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Print ISSN: [3006-2497](#) Online ISSN: [3006-2500](#)Platform & Workflow by: [Open Journal Systems](#)**The Digital Age of Justice: Technology, Fair Trial, and Article 10-A of the Constitution of Pakistan****Muhammad Zahid Rafique**

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maryamarshad190102@gmail.com**Abstract**

The right to a fair trial, entrenched in Pakistan's Constitution through Article 10-A inserted by the Eighteenth Amendment of 2010, guarantees every person "due process" in the determination of their rights and obligations. This paper examines how the rapid digitization of judicial processes intersects with this constitutional guarantee, evaluating whether and how technology strengthens the core tenets of fair trial timeliness, transparency, access to justice, and impartiality within Pakistan's judicial system. Tracing the conceptual and historical foundations of the fair trial doctrine from the Magna Carta through the UDHR, ICCPR, and ECHR to its codification in Article 10-A, the paper situates Pakistan's experience within a global shift toward e-filing, virtual courtrooms, video-conferenced hearings, digital evidence management, and artificial intelligence in legal research and case administration. Drawing on statutory provisions such as Article 164 of the Qanun-e-Shahadat Order 1984 and the Investigation for Fair Trial Act 2013, together with case law admitting emails, CCTV footage, cell-site data, and forensic records as evidence, the study assesses both the promise and the limits of Pakistan's still-nascent digital judicial infrastructure much of which remains paper-based and unevenly distributed across urban and rural courts. Adopting a qualitative methodology grounded in statutes, case law, and scholarly literature, the paper argues that while technology cannot resolve every structural deficiency of the justice system, it is indispensable to realizing the due process guarantee of Article 10-A in a manner that is timely, transparent, and equally accessible. It concludes with recommendations for phased e-filing rollout, expanded virtual hearings, digital literacy training, and stronger data protection legislation, stressing

that meaningful digital transformation requires sustained collaboration among the judiciary, policymakers, technologists, and civil society.

Keywords: Article 10-A, Fair Trial, Due Process, Digital Justice, Virtual Courts, Digital Evidence, Constitutional Right

1. Introduction

The right to fair trial is the standard of international human rights law, which gives protection against arbitrary, unlawful deprivation of life, liberty, freedom of movement, freedom of speech and other rights (Liyew, 2025). To make sure that those accused of crime are treated fairly and equitably under the law. The concept of fair trial has been developed over centuries and is essential both in national and international legal systems, which can be traced to ancient legal systems: the Magna Carta (1215), which had laid the foundation for due process by asserting that no free man should be imprisoned without lawful judgment; English common law, which developed the presumption of innocence and the right to legal representation; the US Constitution and Bill of Rights (1791), which had secured the rights to a public trial by an impartial jury with legal counsel; and the French Revolution's Declaration of Rights of Man and the Citizen (1789), which had established legal protection for the accused (Seyhan, 2025).

Modern advances in the legal system, like the Universal Declaration of Human Rights (UDHR), provide for the right to a fair trial and a public hearing before an independent tribunal. Article 10 provides that everyone has the right to "a fair and public hearing" before an independent and impartial tribunal, established by law, for the determination of his rights and obligations and of any criminal charge against him (Lubis, 2023). The right to a fair trial is one of the most extensive human rights. Article 14 of the International Covenant on Civil and Political Rights (ICCPR) spells out in detail the rights of a fair trial, while Article 6 of the European Convention on Human Rights (ECHR) guarantees the right to a fair trial within a reasonable time (Stavros, 2021). A fair trial is a trial that is carried out in a proper manner, with regularity in the process, and the judge is impartial. Article 10A of the Constitution of the Islamic Republic of Pakistan 1973 deals with the right to fair trial i.e. In the determination of his rights and obligations or in any criminal charge against him, every person shall have the right to a fair trial and due process (Munir et al., 2020). The right aims to ensure the proper administration of justice and is crucial to preventing the violation of all other human rights. All judicial proceedings, civil as well as criminal, are guaranteed the right to a fair trial.

