system are to prevent and control crime, uphold peace and public order, protect the rights of victims and offenders, provide punishment and rehabilitation for those convicted of crimes, and ultimately safeguard the lives and property of individuals from criminal activities.³³

The main formal agencies under the Indian criminal justice system are the police department, judiciary system, and prisons. The Constitution of India dictates that the judiciary is overseen by the Supreme Court at the federal level and by High Courts at the state level. However, the management of police and jail administration is the duty of the state. Although under state jurisdiction, these agencies' organizational structure, administration, and operations are regulated by federal laws like the Criminal Procedure Code, Indian Penal Code, Indian Evidence Act, Police Act, and Prison Act.³⁴

The Central Bureau of Investigation (CBI) was founded in 1963 at the national level and is crucial in probing issues that have implications across state or national borders. The CBI,

³¹ Jones and Johnstone. p. 121.

³² Jones and Johnstone; Roth. p. 398.

³³ J. Hostettler, *A History of Criminal Justice in England and Wales 192-199*(Waterside Press, 2009).

³⁴ R J Terrill, *World Criminal Justice Systems: A Comparative Survey* 117, 398 (Routledge, 2012).

under the leadership of the Director General of Police (DGP), aids central and state governments in criminal investigation, prevention, and detection. State police forces, structured as Commissionerate's, Zones, Ranges, and Districts, are overseen by the DGP and tasked with upholding peace and order in their respective areas.³⁵

The Central Reserve Police Force, created by the Central Reserve Police Bill of 1949, functions as an armed force tasked with upholding internal security during emergencies and combating insurgency and terrorism in various states³⁶. The roles of the police force are specified in the Indian Penal Code, while the Criminal Procedure Code details the procedures for investigation, inquiry, and trial. Investigation is a crucial component of administering justice, which includes gathering evidence, statements, and other essential steps for initiating legal action. Indian police investigations have faced criticism for problems like custodial violence and excessive political influence. The Supreme Court of India and the National Human Rights Commission have stressed the ban on physical violence, save in instances of self-defense. The Indian legal system includes alternative dispute resolution methods such as Lok Adalats and Alternate Dispute Resolution to speed up dispute resolution and lower trial expenses. The Legal Services Authorities Act of 1987 grants legal recognition to the legal aid movement and authorizes Lok Adalats to issue judgments that have legal force. Public prosecutors advocate for the public's interests in criminal courts, following the judge's instructions.

India's criminal justice system still includes the imposition of the death penalty, which is regulated under Section 368(1) of the Code of Criminal Procedure, 1898. The Supreme Court of India has limited the application of the death penalty to cases deemed as the "rarest of rare." Correctional facilities, such as prisons, are vital for administering justice by concentrating on updating infrastructure, enhancing cleanliness, and safeguarding the well-being of inmates, especially women and children. Open-air imprisonment, probation, and parole are used to rehabilitate convicts into society while ensuring public safety.³⁷

The Indian criminal justice system consists of many institutional agencies and systems designed to prevent and deal with criminal activity while maintaining the rule of law and safeguarding individual rights. Ongoing efforts are being made to improve the system's efficiency and equity by addressing difficulties and adjusting to changing societal

³⁵ V. H. Gandhi, *Judicial Approach in Criminal Justice System: An Experience of India* 173 (Read Worthy Publications(P) Ltd, 2010).

³⁶ R Thilagaraj, *Criminal Justice System in India: Handbook of Asian Criminology* 199-210 (Springer New York, 2013).

³⁷ V. H. Gandhi, *Judicial Approach in Criminal Justice System: An Experience of India* 4-7 (Read Worthy Publications(P) Ltd, 2010).

requirements and expectations. The assessment of the criminal justice system involves various important aspects that are crucial for its effectiveness and impact on society. To fully understand the topic, one must analyse its procedural steps, recent crime trends, and ongoing issues.

The procedural steps of the criminal justice system are essential for guaranteeing due process and fair outcomes. The system begins when complaints are entered, which triggers law enforcement intervention. Pre-trial services and prosecution activities include evidence collection, filing charge sheets, and prospective plea negotiating. Adjudication, carried out by court officials, involves a thorough examination of facts and legal reasoning to make decisions. Following the sentence, the imposition of sanctions seeks to combine punitive actions with rehabilitative efforts, in line with wider community goals.³⁸

Contemporary India faces numerous crime trends that challenge the effectiveness of the criminal justice system. There has been a significant increase in crimes like rape, financial fraud, and tax evasion. The widespread occurrence of victimization, especially among vulnerable groups such as women and children, highlights underlying societal weaknesses. Challenges continue despite legislative efforts, creating significant obstacles to effective crime prevention and resolution.³⁹

The criminal justice system is dealing with a significant backlog of unresolved cases, which is hindering its capacity to provide prompt justice. The backlog is caused by a lack of judges and prosecutors, unclear trial procedures, and insufficient technology infrastructure, which leads to ongoing systemic inefficiencies.⁴⁰ The delays that occur not only diminish public trust but also prolong injustices by preventing victims and defendants from receiving prompt resolutions. To tackle these difficulties, a comprehensive approach to reforming the criminal justice system is required. Legislative changes should focus on improving procedural efficiency, strengthening investigation powers, and protecting the rights of victims. Investments in judicial infrastructure and technological modernization are essential to streamline trial proceedings and speed up case settlement.⁴¹ Furthermore, promoting cooperation between different agencies and forming partnerships between the public and private sectors can strengthen crime prevention initiatives and improve the community's

³⁸ David T Johnson and Franklin E Zimring, *The Next Frontier: National Development, Political Change, and the*

Death Penalty in Asia 273, 278 (Oxford University Press, 2009)

³⁹ Amnesty International, *Report: The State of World's Human Rights*. (2010).

