

 **ARTIFICIAL**
INTELLIGENCE & THE FUTURE OF
JUDICIAL SYSTEMS
IN AFRICA

REPORT

EXECUTIVE SUMMARY

With an increased demand for fast, affordable and efficient justice systems, Africa is on the right path, implementing transformative adjudication. To meet the demand for reimagined justice systems, states are adopting innovative service delivery mechanisms. Adopting technology and data-driven solutions in Judicial Systems rapidly affects the business environment (ease of doing business) and the quality of life.

This AI and Judicial Systems in Africa Report 2022 (the “Report”) evaluates the uptake of AI in select countries in Africa’s legal systems, with the view of identifying the current status, challenges, and prospects. It highlights frameworks for adopting AI in the legal professions and whether it is sustainable for the quality of judicial decisions, the reasoning of judges, the perception that AI has the potential to replace the human factor in judicial systems, and taking into account the risk of AI bias.

The Report is predominantly premised on a situational analysis of judicial systems in Africa, which brings the result that growing numbers of disputes cause pressure, blotted criminal justice

systems, and unequal access to justice for different groups. The general finding throughout the Report is that technology has taken center stage in the provision of conventional services within judicial systems, and AI is being explored as a possible solution to identified challenges. There is a push for transformation, with AI viewed as a solution to access justice, access to court data, and laying deep foundations for justice sector solutions.

The Report finds that the path of digital transformation for Judiciaries has not been entirely flawless, with many left behind. The reality of digital transformation in judicial systems bears the challenges relating to digital inequality, already existent between the rich and the poor, men and women, minorities and other groups, and within society. The growing concern for privacy and data protection in the justice sector is further increased. The Report identifies AI as a potential permanent factor in Africa’s justice systems, assisting in investigations, bail determinations, management of case tracking, and AI for the Rule of Law.

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List Of **ABBREVIATIONS**

AI	Artificial Intelligence.
ICT	Information Communication Technology.
CTS	Court Recording and Transcription Services.
ERP	Enterprise Resource Planning.
TAMS	Tanzania Advocates Management Systems.
NAMCIS	Namibia Case Information System.
GEPG	Government Electronic Payment Gateway.
CLS	Electronic Legal Communication.
LIS	Legal Information System.
COMPAS	Correction Offender Management Profiling for Alternative Sanctions.
SLPS	System for Random Allocation of Cases.
UNESCO	United Nations Educational, Scientific and Cultural Organization.
MOOC	Massive Open Online Course.

1.0 CHAPTER ONE

JUDICIAL SYSTEMS IN AFRICA

Africa's judicial system has grown over the years from pre-colonial, colonial, and to the current post-colonial period, with developments in the sector to deliver justice and protect the rule of law. During the Pre-colonial era, African judicial systems were implemented based on the customs and practices of ethnic populations and communities. Different communities and kingdoms had their way of settling disputes and solving cases. However, cases and disputes were settled through oral practice, where the king or council of elders settled the disputes using their customary laws orally. There was no technology adoption in the pre-colonial justice systems in Africa,

and operations in this dispute-resolution system were not automated.

During the colonial era, by the early 1900s, the establishment of common law and civilian law was prioritized in the colonies. Colonialists replicated their judicial systems in Africa for dispute resolution. There were no automation elements, and systems were manual in African countries.

In the post-colonial period, African countries adopted judicial systems, which varied depending on their colonial power, focusing on establishing systems to protect the rule of law and safeguard national constitutions. Countries established courts from Subordinate Courts, High Courts, some Court of Appeal as the last instance Court, and some set up structures for Supreme Courts. The system of courts as conceived formed the

foundational judicial systems in Africa, most of them with constitutionally independent Judiciaries. Initially, operations in judicial systems were manual with no aspects of automation.

Subsequently, judicial systems in African countries have diverse characteristics based on their foundations in different colonial heritages. Their functional architecture, therefore, is shaped by various customary and religious norms, which affect the design of each country's judicial system. Due to corruption, irregularities, and mismanagement in different levels of the African countries' Judiciary, justice has become difficult to deliberate in many cases. Judicial systems in developing countries in Africa continue to suffer from inadequacies that harm socio-economic well-being of its people. The commonly faced voids in the Judi-

ciary include cases taking a long to be disposed of, lack of certainty in the judicial proceedings process, and access to judicial services for the common person is difficult. African courts have widely adopted case flow management techniques to reduce case backlog, increase predictability in the judicial system, and render timely justice.

According to Constitute, an online database of the current constitutions of over 194 countries, eighty (80) percent of constitutions include a formal constitutional review mechanism that is predominantly judicial for checking compliance of po-

litical authorities' actions and decisions with the constitution. Moreover, African judiciaries have assessed the constitutionality of laws, among other determinations, geared towards reflecting political, economic, and social changes. This process is referred to as the constitutional review process.

This Report brings to our attention an important aspect that has revolutionized how various judiciaries in Africa operate amidst technological developments. The advancement of technology and the adoption of various technological innovations provide a conducive environ-

ment for judiciaries to rethink novel ways to access justice and the rule of law. Indeed, as case law, court procedures, and scholarly work show, African judicial systems have adopted technology to transform different aspects of operations in their systems over time. For instance, technology has been adopted to digitize processes in the judicial systems, as indicated in Chapter Two of this Report. Indeed, during the Covid-19 pandemic, many African judiciaries put in place virtual courts. This Report, therefore, maps the use of artificial intelligence in Africa's judicial systems.

2.0 CHAPTER TWO

OVERVIEW OF DIGITIZATION IN JUDICIAL SYSTEMS IN AFRICA

2.1 Digital Transformation Journey for Courts

The interface between law and technology is a growing sphere. The law should accept new dimensions to suit the demands of an IT-based digital society and play a powerful role like a living organ. For example, the use of Information Communication Technology (ICT) to reinforce judicial functions in Africa has been critical for enhancing the efficiency of case processing, determination, and overall access to justice.

Although research has shown that lawyers and judicial officials have been slow in incorporating technology in providing legal and judicial services, the Covid-19

pandemic was a game changer. Government measures such as the closure of offices to limit the movement of people meant that vital services had to be moved online. Ultimately, the locked-down situation due to the Covid-19 pandemic made the judiciary function virtually to enable virtual attendance of parties to a case during trial and to allow the Court to hold inquiries or hearings of applications and appeals and take evidence or deliver orders or judgments. Thus, the Covid-19 pandemic opened the doors to virtual courts.