An efficient judiciary system is essential to meet the needs of present technological society. Digitalisation is on the rise in family, civil and criminal justice systems globally and has manifested itself in online filing and online forms, electronic bundles, increased electronic communication between judges, lawyers and litigants, and the piloting of online dispute resolution (ODR) and the use of artificial intelligence, among others, and has been happening since the mid-1990s, but has accelerated over the past five years. The technology is integral in the criminal justice system of Pakistan and its use can make the system effective, transparent, accurate and accountable: Article 164 of the Qanoon-e-Shahadat Order is related to modern devices in criminal justice system and Investigation for Fair Trial Act 2013 is related to fair trial investigation through modern devices (Usman & Ashraf, 2026). Many problems like low public trust, high crime rate, and backlog of pending cases still plague the criminal justice system in Pakistan, while

technology has brought new avenues of enquiry and access to justice, however, it must be done with caution to ensure that technology does not overpower the protection of fundamental rights.

Technology is playing a vital role in many of the fields and in Pakistan, the judiciary does not have any technological facility. The use of modern technology in the judicial system needs to be improved, especially by educating the populace and giving them access to more modern technology resources to enhance and maintain a fair trial (Saleem et al., 2025). This paper critically analyzes the contribution of technology towards the fair trial in the digital era in the judiciary system of Pakistan. It examines the level of digitization of judicial processes and systems, such as e-filing, virtual courts, case management software, and digital evidence management, within Pakistan's judicial framework and analyzes the impact of technology on the core tenets of a fair trial, including the right to a speedy trial, access to justice, transparency, and the right to a public hearing. It also examines the obstacles and opportunities of the judiciary system, legal practitioners and litigants in the adoption and use of technology, such as technological literacy, infrastructure, data privacy and cyber security, and compares the technological development in the judiciary system of Pakistan with international best practices for further development and improvement (Ali et al., 2024).

2. Conceptual Foundations of Fair Trial

2.1 Meaning and Scope

A trial is a formal judicial review and evaluation of evidence and determination of legal claims in an adversary proceeding (Black's Law Dictionary, 9th ed., p. 1644). It is also said to be a meeting in a court where evidence is presented to a judge and sometimes to a jury concerning crimes, disagreements, etc., so that decisions can be made according to the law (Britannica Dictionary) or a judicial evaluation and resolution of issues between two parties in a civil or criminal case (Cambridge English Dictionary). Considering these definitions, the objectives of the trial are to ensure a fair and impartial administration of justice, to determine the facts and to interpret the law in relation thereto. The final decision of any dispute is trial, if a dispute is not solved by the parties, they go to court. Trials are of two kinds: criminal and civil. A police officer is not involved in the decision of guilt or innocence when a person is arrested for violating the law, a report is filed against him/her, but a person is not criminally charged until proven guilty. Every individual accused of committing a crime is entitled to a fair trial and the fair criminal justice system was instituted to safeguard the liberty of every man, woman and child, judges must be vigilant in the pursuit of justice and fairness (Prawira, 2025).

This right to fair trial is very much accepted, and in fact is a part of the majority of legal systems in the world, and the same can be seen in various treaties and conventions and is considered by many to be a peremptory standard of general international law. The right to a fair trial is a basic human right for all, but it is also the right of administration of justice (Robinson, 2009). A fair trial is also a public trial, to ensure accountability; and the accused has the right to challenge the judgment and punishment if they are found guilty; and, to maintain fairness and equality, a person cannot be tried twice for the same crime, regardless of their ethnicity, gender, religion or socioeconomic standing. The right to a fair trial is thus a complex idea intended to defend the accused and guarantee that justice is done, and it is an essential element of the rule of law, supported in legal systems around the world (Bansal & Kushwah, 2022).

2.2 History and Origin of Fair Trial

A fair trial is a legal right that ensures that an individual has a fair and reasonable trial if they are accused of a crime or sued in a civil case (Langford, 2009). This concept of a fair trial in the legal system was developed in Ancient Greece, and then the Roman Empire gave prominence to the concepts of defense, due process, and the presumption of innocence in legal systems. An ancient document from England, the Magna Carta of 1215, provided limited powers to the monarchy, established the groundwork for the idea that no one should be denied life, liberty or property without due process of law. In the Middle Ages, the common law of England and the United States evolved the adversarial model and judges, and the judicial system played a role in making sure that individuals received a fair trial. In 1948, Article 10 of the UDHR was adopted to ensure fair trial universally, even if it is not a binding document, Articles 14 and 16 of the binding ICCPR in 1966 gave a definition of the fair trial right (Shaikh, 2022). The fair trial of PoWs became part of the Geneva Conventions and their protocols in 1949, during the codification of the IHL (Salman et al., 2023).