⁴⁰ APJ Abdul Kalam, *Turning Points* 192 (HarperCollins, 2012).

⁴¹ Government of India, *The Narcotic Drugs And Psychotropic Substances Act 1985*; Government of India, 'Constitution of India, Ministry of Law and Justice.'

confidence in law enforcement. The assessment of the criminal justice system highlights the necessity of ongoing reform and adjustment to changing societal requirements. India can progress towards a fairer and more efficient criminal justice system by tackling systemic inefficiencies, reducing crime trends, and focusing on providing timely access to justice.⁴²

3. Virtual Justice: Conceptual Framework

The administration of a court system is essential for guaranteeing the efficient delivery of justice. The administrative wing, led by the judge, is the foundation of the entire system. Every member of the administrative staff has a crucial role in overseeing court proceedings, carrying out orders, and upkeeping infrastructure to ensure the efficient operation of the courts. Police personnel play a crucial part in administration within the criminal justice system. They are tasked with issuing summons and warrants, overseeing the execution of court orders, and preserving the legal system. State governments and high courts frequently establish rules and guidelines to standardize administrative procedures and ensure compliance with legal protocols. Technological advancements have transformed judicial administration, greatly enhancing efficiency and productivity. Manual typewriters and carbon copies are no longer in use; computers now allow for effortless document generation and duplication with a single click. This technological breakthrough has reduced the workload of administrative activities, enabling court workers to concentrate on fundamental legal issues.⁴³

Courts can improve their administrative operations and efficiency by using technology and utilizing its advantages. Technology provides many instruments, such as case management systems and electronic filing platforms, to enhance administrative processes and facilitate access to justice. Efficient court administration is crucial for maintaining fairness, openness, and accountability in the justice system. The use of technology in the criminal justice system has become more important because of the rapid technical progress seen globally in recent decades. Advanced nations such as the USA, UK, and China have adopted these technology advancements in their criminal justice systems, resulting in faster case processing and enhanced efficiency.⁴⁴

Technology is used in several forms in these countries, classified as hard and soft technologies. Hard technologies encompass CCTV cameras, street lighting, protection

⁴² R Thilagaraj, 'Criminal Justice in India' in J. Liu, B. Heberton et.al., (eds), Handbook of Asian Criminology 208(Springer, 2013).

⁴³ Philip P. Purpura, Criminal Justice: An Introduction 85-86 (Elsevier Health Sciences, 1997); Robert Bradley, Science, Technology, and Criminal Justice 3-5(Peter Lang, 2004).

⁴⁴ K. Mühlhahn, Criminal Justice in China: A History 1-2(Harvard University Press, 2009).

devices such as mace and Tasers, metal detectors, and ignition interlock systems for intoxicated drivers. These technologies improve police security, aid in digitalizing police activities, allow for criminal identification using biometrics, and integrate digital tools in legal proceedings. Soft technologies include threat and risk assessment software, digitized case and criminal registration systems, and facial recognition software. These software tools assist in crime mapping, identifying hotspots, doing analysis using COPSTAT, sharing information online, and promoting citizen knowledge of the legal system.⁴⁵

The USA and UK have implemented legislation that specifically addresses modern crimes like identity theft and fraud, positioning them at the forefront of the global fight against these offenses. Other countries, like India, have also enacted such laws to tackle new economic and political offenses. The criminal justice system in the USA is managed by many governmental departments and agencies, each responsible for certain areas such as crime prevention, trial procedures, sentencing rules, prison management, and probation services. The criminal justice system in the USA consists of fifteen formal stages and requires substantial financial resources for its functioning. China's criminal justice system, which is frequently misunderstood in Western propaganda, is strongly influenced by its cultural traditions and societal norms. China, along with other industrialized countries, has adopted digital evidence and technical improvements to improve the efficiency of its justice system, despite facing negative perceptions. Digital evidence provides extensive information about individuals and locations related to criminal activity, aiding thorough investigations and efficient judicial processes. The integration of technology in the criminal justice systems of many countries has transformed the administration of justice, offering new possibilities for efficiency, transparency, and interconnection throughout the justice system.⁴⁶

Globalization and urbanization have led to economic changes that have created new types of organized crime, impacting the global criminal justice system. Examining crime within the context of global social dynamics requires analysing both criminal activity and the operation of governmental and political organizations. Criminal justice systems differ between liberal democracies and authoritarian regimes. In liberal democracies, the criminal justice system functions independently with professional law enforcement agencies and impartial judiciaries, while authoritarian nations often have more government influence over the judicial system. Failed regimes provide distinct obstacles to administering justice, frequently