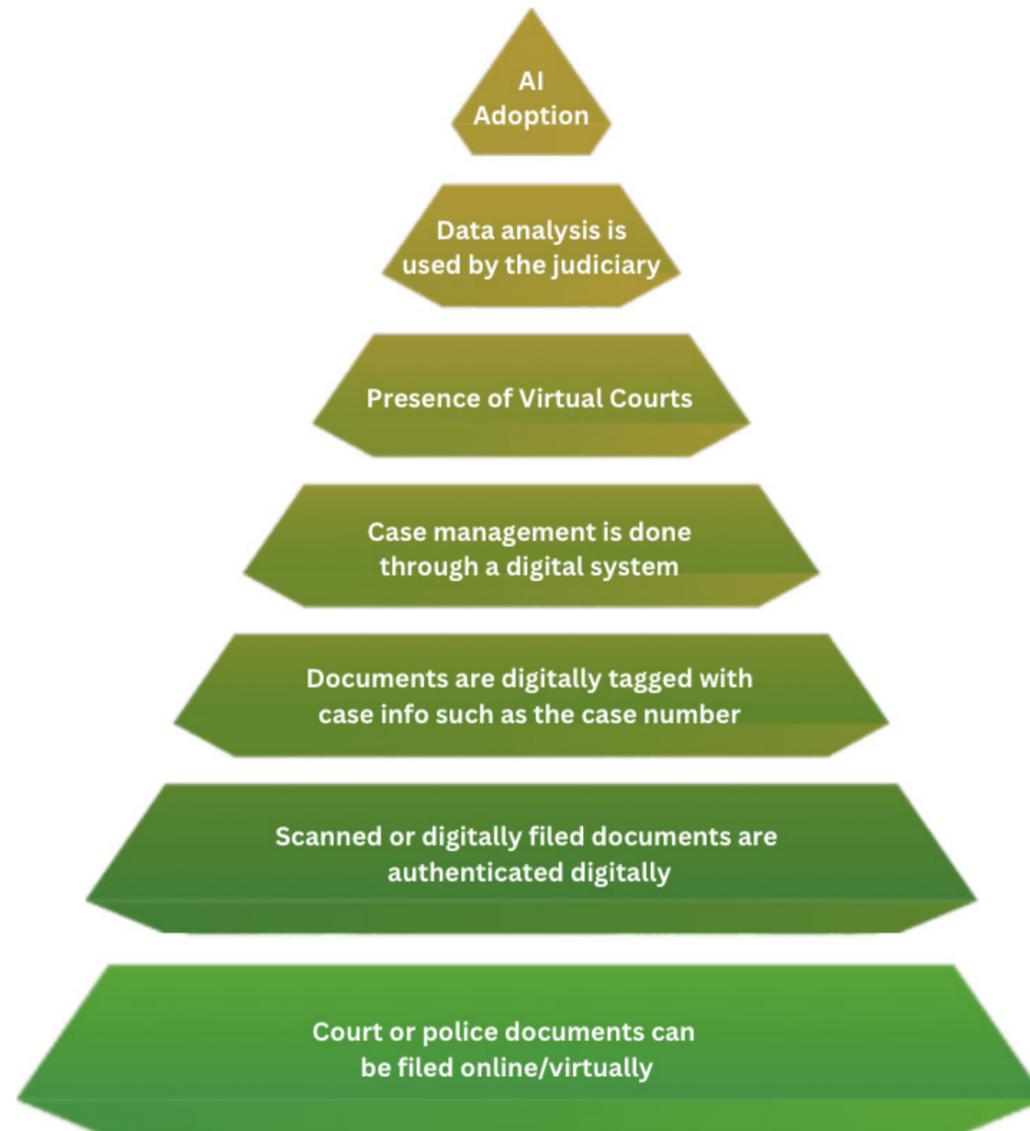
Hence, to meet the increased demand for effective services in the justice sector, courts, prisons, law societies, and justice

sector players across Africa are implementing new, effective, faster, and scalable technological initiatives to manage cases and resolve disputes.

The key technological initiatives adopted and operationalized by the Judiciary across Africa are; e-filing, Court recording and Transcription Services (CRTS), Case Tracking System (CTS), Enterprise Resource Planning (ERP), continued provision of ICT hardware and internet, manual court processes into a digital format, such as court attendance, sending notices of court hearings through automated systems, have been embraced by judicial systems in Africa.

As shown in figure 1 below some of the digital measures adopted by the Judiciary include AI adoption, data analysis, virtual courts, etc.

Figure 1: Stages of Digitalisation of Court Systems



Source: Lawyers Hub, 2022

Over time, judicial systems in Africa have adopted the use of technology to transform different aspects of operations in their systems. Technology has been adopted to digitize processes in the judicial systems, as indicated in Chapter Two of this Report.

Figure 1 on the left is a pyramid representing the different stages of digitalisation of court systems. Depending on the level of technological infrastructure available, digital skills of judicial officers and the need for digital services, most judiciaries will be categorized between the following stages, with the first stage being digital/online filing and the final stage being AI integration.

2.2 Judicial Digitization Efforts at the national level

South Africa, Kenya, and Rwanda have utilized online communications and technologies to file, sign court documents, conduct court hearings, and transmit court outcomes. Below-mentioned is an analysis of a few countries and how they have used technology in their Judicial system.