Fair trial performs an important role in the judicial process in terms of both its structure and its functioning. In terms of procedure, an accused before the court is presumed innocent until proven guilty; the jury and judge must be impartial in that they cannot have any personal or financial stake in the outcome; the accused is allowed to have an attorney of choice, or one provided by the state if an attorney cannot be afforded; the accused is entitled to a speedy trial, the ability to cross-examine witnesses, and the ability to hear the charges in a language he can understand, allowing him enough time and resources to prepare a defense, and the right to remain silent and to appeal. In fact, charges are framed and a plea considered, evidence is exchanged between prosecution and defense, witnesses are examined and cross-examined, arguments are advanced, and, if the accused is convicted, a separate sentence takes place, followed by the right of appeal. Thus, the various phases of a fair trial are investigation, charging, pre-trial proceedings, trial, sentencing, and appeal (Vitkauskas & Dikov, 2012),

3. Fair Trial Globally

A globally equitable trial ensures that court proceedings are carried out fairly, equally and in line with international human rights standards: the judiciary must be free from undue political and social influence, and the victims as well as the accused should have access to legal representation to ensure that their rights are respected (Clooney & Webb, 2020). The principles of a fair trial have roots in international documents: the UDHR (1948) provides that everyone has the right to a fair and public trial before a competent, independent and impartial tribunal (Article 10), with the presumption of innocence and procedural guarantees for accused (Article 11), defines the rights of convicts (Article 10), and states that nobody can be tried more than once (Article 14(7)); the ICCPR (1966) provides that all persons are equal before the courts, that everyone has the right to a fair and public hearing by a competent, independent and impartial tribunal, that the accused has the right to be heard, that a convicted person has the right to a trial, and that no one is to be subject to double jeopardy. The United Nations Human Rights Council, in addition, has declared that everyone, despite their nationality, including stateless persons, is entitled to a fair trial, and that each person is to be treated equally without discrimination on the basis of race, color, sex, language or religion (Vitkauskas & Dikov, 2017). Based on international human rights law, it is intended for the safeguarding of the integrity of the judicial system, and the rights and dignity of all persons involved in judicial proceedings including the right to be presumed innocent,

right to an impartial tribunal, right to counsel, and right not to incriminate oneself and right to freedom from double jeopardy.

Across systems, there are fair trial guarantees in the region. The European Court of Human Rights (1959) ensures that the right to a fair trial is granted to everyone in the Council of Europe's 46 member States, and Article 6 of the ECHR, which came into force on 3 September 1953, provides that everyone has the right to a fair trial and public hearing within a reasonable time by an independent and impartial tribunal established by law; that everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law; and specifies minimum rights including prompt notification of the accusation, sufficient time and facilities for the defence, legal assistance, the right to examine or cross-examine witnesses, and the right to a free interpreter (Stavros, 2021). In the African region the right to a fair trial and equality before the law is enshrined in Article 7 of the African Charter on Human and Peoples' Rights (adopted 1 June 1981; in force 21 October 1986), which also requires that states ensure the independence of the courts under Article 26 of the same Charter (Ssenyonjo, 2011). Under the Inter-American regime, Article 8 of the American Convention on Human Rights (1969) requires a hearing "with due guarantees and within reasonable time, by a competent, independent and impartial tribunal" which is more far-reaching than Article 6 of the ECHR, as it specifies that the trial be public, that the accused be presumed innocent, that confessions be made free of coercion and that no retrial take place after a final acquittal. The Arab Charter on Human Rights (Article 13) also gives the right to a fair trial in an adequate, independent and impartial court, which includes the right to legal assistance if he or she cannot afford it, and the ASEAN Human Rights Declaration (2012) affirms that every person accused of a criminal offence "shall be presumed innocent until proved guilty according to law in a fair and public trial, by a competent, independent and impartial tribunal (Akram, 2007).