⁴⁵ L. Siegel and J. Worrall, Introduction to Criminal Justice 490 (Cengage Learning, 2011)

⁴⁶ Rohan Dua, Rape Biggest Crime Trend in India: National Crime Record Bureau Times of India (Chandigarh, Jul. 3,2012).

necessitating authoritarian actions to reinstate law and order.⁴⁷

Various ideologies and cultural philosophies in different locations have a significant impact on the design and functioning of justice systems. Islamic Sharia law influences judicial systems in the Middle East, Confucian ideas impact systems in China, South Korea, and Vietnam, and indigenous traditions define justice systems in Africa. Societal attitudes, influenced by religious and cultural beliefs, can affect criminalization and decriminalization policies in Western countries regarding problems like abortion, the death penalty, and homosexuality. Some countries that are resistant to modernization nevertheless adhere to traditional systems of criminal justice based on religious ideas and historical norms.⁴⁸ These regimes may have stringent penalties and low crime rates because of societal compliance and the fear of harsh repercussions. Nevertheless, they can also lack the distinction between crime and sin found in contemporary legal systems.

Ancient criminal justice systems in India were influenced by Hindu principles found in scriptures like the "Code of Manu," which included offenses including violence, adultery, and robbery. The Mughal era brought administrative and legal terms that are still in use today, showcasing a combination of traditional and foreign elements. British colonial rule replaced traditional institutions with contemporary legal structures that included constitutional safeguards, separation of powers, and statutory laws.

Contemporary criminal justice systems, established in constitutions and legal structures, emphasize individual rights and equitable justice under the law. These systems are distinguished by due process, the rule of law, and constitutional guarantees, drawing from many legal traditions such as English Common Law and civil law. Although there are differences among countries, they all adhere to basic principles and incorporate information technology and communication to improve efficiency, professionalism, and decentralization in policing and law enforcement.

4. Technological Interventions in Criminal Administration

Technology integration in the Indian court system has played a key role in improving operations and increasing efficiency. Several programs, including LOBIS, FCC, COURTNIC, JUDIS, and IVR, have been implemented to assist different areas of court proceedings.⁴⁹ LOBIS, the List of Business Information Systems, is essential for scheduling

⁴⁷Yogen Vaidya, India Catching up on International Trends on Compliance Forbes, Jul. 1, 2015

⁴⁸ Chakraborty T, 'An Alternative to Crime Trend Analysis in India' (2001) 14 South Asian Terrorism Portal.

⁴⁹Oshisanya and Oshitokunbo.lai , An Almanac of Contemporary and Comparative Judicial Restatements

court hearings, assuring openness, and preventing manual manipulation. This application allows the Supreme Court and High Courts to automate cause lists, resulting in quicker case resolution and streamlined administrative duties. The Filing Counter Computerization system (FCC) enables attorneys to submit cases immediately through computerized counters, minimizing paperwork and simplifying the filing procedure. COURTNIC offers detailed data on ongoing cases in the Supreme Court dating back to 1993, available through the National Informatics Centre Network. JUDIS provides access to judicial judgments from the Supreme Court dating back to 1995, facilitating legal study and analysis. The IVR system allows citizens to readily access judicial services by delivering information on case status and registration.⁵⁰

The Indian judiciary's digitization initiatives have greatly enhanced the technological incorporation in court processes. Digitization enables the gathering, examination, and handling of digital evidence from diverse sources such as open computer systems, mobile devices, and smart cards. Communication networks including regular telephones, mobile phones, and the internet are essential for quickly exchanging information and evidence. Modern gadgets such as cell phones, iPhones, PDAs, and MP3 players aid in collecting digital evidence, improving the efficiency and effectiveness of legal processes. The integration of technology into the Indian legal system has significantly transformed court operations, enhancing transparency, accessibility, and efficiency.⁵¹

4.1 Role of Technology

Information technology has been significantly incorporated into the Indian criminal justice system since the 1970s through initiatives led by the Ministry of Home Affairs. Technological developments and digitization have significantly enhanced different facets of the criminal justice system, such as investigation, court proceedings, adjudication, sentencing, and corrections. Video presentations and audio hearings are widely utilized technologies in the criminal court system. These technologies utilize contemporary equipment such as computer monitors, interactive plasma displays, touch screens, and video players. Video conferencing enables remote participation in court hearings, decreasing the necessity for travel and overcoming geographical obstacles.⁵²

(ACCJR Supp.Ii Public Law): ACCJR Supplement Ii (Almanac Foundation 2015)

⁵⁰ G.S. Randhawa and D. J. Singh, Analysis of Challenges Faced by Indian Prosecution System 3 IJRHSS 1-9 (2016).