Table 1: Digitization efforts at national level for Judicial Systems:

Country	Digitization Efforts
South Africa	<ul style="list-style-type: none"> ● Virtual courts; ● Case Management; ● Case backlog clearance; ● Digitization for dispute resolution.
Kenya	<ul style="list-style-type: none"> ● E-filing commenced in all courts within Nairobi (8,314 e-filing accounts created in 2020/21). ● Electronic payment of court fees (A total of KSh939, 975,091 comprising court fees, fines, and deposits collected using the portal). ● Adoption of an electronic Case Tracking System (CTS) where 1,359,297 cases were captured. ● 26 court rooms installed with the CRTS equipment. ● Internet upgrade from 1.326 Gigabytes per second (Gbps) to 4.215 Gbps, ● Audit of ICT systems to enhance the robustness and security of the systems deployed in the Judiciary. ● Judiciary Advocates Management System (JAMS) launched by the Judiciary for use by Advocates.
Malawi	<ul style="list-style-type: none"> ● Adopted an electronic case management system; ● Use of ICT for the security of court records; ● Digital tracking and retrieval of case files, leading to efficiency in justice delivery.
Botswana	<ul style="list-style-type: none"> ● Adopted the use of technology, which resulted in digitization, leading to “improvements in case file management at the Gaborone Magisterial District. ● Electronic systems for retrieval of case files; and incidents of lost and misplaced case files went down significantly.

Tanzania	<ul style="list-style-type: none">● Adopted the JSDS Case Management Version 2.0;● Tanzania Advocates Management System (TAMS);● Government Electronic Payment Gateway (GEPG) and Video conferencing facilities in all 16 High Court centers, 4 High Court Divisions, and 17 Prisons centers.● This adoption has eased:<ul style="list-style-type: none">● Case registration,● Case tracking,● Retrieval of proceedings and judgments and case information.● The E-government has ensured that court users can pay court fees using the methods they use to make their daily payments.
Namibia	<ul style="list-style-type: none">● Adoption of Namibia Case Information System (NAMCIS), an e-Justice portal that allows users to track case status, view documents, and view court dates.● The Judiciary has a Livestream section on its website, which allows the public to access any publicly streamed court proceedings. Their Court records are kept safe and secure, reducing loss of records and aiding the search ability of data.● The use of e-Justice has ensured that court users do not have to physically go to Court to find out about case status updates.● Use of technology for search ability and retrieval of court cases.

2.3 Virtual Courts in Africa

Before the Covid-19 pandemic, court cases were done physically, with disputes solved in person. The immediate impact of the pandemic triggered courts across the continent to be shut down to maintain social distancing. Against its backdrop, Africa joined a list of continents across the world where the justice system similarly responded to the coronavirus-induced lockdown with increased digitalization. The Judiciary started the operation of the virtual court system.

E-court or electronic Court entails a location in which matters of law are adjudicated upon, in the presence of a qualified Magistrate/Judge, and which has a well-developed technical infrastructure. The pre-condition to ensure e-justice is introducing a full-fledged e-judiciary and e-court rooms in African countries. A virtu-

al court is not a single window solution but requires that several disparate individual components are carefully integrated to create a seamless operating environment. Four mechanisms form the E-Court types: Video Conferencing System, Case Management System, Community and Advocate Portal System, and Court Recording and Transcription System.

The concept of e-courts could be real and virtual courts. The first e-court, as a paperless court, is not a virtual but a real one, where paper is dispensed with. Virtual courts will have no court hall and no timing of a specific nature. Virtual courts have an environment of lawyers, judges, parties, and witnesses having meetings and exchanging documents by utilizing the facility of video conference, exchanging documents through Electronic Documents interchange, and using digital signatures. Singapore's courts include

services and technologies such as the e-Chambers, Technology Courts, the Electronic Filing System, Justice Online, and Law Net. These elements make it possible to have an electronic notebook where the judge and lawyers follow arguments, evidence, and authorities at the click of a mouse.

The African Courts took an extraordinary test with the limited resources and digital infrastructures to carry out virtual courts during the Covid-19 pandemic, as shown in figure 2 below. Majority of the virtual courts were established in 2020 and 2021, as a response to the COVID-19 pandemic. Since then the adoption of virtual courts has slowed significantly, with only one country (Zimbabwe) commissioning virtual courts in 2022. The regional distribution of virtual courts has been relatively even. Central Africa remains the only region that is yet to have any countries implementing virtual court systems.

Figure 2: Chart illustrating the distribution of virtual courts in Africa by country, region and year created



Figure 3: Chart illustrating the distribution of virtual courts in Africa by region

Number of Virtual Courts by Region

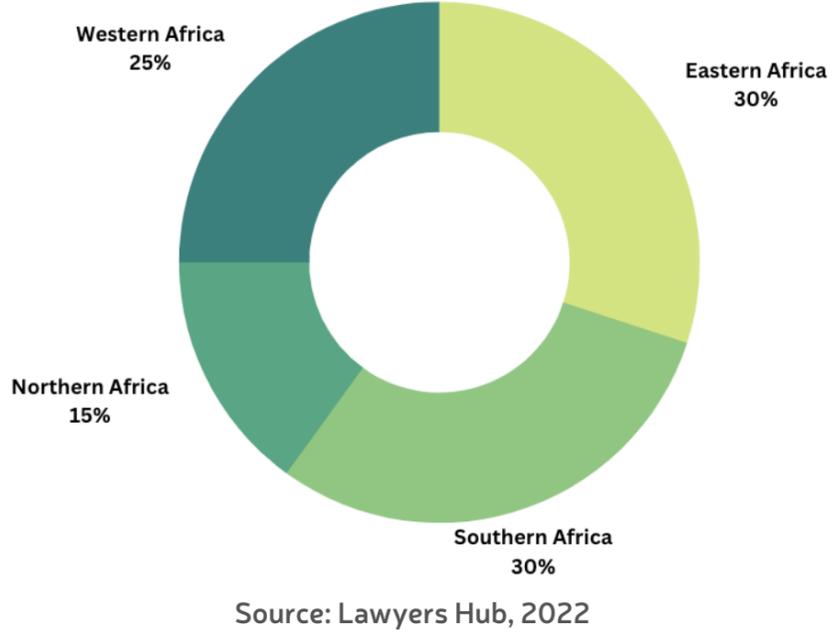
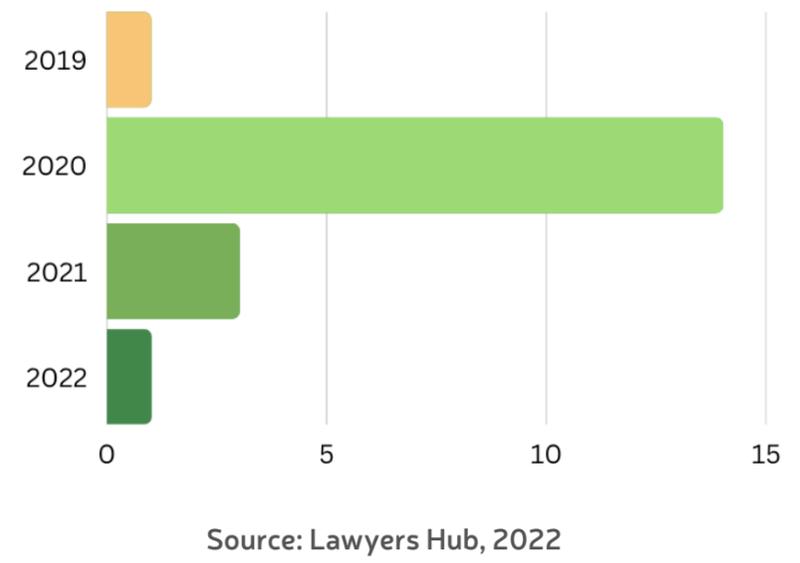