The history of judicial system in Pakistan can be divided in more than one thousand years since the Hindu, Muslim, Mughal and British period, and the history has been divided in three stages: The period of Muslim rule, the period of British rule and the present judicial system. Even after the partition of the country and the formation of Pakistan, it has been continuously reformed and developed, leading to the structure of courts and their hierarchy (Gondal & Hatta, 2023). Provisions related to fair trial are laid down in the Constitution of the Islamic Republic of Pakistan 1973 and basic rights of the public are given in the Code of Criminal Procedure 1898. For the first time, the Constitution through the 18th amendment in 2010, included fair trial as a Fundamental Right, which covers the guarantees for an accused to receive a fair trial and due process of law (Hafeezullah Ishaq, 2014). The Constitution also provides for fundamental rights in its articles 4, 9, 10, 10A, 13, 14, 15 and 25 guarantees the right against double jeopardy, freedom of movement, human dignity and equality of citizens before the law. Islam also guarantees the five freedoms: life, liberty, religion, intellect, and property, as well as lineage and dignity, through Shariah law, and the right of a human being to fair justice, which can be seen in the countless centuries of successful and peaceful Muslim societies (Rahman, 2024).

4. Technological Use in Criminal and Civil Trial Procedure in Pakistan

4.1 Technology in the Judicial System of Pakistan

In every industry, from hospitals managing patient care to farmers analyzing decades of crop data to determine what and when to plant, technology has become essential and a requirement. Especially women and children need speedy justice, but Pakistan as a developing country doesn't utilize technology

in the proper manner. Although the legal profession worldwide has embraced digital transformation, and technology has been integrated into judicial process and procedures in order to make the system more efficient and effective, Pakistan's legal system has yet to fully leverage technology to enhance its standing on the World Justice Project Index, ranking 130th globally with courts taking initial steps towards electronic case management yet still relying heavily on paper-based systems for referring to law and filing cases (Gondal et al., 2025).

4.2 Criminal Trial Procedure in Pakistan

The criminal trial procedure essentially starts with registering a First Information Report (FIR) by the police based on a complaint or evidence of the crime, presentation of the case before a court and charge-sheeting of the accused. There are two types of criminal trials in Pakistan: summary trials and regular trials (Waqar & Iqbal, 2022). The evidence is presented, and the charges are framed, including what the accused is being charged with, and the presentation of evidence, examination of witnesses, cross-examination of witnesses, argument, judgment, and (where the accused is found guilty) sentence, and appeals are available to either party if they are not satisfied with the verdict.

Technology has been utilized in the legal industry to a considerable extent in most of the developed countries, whereas Pakistan is lagging. In Pakistan's judicial system, modern devices are being increasingly used for authentic decision making and broadly can be classified into hard-type devices, which include biometrics such as fingerprint, DNA, voice recognition, facial recognition etc., and soft-type devices, which includes computer related data/computer digitized information etc. To cater for this necessity, new provisions were added to the Qanoon-e-Shahadat Order 1984 regarding the modern devices. Integrating technology into Pakistan's judicial system could greatly increase efficiency and transparency: case management can be automated and case files digitized to reduce the time and expense of legal proceedings, benefiting overworked judges, litigants, attorneys, and court staff, and enhancing access to justice for marginalized communities facing physical or geographic barriers (Akhtar et al., 2023),

In a terrorism prosecution under the Anti-Terrorism Act 1997 and the CRPC 1898 (2021 SCMR 873) email records proved authentic proof of death and threats of abduction, and the co-accused's Internet account records proved involvement. Records from cell phones have also been considered trustworthy proof of an accused's movements and communications and in one case (2021 SCMR 404) that evidence put an accused at a crime scene. Computer evidence such as Internet history, audio recordings, photographs and screenshots are also admissible as documentary evidence, while video and video-cassette evidence is admissible when authenticated by a forensic report but has been excluded when authenticity cannot be demonstrated (2016 SCMR 2084) (Rana et al., 2022). CCTV footage, polygraph testing (which records changes in body temperature, blood pressure and respiration when the subject is questioned) and DNA testing of blood and hair samples are other types of forensic evidence that are accepted, but DNA testing facilities are limited to a few major cities including Islamabad where the government has appointed serologists for this purpose.