⁵¹ S Rukmini, Conviction Rates Up, but Not for Rape The Hindu, Aug. 20, 2015

⁵² A. Siegel and Worrall, Introduction to Criminal Justice.Pattavina, Information Technology and the Criminal

Digitization has transformed how evidence is presented in courtrooms using advanced technology and digital evidence presentation systems (DEPS). The technologies allow both parties in a case to provide evidence in different formats such as papers, films, audio, 3-D imaging, and images. Digital evidence includes various items such as scanned papers, database information, CCTV footage, and audio recordings.⁵³ The internet is essential for enabling access to and sharing of information in the criminal justice system. Automated library management systems and online platforms such as PACER in the United States allow judges and other individuals involved in the judicial system to quickly access legal resources and case information.

As technology progresses, the criminal justice system needs to evolve to adequately address complex crimes. Promoting the collection and display of digital evidence can be a time and resource-efficient way to improve the decisiveness of evidence. India can enhance digitization in evidence collection for law enforcement by acquiring advanced technical equipment like forensic analysis tools, fingerprint identification systems, crime mapping software, and CCTV surveillance. Embracing technology breakthroughs can enhance the criminal justice system by improving efficiency, transparency, and the ability to tackle modern-day crimes.

The Indian criminal justice system encounters multiple obstacles that impede the prompt administration of justice. The bottlenecks consist of caseload crises, intricate case proceedings, pre-trial matters, and a lack of judges. External circumstances can cause delays, but internal variables like the conduct of judges, lawyers, and litigants also have a substantial impact. An insufficient number of judges worsens the backlog of cases in Indian courts. The government has shown indifference to establishing more courts and appointing extra judges, despite the Chief Justice of India recognizing approximately 3.56 million pending cases in 2008. An All-India Judicial Service could help solve these problems by dealing with caseloads and shortages of judges.⁵⁴

Indian court proceedings are regulated by multiple acts and rules, resulting in a complicated system. The absence of contemporary technology hinders court operations. Improved use of technology can speed up testing. Video displays and LCD projectors can improve trial presentations by helping judges, lawyers, and juries comprehend cases more effectively and

JusticeSystem 8 (Thousand Oaks, California, US: SAGE Publications 2004).

⁵³ (Mühlhahn 2009. f. n. 103, p. 2)

⁵⁴ M. McMurrin, N. Khalifa et.al., Forensic Mental Health (Routledge, 2013).

speed up proceedings⁵⁵. Witnesses can make notes on presentations for future use, while evidence cameras can offer sharper images for courtroom displays. Digital gadgets such as computers, iPads, and tablets help modernize trial proceedings by replacing outdated technologies like VCRs and CD/DVD players. Integrated controllers streamline the supervision of video and audio evidence, enhancing productivity. Visual aids can streamline intricate forensic matters for jurors and court officials.

The Supreme Court of India promotes the extensive use of information and communication technology in courts. Video conferencing systems should be installed in all courts to expedite the handling of under-trial and pending matters. Video conferencing can help overcome obstacles such as distance and jail, speeding up legal processes and reducing delays in the criminal justice system. The Indian criminal justice system can improve its efficiency and achieve prompt justice by adopting new technologies and tackling systemic issues.

4.2 Limitations of using technology advancements

Technology in the judicial system has advantages and problems. One significant issue is the costs associated. Utilizing state-of-the-art technology necessitates substantial upfront costs along with continuous upkeep and enhancements. In developing nations such as India and urban centres like Mumbai, these expenses may be too high, causing many courts to continue using conventional approaches.⁵⁶

Security is a crucial concern. Cybercrime is increasing worldwide, posing a threat to the security of personal information. Countries such as the United States have had cases of hackers gaining access to confidential data, and India could encounter comparable difficulties due to technological progress. Moreover, technology may be unreliable, resulting in data corruption and discrepancies in delivering justice. Additionally, the utilization of technology could lead to a lack of connection among individuals participating in the legal system. As tasks are divided among individuals and technology is relied upon for communication, there may be a decrease in face-to-face encounters. This can result in a feeling of detachment and heighten the inconsistency of cases.⁵⁷

Moreover, technology might serve as a distraction during court hearings. Individuals may prioritize interacting with screens or devices over actually participating in the situation. In the

⁵⁵ Siegel and Worrall, Introduction to Criminal Justice.

⁵⁶ Supreme Court of India, 'E-Courts: A Mission Mode Project to Transform Justice Delivery by ICT Enablement

of Courts' available at: <http://www.ecourts.gov.in/>, (2016).

⁵⁷ Miki Markovich, 'The Disadvantages of Using Technology in Business' Demand Media, 2016.