Figure 4: Chart illustrating the distribution of virtual courts in Africa by year

Number of Virtual Courts by Year



The adoption of virtual courts has made the justice delivery system affordable, speedy, transparent, and accountable. E-courts and virtual courts aim to make Africa’s legal processes easier and more user-friendly. That is, making the entire work executed digitally where information shared and generated is stored as a database and synced to a particular software. Adopting virtual courts has reduced the delay in the court process and eliminated the backlog of cases, which were the biggest challenge for the Judiciary in African countries. The virtual courts played a pioneering role in establishing e-judiciary.

2.4 Challenges Undermining Africa's Judiciary Digital Transformation

Overall, there has been a broader expectation that digitization will lead to the centralization of court data. Subsequently, data centralization with the Judiciary will allow greater searchability and integration with other digital technologies. All these strategies will portend the advantage of placing courts in a position to deal with ever-increasing cases. Nonetheless, the rationale for adopting technology throughout African judicial systems is to increase access to justice. The judicial systems have developed in centralizing the interests of litigants in easing access to justice and with the

development of technology. Yet, as expected, digital transformation in Africa's legal sector has come with a myriad of challenges that have limited the use of technology. They include;

1. General shortage of requisite components or enablers of digital transformation, such as necessary hardware, such as computers, projectors, mobile phones, and such equipment.
2. Internet penetration in Africa is at an all-time low, with most rural areas left out. Specifically, research has shown that only 7.7% of the population of Africa has access to a computer within their household. In

addition, 80% of countries in Southern Africa rank in the bottom 20 for smartphone penetration rates globally, meaning the devices needed for successful digital interactions are in short supply.

Regarding internet connectivity, only 46% of people in Sub-Saharan Africa have access to a reliable mobile internet connection, and only 30% of people can afford the cheapest internet device. While many justice systems in Southern Africa are pursuing digital transformation, most court users may be unable to keep up with these changes.

3. The politicization of the Judiciary negatively impacts the Judiciary

ry digitization process. For instance, there are increasing scenarios where Parliaments stifle Judiciary digitization efforts through budget cuts and resource allocation. Yet, as we know, digitization is a highly resource-intensive exercise.

4. Inadequate digital awareness and skills among judicial officials, lawyers, and litigants to effectively use legal technology, e.g., virtual courts, is also challenging. Addressing this challenge requires the Judiciary to invest heavily in training.
5. Interruptions or failure of video links due to poor internet connectivity hinder the process's success.

6. With poor or limited electrical connectivity in African countries, especially in most countries, the power supply does not get to all the citizens in rural areas. Litigants, especially in rural areas, could not access virtual courts without an electricity supply.
7. The costs associated with the use of technology results in a large majority of the population being locked out of the justice system. The technology relies on devices such as computers, laptops, smartphones, and internet connectivity that may be out of reach for poor citizens.

Judicial digital transformation is underpinned by digital infrastructure. In this respect, pursuing digital transformation without implementing clear strategies that consider the digital divide in Africa will drastically impact the right to access justice and various other fundamental human rights. The success of technology in the judicial sector thus lies with judicial officers possessing the requisite skills and keeping up with a technological revolution to enhance efficiency.

3.0 CHAPTER THREE

ARTIFICIAL INTELLIGENCE AND JUDICIAL SYSTEMS IN AFRICA

3.1 What is Artificial Intelligence?

Artificial Intelligence (“AI”) refers to machines and computer systems performing tasks ordinarily done by human intelligence. In particular, AI is the ability of machines to match the cognitive ability of their human creators. Consequently, machines can mimic the human brain when programmed over time. AI is therefore conceived as developing systems with features that can match human intelligence based on behavior and patterns, such as perception, problem-solving, natural language processing and planning, natural language processing, adaptation, and acting on the environment.

While some of the developed systems, such as an expert or a planning system,

can be characterized as pure applications of AI, most of the AI systems are developed as components of complex applications to which they add intelligence in various ways, such as enabling them to reason with knowledge, to process natural language, or to learn and adapt. The large set of technologies and techniques under AI can be classified into two:

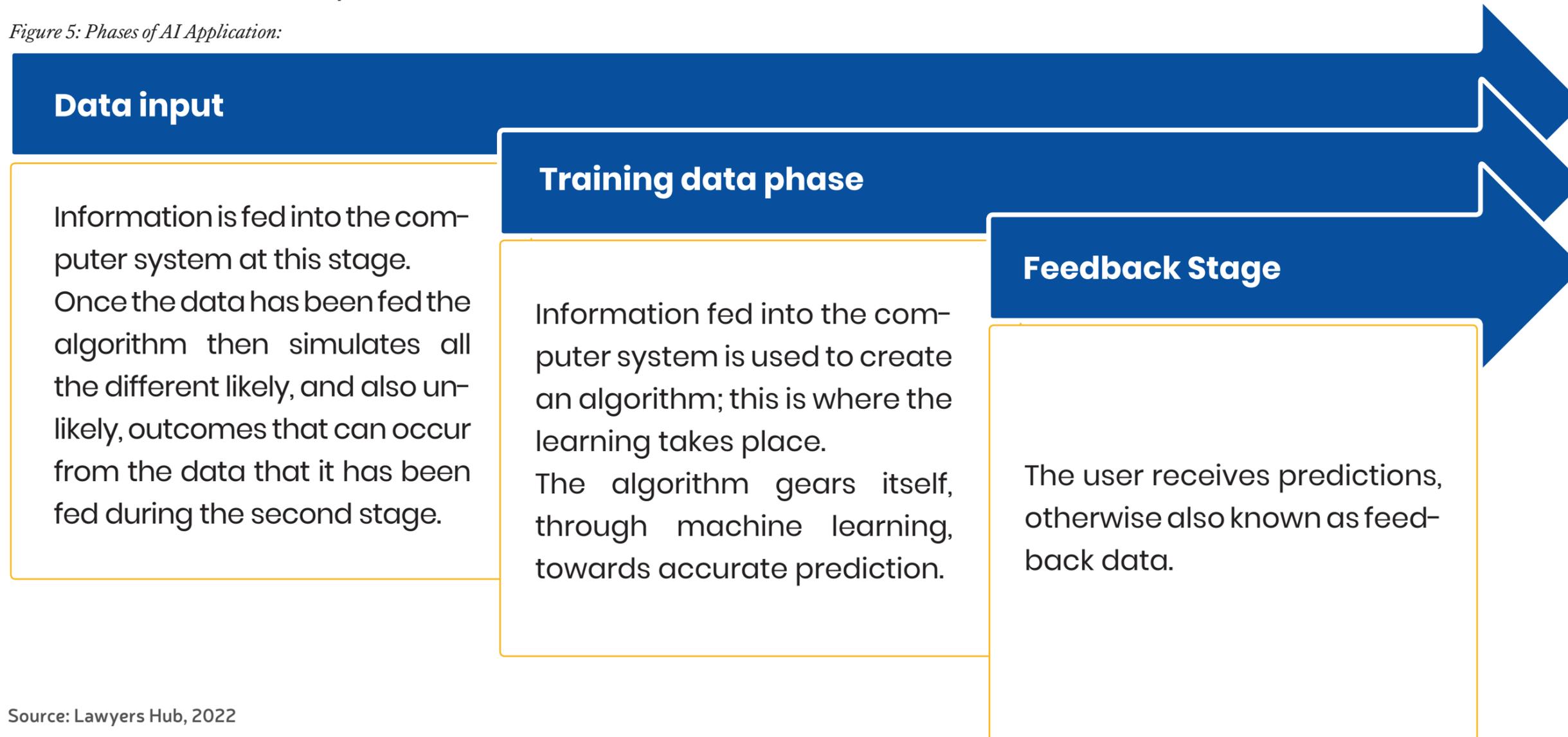
➤ **Knowledge-based systems.** Generate behavior utilizing deduction from a set of axioms and are good at making optimal decisions based on defined rules within a specific domain. Still, they cannot learn or automatically leverage the information they have received over time.

➤ **Statistical learning** to continuously improve decision-making performance. This category includes self-driving vehicles, facial recognition used in policing, and natural language processing techniques used to automate translation and content moderation. This new wave of technologies has been made possible by the exponential growth of computer processing power, the massive decline in the cost of storage, and the resulting acceleration of data collection efforts.

Nevertheless, for AI systems to be effective they must be fed with quality data. The accuracy of AI systems can only be as good as the quality of the data that has been inputted. Meaningful data is extremely valuable.

Figure 5 below shows how the AI system works.

Figure 5: Phases of AI Application:



Source: Lawyers Hub, 2022

The first process is the data input stage, where information is fed into the computer system. The second phase is the training data phase, where the information fed into the computer system is used to create an algorithm; this is where the learning takes place. That leads to the final stage in the process, known as the feedback process; this is where the user receives predictions, otherwise known as feedback data.

3.2 Forms of AI and its application in the judicial system.

The use of AI in the justice sector promises to improve people's lives. AI has allowed institutions to save more while spending less with benefits for the availability and accessibility of all kinds of services. AI-based systems in medicine have outperformed medical specialists in medical procedures, such as diagnosing certain diseases, x-ray procedures, venerations, etc. The analysis below highlights focal areas for the adoption of AI, with heavy reliance on data for the systems to provide optimal results:

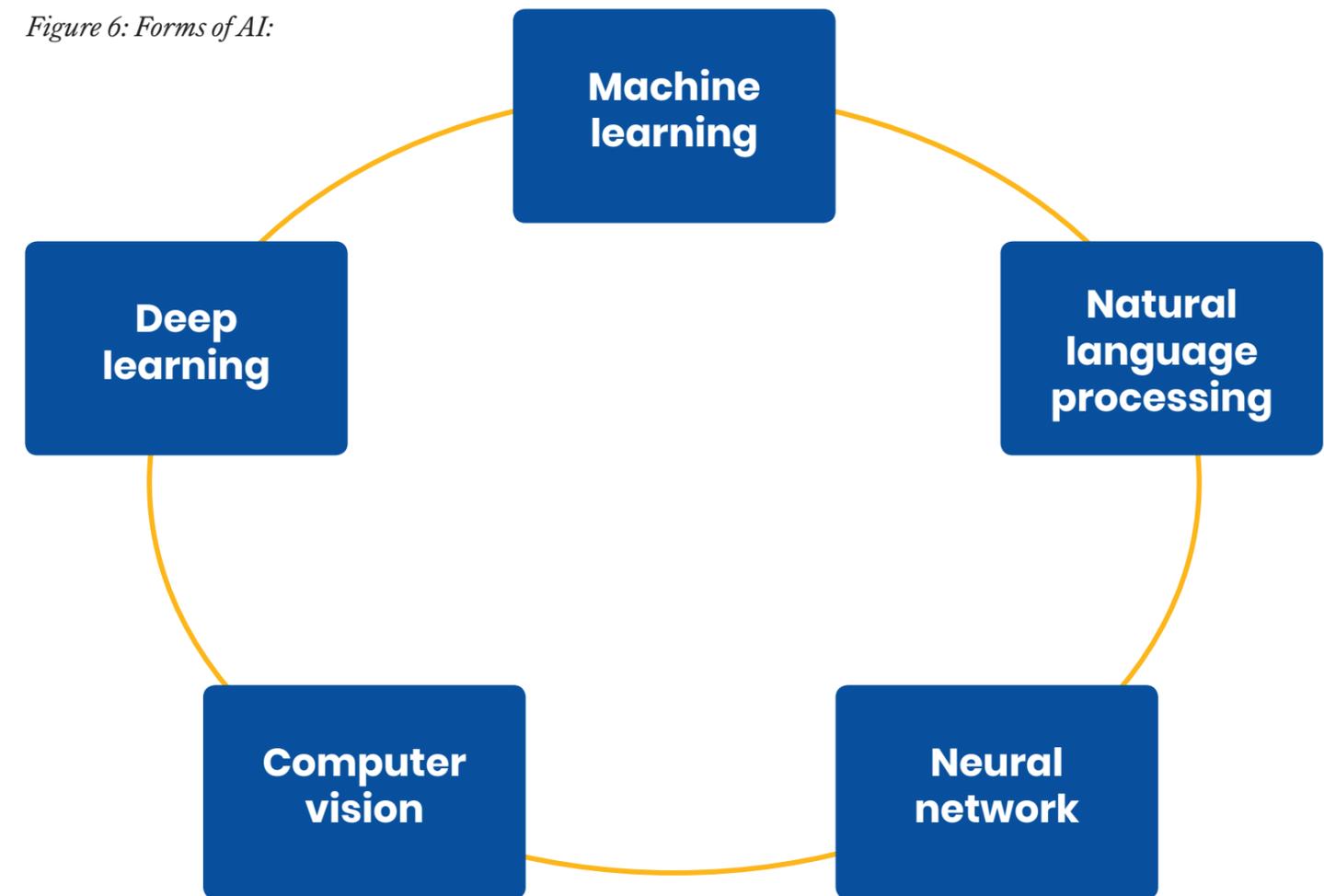
Table 2: Application of AI in the Legal and Judicial Sectors respectively.

