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"Covering The Field" In Justice System: The Ethical Foundation for Reliance on Scientific and Technologically Driven Justice Delivery

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Abstract

The hallmark of a good justice delivery system is one that is unbiased, fast, timely, impartial and efficient in the determination of issues brought to court. "Justice delayed is justice denied" is an assertion that places emphasis on why the courts should be a timely, effective and efficient arbiter of cases brought before them occasioned by its delivery of the final verdict. The court cannot perform magic, because they depend on the working tools and materials its disposal in the adjudication of disputes. Over the years, we have come to know that the problems that bedevil our judiciary system are enormous, and include the massive backlog of cases, poor maintenance of e-courts records, the judiciary's non digitalisation, partiality, an unsavoury harvest of needless delaying interlocutory appeals, executive interference, disobedience to court orders and lack of total independence of the judicial arm of government. We are similarly aware of the damaging effects caused by poor case management, legal research, document automation, online dispute resolution, access to justice, legal analytics, e-discovery, e-filing, artificial-enabled referencing and online hearings. I will in this article seek to unravel how the courts and security agencies can successfully harness technological innovations in overcoming and resolving the intractable ills that have for long dogged the judiciary. Such ills include because I believe that deploying an adequate data-based planning and safeguards, technological tools can be a game changer. This paper knows and takes these problems as given, hence I am minded to examine the ethical foundation in support of the court's reliance on scientific and technologically driven justice, especially, with the explosion in the evolution and utility of science, technology and the all-pervasive artificial intelligence. The ethical application of scientific, technological and artificial intelligent (AI) tools in crime investigation, court and criminal administration is what is needed to translate into covering the field in justice delivery in Nigeria. This is what will bring out the true meaning of justice, justice for the both parties, and justice for the Courts. We conclude that the introduction and statutory validation of the utilisation of scientific and technological tools in the administration of justice would deliver to us a holistic overhaul of the judicial system, covering the initiation, hearing and quick determination of cases by the courts.

Keywords*: Covering-the-field, AI, Science, technology, justice, speedy trial.*

Introduction

Emeritus Prof. Julian Kinderlerer, visiting Professor in the School of Law at the University of KwaZulu-Natal, Emeritus Professor of Intellectual Property Law at the University of Cape Town and former Professor of Biotechnology and Society at Delft University of Technology writing the forward to Bernd Carsten Stahl's book, *Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies,* observed thus:

> Computers have become ubiquitous and are used to control or operate all manner of everyday items in ways that were unimaginable only a few years ago. Smart phones, able to track where we are and who we meet, are commonplace. Autonomous weapons capable of deciding independently what to attack and when are already available to governments—and, by extension, to terrorists. Digital trading systems are being used to rapidly influence financial markets, with just 10% of trading volume now coming from human discretionary investors. AI systems can (and are) being used to redefine work, replacing humans "with smart technology in difficult, dirty, dull or dangerous work." The loss of jobs is likely to become a major factor in what is now termed the "post-industrial society". New jobs and new opportunities for humans need to be created. In medicine, AI is assisting in the diagnosis of illness and disease, in the design of new drugs and in providing support and care to those suffering ill health. In many instances, AI remains under the control of users and designers, but in increasing numbers of applications, the behaviour of a system cannot be predicted by those involved in its design and application. Information is fed into a "black box" whose output may affect many people going about their daily lives. (Stahl 2021: v).

Interestingly, the same trend continues as it is "unimaginable" how science, technologies and computers have impacted the works of the courts, in such a way that it seems to actually "cover the field." The courts have been adjudged the hope of the common man. However, recent happenings on our courts in Nigeria tend to demonstrate the direct opposite of this adage. This is because our courts have become overtaken and overburdened by so much cases as a result of the population explosion that the court now work at snail-speed rate. Individuals and groups seeking to solve problems arising from either personal conflicts with their neighbours, brutalisations and abuse of fundamental rights by the police and the security agents such as DSS and the military; denials or difficulties in being paid their severance or retirement benefit from the government or pension managers; chieftaincy disputes; problems with marriage dissolution and the custody of children; labour problems such as sack and layoffs that do not adhere to the due process; customary and statutory land issues; infringement on property rights and such other land tenure problems; landlord and tenants problems; etc., take from five years to twenty five years to be decided and to pursue the full process of appeal. This is vexing because it goes contrary to Goal 16.3 of the Sustainable Development Goals of the United Nations (UN). This goal stipulates that all nations shall: "Promote the rule of law at the national and international levels and guarantee equal access to justice for all." The various governments of the world are under a moral duty to provide justice for all without leaving anyone behind. (Bowen & Gibbs July, 2018).

The obvious truth is that due to the inability or failure of our courts to readily serve as the bastion of the hope of the common man, in its inability to hand down verdicts that are timely, efficacious and unbiased, which is why it is said that "justice delayed is justice denied." It is interesting that the courts have always come out to denigrate, and in some cases sanction delays, because it has rubbished the integrity and majesty of the courts. In the case of DONATUS NDU v. THE STATE (1990) 12 SCNJ 50 at 60, "Per AKPATA JSC" (of blessed memory), it was held as follows: "Therefore a trial Court in exercising its discretion as to whether to grant an adjournment should always bear it in mind that it is the duty of the Court to minimize time and costs of litigation and to see to it that justice is not unnecessarily delayed. The Court should therefore refuse an application by either party for an adjournment of the hearing, if it is of the opinion that the application was made only for purpose of delaying the proceedings. See; Omege v. State (1964) 1 All NLR 179." In fact, in the case of DANKOFA v. FRN (2019) 9 NWLR [Pt. 1678] 468 @ 488 per EKO, JSC, para B**,** the Supreme Court handed down a "costs of One Million Naira only (₦1,000,000.00)" to the Appellant for what the Supreme Court termed, "dilatory strategy to delay the trial proceedings." The Supreme Court also proceeded to hold that "The appeal is not only unmeritorious, it is also frivolous and vexatious." Apart from the above cases, the court has always been swift in deprecating such practices which seeks to hold down the court and delays the trails. In the case of ENL CONSORTIUM LTD. v. S.S. (NIG.) LTD. (2018) 11 NWLR [Pt. 1630] 315 @ 325 para H – B, per PETER-ODILI, JSC, the Supreme Court clearly declared that a party would not be allowed to "play hide and seek as an artful dodger . . . in an attempt to plead non-service so as to scale through the hurdle of attending to the hearing, delay the proceedings and thereby obtain cheap victory." The fact deducible from the above surrealistic adventure into forthright decisions by the apex court of Nigeria is to show that the courts are not to blame in all instances where delays defeats the justice of the matter. For instance, there are situations in which all the litigants die before the court pronounces its final verdict which would mandate the claimants to the benefits of that action.

The truth remains, that there exist a myriad of other problems confronting our courts, that touches on why justice is delayed and which includes the fact that our courts are overburdened and weak, political and official interference, which serve as a veritable "obstacle to effective anti-corruption prosecutions—and is responsible for considerable injustice in other arenas as well." (Human Rights watch 2011: 59). The intendment for going this direction is to point out that the age-long challenges of our courts, that they are perennially overloaded with plenty caseloads, giving rise to burdened, delays in trials of cases and prolonged trial and hearing of cases are tied to some other problems, that of science and technology, which this work seeks to provide solutions to.

It should provoke pity and respect when it is realized that one judge, sitting in one court, has over 700 case file he is to hear and determine, about 25 cases on his cause list for every day, he sits five (5) days a week, and that he is expected to hear all of them, deliver judgments and/or rulings on all of them and to undertake to write these decisions in long hand, and also perform other official duties and assignments, like meetings, conferences, and read law reports, etc., it compels us to appreciate that the reality of the Nigeria Court system makes it impracticable" to meet the requirements of the law on speedy trials and efficacy of hearings and determinations of the issues

before them, for instance the requirement for a "judge to hear every criminal cases on a day-to-day basis or to ensure the strict compliance with Section 396 of the Administration of Criminal Justice Act 2015." (Olarenwaju in Suraju – HEDA 2021: 10, 11). This explains why, though aware of the pains and increased cost of litigation for litigants, the Judges sometimes grant adjournments freely, to give themselves a breathing space. This is where the attitude of some skilled defense lawyers come in, who immorally exploit all available loopholes in the procedure and substantive laws to put up months, and in some cases, years of delays in any given case. (Human Rights Watch: 2011: 33; Onapajo & Uzodike 2012: 137).

These other challenges that are faced by Nigerian courts in this direction today include but not limited to problems in the storage and retrieval system, poor case management and courts' decongestion which could be observed at the initiation, hearing and final determination of cases by our courts. We make bold to state that there is an overriding need for the holistic overhaul of the judicial process and system, so that from the initiation of cases by the aggrieved parties, to the hearing and final determination of these cases by the courts, the time taken would be reduced and abridged. We have come to realise that this would not be a mean feat, but it is doable. This is because having moved into the age of scientific and technological revolution, we argue that these developments can and do help in making adjudication and the hearing and determination of cases easier and smoother. We are unyielding in our proposal, that in order to improve justice's accessibility, precision, and efficiency in the modern period, science and technology ought to be integrated into the legal system.

In the words of Kanan Dhru, Manasi Nikam & Maurits Barendrecht (2024), the system of justice and adjudication should look towards adopting the now readily available "innovative approaches to deliver justice in a more people-centred way have emerged. Private-sector initiatives and public institutions are creating solutions that prevent and resolve most pressing justice issues of people. We see a variety of delivery models taking shape, with technology starting to play a prominent role in the way institutions perform their functions" (Dhru, Nikam & Barendrecht, 2024). Science and technology will definitely help the courts and the judiciary to cover the field with ease, by adopting a scientific and technologically driven justice delivery. It will also assist the security agencies in how they conduct their investigations, and in how they come out with the investigation reports so that both criminal and civil causes are given the speed they deserve.

This has produced a very wide gulf in the "justice gap" which refers to "the number of people who, seeking to solve a justiciable problem, are unable to find access to a system that provides justice." This article examines why science and technological artefacts and discoveries should be incorporated into our justice system, the possible problems and how to overcome t-some of them. We will also examine the ethical grounds for the introduction and adoption of scientific and technological developments into the administration and management of cases by Nigerian courts. Research shows that science and technology have revolutionised the way of life of the world at large, and that it will also revolutionise the way justice would be administered, with special emphasis on data analytics, artificial intelligence (AI), digital evidence, forensic science and such other fields. It also discusses the advantages of these developments, such as enhanced data

gathering and analysis, anticipatory law enforcement, and expedited legal procedures. We will attempt to address the difficulties and moral issues relating to the use of technology in the administration of justice, make recommendations on how and what will lead us out of the doldrums on how the court system can effectively exploit the benefits of science and technology. We will also make a strong case for the need to create a strong legal and regulatory frameworks which would help resolve the ethical concerns surrounding the adoption of scientific and technological innovations in ensuring that our courts "cover the field."