United States, polygraph examinations are often used, however, there have been cases when human manipulation has undermined the reliability of the results. Technology has a crucial role in different industries, such as the court system, but it also has its drawbacks.⁵⁸

5. Technology in Evidence Collection and Crime Analysis

Technology in the legal area includes many instruments and systems that assist in the administration of justice, legal research, case management, and communication. These technologies consist of:

- Legal research tools such as online databases, search engines, and software platforms allow attorneys, judges, and legal professionals to efficiently perform thorough legal research by accessing extensive collections of legal knowledge.
- Case Management Systems utilize technology to organize and track legal cases, including scheduling, document management, and communication among parties participating in legal procedures.
- Electronic discovery technologies aid in identifying, gathering, and analysing electronically stored information (ESI) to be used as evidence in judicial procedures, especially in intricate litigation situations with substantial amounts of data.
- Courtroom technology, like video conferencing, digital evidence presentation systems, and real-time transcription services, improves the efficiency and effectiveness of courtroom proceedings by allowing remote participation and aiding in evidence presentation.
- Legal Practice administration Software automates functions like timekeeping, billing, client administration, and document writing in legal firms to enhance productivity and profitability.
- Online Dispute Resolution (ODR) Platforms offer a convenient and cost-effective mechanism for parties to resolve legal disputes online without resorting to traditional litigation.
- Cybersecurity and data protection tools are crucial for protecting sensitive client information and complying with data privacy requirements due to the growing dependence on technology in the legal field.
- Artificial Intelligence (AI) and Machine Learning technologies in the legal field, like predictive analytics, contract analysis, and legal research assistants, help legal

⁵⁸ D.L. Faigman, S.E. Fienberg et.al, *The Limits of the Polygraph XX Issues in Science and Technology*, (2003).

professionals work more efficiently and accurately by using machine learning algorithms and natural language processing.

Technology is essential in defining the contemporary legal environment by promoting innovation, increasing efficiency, and extending access to justice. Technology's advancement will certainly have a growing influence on the legal field, requiring continuous adjustment and incorporation of new tools and processes into legal work. The researcher's focus on the importance of physical evidence, such as the items found in the possession of the accused, in criminal cases is valid and crucial. Oral and documentary evidence are commonly used in criminal prosecutions, but physical evidence can offer essential corroboration and confirmation of the events described in the case.

Physical evidence is advantageous due to its tangibility and objectivity, making it less vulnerable to human error or manipulation than oral testimony, which can be affected by factors like memory recall or bias. Physical evidence can independently offer direct insight into the crime events.

Chapter XXXIV of the Code of Criminal Procedure, 1973 outlines a detailed system for handling confiscated assets in criminal proceedings. This chapter guarantees that confiscated property is carefully and cautiously managed during the criminal judicial procedure to avoid interference and to preserve its integrity as evidence. This chapter is summarised by the following major points:

- The term "property" encompasses both moveable and immovable property. This includes any object or asset pertinent to the criminal prosecution.
- The Criminal Court has the authority to determine the custody or disposal of confiscated property until the trial. This authority must be used promptly and wisely, considering aspects like property safety and owner's rights. The Court can issue custody orders for property under certain conditions, such as requiring the execution of an indemnity bond to guarantee the property's security. Custody is granted when both parties interested in the case have been heard.
- Sale of confiscated Property: If it's not feasible to keep confiscated property during the trial, the Court can allow its sale before the trial ends. The Court must allow all relevant parties to present their arguments before issuing the order.
- Disposition at End of Trial (Section 452): The Court determines the final fate of the confiscated property when the trial concludes. Typically, those who have been

acquitted have the right to have their property returned, unless there are strong grounds to keep it.

- **Confiscation:** The Court has the authority to seize property that was utilized in the commission of a crime, based on specific conditions and factors. Confiscation orders are issued based on the immediate possession rights and do not definitively establish ownership rights.
- The police oversee confiscating and safeguarding property during an investigation, but the Magistrate has the power to determine its custody or disposal. The Magistrate's authority is exercised once the police seize the property and report it to them.
- Properly managing seized property is essential for maintaining evidence integrity and guaranteeing a just trial. The law stresses the responsibility of the police and the Court to handle confiscated property carefully and cautiously during the criminal justice process.

Establishing clear norms and procedures is crucial for efficiently managing the complexity of handling e-property in criminal cases. First, a detailed definition of e-property needs to be developed, covering a range of digital assets including electronic devices, online accounts, and digital documents. Establish identification processes to guarantee precise recognition and management of digital evidence during the proceedings. Preserving digital evidence is crucial and involves making forensic copies and maintaining detailed chain of custody records. Expert testimony should be easily accessible to assist in the analysis of digital evidence and its significance in the case. To tackle jurisdictional issues arising from cross-border cybercrime, it is essential to provide rules for defining jurisdiction and promoting international collaboration among law enforcement bodies. Notice and due process must be maintained to allow all parties to express their reasons concerning the custody and disposal of electronic property. Judicial discretion should be used carefully to adapt current legal frameworks to fit the specific characteristics of electronic property. Legislative reform may be required to address deficiencies in existing laws regarding digital evidence and electronic property. Furthermore, it is essential to introduce thorough training and educational programs to provide legal professionals and law enforcement officials with the essential skills required to manage digital evidence proficiently. The criminal justice system can effectively handle the intricacies of e-property by implementing these procedures while ensuring fairness, openness, and accountability.

6. Judicial Trends Regarding Electronic Evidence

Recent judicial cases have demonstrated the increasing acknowledgment and approval of technical improvements in legal proceedings, particularly in the appreciation of electronic evidence.