Legal Sector AI Application	Justice Sector AI Application
Use of algorithms for contract review	Records Management
Legal Research bots	Case Management Systems
Automated billing systems	Data-based e-filing systems
Client Management automated systems	Bar Code systems for endorsing Court Judgments
Client feedback sites	Automated Calendar systems based on data
e-signature systems	Automated Fees Assessment Systems
Automated Calendar systems based on data	Bail processing systems based on data

Source: Lawyers Hub, 2022

AI focuses on technology systems such as machine learning (the process by which a computer can improve its performance by continuously incorporating data into an existing statistical model), natural language processing, visual recognition, and speech recognition.

Figure 6: Forms of AI:



Source: Lawyers Hub, 2022

Among the various forms of AI, Natural Language Processing and Machine Learning can be important tools for adoption into African judicial systems. Using software and technologies built on machine learning and natural language processing can ease

court processes and allow judicial officers to attend to more litigants than before, thus improving results in the justice chain. This can be implemented in areas such as transcribing court proceedings and predicting outcomes using computer systems.

Machine learning enables AI systems to enhance algorithm performance by utilizing data and updating the information available to make accurate decisions. The machine or algorithm is programmed to learn progressively by analysis of the data fed into it, and additional data is updated from time to time, creating accurate outcomes. Machine learning can thus be effective in assisting judges in the judicial systems in Africa through the decision making elements, where data can be collected and processed to engineer systems to perform tasks usually done by human beings in their different official capacities within Judiciaries.

Natural language processing allows AI systems to perceive, interpret and understand languages. In this way, judicial officers can avoid tasks such as typing proceedings, thus focusing on other aspects of service delivery. Transcription systems, translation systems, and such assistive devices rely on natural language processing technologies, thus an opportunity to automate this aspect in Africa's judicial systems.

Neural networks help enable deep learning. Neural networks learn by processing training examples. This process analyzes data to find associations and give meaning to previously un-

defined data. Through different learning models, like positive reinforcement, the machine is taught and successfully identifies the object.

Computer vision is a technique that implements deep learning and pattern identification to interpret the content of an image, including the graphs, tables, and pictures within PDF documents, as well as other text and video. Computer vision is an integral field of AI, enabling computers to identify, process, and interpret visual data.

Generally, AI tools can enhance the review of contracts, documents, and evidence analysis and reduce human errors. Subsequently, creating more accurate results than reliance on persons known to have bias while serving more clients in the justice system. The Report evaluates the adoption of various forms of AI in judicial processes or the day-to-day decision-making structure of trial judges and the patterns of thinking for judicial officers, representing a summary of the technology's application process. Table 3 below shows the analysis of how AI has been adopted in the various courts outside Africa, with an impact on operations in the Judicial Systems.

Table 3: The Adoption of AI in Judicial Systems Outside Africa

Country	AI System	Benefits
China	Smart courts Shanghai Intelligent Assistance System	Internet court, where AI tools are utilized to improve efficiency greatly. ¹⁹ 65% reduction of cases in hearing, credited to this digitalization. Guides in criminal cases, reviews of single evidence of the case, checks and monitors the evidence chain and the entire set of case evidence, and judges. It can also formulate evidence standards and construct evidence models and other paths as rules for machine learning are sufficient to indicate that the system can focus on the machine study of human legal thinking and adjudication rules to unify evidence standards.
Austria	Analyzing incoming mail. Digital file management. Analysis in investigation data. Anonymization of court decisions. Anonymization of court documents.	For analysis, classification and extraction of metadata for mail income. For consistent file management, incoming unstructured documents are processed uniformly and metadata adopted automatically. For analysis, classification, and extraction of metadata from any form of “data” as well as recognition of relationships and communication flows. Automated anonymization and metadata recognition of court decisions and preparation for publication in the Legal Information System (LIS). Recognition of names, addresses, roles of certain parties involved in judgments and decisions, and preparation of anonymization proposals.

U.S.A.	Correctional Offender Management Profiling for Alternative Sanctions, (COMPAS). E-Discover.	An integrated web based assessment and case management system for criminal justice practitioners. The system serves in some U.S. courts as a tool for both case management and decision making, providing support regarding recidivism for the decision-making part. Used to investigate electronic information for discovery before the start of a court procedure. This method or process of using AI for document investigation is faster and more accurate than manual processes. It can extract relevant information from a large amount of data; however, the judge assesses and confirms the information.
European Union.	System Losowego Przydziału Spraw (System of Random Allocation of Cases) (SLPS).	They are utilized by the judicial system to decide which judges are assigned to which cases throughout the country.