4.3 Civil Trial Procedure in Pakistan

In a civil trial, the basic steps of the process are that the plaintiff files the case and sends a summons to the defendant, who then writes a statement, the issues of fact and law are determined based on the claims and defenses of the both parties, pre-trial conferences are held where witnesses are examined

and documents are presented, and both parties present their case, with the court reaching a judgment, subject to appeal (Shah et al., 2014).

Limited technology is used in civil cases in Pakistan; although the internet is readily available in the country's major cities, it is not properly utilized within the judicial system. To varying extents, e-filing enables parties to post documents online, such as digitized case documents and digitally presented evidence, while video conferencing allows for testimony and lawyer-client consultation without in-person attendance and case management software, offered by some courts, allows parties to track case progress and assists with presenting evidence and testimony. But technology is not implemented in a proper way in the legal system of Pakistan, because of the use of old technology and lack of facilities (Khan & Ali, 2021).

5. International and National Legal Framework

5.1 International Legal Framework

Internationally, there are different laws and treaties which have been created regarding technology in judicial systems, all focusing on how to make the judicial process more just and fairer. Technology can help support access to information and legal services, as stated in the UDHR, under Article 10 "The right to a fair trial and public hearing by an independent and impartial tribunal" and Article 14 "Everyone has the right to a legal remedy". The ECHR's Article 6 guarantees a right to a fair trial, including through technology that can enhance efficiency of the justice system. The EU's Charter of Fundamental Rights' Article 47 secures a right that can be supported by technology, such as e-portal systems offering electronic resources and tools. The ICCPR's Article 14 guarantees a right to a fair trial, which technology can support through remote hearings and digital submission of evidence (Jamar, 2001). The Hague Conference on Private International Law promotes the application of new technology in judicial cooperation cross-border and the taking of evidence (Stikkelbroeck, 2006).

There are extensive technological legal frameworks that have been developed in many developed countries. China has been developing a "smart court" system since 1994, when they started developing internet services in the country; from 2014, the focus of Chinese courts shifted to technological transformation, and in 2017 the concept of "smart court" was officially raised (Shi et al., 2021). A number of acts and policies in the United Kingdom have been put in place to introduce technology in the court system such as the Human Rights Act 1998, which strengthens rights to a fair trial; the Criminal Procedure and Investigations Act 1996, which covers disclosure of evidence; the Digital Economy Act 2017, which encourages the use of electronic communication in the legal process; and the Police and Criminal Evidence Act 1984, concerning the gathering and presentation of evidence. The Courts and Tribunals (Online Procedure) Bill 2019 seeks to bring modernisation to court procedures, and permit electronic participation, the Crime and Courts Act 2013 regulates the use of video technology in the taking of evidence of witnesses, the Counter-Terrorism and Border Security Act 2019 allows the use of electronic data in the context of terrorism investigations (Zalnieriute & Bell, 2020).

The United States has also passed legislation to deal with technology in the context of a fair trial, such as the Electronic Communications Privacy Act, the Federal Rules of Civil Procedure and the Federal Rules of Evidence. The Computer Fraud and Abuse Act applies to unauthorized access to computer systems and digital evidence, the Stored Communications Act to disclosure of electronic communications held by third-party providers, the Fourth Amendment to protecting against unreasonable searches and seizures

involving technology and the Freedom of Information Act and Cybersecurity Information Sharing Act to promote transparency and secure information sharing between the private sector and government (Marchant, 2019).

5.2 National Legal Framework of Pakistan

There are several laws and acts in Pakistan concerning the usage of modern devices and technology with the judiciary. The Constitution of Pakistan 1973 guarantees the right to a fair trial and due process as provided in Article 10A, added under the 18th Amendment in 2010. The Qanoon-e-Shahadat Order 1984 (Order) provides for admissibility of electronic evidence under limited circumstances in Article 164 and the Electronic Transactions Ordinance 2002 (Electronic Ordinance) added Article 164A which establishes electronic records and electronic signatures as evidence. The Code of Criminal Procedure, 1898 also provides for taking statements through videoconferencing, taking confessions through electronic records and examination of witnesses through videoconferencing to ensure safety and convenience (Jamali et al., 2024).