- *Amitabh Bagchi vs. Ena Bagchi*: The case examined the admissibility of electronic records, such as video conferencing, under Sections 65-A and 65-B of the Evidence Act, 1872. The court allowed the collection of evidence by video conferencing, highlighting the importance of technological evidence.⁵⁹
- In the case of *the State of Maharashtra vs. Dr. Praful B Desai*, the Supreme Court determined that witnesses can be interviewed over video conference, stating that being physically present is not necessary for legal procedures. The organization approved the utilization of video conferencing for witness evidence, recognizing developments in courtroom procedures.⁶⁰
- *Bodala Murali Krishna Vs. Smt. Bodala Prathima*: This case highlighted the importance of the revisions made to the Evidence Act regarding electronic records. The document emphasized sections concerning the authentication and validation of digital signatures, indicating the judiciary's acknowledgment of the acceptability of electronic evidence.⁶¹
- In the case of *Dharambir Vs. Central Bureau of Investigation*⁶², the court explained the idea of electronic records generated by a computer, which includes data stored on a hard disc. The document outlined two tiers of electronic records and confirmed the acceptability of data that can be accessed from electronic devices.
- *State (NCT of Delhi) v. Navjot Sandhu*: This case dealt with the acceptability of mobile telephone call records in a criminal appeal. The Supreme Court highlighted the need for cross-examination in verifying the legitimacy of electronic evidence, even without a certificate as per Section 65-B (4) of the Evidence Act.⁶³
- In the case of *Jagjit Singh Vs. State of Haryana*⁶⁴, the Supreme Court analysed digital evidence, including interview transcripts, in a case involving legislative

⁵⁹ *Amitabh Bagchi vs. Ena Bagchi* (AIR 2005 Cal 11).

⁶⁰ *State of Maharashtra vs. Dr. Praful B Desai* (AIR 2003 SC 2053).

⁶¹ *Bodala Murali Krishna Vs. Smt. Bodala Prathima* (2007 (2) ALD 72)

⁶² *Dharambir Vs. Central Bureau of Investigation* (148 (2008) DLT 289)

⁶³ *State (NCT of Delhi) v. Navjot Sandhu* (AIR 2005 SC 3820)

⁶⁴ *Jagjit Singh Vs. State of Haryana* (2006) 11 SCC 1),

disqualification. The court confirmed the acceptance of electronic evidence and verified its trustworthiness in judicial cases.

- Kunal Motiram Maske (In Jail) vs State of Maharashtra, Criminal Appeal No.254 OF 2015 This case provided an overview of electronic evidence legislation, focusing on the procedural criteria outlined in Sections 59, 65-A, and 65-B of the Evidence Act. The importance of adhering to Section 65-B for electronic records to be admissible was emphasized.⁶⁵
- Metropolitan Magistrate in Delhi handling a case of Domestic Violence. The recent case permitted the delivery of summons over WhatsApp, text message, and email, acknowledging the effectiveness of technological communication in legal proceedings. The court's use of precedent demonstrates the judiciary's ability to adjust to modern methods of service.⁶⁶

The examples demonstrate how the judiciary's position on electronic evidence is changing, highlighting the significance of following procedural rules while incorporating technical progress in legal processes.

6.1 Reasons for delay of cases disposal in India

- Delays in case disposal in India are caused by systemic and procedural difficulties within the court system. Here are several primary causes for the delay:
- The biggest reason for delays is the shortage of judges throughout India. The Law Commission of India and other publications have emphasized the necessity of augmenting the number of judges to efficiently manage the caseload. Delays in appointing judges worsen the issue.
- The judicial process consists of many stages such as issuing summonses, pre-trial procedures, documenting evidence, presenting arguments, delivering judgment, and carrying out execution. Inefficiencies at any of these phases can cause delays in resolving cases. The Law Commission has proposed recommendations to streamline procedures and enhance court management.
- Investigators encounter challenges in gathering evidence because of geographical limitations and time constraints. This might hinder the advancement of legal proceedings, especially in isolated regions.

⁶⁵ Kunal Motiram Maske (In Jail) vs State of Maharashtra, Criminal Appeal No.254 OF 2015

⁶⁶ Tata Sons &Ors. Vs. John Does in CS(COMM) 1601/2016

- India's varied cultural and religious environment poses complications for the criminal justice system. Resolving cases with intricate cultural backgrounds may be delayed because of societal conventions and values.
- Legal gaps, including the absence of legislation targeting corruption in the private industry, lead to delays in pursuing specific crimes. Moreover, obstacles associated with scientific procedures, such as DNA testing, can influence case results and extend judicial proceedings.
- Technological Limitations: Technology could speed up court proceedings, but its use in the Indian legal system has been restricted. Challenges like expenses, security issues, and dependability impede the broad adoption of technology-based solutions.
- Corruption in the legal system exacerbates delays in resolving cases. Legal laws being misused, and malpractices are factors that slow down the delivery of justice.