Source: Lawyers Hub, 2022

Indeed, there is an opportunity to address existing challenges behoving court processes and operations in Africa's justice and legal sectors. This is by adopting AI solutions that make services quick, efficient, and high-quality. Digitization of court systems establishes a case for digital data collection, centralizing, processing, and integration into AI

systems. The Council of Europe's Ethical Charter The Use of Artificial Intelligence in the Judicial System illustrates that AI can work for Africa's judicial systems. The Charter states that the application of AI into the justice system should be made responsibly, with due regard for the fundamental rights of individuals. The Charter lays down doctrines that should be

met to achieve AI in the judicial systems, including;

1. The fundamental rights principle (the design and implementation of AI in the judicial systems must be compatible with fundamental rights).
2. The principle of non-discrimination (AI must not be used as an excuse to discriminate marginalized individu-

- als or minority groups).
3. The principle of quality and security, with regard to the processing of judicial decisions and data, using certificates sourced in a security technological environment.
 4. The user control principle (users are informed actors and in control of the choices made).
 5. The transparency, impartiality, and fairness principle (data processing methods must be accessible and understandable, and external audits must be authorized. Transparency is one of the requirements for the accountability of technological systems and of the agency they enable or mediate issues that, even if not mentioned by the Charter, are pivotal in AI ethics.

3.3 The Application of AI in Africa's Judicial System

The examples highlighted provide insights into the implementation of intelligent systems in Africa. Such systems can; establish a case element database to extract essential elements, index legal norms and implementation cases, and search facts and legal elements. This Report reckons that there is a need to develop Africa-Unique products and services based on the following ramifications: identify standard request paths based on a common understanding of language and realize the intelligent analysis of file information. AI proponents in Africa hope to use the technology to;

1. Analyze cases based on big data,
2. Formulate corresponding guidelines for evidence standards,
3. Verify and compare such standards,

4. Preclude defective evidence,
5. Exclude illegal evidence,
6. Avoid external interference and;
7. Improve judicial credibility.

Artificial intelligence in Africa's justice system is being introduced on different levels of filing, trial records, and trials of case entities. From the perspective of the virtual courts during the Covid-19 pandemic period, multi-platform information sharing and docking, algorithm application, and trial guidelines, artificial intelligence has enriched judicial innovation. Judging from the application of technology to document delivery, evidence, and court trials, AI has had an impact on the discipline of justice, and the in-depth combination of artificial intelligence technologies, such as artificial intelligence-assisted trials and judicial

activities, is related to the comprehensive support of judicial level reform.

AI uses simulation algorithms to obtain sentencing references and automate document generation. The circumstances of extracted legal documents can be structured, and mathematical models can be used to describe the characteristics and rules of the data. Functions can be applied to calculate mathematical models or the algorithms that correspond to them.

The artificial intelligence system has application scenarios that include;

- Case push,
- Prompts,
- Similar guidelines,
- Departure warnings, and other supplementary trial intelligence over the entire Judicial process.

Indeed, AI, when introduced to the African justice system, has signs of;

- Improving procedural and administrative efficiency,
- Aid in decision making processes for judges, lawyers and litigants, and
- Further predict outcomes consistent with past precedents.

Newer technologies can be adopted to improve information and communication service in Africa justice systems to help the implementation of legislation on small claims procedures and to increase cross-border cooperation between justice authorities. Furthermore, as Thomas Julius Buocz claims, “Artificial Intelligence can be used as a tool to analyze court decisions, with the aim to assist the identification of precedents and

related cases and to provide a preliminary input to the judge on specific legal questions”.

Nevertheless, a question remains, why exactly would one use AI systems in the judiciary system? And this can be answered by looking at how AI systems can excel. This can provide significant advantages to the judiciary system, thus warranting the risks related to its development, implementation, and utilization.

1. Efficiency

In most African Countries, cases take a long time in courts. Litigation in Africa can take up to ten years, and as always said, justice delayed is justice denied. Ultimately only the use of AI systems will truly tell if they are as efficient as some hope or expect them to be, but what is

clear from these statistics is that the justice system is in dire need of efficiency, which is why it is such a fundamental issue and driving force for the development of legal AI systems.

2. Data collection – higher quality judgments

Data collection involves vast amounts of time spent sifting through large amounts of information and data involving relevant legislation, previous court cases, and other documents of relevance for the legal research or ongoing court case. Today there is the digitalization of many of these legal sources, with websites such as Kenya Law reports for Kenya. A McKinsey study shows that data collection and processing is one of the key areas considered easier to automate with AI, sifting through this information faster

than any human, and efficiently gathering all relevant information for those in need. This could enable higher-quality judgments made more efficiently than manual data collection could potentially have achieved.

3. Consistency

A potential strength of artificial intelligence could be its potential to provide consistency. Whether the AI system is based upon machine learning or logic- and knowledge based approach, the fact remains that the AI system would operate based on a specific coding. This deterministic logic could provide more consistency in its assistance, leading to greater predictability in the justice system. This is only as good as its programming, however. While consistency and predictability are values strived towards

in the justice system, so is the idea to treat each case with dignity and the ability to distinguish a case to the correct verdict. Reliance on AI tools might lead to more streamlined verdicts where common factors are prioritized and unique aspects are ignored due to how AI systems tend to function.

4. Quality of Judicial Trials in Africa

With the help of the internet, an AI-assisted system can realize the full disclosure of the trial process and the Court's case-handling process. As a result, judicial justice can become more transparent. With the help of big data and a unified platform, AI can prompt the case record management system to leave marks throughout the process and achieve the effect of comprehensive supervision of the case trial process. The same type

of cases can obtain the same or similar judgment results. Through data sharing, one can achieve the goal of identical cases resulting in the same sentence. In addition, not only AI can provide a new solution for the treatment of difficult cases. It can also unify the standards of judicial decisions.