We will commence with a brief definition of some of the key concepts herein, as this will assist us in our understanding of the topic under discussion. We will thus look at "covering the field", science, technology, justice and AI. The term "cover the field" was well extrapolated in the decision of the Court of Appeal in ENVIRONMENTAL HEALTH OFFICERS REGISTRATION COUNCIL OF NIGERIA V. LAGOS STATE WASTE MANAGEMENT AUTHORITY & 4 ORS (2012) LPELR 15418, p. 35 para B - D (CA), where the Court of Appeal per BAJE, JCA, stated that this concept ordinarily should be understood to within the context of:

> Where the conflict of laws exist between the National and States Assemblies on the same subject, and the National Assembly which also derives its powers from the Constitution and so the States, the laws made by the National Assembly on the same subject maters shall prevail over that of the states, if the law made has completely, exhaustively and exclusively covered the space. This is the doctrine of covering the field as enunciated in the case of A. G. Ogun State v A. G. Federation [Consolidated] (1982) 1 – 2 S. C. 13 at 39 – 40. (emphasis mine).

However, we intend to work around the direct application of the understanding of the doctrine of covering the filed because it merely refers to an enactment, where the law is made by the national Assembly and also made by the State House of Assembly. In this work, we will broaden the definition by using the term, "cover the field" to explain the relative relevance of how scientific and technological advancements will be adopted and made useful and applicable to every sphere of our justice system, to satisfactorily meet the needs and aspirations of legal, judiciary and investigative capabilities of these personnel in its object of ensuring quick dispensation of justice. In the same case of ENVIRONMENTAL HEALTH OFFICERS REGISTRATION COUNCIL OF NIGERIA V. LAGOS STATE WASTE MANAGEMENT AUTHORITY & 4 ORS (2012), it was held thus: "If it appeared that the Federal Law is intended to be supplementary to or cumulative upon state law, then no inconsistency would be exhibited in imposing the same duties or in inflicting different penalties. The inconsistency does not lie in the mere co-existence of two laws which are susceptible of simultaneous obedience. It depends upon the intention of the paramount legislature to express by its enactment, completely, exhaustively, or exclusively what shall be the law governing the particular conduct or matter to which its attention is directed." I admit and abide by the wordings of that judgment as it refers to the subsequent law(s) being "supplementary", "cumulative" and "co-existence." We submit that the use of science and technology in the administration of the courts are to be made "susceptible of simultaneous obedience", that they are indeed supplementary and cumulative as these are measures intended to help the courts to bypass

every aspect of inconsistency, delays, and overburdenness, push adjudication into consistency by its alignment to scientific and technological tools, to perform routine business of the courts, and whose "capabilities are designed to solve a wide range of problems, boost productivity, and foster new discoveries across many industries." (Francesca Rossi, PE 571.380).

Due to their capacity to recognise the nature of their problems and look for solutions, humans are frequently thought to be distinct from other animal species. The basis of science and technology is this capacity. As a result, science and technology becomes indispensable to the development and advancement of the human race. This is particularly true given that science is driven by the goal of bettering human conditions through the study and manipulation of nature. Even if science has great things in store for humanity, humanity's fallibility makes science seem like a double-edged sword that may both benefit humanity and bring about its destruction if applied without the necessary safeguards.

Ethics

Ethics plays a crucial role in determining and putting a control valve over how humans beings do science, undertake and practice research and apply science in what is termed technology. Ethical checks are indispensable, and hence desperately needed for human flourishing. In the work of León Olivé, UNESCO EOLSS (2020) she advances argument for ethics thus, What is ethics? There are, in fact, several ways to comprehend it. One of the most common considers it as a branch of philosophy that makes analyses and produces theories about the nature, function and value of moral judgments. Moreover, considering that one of the principal tasks of philosophy in the Socratic tradition is the exercise of the reflexive and critical faculty of human beings, this position would UNESCO – EOLSS SAMPLE CHAPTERS HISTORY AND PHILOSOPHY OF SCIENCE AND TECHNOLOGY – Vol. III - Introduction to Ethics of Science and Technology-Leon Olive, in sample chapters of the Encyclopedia of Life Support Systems (EOLSS), she says the fundamental objective of ethics is to "rationally justify moral judgments," or the "analysis of the fundaments of moral judgments in relation to the phenomena of life", or to attempting to see ethics as that mode of study that "underpins moral judgments, tries to account for norms and moral values." Eventually, Leo Olive tappers ethics to the direction of human happiness, when she stated that the "aim of human action should be happiness, . . . understood as the achievement of maximum pleasure" which is to basically restate Jeremy Bentham and John Stuart Mill.

The understanding of what "ethics" means in this fashion also comes alive with Stahl, (2021). In his book, *Artificial Intelligence for a Better Future An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies*, Stahl says ethics has to do with the study of what is the good and bad, with what is right and wrong., hence "the term "ethics" is much more complex than that and the same word is used to cover very different aspects of the question of right and wrong." Stahl proposes four different levels of what he understands should be covered by the concepts, "ethics" and which are – (a) Moral intuition, as in the question, "This is right," or "This is wrong"; (b) explicit morality which falls among those statements stated in the form, "One should always /never do this."; (c) general ethical theory, which stands for "the justification of morality drawing on

moral philosophy expressed in statements like "Doing this is right/wrong because …" and (d) Metaethics, which deals with the "higher-level theorising about ethical theories." (Stahl 2021: 19).

Further down in this work, Stahl argues along the lines of Terry Bynum's submission, by translating the principles of virtue ethics credited to Aristotle into a modern technology-saturated context which is intertwined with the ethics of flourishing. Stahl states that in our attempt to accept technology and science into the administration of justice by the courts of law, that we should consider as primary, the fact that: (i) that human flourishing is central to ethics; (ii) that human beings as social animals can only flourish in society; (iii) that human flourishing requires humans to do what we are especially equipped to do; (iv) that we need to acquire genuine knowledge via theoretical reasoning and then act autonomously and justly through acts of practical reasoning in order to flourish, and (v) that the key to excellent practical reasoning and to being ethical in this case lies in our ability to deliberate about one's goals and then being able to choose a wise course of action. (Stahl 2021: 22).

We admit from the above that by adopting as did Stahl, the views of Bynum, we will appreciate and accept that through the ethical principles of human flourishing, we would be better placed to articulate the principles of virtue ethics as they are relevant and informative of our considerations of information technology, science, digital technology and technology as applied to the court and court procedure and practices. The reliance on and utilisation of science and technology in the administration and management of cases in courts is explainable through one's understanding the three theories, the Critical theory of technology, the capacity theory and the responsible research and innovation (RRI). RRI is a concept that has gained prominence in research and innovation governance since around the early 2010s. It has been defined as the "on-going process of aligning research and innovation to the values, needs and expectations of society". (Stahl 2021: 27). Before I return to a more detailed discussion of the concept of flourishing, I now want to discuss the motivations behind and purposes of developing, deploying and using AI, as these have a direct bearing on the ethical evaluation of AI socio-technical systems (Stahl 2021: 22).

The administration of justice has been completely transformed by the incorporation of science and technology into the legal system. (Dhru, Nikam & Barendrecht 2024: 12). The administration of justice has been improved by the revolutionary power of science and technology's integration into the legal and adjudication systems. The legal system has seen a profound transformation because to science and technology, which have produced cutting-edge instruments and techniques that improve the effectiveness, precision, and accessibility of justice. Legal administration has changed as a result of developments in forensic science, digital evidence, data analytics, and artificial intelligence. While the administration of justice has greatly improved as a result of these developments, a number of new issues have also emerged that must be resolved to maintain just and equitable legal procedures. In this piece, we'll look at the necessity of science and technology in the administration of justice, discussing their transformational power as well as the difficulties and moral dilemmas that come with using them. In light of this, we proceed to further definitions of the other far-reaching numerous notions that are contained or incorporated in this wor,

Science

Science is essential to human progress and understanding. It is a methodical and structured process that uses experiments, theoretical justification, and observation to try and comprehend the natural world and its manifestations. It is the foundation of contemporary society, supporting scientific discoveries, medical progress, and our understanding of the cosmos.

Science is a methodical endeavour that constructs and arranges knowledge in the form of universe-related hypotheses and testable explanations. Various academics and organisations have provided distinct definitions of science in order to emphasise the variety of its approaches and facets. Leon Olive says attempts to characterize science flows from whether the said definition is based on the epistemological, ethical or metaphysical leaning. She pointed out that science "is often understood as pure knowledge, unrelated to values other than epistemic values such as coherence, truth verisimilitude, simplicity, fecundity, explanatory power, etc., and that it is unaffected by our passions. (Leon 2024). It is also along this line that he presented the thoughts of the Mexican Scientists, Ruy Perez Tamayo, who also described science as an activity that characterizes a creative human activity, whose aim is the comprehension of nature, and whose product is knowledge obtained by reliable methods, and which aspires to obtain as much rational concensus as possible" (Leon 2024). There are still other scientists like Karl Popper (1959), who defined science as the methodical observation and experimentation used to find and evaluate falsifiable ideas. The significance of falsifiability and empirical testing in scientific research is emphasised by this term. According to Kuhn (1962), science is a collection of paradigms, or frameworks, that scientists labour inside and that direct their study until anomalies mount up and cause paradigm changes and scientific revolutions. This definition emphasises how important paradigms and changes are to the advancement of science. The suggestion to introduce science and technology into the courts, adjudication and case management is like paradigm change. It described a new move in efforts to solve human problems as highlighted in Alejandro Ponce (2020). In their own suggestion, Kloosterman, Mapes, Geradts, van Eijk, Koper, van den Berg, Verheij, van der Steen & van Asten, 5th August, 2015, observed that "The technological revolution in forensic science could ultimately lead to a paradigm shift in which a new role of the forensic expert emerges as developer and custodian of integrated platforms." They went on to isolate the four (4) paradigm shifts that has hit the world of science and technology, and which scientific and technologically driven justice delivery would benefit from to become revolutionized and modernized. They outlined the four paradigms to be (1) experimental science, (2) theoretical science, (3) computational science, and (4) data-intensive scientific discovery, which is the paradigm that is based on the exponential availability of data to scientists through the global growth of science and the distribution of findings through worldwide networks. It is on the 4th paradigm that the growth of law and justice delivery would depend. (Kloosterman, Mapes, Geradts, Van Eijk, Koper, Van Den Berg, Verheij, Van Der Steen & Van Asten, 5th August, 2015).

Feynman (1965), who we also want to rely upon for giving us a further definition of science, defined science as an approach to the trustworthy discovery of knowledge about nature by means of experimentation, theory development, and observation. The methods and goals of science are the main emphasis of this definition. On his own too, Gould (1981), also defined science as an approach to comprehending the natural world via methodical investigation, observation, and

reasoning that is supported by empirical data and the scepticism principle. The empirical and sceptic character of scientific investigation is highlighted by this definition. However, we will employ Pearson's definition of science, which emphasises the systematic and thorough quality of scientific knowledge, for the sake of this investigation. According to Pearson, science is the collection of all known facts, ideas, and techniques about the physical universe and its phenomena. He defines science as organised knowledge (Pearson, 1892). In other for us to appreciate the more how we intend put science and technology at the service of our courts and adjudication, it is appropriate to consider it that science is more complex than being merely a body of systematic knowledge. Leon Olive, firmly stresses in approval of Mario Bunge (1996) that science is much more than a body of knowledge or a systematic study of phenomena. He agrees without hesitation that "science is rather a dynamic organism composed of practices, actions and institutions, oriented towards the achievement of specific ends, where emotions, desires, interests and values are determinant." This is where we rest our case with the definition of science, that it is a dynamic organism, composed of practices.