Recommendations have been proposed to tackle these issues and speed up case resolution by boosting judicial staff, enhancing procedural efficiency, utilizing technology, and addressing sociological and cultural complexities. Comprehensive reforms are needed to revamp the judicial system and guarantee prompt justice delivery in India.⁶⁷

7. Challenges

The Indian legal system operates within a hierarchical structure to provide fair and equal justice to its residents. The Supreme Court is at the highest position, with 24 High Courts representing each state following it. Below are the District Courts, followed by the Mofussil Courts. Decisions made by the Supreme Court are ultimate and binding, whereas rulings from the High Courts can be challenged in the Supreme Court. Decisions made by District Courts can be appealed in High Courts, but judgments from Mofussil Courts can be disputed in District Courts.⁶⁸

While the High Court level has a strong infrastructure, deficiencies are noticeable in the District and Mofussil Courts, mostly because of insufficient finances. This shortcoming hampers the laudable goal of administering justice, especially in regions experiencing dynamic changes. Judicial officers recognize the system's efficacy in different jurisdictions

⁶⁷ Saurabh Gupta, Ajay Singh Chahal and Sandeep Sood, 'Visions to Reality of Faster Dispensation of Justice Through Inter-Operable Criminal Justice System - A Case Study' (2013)

⁶⁸ F. Bensouda, 'Challenges Related to Investigation and Prosecution at the International Criminal Court' in Roberto Bellelli(ed), *International Criminal Justice: Law and Practice from the Rome Statute to Its Review* (Ashgate Publishing, 2013)

but also admit its inherent limitations.⁶⁹ Senior advocates believe that the increasing number of criminal cases is due to structural inefficiencies, such as slow processes caused by infrastructure deficiencies and inadequate training.

Judicial officers support the system's flexibility to India's specific conditions while differing opinions arise from personnel and litigants. They support prompt reforms by campaigning for the removal of outdated laws and adopting contemporary technology to speed up operations. The widespread delay in the system is met with overwhelming condemnation, emphasizing the urgent requirement for reform.⁷⁰

Judicial officers strive to maintain the system's integrity, while staff and advocates bring attention to important difficulties. Recognition is given to efforts for improvement and development, with a focus on compliance with human rights regulations and increasing staff efficiency to tackle ongoing issues. The ongoing discussion emphasizes the necessity of modernizing and adjusting the judicial system to align with the changing requirements of Indian society.

The Indian legal system has substantial problems despite sincere attempts towards progress, as indicated by multiple stakeholders in the research. Primary problems include the resistance to technology and the widespread problem of delayed justice, identified in interviews with four different groups.

Sabharwal (2006) noted that the ongoing delay in the Indian judicial system is a significant concern recognized by all parties. Advocates highlight the emotional discomfort and difficulties faced by litigants because of lengthy legal proceedings. They express sorrow about the challenge of handling numerous cases at the same time, which hinders their capacity to offer fair representation to each client.

Judges argue that delays are not deliberate but are a result of procedural intricacies and the need to thoroughly review evidence and witness statements. They also emphasize the lack of competent support workers, which hampers their capacity to adequately handle case materials. Staff members believe that delays are caused by insufficient infrastructure and a lack of skilled workers, emphasizing the importance of appropriate technology resources and effective staffing to speed up legal procedures.

Litigants face considerable social, emotional, and financial burdens as disputes remain

⁶⁹ Jona Razzaque, *Public Interest Environmental Litigation in India, Pakistan, and Bangladesh* 20 (Kluwer Law International, 2004).

⁷⁰Y. Hussain, *Corruption Free India: Fight to Finish* 121 (Epitome Books, 2012).

unresolved in the courts. Delayed justice has a cumulative influence that goes beyond the courtroom, disrupting the peace and stability of individuals' lives. This finding highlights the pressing necessity for systemic reforms to tackle the underlying reasons for delay and improve efficiency in the justice system.⁷¹

The research findings confirm that the main difficulty faced by all stakeholders in the Indian criminal justice system is the delay in dispensing justice. This supports Kumar's (2012) findings, highlighting the importance of fixing systemic inefficiencies to guarantee prompt case resolution.

The incorporation of technological breakthroughs into different facets of everyday life has greatly boosted work operations and overall system enhancement. This is also applicable to the Indian criminal justice system, as expressed by judges, court personnel, and lawyers. They all support the use of specialized technical solutions designed for the specific requirements of the justice system to improve its efficiency and case handling.

Court officials believe that using technology will make court processes more efficient, decrease administrative tasks, and speed up the supply of services to litigants. They imagine a situation in which technology allows for smooth record-keeping, reduces waiting times for litigants, and improves the general efficiency of the court. Advocates emphasize the potential of technology to condense case files, evidence, and court procedures into a digital format accessible with a single click. Digitalization saves time by automating duties and enables thorough case studies before trial, enhancing the efficiency of the legal system.

The use of technology, especially information technology and information and communication technology, is considered crucial for collecting strong evidence in investigations. This highlights the wider applicability of technology beyond legal proceedings, expanding into the field of criminal detection and investigation.

Authorities are criticized for not appropriately leading and training staff to efficiently use technological tools, although acknowledge their value. Installation teams may not fully realize the possibilities of modernized tools due to inadequate training and advice. It is essential to fill this gap to fully utilize the advantages of technological incorporation and tackle the obstacles caused by delays in the justice system.