The National Judicial Policy 2009, which has been prepared with emphasis on grass root justice, places a strong focus on the use of technology to enhance the efficiency and transparency of the judicial system, including the introduction of case management systems, e-filing of cases and video conferencing of witnesses to facilitate timely and fair trials, including video conferencing facilities between courts and jails to assist in early disposal of cases, and a modern witness protection program, whereunder a witness can be examined through video link (Saleem et al., 2025). The Pakistan Telecommunication (Re-organization) Act 1996 lays foundational regulatory framework for telecom sector including video conferencing and collection of electronic evidence, and the Right of Access to Information Act 2017 encourages transparency in access to information by public organizations, including courts. The Federal Investigation Agency Act 1974 provided for the agency which is responsible for investigation of cybercrime under PECA, 2016 and to ensure that digital evidence abides by the fundamental principles of fair trial (Rehmat & Alam, 2018).

PECA 2016 is the main legislation for electronic crime and it seeks to punish unauthorized access to information systems and dishonest interference with information provided through offences such as the unauthorized access to and copying of information, interference with critical infrastructure information systems, cyber terrorism, electronic forgery and fraud, unauthorized use of information constituting an identity, cyberstalking, spoofing, and provisions for real-time collection and recording of information and forensic evidence to investigate offences under the Act (Iqbal et al., 2023). The Electronic Transactions Ordinance 2002 is another legal framework that aims at facilitating and regulating electronic transactions in Pakistan by securing legal recognition and reliability of electronic documents and digital signatures, setting up a framework for the accreditation of certificate authorities for the issuance of digital certificates, ensuring the security and integrity of the electronic transactions and allowing electronic records and digital signatures to be considered admissible evidence in court if they are reliable, their integrity has not been impugned and they are authentic (Munir, 2010).

5.3 Global Use of Artificial Intelligence

In the light of the general trend on modern technology, the use of artificial intelligence has grown significantly all over the globe and many developed countries have moved towards utilizing artificial intelligence in the legal arena to modernize their judicial system. In the judicial services sector, where

technology has not been as effectively employed as in other sectors, this disruptive potential is particularly high with new technologies and tools driven by data potentially seriously threatening existing processes (Brooks et al., 2020). AI and data analytics tools are revolutionizing the legal landscape, enabling attorneys to work more efficiently, streamline processes, and provide superior legal services in areas such as legal research, e-discovery, document automation, predictive legal analysis, case management, and legal research, etc. However, there are also several ethical and legal issues to consider in legal practice when using AI, such as impartiality and fairness, privacy, data protection, conflict of interest, openness, trust, communication and competent representation (Laptev & Feyzrakhmanova, 2024).

6. Impacts of Technological Advancement on The Right to a Fair Trial in Pakistan

6.1 Impacts of Technology on Fair Trial

The primary rule of judicial process is to provide fair trial to the people and if the judicial system fails to provide fair justice to the people, it disturbs the process and everybody is entitled to fair and free justice. The right to a fair trial is the right to justice and technology is a part of the justice system today and in the future, new technology can be used in critical situations for fair justice such as hearing through video links. Especially in criminal process, evidence and investigation play a critical role in the resolution of the case, and digital evidence and digital forensics play a certain part in criminal investigation (Marshall, 2009). The introduction of new technology should be emphasized in the context of improving the quality of civil proceedings and enhancing citizens' satisfaction with the process, as law and judiciary are the pillars of social order and their main mission is to provide justice and equality to all citizens. While technology can enhance access to information for the justice system, it also presents challenges in the collection of evidence using technology and in verifying the authenticity of the evidence, as well as in preventing the tampering or manipulation of digital evidence in conducting a fair trial process.

6.2 Improved Access to Justice

Through technology, access to justice in the legal sector improves, meaning easier access to rights and justice for the people. American courts have implemented online platform technology, which allows attorneys, litigants, judges, and prosecutors to communicate, share and resolve case information digitally without physical presence and makes courts more efficient, responsive, and effective (Prescott, 2017). New technologies and equipment, like court recordings, video and audio-conferencing, e-filing systems, e-libraries and sentencing support systems, have increased access in the UK where the first virtual court system was launched in southeast London and Kent in 2009 (Donoghue, 2017). In USA, courts and legal aid organizations have established self-help centres and legal websites providing information in electronic and multimedia form to increase access for low income litigants (Cabral et al., 2012). The same can be the case in Pakistan judicial system, where judges can, at least to a certain extent, use AI to support the drafting of orders and judgments.