Technology

Modern society is heavily reliant on technology, which has an impact on almost every area of human existence. Technology, which includes instruments, methods, and frameworks that raise human potential and improve quality of life, is an essential component of contemporary society. It permeates every aspect of our life, impacting the way we interact, collaborate, and resolve issues. Because technology is so complex, many academics and organisations have given it distinct definitions that reflect the range of applications and ramifications it has. Franklin (1999), for example, defines technology as a system that includes organisation, protocols, symbols, new vocabulary, equations, and, above all, a mindset. This term emphasises how technology is integrated into societal structures and ways of thinking, highlighting its systemic and cultural aspects. Arthur (2009) provides additional definitions of technology, which include: a way to achieve human goals; a collection of methods that use knowledge to create products and artefacts; and a system of interconnected parts and systems that carry out tasks. The practical, knowledge-based, and systemic aspects of technology are emphasised in this concept.

Castells (1996), on his part, defines technology as the assortment of implements, equipment, adjustments, configurations, and practices that people employ. His definition concentrates on the practical and visible parts of technology that support human endeavours. Ellul (1964) adds a definition of technology: "the entirety of methods rationally arrived at and possessing absolute efficiency in every field of human activity." Ellul's definition emphasises how technical approaches are logical and efficiency-driven. For the sake of this study, however, we will use the National Academy of Engineering's definition of technology, which places an emphasis on its ability to solve problems and advance human welfare. The National Academy of Engineering (NAE, 2003) defines technology as the use of science and mathematics to solve issues and develop new tools and systems that will benefit humanity.

In her own submission, Leon Olive declares that technology is not just the application of scientific knowledge for practical purposes, that technology is a "set of set of techniques or artifacts, with

the idea that what are central to technology are technical systems, which are composed of intentional agents, their actions, the aims they want to achieve, beliefs, knowledge, norms and values that operate when agents in the system realize actions, in order to transform objects, in trying to achieve their desired ends." (Olive 2024). This explains why whenever technical systems are in operation, they produce desired results. And this is what we are poised to achieving, to produce results by the application of science and technology to the operations of our courts and legal systems.

Science and Technology

Modern civilization is based on science and technology, which stimulate economic growth, inspire innovation, and have an impact on day-to-day living. While science uses methodical investigation to try to comprehend the natural world, technology uses this understanding to make useful things like tools, machines, and systems that make life better for humans and solve issues.

Science and technology have a dynamic and reciprocal relationship in which one field propels the other's progress. They are mutually supportive and intricately linked. While technology developments are frequently the result of scientific discoveries, scientific research is enhanced by technological tools and instruments. Scientific knowledge is advanced through the development of instruments such as telescopes, microscopes, particle accelerators, and computer models, as well as through the understanding of electromagnetism and quantum mechanics, which led to the development of electrical appliances and modern electronics and computing.

Justice

A society's ability to function depends on the complex idea of justice. It ensures that people and groups are treated fairly and that their rights are upheld by embracing the concepts of equality, justice, and the rule of law. Fundamentally, justice refers to the moral and legal precepts that control how members of a society should be treated fairly. It entails the just resolution of conflicts, the application of the law, and the equitable distribution of opportunities, resources, and privileges. The nature of justice has long been a topic of discussion among philosophers and legal theorists, leading to a variety of frameworks and interpretations. For example, according to Aristotle (1984), justice is about distributing commodities and duties fairly among members of society and ensuring that everyone gets what is owed to them. For his part, Rawls (1971) defined justice as fairness. He presented the concepts of justice, highlighting equal basic rights and social and economic disparities designed to assist the most disadvantaged, as the cornerstone for establishing a just society.

Justice, according to Plato (1968) in The Republic, is a virtue that promotes social equilibrium. According to him, fairness entails everyone playing their proper part and not getting in the way of other people's duties. Aquinas (1988) added to the conceptions of justice by characterising justice as a habit in which an individual consistently and enduringly gives each person their rightful compensation. He claimed that just acts are in accordance with moral and divine rules, connecting justice to the idea of natural law. Sen (2009) used the capacity approach to define justice, emphasising people's real freedoms to live the lives they value. Sen views justice as the process of

improving each person's potential. In an attempt to define justice, Sandel (2009) emphasises the significance of moral reasoning and communal values in defining just actions, characterising justice as a moral notion that entails making decisions based on what is right and wrong. Every one of these definitions offers a different viewpoint on justice, emphasising its complexity and the range of aspects it includes. When taken as a whole, they advance a more thorough comprehension of what justice looks like in various situations.

For the sake of this study, nevertheless, we'll use Kelsen's notion of justice. As per his perspective, justice is a crucial element of the legal system, underscoring the necessity of a legal structure that guarantees impartiality, parity, and the safeguarding of personal liberties under the legal system.

Science and Technology and the dispensation of Justice

The emergence of science and technology has resulted in significant transformations across multiple domains, including the legal system. Advances in technology have improved the precision, effectiveness, and accessibility of justice, from advances in forensic science to the application of artificial intelligence in courtrooms. We will proceed to set out target areas where science and technology could be advanced to demonstrate the efficacy of the scientific and technological enterprise in positively affecting and enhancing the administration of justice. The target areas include:

- **i.** Virtual Hearing and Video Conferencing
- **ii.** Electronic Case Management
- **iii.** E-Filing of cases
- **iv.** Webportal/Social Media – Legal research, online dispute resolution, access to justice, legal analysis, e-discovery
- **v.** AI and Decision-Support and Automation of Decision-Making
- **vi.** Forensics support.

A. **Virtual Hearing Of Cases**: This refers to the use of electronic devices to carry out video-conferencing and virtual hearing of cases by the courts. This procedure excuses the personal attendance of the litigants and the legal practitioners to court, and they can stay anywhere in the world and attend the said hearings. This form of hearing was made dominant and prominent by the Covid-19 pandemic. (Llagami. (2024) p. 67). The Nigerian jurisprudence received a stamp of approval when the Supreme Court of Nigeria on the 7th day of July, 2020 held that virtual proceedings was valid and proper. The Supreme Court did so declare in two suits filed by the Ekiti State and Lagos State Attorney Generals asking the apex court to determine if having regard to Section 36(1), (3) and (4) of the 1999 Constitution (as amended), the AG federation's directive and the ensuing practical use of information technology (IT) to facilitate virtual hearing of cases in courts of the land in 2020, mainly then because of the Covid-19 pandemic, which held through Zoom, Microsoft Teams, WhatsApp, Skype, or through any other audiovisual or video-conferencing platform by the Lagos State High Court or any other courts in Nigeria in the determination of cases before them was constitutional. Alex Enumah, of THISDAYLIVE Newspaper in his report with the headline, "Virtual Court Sitting Not Unconstitutional, Supreme

Court Rules" stated that the Supreme Court did decide that there was nothing practically wrong with conducting court trials through or by virtual proceedings. The report elucidated how that: "A seven-man panel of the apex court led by Justice Bode Rhodes-Vivour held that it was premature for Lagos and Ekiti States to file suits to seek their interpretation of the constitution to determine whether or not virtual court proceedings and sitting are constitutional. The court directed judges nationwide to continue to conduct virtual proceedings, where comfortable for them, until the National Assembly concludes its ongoing efforts to amend the constitution to accommodate virtual hearing. It said, for now, it was premature to challenge the constitutionality or otherwise of virtual court proceedings because the National Assembly was still in the process of amending the constitution or enact a law to that effect. (Enumah, 8th July, 2020, ThisdayLive).

In a related report on the same subject matter from Felix Omohomhion, of BusinessDay Newspapers, published July 14th, 2020, reported that the Supreme Court on Tuesday, 7th July, 2020 threw out two suits challenging the constitutionality of the virtual court sittings procedure. The suits. The report added was initiated by the Lagos and Ekiti State Governments, asking the Supreme Court to determine "whether having regard to Section 36(1), (3) and (4) of the 1999 Constitution (as amended), use of technology by remote hearings of any kind, whether by Zoom, Microsoft Teams, WhatsApp, Skype or any other audio visual or video-conference platform by the Lagos State High Court or any other courts in Nigeria in aid of hearing and determination of cases was constitutional." (Omohomhion, 14th July, 2020). The report continued that the 7 – man panel that was presided over by Justice Bode Rhodes-Vivour held that "the suit was speculative and pre-emptive" and that Justice Rhodes-Vivour, JSC., in his ruling held that "as of today virtual sitting is not unconstitutional. . . . This suit is speculative and having been withdrawn, it is struck out," (Omohomhion 14th July, 2020). The above decision informs us that the aspect of virtual hearing has been settled and therefore come to stay in Nigeria.

In their research work, Monika Zalnieriute and Felicity Bell with approval argued that the use of "video-links can reduce costs and time associated with bringing persons to court. It may also enable a person 'to adduce evidence that might not otherwise have been available' and protect vulnerable witnesses. On the other hand, use of video-link is a distinct change to the historical importance accorded to parties and witnesses in court proceedings, and judiciary, 'seeing' one another in person, and may negatively impact on a person's ability to be heard. Communication technologies are among the most important for judicial work." (Zalnieriute & Bell, 2021, p. 22).

In a similar action in India, it was also the position of the Indian Supreme Court, who in the case of Swapnil Tripathi Vs. Supreme Court Of India (2018) 10 SCC 628, which was decided by a nine-judge bench and held that video conferencing or virtual hearing of matters in court was a significant step that will enhance the people's access to public information, justice, and produce transparency in the judicial process. In this case, the main question that was put before the court was: "Whether there should be live streaming of court proceedings or not?" in the words of the Indian Supreme Court, they held as follows: "Live-streaming of court proceedings is manifestly in the public interest. It is important to re-emphasize the significance of live-streaming as an extension of the principle of open justice and open courts. However, the process of live-streaming should be subjected to carefully structured guidelines." It is therefore interesting to note with increased use

of the ITC apparatus, there is an ever increasing use and reliance upon not only virtual hearings and video conferencing, but gradually some jurisdictions have permitted video coverage and publication of court sittings. It is also to be appreciated that security agencies involved in the investigation and prosecution of cases, legal practitioners and the general public have grown used to the use of technology as regards virtual and video conferencing in the hearing of cases in court. A case in point is that "The Supreme Court of Victoria regularly posts on Facebook and tweets about recent decisions and developments in the law. It also allows the media – but not the public – to post and tweet about on-going matters, arguably limiting the principle of 'open justice.' Of course, limits on open justice, including suppression orders applying to the media, might be needed to preserve the principle of the fair trial, as was recently illustrated with the criminal trial of Cardinal George Pell." (Zalnieriute & Bell, 2021, p. 12). This is definitely a shift in focus from what "The judicial process, in particular the courtroom, has traditionally been a bastion of decorum, resistant and conservativeness and if not immune to the extremes of change, could find itself in the midst of a technological revolution." (Hon Justice M. D. Abubakar, NPOM. (2018). This helps to send a serious signal that there is now a change in our stereotyped perception of the courts and the judiciary as being orthodox and conservative.