Adhikary (2016) emphasizes the significant influence of DNA technology on crime detection,

⁷¹ Bhavya Dore, Long Road to Rehabilitation: Maharashtra Juvenile Justice System Cuts Pendency, but Challenges Remain Frontline India, 2016.

emphasizing how technical progress has streamlined criminal detection and trial processes. This demonstrates how technology can speed up legal procedures and disproves the null hypothesis that suggests the opposite.⁷²

Ultimately, the widespread acknowledgment of technology's crucial role in the justice system emphasizes the necessity of effectively utilizing its potential through appropriate supervision, training, and use. Adhikary's research shows that technology has the potential to reduce delays in resolving cases and improve the efficiency of delivering justice.

The Indian judicial system, derived from the British, is responsible for providing justice and equity for all citizens. Despite criticism for being slow, it is important to acknowledge the system's development with societal changes. The Indian Constitution contains provisions that allow for flexible adjustment, ensuring that legislation such as the Indian Evidence Act, 1872, and the Indian Penal Code, 1860, can stay pertinent considering technological progress.

The researcher identifies similar difficulties applicable to courts across India by conducting interviews with numerous stakeholders largely headquartered in Mumbai. Despite facing initial resistance, technology is slowly being embraced by stakeholders, particularly by newer recruits who are more adept at using technology. The increasing adoption of technology in the legal system is expected to lead to a positive outcome, including decreased case backlogs and improved efficiency.

The government's support for strengthening legal infrastructure is demonstrated by the annual budget allocations designated for technological integration in courts. The researcher's suggestions for addressing stakeholder issues provide concrete solutions focused on reducing operational difficulties.

Recent court decisions, including those made by the High Courts of Delhi and Bombay acknowledging the legitimacy of serving notices over WhatsApp, highlight the increasing adoption of technology in the legal profession. This trend represents a major advancement in using technology to simplify judicial processes and improve access to justice.

Ultimately, despite enduring obstacles, the Indian legal system is moving towards modernization and improved efficiency. Utilizing technology, along with government backing and stakeholder-driven solutions, is crucial for achieving a faster and fairer justice system for everyone.

⁷²S.K. Dogra and J.K. Chauhan, *Criminal Justice Administration in India* 157 (Deep & Deep Chauhan Pvt Ltd, 2009).

8. Concluding Remarks

The research explores the difficulties encountered by the Indian criminal justice system and promotes the incorporation of information technology and digitization to accelerate procedures in trial courts. Although the Indian legal system has been thoroughly studied, there is a significant lack of research on the integration of modern technology in the judiciary. The study utilizes a case study approach that concentrates on trial courts in Mumbai to evaluate the present condition of the justice system.

The Indian judicial system is responsible for delivering equal justice for all residents, serving as a cornerstone of democracy. The research intends to collect a variety of viewpoints on the existing state of the system and the necessity for technological improvements. The study utilizes stakeholder analysis with litigants, advocates, court personnel, and judicial authorities. Questionnaires containing open-ended and structured questions are used to get complete perspectives. The Indian legal system is hindered by delays, corruption, and bribery, which significantly impede its efficacy. If not dealt with, these issues may compromise the system's integrity in the long run, notwithstanding its current excellent functioning. Creating an equitable and clear system is essential for providing timely justice, especially given the low conviction rates and other circumstances that lead to inadequate recordkeeping. Stakeholders unanimously acknowledge the necessity of technological enhancements to optimize trial court operations. Legal professionals and individuals involved in court cases advocate for the implementation of modern technology and the removal of obsolete legislation to improve the system's effectiveness and bring it in line with global norms, with a focus on upholding human rights.

The study affirms that procrastination is a significant obstacle hindering the efficient operation of the Indian criminal justice system. Litigants face mental stress, while advocates and court workers grapple with case management and timely resolution because of large workloads and insufficient infrastructure. IT and digitization provide potential solutions to revolutionize the Indian criminal justice system. Contemporary tools can accelerate case resolution, enhance efficiency, and assist in evidence collection during investigations. Utilizing safe technology improvements like record-keeping systems and database management through IT can be advantageous for all parties in the legal system.

An integrated system would allow advocates to stay updated on case procedures, reducing the time required for manual file verifications. Judicial officers could access case details more

efficiently, improving the justice delivery process. Stakeholders are dissatisfied with the direction provided by authorities on IT-related issues and emphasize the necessity for a user-friendly platform tailored to their requirements. Advanced technology like as DNA analysis and video evidence have the potential to transform trials and enhance the development of electronic court systems. Collaboration among stakeholders, technologists, and private industrialists is crucial to close the gap between current technology and new tools for successful deployment. The paper highlights the pressing need for improving the Indian criminal justice system and stresses the substantial influence technology might provide. Stakeholders want to enhance system efficiency, streamline processes, and deliver more timely and efficient justice by implementing IT and digitization. Key ideas for modernizing the system include upgrading digital infrastructure, expanding data-sharing platforms, and creating case management platforms to promote accessibility and accountability for all.