6.3 Safeguarding Rights and Due Process

The application of new technology in providing protection of rights and guarantee of due process of law makes the legal sector more open, equitable and accessible. Technology can assist in enhancing transparency, safeguarding due process, ensuring integrity evidence, securely handling data, and facilitating remote hearings, ensuring balanced treatment for all parties involved. Online databases and portals allow the public to follow the process and hold it accountable; digital tools ensure security of the

documents, allowing no alteration or falsification of the files or evidence under judicial oversight. The use of virtual courtrooms and video conferencing allows individuals to appear in court without traveling, which can save time and resources for all parties, and educational training on how to use these tools helps legal professionals better understand the due process of law (Bandes & Feigenson, 2020).

6.4 Negative Impacts of Technology

Technology comes with several risks. There's been a growing concern about security, especially when it comes to storing sensitive data, as court data and legal records are susceptible to cyberattacks with the rise in technology use. Access to technology is one of the serious concerns, since all do not have equal access to technology and the government needs to provide the facilities to the public. The technology infrastructure is costly to implement and maintain, adding to the limited budget and the internet service in Pakistan is not very good (Jamil, 2021). There is also the prospect that increased reliance on technology also has the potential to reduce job opportunities for the legal profession resulting in displacement and change in the legal profession.

6.5 Improvement of Technological Advancement in Pakistan's Legal Sector

Pakistan's judicial system follows traditional practices and procedures that need to advance, as in developed countries, to achieve easier access to justice. For example, the United Kingdom's E-Court, which aims to transform the judiciary by making it digital, has enhanced justice, accessibility, and fairness, and similar initiatives could be beneficial for Pakistan (Iftikhar, 2025). There's a pressing need on a proper implementation of e-filing system, as it is done in the UK, Canada and the United States, where individuals could file cases online without actual appearance, particularly for poor litigants (Iftikhar, 2025). Electronic court proceedings and virtual hearings have been introduced in Pakistan but are not yet fully implemented because of lack of facilities. Systems for full electronic submission, storage and presentation of evidence are underdeveloped (Kalanauri & Kalanauri, 2020).

6.7 Use of Artificial Intelligence in the Judicial Sector

Artificial Intelligence is an area of technology that concentrates on creating computer systems that execute tasks that need human intelligence, such as learning, problem solving, understanding language, and adjusting to circumstances. In the field of judicial administration, European courts have started to experiment with AI systems in document management, judge allocation, and the anonymization of judgments for publication some of the most advanced applications of AI in the courts (Terzidou, 2022). Its main benefits include efficiency, improved risk analysis, quality of work and analysis capacity without fatigue. While there are many fields in Pakistan that have been utilizing the technology of AI such as media, health, air defense and cyber security, it has not been effectively incorporated in the judicial field. In a significant first, a judge in Phalia district used ChatGPT to help him arrive at the findings of a case and demonstrating the potential of AI in the Pakistani judicial system to speed up case resolution (TLTP, 2023).

6.8 Limitations of Technological Advancement

The judicial sector has several restrictions on technology. There is a constant change in technology and if facilities are not properly set up, there's always a risk of it becoming obsolete; for the legal industry, the shift in technology isn't a one-time thing, but a mindset change; software used today will inevitably require replacement or upgrading. Digital access also equates to digital susceptibility to errors and security breaches the misuse of technology in the legal arena is a significant danger, and, with cyber

insurance premiums on the rise, there is no room for compromise when it comes to cybersecurity (Loader & Thomas, 2013).