It is my respected view and position on this that adopting the technology for video conferencing and virtual court hearings, having been validated by the apex courts of the various countries, should be developed and expanded, leading to the introduction of other forms of ICT into the judiciary to help foster accountability, credibility, transparency, impartiality and such other values for which the judiciary is identified. This would be particularly useful in situations the witness or an expert witness is sick or indisposed, staying very far away for which the cost of transport would be very exorbitant and for persons too old to move about with ease. The adoption of technology in law offers several benefits that positively impact. According to Zalnieriute & Bell, (2021: 11), video conferencing enable someone 'to adduce evidence that might not otherwise have been available', transforms the interactions between the litigants, the lawyers and the judiciary. In the same clime, it is reported that Chief Justice Brennan of High Court of Australia also pursued a broad course which sought to open up the Court to the public to build up public confidence, and so as to make "its procedures more understandable and its decisions more easily available and allowing video recording to document the justices at work." (Zalnieriute & Bell, 2021: 11). Zalnieriute & Bell, 2021 also observes that the use of video-links and virtual hearings do help reduce costs and time associated with bringing persons to court, especially within the provisions of the Administrative Criminal justice Act, 2015 which prescribes that a witness should be paid the cost of making him/herself available for the hearing.

B. Electronic Case Management

This process involves the provision of automated and electronic management of cases. It is according to Dhru, Nikam & Barendrecht 2024, the administrative, managerial or regulatory interventions in the handling of cases in an efficient manner and which is done electronically (Dhru, Nikam & Barendrecht 2024: P. 19). Case management systems are created so that administrative and judicial process are integrated in case flow and management. It covers case tracking, court scheduling and instant transcript, the deployment of Court Room Technology

through the use of court recording and transcribing system that will eventually reduce the work load and stress of judges taking proceedings long hand and will make the life of judges healthier and saves time. (Hon Justice M. D. Abubakar, NPOM, 2018). This is to be contrasted with the findings of Human Rights Watch, who in their studies observed that, "Many judges must take their own notes in longhand while, in the words of one judge, they "sweat and choke" in stiflingly hot courtrooms—hobbling the speed of any proceedings.141 The judiciary, including appellate courts, also strains under the burdens of an excessive caseload" (Human Rights Watch 2010: 33). The introduction of electronic case management is enhance group collaboration and team work, as it makes working in teams and in collaboration seamless and easy. For example, every one of the parties involved in the initiation of cases in court can access the information relating to their case(s) from the web unassisted, which is to say it facilitates interface. According to Dhru, Nikam & Barendrecht 2024, a case management system, being "automated and streamlined" ensures the prompt resolution of cases, and "data can be securely accessed and easily shared by authorised persons wherever they may be located in the world, by using a dedicated cloud database. Updates are reflected in real-time so cases can be properly assessed at any given point in time - before, after and during the trial." Although the quality of the communication network of the informatics system ultimately determines the responsiveness of the functionaries of the justice system, but all the same, "Litigants, lawyers, judges and other users of the court exchange a large volume of data in the form of previous judgements, decrees, acts, pictures of crime scene, and case papers related to every case" through a workable case management system. In Rivers State, paper-based files are scanned and archived (Dhru, Nikam & Barendrecht 2024: P. 38). A good and functional case management system is cost, time and labour intensive. (Dhru, Nikam & Barendrecht 2024: P. 39). In a country like Cape Verde, their case management system, according to (Dhru, Nikam & Barendrecht 2024, "anonymises data to protect the information of citizens in the event of a cyber-attack" and also "uses local identifiers that are interlinked to the original information" to trace the original identity of the primary user, so that the security operatives can locate the likely source of attack. The basis for this is that if "the local and remote identifiers are distinct, the attackers will not have a direct, easy to link path among databases" (Dhru, Nikam & Barendrecht 2024: P. 47).

Making their contribution, Sharma & Imran (2021), made a fantastic point about electronic case management when they argued that "Advanced case management systems empower legal professionals to effectively arrange, monitor, and oversee case-related data, documents, time limits, and correspondences." Further, they pointed out that, "Adopting case management software is crucial for law enforcement agencies to streamline their processes and improve efficiency. A case management platform enables easier management of the full lifecycle of an incident, from the initial report to building and preparing the case for court. Benefits of case management software include improved collaboration, increased efficiency, better decision-making, enhanced data security, improved reporting, and improved outcomes. Case management software centralises case information, allowing different departments to access and share information." (Sharma & Imran 2021: 238). The fact that law enforcement agencies, that seem to have been overwhelmed by the handling and prosecution of criminal cases, makes it too interesting. It is why the quick implementation of electronic case management is being canvassed for all the agencies that manage and handle security issues, especially because these information are highly confidential and secret,

so having a medium where they can be handled without leakages would be transforming and endearing since it is a tool that "automates routine tasks, freeing up time for officers to focus on more important tasks" (Sharma & Imran 2021: 238).

In their own research, Zalnieriute & Bell, 2021 observes that the use of electronic case management system and sundry digital technologies are a good tool needed to assist in the widespread sharing of information, are a veritable weapon needed and necessary in fighting against judicial corruption, described as a mixed bag, that has been "tainted by allegations of corruption or succumbing to political influence", that has been criticized to undermine the independence, integrity and impartiality of the judiciary. (Human Rights Watch 2010: 37). Zalnieriute & Bell threw their weight behind electronic case management which relies upon information and communication technology (ICT), which relies upon computers processing of data, the use of technologies from computing, electronics, and telecommunications to process and distribute information in digital and other forms, and the use of computer and such technology for case allocation. The high point is that cases are randomly assigned to judges with little or no human interference but based on the codes that has been written. This "ensures that judges are not 'cherry-picked' to hear particular cases, and electronic case management system can provide further oversight by identifying irregularities." The reliance on electronic case management has the capacity to reduce corruption, promote judicial independence and ensure impartiality by the judges to a large extent. In the long run, electronic case management helps to boost "public trust by providing an effective means of communication between courts and their users and the general public" (Zalnieriute & Bell, 2021: p. 16).

Electronic case management, according to (Naureda Llagami 2024 is also useful to state prosecutors, external users who are involved in judicial proceedings, including parties, citizens, private companies, public institutions, and lawyers for sundry applications by helping to streamline document exchange. In such situations, it become mandatory to engage a front desk officer, whose work would be to "facilitate the exchange and access of electronic documents and data." Litigants and parties would be required to "submit legal acts to the court by uploading pertinent documents once they have completed a secure electronic identification process, preferably utilizing two-factor authentication." Thereafter, these persons so indicated would "have the ability to request services, access digital files and information related to their case, and receive electronic notifications" (Naureda Llagami 2024: pp. 76, 77).

We will end this section with the position taken by Sharma and Imran (2021), on legal technology and case management, where discussing the advantages of science and technology in legal practice, case management and litigation technology they observed that, "It is important to note that these solutions have broader applications beyond the legal domain, providing benefits to both solicitors and corporation, . . . The Legal and Court Case Management Module (LAMS) software offers, 'various features such as document management, calendar and deadline management, task assignment and collaboration, data analysis and reporting, communication tracking, and secure access. It provides centralized storage, version control, and access controls for data security. It also enables real-time updates and communication, promoting efficient teamwork even in

geographically dispersed locations. LAMS is a cloud-based platform for secure access.'" Sharma and mran, 2021: 237).

C. E-Filing

E-Filing falls among the earliest forms of innovations introduced by science and technology into our justice systems world over. According to Reiling (2020), a retired judge and an expert in international court practice and ICT agrees with us when he writes in his article, "Courts and Artificial Intelligence" that e-filing or "digital filing and process automation are the first IT requirements" undertaken through a smart filing portal, which can help the parties in a matter to bring their cases to court in time and through the best possible way.

According to Honourable Justice M. D. Abubakar, in his lecture delivered to the body of benchers in 2018, he acknowledges that as the orientation and drive of the people in a community changes, more persons are awakened to the benefits of litigation and the destructive forces that attend violence, thereby clogging all the hierarchies of our courts, magistrates, customary, Islamic, high, appeal and supreme Courts to be overburdened by an unprecedented overflow of cases hitherto unthought of. The attendant problem is an unprecedented number of court processes waiting to be filed by the claimants/plaintiffs. As a Judge, he knows that as a routine, our courts have to contend with these wieldy and voluminous records, which necessitated the development of a means to conveniently manage this upsurge and save time, energy and cost. The use of information and communication technology (ICT) in the form of E-Filing became the mainstay and is being efficiently "deployed in a variety of ways to ensure efficiency, minimise delays, engenders transparency and integrity in the system." (Hon Justice M. D. Abubakar, NPOM, 2018). Accoridng to Justice Abubakar, e-filing also covers aspects of electronic data/information exchange system which allows legal practitioners to file their originating processes, affidavits, counter affidavits, replies, written addresses and all such other processes electronically, and to upload their exhibits through the same system. E-filing, he adds, also help in the case management because having the documents on a platform would enable the Chief Judge, or any such person(s) so designated by him to gain "access to information and data of all courts instantly and this could ease case distribution and assignment as well as track case disposition of all courts." (Hon Justice M. D. Abubakar, NPOM, 2018).

One case in point is that of Rivers State, that introduced E-Filing some five or so years ago and presently captured in the Rivers State High Court (Civil Procedure) Rules, 2023. Order 3, Rule 2 (1) of the Rivers State High Court (Civil Procedure) Rules, 2023 prescribes that, "All proceedings in the court shall be commenced by e-filing of the relevant processes at the RIVCOMIS Platform or any other platform that the Chief Judge may direct in writing." Order 3, Rule 2, sub Rules (8), (9), (11) and Rule 18 severally refer to compliance with the E-Filing template on the RIVCOMIS Platform for commencement and judgment in matters relating to land and filing of the LIS PENDENS CERTIFICATE, searching on the RIVCOMIS Platform for LIS PENDENS SEARCH REPORT (10) and that noncompliance with Sub-Rule (10) shall be sanctioned by rejecting the originating process being filed by the Registrar.

The said Rivers State High Court (Civil Procedure) Rules, 2023 also states in Order 3, Rule 17 (1) that exceptions for manual filing shall only be in the hand of the Chief Judge where the e-filing system is experiencing glitches or under maintenance, and that "Notwithstanding the procedure specified in sub-rule (1), any process that has been exempted shall be uploaded thereafter on the e-filing platform and all subsequent filing shall be by e-filing." The Rivers State Judiciary is a typical example of one that has developed the complete process of "e-filing of documents, online databases or digital stamping" (Zalnieriute & Bell, 2021: p. 6), and which is being enjoyed by lawyers and clients. It is highly commended by the stakeholders as the secretary to a law firm or the legal practitioner can at the punch of a button file his documents on the RIVCOMIS Platform, pay for same and have it commissioned without hassles.

