

The Role of Artificial Intelligence in Anambra State Judiciary Service Delivery

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Abstract

This study empirically investigated the role of artificial intelligence (AI) in Anambra State Judiciary service delivery. In order to determine the relationship between AI and judiciary service delivery in Anambra State, AI was proxy using expert system (ES) and intelligent agents (IA) while service delivery in judicial system was the dependent variable. Two hypotheses were formulated to guide the investigation and the statistical test of parameter estimates was conducted using least squares regression model operated with E-Views.12. Survey design was adopted and data for the study was obtained through e-questionnaire survey sent to the respondents (judicial officers and administrative personnel of Anambra State Judiciary System) through their WhatsApp group platform. The findings of the study indicate that expert system and intelligent agents have positive and significant effect on service delivery in Anambra State Judicial System. Based on this, the study concludes that the use of AI has ensured effective service delivery in Anambra State Judicial System. The study therefore recommends that the application of expert system in Anambra State Judicial System should be encouraged as the use of it has contributed to a more standardized interpretation of laws. Also, Anambra State Judicial System should also embrace the application of intelligent agents considering its economic value and improvement on service delivery in the system

Keyword: Artificial Intelligence; Expert System; Intelligent Agents; Judiciary Service Delivery

1. Introduction

The integration of Artificial Intelligence (AI) into judicial systems represents a transformative global phenomenon that promises to enhance efficiency, transparency, and accessibility of justice delivery. In Anambra State, Nigeria, this technological revolution intersects with a unique socio-legal context characterized by both innovative aspirations and significant systemic challenges. As one of Nigeria's most economically vibrant states, Anambra has demonstrated political commitment to technological innovation through initiatives like the SmartGov Suite developed by the Anambra State ICT Agency (Okoye, 2025). However, the judiciary, a critical pillar of governance and social order remains largely unexplored for AI implementation, despite its documented potential to address persistent challenges in justice administration which calls for further clarity.

The global acceleration of AI adoption in judicial processes contrasts sharply with the gradual hesitant approach within most Nigerian states, including Anambra. While in developed nations, judicial processes are leveraging AI for case prediction, document analysis, and virtual court

proceedings, Nigeria's judiciary struggles with fundamental infrastructural deficits and systemic inefficiencies that complicate technology integration (Bello & Ogufere, 2025).

According to Igbokwe (2024), the adoption of AI in judiciary service requires a complex interplay of technical, ethical, regulatory, and capacity considerations to develop contextual appropriate models suitable for it. Without such investigation, Anambra State risks either missing the transformative potential of AI in justice delivery or implementing inappropriate solutions that exacerbate existing challenges and create new risks for judicial integrity and access to justice.

Also, the absence of comprehensive research on the specific requirements, constraints, and implementation strategies for AI in Anambra's judiciary creates a knowledge gap that hinders evidence-based policy and investment decisions which the present study seeks to sort.

The study therefore examines the multifaceted challenges, opportunities, and considerations surrounding AI implementation in Anambra State's judiciary, situating this inquiry within broader national efforts toward digital transformation in justice delivery

To achieve this purpose, we formulated the following hypotheses:

H₀₁: The use of expert system has no significant effect on service delivery in Anambra State judiciary service.

H₀₂: The use of intelligent agents has no significant effect on service delivery in Anambra State judiciary service.

This study includes several sections. Therefore, the remainder of this study is structured as follows: Section 2 addresses the business rationale (an overview of the current state of the relevant literature). This is followed by Section 3, which deals with the methodology. Section 4 presents and discusses the results, while Section 5 deals with conclusion and recommendations.

2. Review of Related Literature

2.1. Artificial Intelligence (AI)

Russel and Norvig (2021) define AI through four potential goals: systems that think like humans, act like humans, think rationally, or act rationally. The study goes further to state that AI is the study of agents that receive percepts from the environment and perform actions. The EU's landmark regulatory framework (2023) defines AI as software that is developed with one or more of the techniques and approaches [e.g., machine learning, logic-based systems] and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with.

Ijeoma et al. (2024) note that AI is becoming more and more vital in ensuring global sustainability and providing creative ways to improve accountability, efficiency and transparency. AI has the potential to support sustainability in Nigeria's developing tech sector by enhancing stakeholder engagement, internal controls, risk management, financial reporting, and decision-making process. The potential of artificial intelligence to give businesses a greater competitive edge has drawn a lot of attention. According to Ikegwuru et al. (2023), artificial intelligence is the capacity of a machine to act in ways that are connected to human intelligence, such as problem-solving, learning and communication.

According to OECD (2023), an AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their autonomy and adaptiveness after deployment. The broad field of creating machines or software capable of performing tasks that require intelligence when done by humans, while acknowledging that 'intelligence' itself remains an ill-defined and culturally contingent

concept (Mitchell, 2023). AI is a broad field that is consistently growing and has gone beyond artificial narrow intelligence thereby complementing two possible future forms of AI: artificial super intelligence and artificial general intelligence (Riyam, 2023).