7. Conclusion and Recommendations

Technology is revolutionizing the judicial system in Pakistan, offering the potential for a fairer and more efficient trial process, greater transparency, and more accessible justice. This paper has discussed the various functions of technology to solve systemic problems like case backlog, procedural delays and lack of legal resources. While there are many ways in which technology can revolutionize the justice system in Pakistan, such as e-courts, digital case management systems, virtual court hearings, and online legal databases, the journey toward digital justice is fraught with challenges. To fully reap the benefits of technological advancement, digital literacy, infrastructure constraints, data privacy and the resistance to change all need to be addressed and, above all, it will depend on collaboration between the judiciary, government and legal experts in an equitable digital domain. Technology can't fix all the issues that the judicial system of Pakistan is facing, but it is a strong instrument to make things fair.

It points out that overall technology usage in the judiciary of Pakistan is still in infancy and a significant portion of the judiciary is still dependent on paper based and manual procedures and also that a lot of segments of the judiciary do not have any technology of their own, such as case management system, e-filing and virtual courtrooms. At the same time, digital documentation and real-time court proceedings can help reduce corruption and increase public trust; case management automation and e-filing can help alleviate case backlog and delay; and virtual courts and online Dispute Resolution can make access to justice more convenient for remote and marginalized communities. There is a need for judicial technology, judicial training, and judicial legal reforms on data protection for the court with greater investments in the light of limited access to the internet, outdated hardware, lack of technical training and high costs of such implementation.

Internationally, there is increasing number of documents establishing a framework for the protection of the right to a fair trial, some of which are also more and more entangled in technological developments, such as the UDHR and ICCPR; the interplay between international standards and national laws is an important element in harnessing the opportunities of technology and protecting the fundamental principles of a fair trial in a modern digital age. The impact of technological advancements on the right to a fair trial in Pakistan has been a mixed bag, with some positive and some negative consequences: Digital evidence, e-filing systems, virtual courtrooms, and AI-driven legal research have streamlined the process, enhanced efficiency, transparency, and accessibility to justice, potentially mitigating delays, reducing human error, and expanding access, as guaranteed under Article 10A of the Constitution. However, technological advancements have also presented challenges, such as data privacy, cybersecurity, digital divide, and potential misuse of digital evidence. There is a need to strike a balance between strong legal instruments, capacity building and inclusive policies to allow the use of technology as a tool of justice and not injustice.

It is therefore recommended that the following steps be taken. First, the e-filing system should be rolled out throughout the judicial system in an appropriate manner, and should permit lawyers, litigants and the public to submit electronic documents and evidence, except in case of urgency, which will save time and documents. Secondly, electronic means of hearing cases (by video conferencing) should be encouraged to save costs, delays and unnecessary attendance and judges should be provided with better

facilities to use computers to draft judgements. Thirdly, mobile applications and websites should be created to ease access to legal information for individual litigants. Fourthly, create training and education for judges, attorneys and court staff to maximize the use of new technology and encourage digital literacy.

But, with regards to criminal trial procedure, the virtual courtroom should be expanded for the use in hearings and matters that do not require evidence, e-filing of legal documents should be adopted to make it easier to submit and process legal documents, there's a need to adopt advanced technologies like DNA and digital forensics for quick processing of evidence, and additional legislation that supports the fair and efficient use of technology in the judicial system should be adopted. Electronic filing systems should be adopted to reduce paperwork and advance case management; use of video hearing systems and remote depositions should be encouraged to overcome the scheduling and traveling time; fast-track system should be adopted for less complex cases; civil procedure rules should be reviewed and amended periodically; use of more electronic means of dispute resolution instead of traditional court hearings should be encouraged as quick remedy.

In sum, innovations in technology can help to prevent and avoid miscarriages of justice, a need that is now an integral part of justice itself. Technology has enhanced the right to a fair trial through better court processes, efficiency and transparency, which helps to minimize any error in the trial experience and trust in the outcome of the judicial process. However, the challenges technology will continue to pose, such as attitudinal difference in digital literacy, lack of infrastructure, data security and privacy issues, as well as cultural change in the legal profession and continued policy support from the government, will be significant. A holistic approach is required to realize the potential of digital transformation, including technological innovation, legal changes, capacity development and public engagement. Through collaboration, policy makers, legal practitioners and technologists can help develop a more robust, transparent and efficient legal system that will help to ensure that access to justice and equality are upheld in the digital age, that fair trials are guaranteed to every citizen and that Pakistan remains committed to the realization of this goal.

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