Among the many benefits of introducing ICT into the judiciary, is that it saves costs, time, and increases efficiency, enable the exchange of data and documents, as well as the electronic management of judicial procedures. In his submission, Naureda Llagami makes a strong case for the enactment of a comprehensive law to make room for the introduction and use of ICT innovations in the judiciary. In his words, he says, "The digitization of judicial procedures4 and electronic filing7 requires comprehensive legislation aimed at formalizing, simplifying, and/or dematerializing and standardizing processes." This he argues is to put paid to the possibility of legal challenges to its free practice and use, and to maintain the kind of flexibility that is demanded by certain special circumstances. A practical example is that of Order 3, Rule 17 (1), Rivers State High Court (Civil Procedure) Rules, 2023, which provides that there shall be an exception which allows for manual filing, to be given by the Chief Judge, and only when the e-filing system is experiencing technical glitches or under maintenance. In order to guarantee flexibility, it orders that, "Notwithstanding the procedure specified in sub-rule (1), any process that has been exempted shall be uploaded thereafter on the e-filing platform and all subsequent filing shall be by e-filing" a fact that e-fling is imperative, bound by the strict rules which established it and immediate reversal when the situation normalizes. We see in the Rivers State High Court (Civil Procedure) Rules, 2023 the fundamentality of the essence and principles of effective legislation espoused by Llagami and which covers, "the drafting of a coherent and independent regulation, the harmonization of the legislation with existing laws, the allowance of some flexibility for a variety of exceptions and special use cases, the establishment of obligations regarding readiness, the transition period, and subsequent measures, the preservation of alternative channels for those who wish to opt out or disconnect, and the promotion of data exchange with external systems" (Naureda Llagami p. 77).

D. Webportal/Social Media – Legal Research, Online dispute resolution, access to justice, legal analysis, e-discovery, et al.

It will be appropriate and imperative at this time to discuss how our creation of and reliance upon web portal and social media electronic tools can become a means of providing technologically driven justice to Nigerian. I found out that the creation of a web portal and social media platform for the judiciary can give to all the stakeholders within the legal system the much needed free access to legal services. It helps to link an accused person to the court and to tools for his defence pursuant to Section 350 (2) of the Administration of Criminal Justice Act, 2015 which states thus,

"the prosecution shall, provide the defendant all materials that the prosecution intends to rely on at the trial, before or at the commencement of the trial." In its judgment to support the above principle of law, the Court of Appeal in the case of ABRAHAM v. OLURUNFUNMI (1991) 1 NWLR [Pt. 165] 53 @ 71 per TOBI, JCA PARA B – D held that "A Plaintiff (Prosecutor) has no legal right to instalment the facts he intends to rely upon at the trial by miserly and discreetly keeping some away from the arena of pleadings. He must plead all the facts he intends to rely upon at the trial in proof of his claim. Of course, he is entitled to keep the evidence in proof of the facts under lock and key until the matter is heard. But the facts, he cannot. Certainly not. Above all, a Plaintiff has no legal right to tantalize the Defendant with his pleadings and place him in the most uneasy position of speculating what is likely to meet at the trial. No law known to me gives him such a right." These are privileges and rights enjoyed by the defendants in cases where webportal and media platforms are utilised. Electronic devices operated through webportal and media outfits help child labour, rape and human rights abuse victims, lead or link them to lawyers, even defendants accused of capital punishments are availed of these services, especially, from the Legal Aid Council, FIDA and other free legal service portals and offices. They avail themselves of the legal services or support that are offered free of charge, students and researchers conduct their researches, on-line dispute resolution are canvassed and undertaken by linking them with qualified ADR professionals and also undertake legal analysis and e-discovery.

My research also showed that in the Indian judiciary, the operation of a WebPortal and media platform was included in the terms of reference that was given to the E-Committee by the Chief Justice/President of the Supreme Court of India on August 26, 2014 (Free Law – By De Jure accessed on 20th January, 2025). It was the recommendation of the E-Committee that proceedings of the Supreme Court and High Courts of India, should be streamed live, while the privacy and confidentiality of the litigants and witnesses are given top priority in the process. It was unraveled that the E-Committee made crucial and essential policy statements towards why "Courts must also take the aid of technology to enhance the principle of open courts by moving beyond physical accessibility to virtual accessibility." That this is working well, it is worth noting that Indian judiciary operates, "a single unified Case Information System (CIS) Software . . . developed for catering to the diversified requirements of the country in terms of local procedures, practices, and languages." The E-Committee also included in their recommendation, the introduction of such other electronic platforms for service delivery such as the "e-Courts Portal, Mobile App, SMS Push, SMS Pull, Automated E-Mails, E-Payment, E-Filing, Touch Screen Kiosks, and Service Centres." (Free Law, 18 August, 2023 – By De Jure accessed on 20th January, 2025). (Sharma & Imran 2021: 236).

For example, quoting from Sharma and Imran, they contend that "the utilisation of data analytics technologies offers legal practitioners the opportunity to gain valuable insights from legal data, hence facilitating well informed decision-making and the development of optimised legal strategies. The utilisation of e-discovery and e-filing systems enhances the efficiency of legal procedures by enabling the identification, examination, and presentation of digital evidence inside legal proceedings. Through the adoption of legal technology, professionals can improve productivity, cooperation, and openness, ultimately achieving superior results for their clients."

(Sharma & Imran 2021: 237). This in a brief demonstrates the usefulness and vital roles played by electronic webportals and media, and from which Nigeria can tap and work towards improving the confidence ratings of our courts.

Interestingly, on the heels of their engagement and work, on May 23rd 2023, the Supreme Court of India called for Financial Bids, Technical Bids, and EMD from qualified technologists and computer scientists for the Design, Development, and Implementation of AI tools for transcribing Court proceedings and arguments. This implies that web portals and media platforms incorporate such responsibilities like "Design, Development, and Implementation of Artificial Intelligence (AI) Solution, Tools for Transcribing Arguments and Court Proceedings' for the court hierarchical systems. Some other advanced technological tools include many other technologies which if incorporated into the judicial system would assist in not only speeding up the judicial processes, but would enhance reliability, impartiality, independence and efficiency for our courts. In India, according Free Law, 18 August, 2023, some of the technology-based tools which would help in delivery of justice to the people, make the courts efficient, and for their common good includes the format of the Indian Judiciary's e-Courts project, which should be directed towards both digitalizing based on making the courts and the hearing processes effective, efficient and transparent. There will needs be created a National Judicial Database, to incorporate a centralized database of cases from various courts, by State, Federal, Industrial, Appeal and Supreme Courts in Nigeria. The Federal Ministry of Justice, National Judicial Council and Chief justice of the federation, President Court of Appeal and Chief Judges of States, National Industrial Courts and federal High Court should sit down and articulate how this would be conceived and fashioned. Drawing in on the Indian style, I hope that this service would enable lawyers, parties and the general public to "access court-related information and services online . . . access to case information, including case status, case history, and next hearing dates. It also allows the electronic filing of cases, petitions, and documents as well as helps in maintaining a cause list." It would be designed to act as a web portal and media platform. This is intended to spur active participation in court processes and proceedings. I do believe that this endeavour will further address electronic or digital reports of cases, particularly, judgments of special court, like family courts, fundamental human rights, admiralty, election petitions, etc., and those of Court of Appeal and Supreme Court. These judgments would be floated online, so that lawyers, legal professionals, researchers, and the general public would be at liberty to search for specific cases, review past judgments, and stay updated on the latest decisions of the Supreme Court instead of merely guessing the courts decisions or verdicts.

In his lecture on this, Hon Justice Abubakar was emphatic when he declared that, "IT compliant judiciary will help Judicial Officers to access current global trends, share experiences and reach out globally. With the deployment of ICT, there is the possibility of establishing a Judicial Research Centre and Data Base. This would allow for easy research, access to legal authorities and interactive reach out along the court hierarchy in Nigeria. The advent of online legal research outlets such as LexisNexis, Legal Pedia and Law Pavilion has reduced the rigours of research as legal resources can easily be accessed on the Internet." (Hon Justice M. D. Abubakar, NPOM, 2018). Today, going by the statement credited to the Honourable Justice Abubakar during his

lecture delivered to a training session for judges, it would be actually very fascinating and realistic to see individuals, including litigants and legal practitioners who wish to, comfortably from the recluse of their homes, browse about any case that captures their fancy, analyse them based on what is it he wants to get from them without stepping his feet into a court hall. This could not have been so during the days of analogue legal search, and this is why this should be pursued to keep us up with the passing times.

E. AI, Decision-Support and Automation of Decision-Making

In appreciating this section of the work, let us lean slightly unto what Biard, Hoevenaars, Kramer, and Themeli, (2021) said in trying to explain this new field of artificial intelligence. They described it thus, "Artificial intelligence is an umbrella term that covers many technologies and techniques that try to replicate2 traits of human intelligence. Using algorithms and data analysis, AI systems perform their tasks much faster than humans and at a much lower cost, and offer considerable benefits with regard to labour-intensive jobs. With technology's ability to simplify, speed up, and, most importantly, lower the cost of court procedures, it is no surprise that government and court officials are looking at it to resolve many of these problems" (Biard, Hoevenaars, Kramer, and Themeli, 2021: 4). This is impressive, catchy and fascinating, getting to know that machine speeds up and makes performance of labour intensive jobs much simpler and faster. Sharma & Imran, endorsing the resort to electornic and technological applications in Indian courts observed in their article, "The Significance Of Technology In The Indian Legal System And Legal Education: A Comprehensive Examination" they commending the coming into our everyday works of scientific, technological and numerous other advancements in the field, and particularly for the introduction of artificial intelligence and machine learning algorithms, which they termed, "sophisticated legal research tools." Their research revealed in great details that machine learning algorithms and AI tools have been of immense assistance to lawyers, especially, that these assisted the Indian judiciary in the discharge of an unbiased and judicious dispensation of justice. According to the duo, "breakthroughs in artificial intelligence, machine learning, automation, virtual reality, augmented reality, and data analytics. Case management is a central domain in which legal technology has made significant progress" (Sharma & Imran 2021: 237). According to them, we agree and adopt their argument that the introduction and reliance upon artificial intelligence would do Nigerian judiciary, which is still been battered by accusations of corruption, delays and secrecy. If legal technology seeks to improve and enliven the various aspects of legal practice generally, worldwide, then it would do us great good if Nigerian judiciary and lawyers also accept and embrace and utilize technological and scientific "breakthroughs in artificial intelligence, machine learning, automation, virtual reality, augmented reality, and data analytics" (Sharma & Imran 2021: 237).

In attempting what and how artificial intelligence can be of assistance to the courts, let us review what Honourable Justice Reiling, a retired Judge of and an international information technology expert has to say. He tasked everyone that ventures into this field with some penetrating questions, among which are: "How can AI be useful for courts and judges? What is needed to make the AI useful? . . . . What artificial intelligence has already proven itself for these different processes? How can courts and judges work with artificial intelligence according to the standards fair

procedure, for instance in Article 6 of the European Convention on Human Rights? What risks do the standards of Article 6 run when using artificial intelligence? . . . . And how can legal information be made more usable for artificial intelligence? (Rory 2020: 1). Answering these questions, Rory (2020) lists five areas where AI have been proven to be competent and which are: (a) organising information, (b) advise, and for (c) predictions. Reiling argues that AI, can through how it recognizes patterns in texts and files can assemble facts much easier and faster than any man can. He refers to its use in the United States of America where it operates as "e-Discovery", using machine learning AI to go through the large volume of cases, extract the relevant parts, submitted to the judge, who assesses and confirms the content as okay. He sums it up by declaring that "The method is faster and more accurate than manual file research."