With the help of speech, image recognition, and neural network technology, judicial officers are liberated from repetitive labour. In addition, the time required to retrieve relevant legal provisions and similar cases is shortened. Moreover, they can even realize the one-click creation of referee documents, effectively alleviating the shortage of their resources. In short, the judicial application of AI facilitates litigation procedures, enabling judicial officers, i.e. Judges and magistrates, to focus more energy on solving

difficult problems and improving judicial efficiency.

5. Digitization of Court Systems and AI

Digital technologies are seen as tools to support the delivery of justice. The digitization of judicial proceedings entails migrating operations and tools from paper-based to digital media. The online court systems already in place, such as the e-filing system and the digital exchange of data and documents through e-service systems, allow the creation of records and patterns that can be adopted into forms of AI, useful for judicial processes. This translates into improved access to justice, equal treatment, and the efficiency and effectiveness of judicial procedures. AI is thus set to disrupt procedures and decisions in judicial sys-

tems in Africa that, is

- Legal analysis and advice performed by autonomous devices,
- Predict judicial decisions based on jurisprudence and other criteria, and even the capacity for autonomous decision-making delegated to 'robot judges.'
- For judiciaries under pressure from high caseloads, backlogs, and a lack of resources, AI offers inexpensive, consistent and fast decisions.

AI is already widely adopted in sectors like finance, health, education, access to public services, etc. Access to justice in Africa remains fundamentally important in the protection, recognition and enforcement of human rights. Digitalization of court systems is one of the initial steps taken in embracing technology

which have improved efficiency in the judicial system, specifically in addressing the challenges of accessibility, long delays, accountability, transparency, and corruption.

Although the judicial systems in the African jurisdictions are still at the foundational stages in the adoption of technology, and the use of AI as compared to global jurisdictions, law firms in Africa have embraced AI systems to improve their legal service delivery.

The AI platforms such as;

- **LawPavillionPrime**, launched in 2016, gives in-depth analysis of the strengths and weaknesses of legal positions and authorities by generating statistical analysis, historical data, precedential value ratings, conflicting judgments, locus classicus, statutory or literary authorities,

and opinions.

- **TIMI**, launched in 2018, is Nigeria's first artificial intelligence legal assistant. It assists lawyers with legal research, litigation, opinion drafting, provides notes with legal authorities, and gives a step-by-step guide on drafting and filing court processes.

3.4 Issues and challenges facing the application of AI in Africa's judicial system.

The introduction of AI systems is not without expected disadvantages or issues. They can pose severe risks to both health and safety, or they may adversely impact fundamental rights. They may also challenge our current ideas concerning how society should function, causing drastic societal shifts. It is, therefore, important

to identify these disadvantages, assess why they might appear, and discern how they are best dealt with. AI carries a serious risk that perpetuates, amplifies, and ultimately ossifies existing social prejudices, with the attendant consequences for the right to equality.

Limitations of Artificial Intelligence Africa's judicial systems

1. **Current judicial data is not comprehensible, reliable, and objective:** Referee documents available online are not accurate, and those that should ideally be found online are not. This bears the risk of affecting the results of the referee's decision, pre-trial procedures, and role discussions.
2. **Judicial data is inaccurate:** Documents e.g, Judgment documents on the internet, represent redundant

data, and there are conflicting judgments and local practice differences.

3. **Incomplete knowledge map for the application of artificial intelligence:**

There is a need to automatically construct a knowledge graph through deep learning of massive documents, extract the corresponding plots from the judgment document, laws, and use judicial interpretations to enrich and form a complete map.

Potential defects in the application of AI by judicial systems

1. Regarding the judge's capacity to judge and support evidence, artificial intelligence will be incompetent in force judgment and proof of standard judgment.
2. Factual and unprejudiced restoration case facts requires the experience of

the judge, his/her values, morals and principles, and even his/her devoutness in certain cases. Artificial intelligence software in the judicial system will find it difficult to learn this flexible value judgment of judges. However, artificial intelligence cannot possess human nature and thus simulate a judge's value judgments.

3. The documented lingos in legal articles are general and abstract. In particular, they lack clear assumptions and express legal facts in legal principles. Such linguistics is also mostly confusing, and AI software may have a biased understanding of the original intentions of lawmakers.

Potential Outcome Defects in the adoption of AI in Judicial systems in Africa

1. The construction and adoption of ar-

tificial intelligence in judicial systems require the deep integration and docking of technical personnel and legal experts. Most technicians who do not comprehend the Court's demands and developed products are beyond the current level of theoretical legal research. The creation of artificial intelligence systems in the Judiciary requires legal professionals to raise hypothetical issues, continually discuss them, and screen them one by one based on judicial data and recommend solutions.

2. Application of artificial intelligence in the judicial systems in Africa will to a degree destabilize the judicial rules and changes in society. The trials should focus on being able to construct new sporadic cases of rules for referees. Additionally, though many

cases have correspondences in the composition of case elements, making a case verdict requires a rational argument. The most common artificial intelligence software lacks an unprejudiced rational reasoning capacity. Given the opaqueness of its operation process, the judge and the parties cannot understand the process of the evidence.

Addressing the Limits of AI in Judicial Systems

Automated decision-making through AI can right social wrongs by seeking the correction of biases in human decision-making. Applying AI in Judicial Systems is essential to guarantee the respect of the right to a fair trial and other basic principles. Accordingly, the process of judicial decisions in structured com-

puter databases may pose certain risks and require appropriate safeguards. There can be some problems related to confidentiality, privacy, and personal data protection.

Independent use of AI in Court will help find reasonable dispute resolution mechanisms. In this case, AI will function as a tool that turns the fact of the case into a legal consequence and that it will autonomously decide the solution of the case. However, scholars argue that AI must be an assistive tool in legal proceedings. This will help empower legal research, especially law firms will apply e-discovery software to cases that involve many documents to be screened. Also, AI in the Judiciary will help to minimize the influence of factors such as weariness and emotional instability.

AI systems used in the judicial systems must: Have complete, relevant and representative data, free of errors; be designed with the capability of automatic recording of events (logs), for traceability of the AI system's functioning throughout its lifecycle; be accompanied with relevant, accessible, and comprehensible instructions; provide a mechanism for explanations as to why the AI made the decision it did.

This way, the Judiciary can ensure that in areas where it is subjected to AI systems, it can demand an explanation as to how the AI system made the choices it did.