Further on, Reiling (2020) adds that AI can and does provide helping hands to potential litigants and legal practitioners legal advise. He adds that AI can provide solutions states to would be parties to a suit, which "can also be useful for legal professionals." This it does by searching for relevant information, providing likely answers to possible question, and thus armed, the user decides the best course of action by him/herself. An example is given of the efficacy of the Civil Resolution Tribunal (CRT) in British Columbia, where CRT offers through its Solution Explorer, "guided pathways, interactive questions and answers, dispute resolution or preparation for proceedings at CRT Canada" Reiling (2020). But the extent of relevance and support is bound to increase to cover other areas such as traffic violations, its capacity to predict the outcomes of cases, which is very perplexing and intriguing because over time, it has come to be known that court cases are largely, very unpredictable and unfixed. The potential for unpredictability increases as the case gets complex and wieldy, and so its accompanying risk adds up proportionally. Reiling gives an example of a model of AI in use in United States, where AI provides "various prediction tools are . . . commercially" but discountenances aspects of its operation which is still "business secrets, so we do not know how they work." (Reiling 2020: 5). But he unhesitantly points out that the prescriptive capacity of AI, as used in certain non-commercial applications abound. Reiling gives some examples to include how AI is used "to predict decisions of the European Court of Human Rights (ECHR)", that is a Court verdict would violate "a particular provision of the European Convention on Human Rights (ECHR)" or not. He further adds that AI is useful in "predicting recidivism in criminal cases" in the United States of America. He describes how its uses a too called, the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), which assesses "the recidivism risk of defendants or convicted persons in decisions on pre-trial detention, sentencing or early release." This shows how far AI tool can be utilized by our courts, to reduce partiality, corruption and foster integrity of the process and build trust and confidence. The benefits of this tool, COMPAS, is enormous as it helps to drastically "reduce the number of people detained because the tools make the assessment of the recidivism risk more objective." (Reiling 2020: 5).

On the part of (Sharma & Imran 2021), AI tools play so many pivotal roles in machine learning algorithms as they offer "extensive legal knowledge and precedents in a prompt and precise manner." Some of the areas that AI tools are important include those of providing legal advise and solutions that would assist professionals and laymen in handing and "management of contracts and

automation of documents, thereby streamlining the process of creating, customising, and overseeing legal contracts and agreements." In this direction, when AI helps in the "automation and digitalization, these systems effectively decrease the duration and exertion associated with manual tasks, concurrently mitigating the potential for errors and inconsistencies." They also present scenarios which portray AI's involvement in settling disputes on-line, reliance on science and technology to speed up the final and full settlement of disputes, and that AI also provides "a quicker and more convenient alternative to conventional litigation." (Sharma & Imran 2021: 238).

According to reports credited to Free Law, 18 August, 2023 – By De Jure, and accessed on 20th January, 2025). (Sharma & Imran 2021: 236), there is already in place in India, a software**,** SUVAS, an acronym for Supreme Court Vidhik Anuvaad Software, which the E-Committee and the Chief Justice of India presented to the President of India in 2019. Reports filtering in point out that – "SUVAS is a Machine-assisted translation tool trained by Artificial Intelligence. This Tool is especially designed for Judicial Domain and at present, has the capacity and capability of translating English Judicial documents, Orders, or Judgments into nine vernacular languages scripts and vice versa. The said interpretation would encompass the translation of texts and court processes in nine local languages of India, including "Hindi, Bengali, Marathi, Telugu, Urdu, Assamese, Kannada, Odiya, and Tamil." (Free Law, 18 August, 2023 – By De Jure accessed on 20th January, 2025). This makes introduction of AI imperative as the majority of Nigerians are barred from adjudication process because of language barriers, which AI is poised to ameliorate. What a state. In addition to SUVAS, India also has another tool called, SUPACE, short for Supreme Court Portal for Assistance in Court's Efficiency. This, Sharma & Imran says is an "AI Research Assistant tool that helps in upgrading the productivity of legitimate analysts and judges by improving proficiency and reducing pendency. It provides information in a couple of seconds even from thousands of pages of documents."

Evidently showing concerns, Biard, Hoevenaars, Kramer, and Themeli, 2021 pointed that it is very challenging to measure how specialisation, self-representation, digitalization and privatisation, bring about positive trends observable civil procedure and improve upon the people's access to justice. This, they say is because they don't operate singly, but work towards strengthening each other, are intertwined, act in collaboration and overlap randomly. Explaining they say that not only had digitalisation and AI found their way into the courts, but these trends have changed the way parties engage in the practice of alterative dispute settlement in developed countries and India because firms that provide ADR have moved online to host their services. They observed, "Several ADR entities, are now using AI-powered tools to assist and guide users during the dispute resolution process. This trend is expected to expand in the foreseeable future. In fact, private online dispute resolution (ODR) often proves more advanced and more flexible in integrating technology than do public courts and bodies." In addition, it has been shown that because alternative dispute resolution formats are hosted on-line, the parties in some cases represented themselves, and non-lawyers or website hosts conducted the settlements without the accompanying journey to courts. We get to know therefore that "Technology and online information play an important role in improving the interface between court and out-of-court dispute resolution." (Biard, Hoevenaars, Kramer, and Themeli, 2021: p. 19)

Its useful application by the Police and security operatives for forensics support and advancements of their investigations towards proving the guilt or innocence of an accused is also applauded as this will positively impact smooth and quick dispensation of justice in the courts. This is considered from the point of assisting in police investigation, DNA profiling, forensic science, which we fully admit is fundamental to the quick dispensation of justice because in Nigeria, the Police in most cases proceed to arrest a suspect, before proceeding to scour for evidence in support of the crimes for which an accused is charged. Kloosterman, Mapes, Geradts, van Eijk, Koper, van den Berg, Verheij, van der Steen & van Asten, (2015: 3, 4). The suggestion to introduce science and technology into the courts, adjudication and case management is touted to function for a paradigm change. It described a new move in efforts to solve human problems as highlighted in Alejandro Ponce (2020). In their own suggestion, Kloosterman, Mapes, Geradts, van Eijk, Koper, van den Berg, Verheij, van der Steen & van Asten, 5th August, 2015, observed that "The technological revolution in forensic science could ultimately lead to a paradigm shift in which a new role of the forensic expert emerges as developer and custodian of integrated platforms." They went on to isolate the four (4) paradigm shifts that has hit the world of science and technology, and which scientific and technologically driven justice delivery would benefit from to become revolutionized and modernized. They outlined the four paradigms to be (1) experimental science, (2) theoretical science, (3) computational science, and (4) data-intensive scientific discovery, which is the paradigm that is based on the exponential availability of data to scientists through the global growth of science and the distribution of findings through worldwide networks. It is on the 4th paradigm that the growth of law and justice delivery would depend. (Kloosterman, Mapes, Geradts, Van Eijk, Koper, Van Den Berg, Verheij, Van Der Steen & Van Asten, 2015: 2).

On how to link technology and forensic science, Kloosterman, Mapes, Geradts, Van Eijk, Koper, Van Den Berg, Verheij, Van Der Steen & Van Asten, 2015 specifically opined that to "improve the speed of DNA evidence analysis. This technology will aim at robust, mobile, all-in-one platforms for STR profiling to reduce the actual turnaround time from days to hours. Currently, rapid analysis of reference material such as buccal swabs and samples containing vast amounts of DNA such as blood is possible using the all-in-one platforms. The technical innovations in the area of fast and mobile DNA analyses are towards creating fully integrated instruments for the analysis of DNA traces. These instruments will enable the analysis of biological traces on or near the scene and connect the results directly to a reference profile from the DNA database to identify suspects, witnesses and/or victims." (Kloosterman, Mapes, Geradts, Van Eijk, Koper, Van Den Berg, Verheij, Van Der Steen & Van Asten, 2015). They also argue that They further contend that the date so analysed should comply with the routines for security, privacy and transparency, so as to demonstrate to the public and magistrates that the data were handled responsibly, show who handled what and at what point in time. And to solve the problem that comes with large volumes of video and image data, "face recognition software should be used to recognise faces that are taken from frontview passport photographs, from variable views with respect to angles, distance, lighting and contrasts" (Kloosterman, Mapes, Geradts, Van Eijk, Koper, Van Den Berg, Verheij, Van Der Steen & Van Asten, 2015).

Anderez; Kanjo; Anwar; Johnson and Lucy (August 31, 2024), in their article on "THE RISE OF TECHNOLOGY IN CRIME PREVENTION" said that there is the need for the introduction and full scale utilisation of closed circuit television (CCTV) inside the courts as well as for the security agencies. They pointed out that although "CCTV cameras were formerly employed as a means to report crime, support police officers with prosecution processes or as a supporting evidence in court of justice" but that as more discoveries create increased opportunities for CCTV use, minds go to computer vision and machine learning as a means by which "CCTV can be used for surveillance as a crime prevention mechanism" [Anderez; Kanjo; Anwar; Johnson and Lucy (August 31, 2024) p. 3]. Therefore apart from CCTV serving for deterrence, or to afford the Police an opportunity to identify crimes in progress, those that are about to happen, and this signal them to intervene and save the day, or to provide needed proof that an offence was committed, possibly identify the culprits, recent developments in the CCTV technology have software technology features that give them cut edge advantages. Anderez; Kanjo; Anwar; Johnson and Lucy (August 31, 2024) highlight some of these cut-edge features to include "extraction and machine learning classification algorithms . . . possible to extract different patterns and personal bio-metrics from video sequences, which can be a posteriori used for person identification." CCTV can also be used for "the automatic detection of suspicious anomalies such us unattended bags in mass transit areas or crowded venues, iris recognition-based security systems which deny access to buildings to unauthorised personnel, intrusion detection systems (IDS) in unauthorised areas employing motion tracking techniques, etc." (Anderez; Kanjo; Anwar; Johnson and Lucy: August 31, 2024).

In summary, it has been discussed how it our courts are struggling under the many impediments which makes the courts struggle to deliver its services to Nigerians. Access to justice is seriously hampered by its high costs and few can access it. In the midst of these, this article has considered and argued convincingly in favour of that the introduction of scientific, technological, machine learning tools and AI, which are tools that will help transform our courts into an effective, decisive, impartial courts, and would foster accountability, boost reliability, transparency, credibility, impartiality, independence and efficiency, which are what would boost public trust. This is how Nigeria can catch up with the otherwise very Goal 16.3 of the United Nation's Sustainable Development Goals which calls on all nations of the world to "Promote the rule of law at the national and international levels and guarantee equal access to justice for all."

The Ethical Considerations Of Introducing Technological Innovations Into The Judiciary

The mere fact that science and technology is beneficial and necessary for the promotion of effective, impartial and efficient justice delivery is on the other hand, direct pointer to the ethical concerns raised by the negative impact of science and technology on the dispensation of justice. This was a fact discussed Biard, Hoevenaars, Kramer, and Themeli (2021) where they saw through the barrier walls built by science and technology n justice delivery to a fair understanding of the ethical issues connected with the use of science and technology in the courts and the administration of justice. Starting from the perspective of deontological ethics, with a bias for teleological and consequentialist perspectives, it they warned should be noted that any such emphasis on the full scale introduction of science, technology and machine learning algorithms into the justice and court

processes, if it requires that machine judges would replace human judges, would be ethically questionable. The only consolation to us in this respect is that all forms of Artificial I ntelligence that would be incorporated would definitely remain under the control and manipulation of a man, a sort of "garbage in, garbage out" (Hon Justice M. D. Abubakar, NPOM, 2018).

To make this dream to work and to the benefit of the stakeholders, Stahl (2021) admonishes that the business of the courts should be sectioned, divided and shared into partitions or layers, in which each stage or section is under the direct control of a human agent, whose responsibility would be to coordinate the computer or AI platform or machinery. (Stahl p. 3). This will push the proposal of self-representation and online courts proposed by Richard Susskind (2019) to some very periods in the future, whether it be ten, fifty or one hundred years to come. This implies that the whole sale introduction of electronic and technological tools in court and justice would definitely pose a host of civil justice challenges for the 21st century. It raises the question of accessibility for those without the means of acquiring the gadgets, data and linkages, the issue of rising costs of public legal aid, and questions of effective legal protection and the integrity of the legal system.

The final analysis points to its capacity to diminish the role of legal representation and legal professionalism in adjudication. This further directs our attention to the consequences of the wholesale removal of lawyers from the administration of justice. Adding to the catalogue of the major challenges to the legal profession and practice of fielding technological innovation in law practice, Biard, Hoevenaars, Kramer, and Themeli, 2021, warned relying on John Sorabji, that "Do-It-Yourself Justice' and a diminishing role for lawyers provide a fertile testing ground for procedural innovations that allow for greater access and simpler, more cost-effective procedures, while maintaining the integrity of the justice system as a whole" but that we should not "throw the baby out with the bathwater." (Biard, Hoevenaars, Kramer, and Themeli, 2021: 12). They contend that such developments are usually outfalls from the risks that come with development at that level, which includes "deskilling lawyers who are then effectively reduced to being process managers in a technological environment" and that it will drastically take "lawyers out of the courtroom also takes away the essential function of lawyers in keeping judges accountable." This notwithstanding, it must be borne in mind that things wouldn't get that sour in Nigeria because of our very high level of illiteracy and high percentage of non-conformism or peripheral adherence. This means that for a very long time to come, lawyers will continue represent, advise and provide legal services and legal representation of their clients. The interwovenness of human element of direct representation and electronic aspects of adjudication would "remain a crucial feature of any civil justice system that is committed to securing effective participation, open justice, and democratic accountability." (Biard, Hoevenaars, Kramer, and Themeli, 2021: p. 12, 13).

One ethical problem created by introduction and reliance on scientific, electronic, technological and artificial intelligence in the administration of justice is that it will exacerbate the perplexity of the "The Collingridge Dilemma." This refers to a condition in which for every new discovery or technological tool, it always appear relatively easy to intervene, introduce modifications and changes that will tackle the effects anticipated, and "change the characteristics of the given technology early in its life cycle" but which would also make little sense since at that point it would be almost impossible to predict its adverse effects or consequences. However, later when and of

such adverse consequences come to limelight, it become too late and hence very difficult to intervene. Stahl says, "This is a dilemma for those wanting to address ethical issues during the development process" of scientific and technological tools in justice delivery (Stahl 2021: 68). We also have to consider it that any successful system of ethical governance of AI systems is never certain of all its effects on particular environments in which it is introduced, be they "technical, social or ethical." It is not in doubt that all AI-related technical developments are happening at a very quick and rapid rate. This reduces and limits the "value of trying to predict the next step" to a great deal. Then also, we are to note that, "The application of current machine learning technologies may lead to radical changes in coming years even without any further technical progress, simply because actors are beginning to understand what these technologies can do and to apply them to new problems in novel ways . . . (in) societies are always dynamic, and this can play out in ways that affect technological ecosystems in unpredictable ways. (Stahl 2021: 95).

There is also the problem of the inevitable existence of ethical disagreement and value conflicts as part of the process of reflecting on and promoting human flourishing" (Stahl 2021: 93). This means that a system that incorporates different understandings and perception of the concepts of science and technological in judicial systems would have to be taken into account, as well as the role, impact and "interplay between stakeholders, issues and interventions." The problem is not only that there are many different issues, actors and responses, but that resolving such conflicts may unintentionally contribute to the general problem of unintended consequences of its utility. (Stahl 2021: 92).

Virtual Hearings – the possible moral problems associated with virtual hearings is that although the parties and the judge may convene online to commence electronic hearing of the matter, but there may arise problems of communication and identity. In Nigeria, where the problem of network and data is very costly and not assured, it creates problems of reach between lawyers and clients. It also acts as a bar to its general use because of problems of access and familiarity with the method. It also poses as a problem to low income populations, and those who cannot afford the cost of setting up a virtual link for participating in the hearing online. During virtual hearings of cases, the judge is denied a vital ingredient of hearings, watching and observing the witness. In the case of Ukeje vs Ukeje (2014) 11 NWLR [Pt. 1418] 384 @ 405, 406 para B – C per Rhodes-Vivour, JSC, it was held by the Supreme Court thus: "It is well settled that it is the duty of the trial court which saw and heard the witness to evaluate the evidence, and pronounce on their credibility and ascribe probative value. A trial court is expected to watch the demeanour of the witness, to see how readily he answers questions, whether he gesticulates. His reaction when confronted with evidence, be it documentary which suggest that his testimony is untrue. It is only after the above that the Judge can attach weight to the evidence of a witness." Here, the Judge cannot observe the demeanour of the witnesses when matters are heard over zoom technology or any such technological device. "Therefore virtual hearings "lack empathetic environments that face-to-face hearings can create." Questions of identity theft may arise. Disruptions due to poor internet connection and lack of necessary equipment also occur frequently." (p. 38).

Case Management – In her forward to the book, *Pandora's Box*, Professor Sarah Derrington said, "The modern lawyer must contend with e-files, e-discovery and e-courts, with e-project

management tools, with automation and cybersecurity issues, all in the context of rapidly changing client expectations about the speed, form and efficiency of the delivery of legal services." (Pandora's Box, p. 18).)Then also there is the problem of how to determine that e-case management processes are effective, and particularly raises "concerns about the efficiency of this method of case listing." (Pandora's Box, p. 18). Low penetration of the internet can result in digital exclusion as well as inability of courts to access the IT system. Given that half of the world's population does not have access to the internet (as indicated by the UN Global SDG database), the adoption of digital tools like case management systems can result in the exclusion of a significant proportion of the population. The quality of the communication network of the informatics system will determine the responsiveness of the functionaries of the justice system. Litigants, lawyers, judges and other users of the court will also be face by the problems of One concerns the form of consent, the other – the potential normative consequences of consent. To better understand these problems and to evaluate the very adequacy of contract-based private lawmaking we must revisit some early cyberspace scholarship. (Mik 2016: 117). Since courts use and rely on very large volumes of court papers resulting from court verdicts, judgements, exhibits, evidence of both Prosecution of Claimants and Defendants, and processes filed in court, for example in the RIVCOMIS Platform of Rivers State, the e-fling is activated by scanning these documents into pdf files and is the network is drag or slow, "then it weakens the responsiveness of the justice system towards people. . . . converting paper-based files and archived documents into electronic files requires tremendous amounts of time and labour (and cost)." In addition, implementing an electronic case management system is capital intensive, and also vulnerable to cyberattacks. (p. 38, 39).

Dispute Resolution – The reliance on electronically orchestrated dispute resolution processes are gaining more rounds in developed countries, but this will take time for Nigerian stakeholders to get used to it. This is because it is "impersonal, lack face to face interaction " and unless it is organized so that there is the provision that it should be used interchangeably with other methods or a combination of methods and systems, its utilization may remain a mirage for decades to come. According to Samovar, Porter and McDaniel. (2012), the main reason hindering the full reliance on online dispute resolution methods is that it primarily affects adversely the medium of communication between parties to a dispute in court, and also because it robs them of the benefits or prevents them from taking advantage of any non-verbal communication methods or signals that convey the individual's inner feelings. (Samovar, Porter and McDaniel 2012: 462). The ethical problems arise because of the inadequate training of dispute regulators, the inability of arbitrators, mediators, negotiators, lawyers, judges, and counsellors to have the relevant ICT trainings. In situations in which the people are minded to rely upon digital dispute resolution processes, in situations in which this process can result in digital exclusion of those who do not have access to the internet, computers or lack knowledge about legal technology. Dhru, Nikam & Barendrecht 2024: P. 47, sharing the risks they have been accustomed with in the delivery of electronic dispute resolution efforts, they agree that "those living in remote areas or rural areas will be susceptible to poor networks and cannot take advantage of services under one-stop-shop dispute resolution. . . . For example, a study of online negotiation reveals that parties were not as cooperative and were

likely to escalate the conflict in online negotiation as they were in telephone or in-person settings (Dhru, Nikam & Barendrecht 2024: P. 47 p. 39).

Court digitalization – In other to make trials to take place in court rooms which are entirely digital, using documents that are electronically filed, and relying on s "digital court reporting, telephone conferencing, hearing loops, real time transcripts, desktop mirroring, multimedia evidence playback and video conferencing" (Zalnieriute & Bell, 2021: p. 5), come problems of video-linkages, which includes poor sound and image quality, unreliable transmission, inability of parties to reach their lawyer and exchange of documents, difficulty in managing time, and the inconvenience of holding phones, or standing behind laptops to attend the sessions un-end (Zalnieriute & Bell, 2021: p. 5).

On the other hand, Dhru, Nikam & Barendrecht 2024 point us to the problems and risks such as lack of information about the usefulness of any particular method, and fears that if electronic devices are used, it may lead to laying off of human persons "pose a serious threat to its utility" (Dhru, Nikam & Barendrecht 2024: P. 47). They also share their views that the problem with the "design and maintenance of the informatics system will determine its user-friendliness." On their own, Zalnieriute & Bell, 2021 quoting Carolyn McKay, (Routledge, 2018), they contended that, "The administration of justice is not necessarily well-served by substituting a screen for a living human presence" and added that, "However, the pursuit of digitisation of the courts for cost-saving and efficiency may sometimes conflict with, rather than promote, access to justice – as noted with the use of video-link." (Zalnieriute & Bell, 2021: p. 6, 7). I agree and rove my boat along with these opinions, because any electronic and machine learning facility to be used by members of the public should be designed and maintained accurately in such a way that they are cost effective, makes for a "synergy between the new information systems and the old or previous information systems." Information and data exchange in a judicial system should not be held up like "systems in silos", because they end up posing a greater threat to the exchange of information and data. The other issue is how to lawfully collate data and coordinate same between the different agencies and stakeholders within the judicial and magistracy, and how to proactively protect personal information in the archives of the courts. This is paramount because as cautioned by Dhru, Nikam & Barendrecht 2024, "cracks in protection systems can lead to harmful data leaks and breach of data security, integrity and confidentiality" (Dhru, Nikam & Barendrecht 2024: 40).

In further addressing our minds to the ethical and moral problems which surround the adoption of science and technology, particularly, the use of machine learning devices, artificial intelligence and such other decision making system, our focus is directed at how science and technology impacts the core judicial values such as impartiality, transparency, independence, diversity, efficiency, speedy trial and accountability. I endorse Zalnieriute & Bells, 2021, who in their work, explained that impartiality stands for "equal treatment or absence of bias in decision-making"; accountability refers to the court's "commitment to ensure that the values of independence and impartiality are appropriately deployed in the public interest, rather than the interest if the judges themselves"; and that "transparency and accountability are necessary for individuals to understand the reasons for decisions affecting them and learn how future decisions might affect them, as well as trust the courts more generally." (Zalnieriute & Bell, 2021: p. 11).

Some other ethical problems that accompany the adoption and reliance upon high tech science features and devices in our judicial process introduce the "seemingly insurmountable difficulties involved in programming a system to mimic (and explain) legal reasoning . . . if algorithms usurp judges' decision-making power, then the developers or creators of automated systems should be responsible, similarly to a judge, for explaining their decisions 'in written, protracted, published opinions" (Zalnieriute & Bell, 2021: 12). Unfortunately, these algorithmic and machine learning systems are under the same spell, because they equally "struggle to understand and explain why their programs make a single, discrete decision" and not the other (Zalnieriute & Bell, 2021: p. 12). Worse still, it has been shown that "Automated systems generally do not (and possibly cannot) provide reasons for the decision they deliver" even though in law and making judicial decisions, "reasons are crucial (and thus imperative) for ensuring that the parties and the public understand the logic behind judicial decision-making.' (Zalnieriute & Bell, 2021: p. 13). See also the cases of Nnonye v. Anyichie (2005) 2 NWLR [Pt. 910] 623 at 656, Oguntade, JSC and Gadi V Male (2010) 7 N.W.L.R (Part 1193) 225, the later in which the Supreme Court of Nigeria held that, *"Judicial discretion implies that a court must act according to rules, reason and justice."* Thus, it is better to reason as did Zalnieriute & Bell, 2021 that "automated systems are not useful in discretionary decision-making" (Zalnieriute & Bell, 2021: p. 18).

It is to be appreciated that there also exists the problem that human beings do not reason like machines, in fact machines do not reason, but regurgitate whatever information that has been fed into them. That is why man can hardly interpret the interactions among data and algorithms or interface with these machines on the same level, "even if suitably trained." In the words of Zalnieriute & Bell, 2021, "Even if we could read the code, we may not be able to understand how the ML system generated its results, as it has gone through a recursive process of refining its results and adjusting the 'weight' accorded to a multitude of different variables." What this translate into is that, the hallowed core judicial values of impartiality, transparency, independence, diversity, efficiency, speedy trial and accountability may be eroded with time, and even worse than that, "compromised." (Zalnieriute & Bell, 2021: p. 14, 22). For Llagami, 2024, it is rather important to seriously consider the the potential disruptive effects of AI deployment in the administration of justice and the necessity of new forms of accountability are also emphasized" (Naureda Llagami 2024: 68).

In Nigeria, shifting from "paper-based cadastres . . . to a digital system will require investment in terms of time and funds in relation to accurate updating of records." And it is at this stage that I want to place emphasis, since the transition being canvassed, Naureda Llagami says is in three stages each representing a distinct level of technological advancement. The first stage defines electronic stage, with the initial integration of electronic equipment into the working processes of courts, predominantly featuring the utilization of computers as machines for the purpose of information generation and storage. (Naureda Llagami 2024: 67). The second stage presents with the use of smart hardware and software that can actively process and deliver information. Smart applications are capable of exchanging and connecting data with one another, and they can also elaborate on this data at a more advanced level. We have some aspects of this stage actively merged with that presided over by AI. This stage in Nigeria is where we now have electronic reporting, and such other devices, including reliance by the Police and security on DNA profiling, etc. It is

anticipated that this stage will serve as the subsequent progression in the development of justice. (Naureda Llagami 2024: 68). Institutional reforms that eradicate corruption, discrepancies and inconsistencies in land records play an important role in the success of this innovation (Dhru, Nikam & Barendrecht 2024: 40, 41).

In the same way, the use of electronic, technological and scientific devices for surveillance, CCTV and E-kiosks and web Portal/media have come under attacks especially, if and when they are alleged to be based on incorrect data collation, unrepresentative of the population and biased against any community. In certain cases, the devices and equipment hired or bough into by the law enforcement agencies are from 3rd parties, that were developed by private companies for profit and where, the data loaded remains with the private owners of the data. The act of courts accessing that kind of data, domiciled with private companies may be taken to be akin to be a "black box—the workings of which are unknown." This would violate the fundamental human rights of the accused/defendant to "equality of arms and access to evidence" (Dhru, Nikam & Barendrecht 2024: 41). In other cases, the use of E-kiosks and web Portal/media may be hampered by lack digital literacy in poor and developing countries like Nigeria, where the costs of investment and training in digital electronic filing, electronic case management and electronic virtual hearings are costly, and where contending demands on the lean resources of government always act as a barrier to full scale adoption. (Dhru, Nikam & Barendrecht 2024:.42).

Finally, there are the attendant risks of cybersecurity, hacking and infrastructural deficit could pose a serious risk to the use and dependence on electronic and technologically based court management of cases. This will invariably impinge on the citizens' right to privacy.

Conclusion

The issue that occupied us was how to solve the problem of accessibility, costs of litigation, delays and sluggishness in judicial services to the members of the public. This article examined how the introduction of science, technology and others can drive our justice delivery system to its enviable heights, almost in the same way it is been experienced in India, and other nations studied herein. It is anticipated that technological innovations, machine learning and AI would be extremely useful in how we use digital devices and the internet, e-filing, webportal and media platforms which would help everyone. It was a positive signal when the Supreme Court of Nigeria ruled in a matter to determine if virtual hearing was constitutional, that it was, and also that hearing notices are good if sent through emails, text messages and other social media posts.

We look forward to a period when the courts and Nigerian Courts and the security agencies would be enabled by computer enabled electronic data analysing facilities, when they can rely on these electronic instruments and devices to identify crime patterns, predict potential criminal activities, and allocate resources more effectively, carry out predictive policing, use machine learning algorithms to forecast where crimes are likely to occur, act proactively to prevent crimes and to file charges against the Police and other security agencies. We also anticipate that artificial intelligence (AI) will largely transform legal research, case management. AI-powered tools can quickly analyze vast amounts of legal documents, case laws, and streamline administrative tasks, improving the efficiency of legal proceedings. Such platforms like LexisNexis, Legal Pedia and

Law Pavilion would be made less costly and accessible by legal practitioners, which have been held to provide lawyers with easy-to-reach relevant information and case laws, and reputed to drastically reduce the time required for legal research. We also look forward to our courts using AI to handle case management systems, to streamline administrative tasks which in most times involve a huge cache of documents to improve the efficiency of legal proceedings. We also propose that we explore the use of AI and machine learning tools, predictive models, and such other programs designed for court administration to assist the courts to make judicial decision-making, provide insights into the type and form of the offences and hence, help in designing the sentencing patterns and case outcomes based on historical data.

Susskind (Susskind, 2019) argues that scientific and technological innovations should be adopted and relied upon to promote legal services to the hinterland, everywhere the internet has reached. It is expected that this will enable virtual court hearings, remote consultations, and online document submissions, which would assist the local people to embrace adjudication, instead of resorting to violence and self help.

The only logical and clever conclusion that can be drawn at this point in time is having provided a copious examples and list of advantages derivable from science and technology applied to the operations of our courts, we should back calls for its full utilization and use in our courts. This is because science and technology can improve accessibility, efficiency, and accuracy, they can greatly improve the way justice is administered. More so, integrating scientific and technological innovations into justice delivery system, would definitely remove legal hurdles on the way to expanding the reach of the people to justice. What we recommend here is that to guarantee a just and egalitarian system, then let it address important areas of concern to the people such as the problems with digital evidence, data privacy, algorithmic bias, ethical issues, and the requirement for complete legal frameworks. We should pursue the enactment of a strong legal and regulatory structures, the resolution of ethical issues, and the maintenance of equity and responsibility, the legal system can efficiently leverage the advantages of science and technology while minimising the related difficulties.

The use of technology in the justice system presents significant opportunities to make access to justice possible but also creates newer risks, barriers and vulnerabilities. Generally, court systems and other government justice institutions use technology for reasons such as the following: Technology can provide economies of scale. Processes can be standardised and be delivered at lower costs and at higher quality. The costs of communication can be limited, thus saving travel costs and waiting times. Online files can be stored with backups and ensure paper files cannot be lost, manipulated, or ruined without a trace. (Dhru, Nikam & Barendrecht 2024: P. 47).

Recommendation

Following on the back of the above, I unhesitantly and “scientifically” recommend as follows:

a. The Government should organize and mandate the office of the Honourable Attorney General of the Federation (AGF), States’ Attorney Generals, Chief Justice of Nigeria and Chief Justices of the States and Abuja, to liaise with the leadership of the National

Assembly to set up appropriate laws that will serve as the basis for the full scale introduction and adoption of science and technology in our court and justice system to produce and defend the core judicial values such as impartiality, transparency, independence, diversity, efficiency, speedy trial and accountability.

b. The Federal Government should without wasting time, set up a body to be known as, the national Agency/Commission for the Digitalisation of the Judiciary in Nigeria, and to be replicated in all the States of the Federation and the Federal Capital Territory, Abuja mandated on how best to deploy technology in courts and to find ways to adopt and/or implement such legal tools and devices which will assist in virtual hearings, case management, web-portals and media administration and others like Microsoft Teams, Google Docs, Legodesk, cloud-based platforms and collaboration tools, etc. (Alejandro Ponce, 2020).
c. That the Federal Government and State Governments should pursue the funding of the body so set up in (b) above as a priority, to assure Nigerians of speedy trial of matter brought to court, impartiality, transparency, to build up confidence and trust in the judiciary as the hope of the common man.
d. That the National Assembly should step up its oversight functions, as the foremost organ of government pursuant of Part II, Section 4 of the Constitution of the federal Republic of Nigeria, 1999 9as amended), and to legally provide for the monitoring and supervision of the proper functioning of the devices and machine learning tools in court by an agglomeration of nongovernmental organisations and civil liberty groups, and given legal powers to identify irregularities, question and report deviations and noncompliance for appropriate disciplinary actions.
e. Make rules which preserve the non-technology-based access to justice so that areas and persons who may not be able to utilize the digital system would be given a window to opt in or opt out of it, allow the court and the parties to select the most suitable methods for cases being heard and the "circumstances under which technology may be implemented in court proceedings" (Llagami 2024: 71).

Conclusively, I completely adopt the views of "the drafting of a coherent and independent regulation, the harmonization of the legislation with existing laws, the allowance of some flexibility for a variety of exceptions and special use cases, the establishment of obligations regarding readiness, the transition period, and subsequent measures, the preservation of alternative channels for those who wish to opt out or disconnect, and the promotion of data exchange with external systems" (Naureda Llagami p. 77).

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