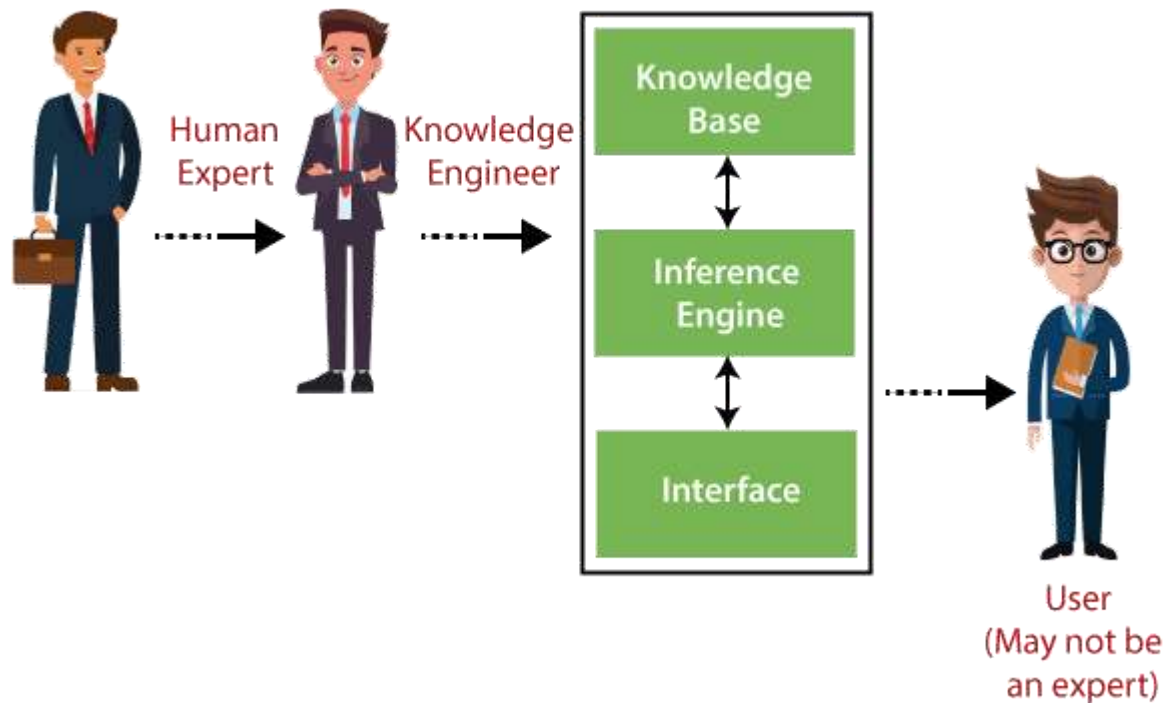
2.1.1 Expert System (ES)

According to Liao (2023), an expert system is a knowledge-based computer program designed to emulate the decision-making abilities of human experts in a specific domain by leveraging structured knowledge bases, inference engines, and rule-based reasoning. Expert systems are a subset of artificial intelligence that utilize symbolic reasoning and domain-specific heuristics to solve complex problems, historically relying on 'if-then' rules but increasingly incorporating hybrid AI techniques (Durkin, 2021).

According to Gavel (2025), an expert system in judiciary services is a domain-specific artificial intelligence (AI) application designed to emulate the decision-making capabilities of human legal experts. It utilizes a knowledge-based architecture to store legal rules, precedents, and statutes, combined with an inference engine that applies logical reasoning to solve complex legal problems, provide recommendations, or assist in judicial processes. These systems are intended to complement rather replace human judges and lawyers, enhancing efficiency, accuracy, and accessibility in justice delivery

Russell and Norvig (2022) opine that a computer system achieves expert-level competence in a specialized task by encoding expert knowledge into a knowledge base and applying logical inference to derive conclusions or recommendations. In the study of Shortliffe and Cimino (2020), the study conceded that an expert system is software created for any issue where a decision must be made from a defined set of options and is supported by logical reasoning. Therefore, an expert system could be used in any field where a person or group has specialized knowledge that is required by others. The pictorial representation of an expert system is explicated on figure 1 below as thus;

Figure 1: Pictorial Representation of Expert System



Sources : <https://medium.com/@nishankkuppa/the-importance-of-expert-systems>

The figure 1 above shows the pictorial representation of expert system used to reproduce the judgment of a human with expert knowledge in a judiciary field.

Expert systems in the judiciary system use a knowledge base and inference engine to emulate human legal experts, assisting with tasks like interpreting laws, predicting legal outcomes, evaluating cases, and managing legal information by analyzing documents, extracting relevant details, and generating consistent decisions based on legal principles. They serve as decision support tools for legal professionals by providing recommendations, making processes more efficient, and offering explanations for their reasoning, thereby improving performance and helping to make well-informed decisions.

Figure 1 above illustrates the following interfaces in arrows as thus;

1. Knowledge Acquisition:

The system gathers legal information from various sources, including legal texts, past case precedents, and expert insights.

2. Knowledge Representation:

The acquired information is structured into a format that the system can understand, often as a set of rules (e.g., “if-then” rules) or case-based logic. Stores vast amounts of legal information, including case precedents, statutes, legal rules, and procedural information

3. Inference Engine:

This component applies the rules to the user’s input, performing logical reasoning to reach conclusions or recommendations

4. User Interface:

This is the part where the user interacts with the system, providing case details and receiving advice or information.

5. Explanation Facility:

A key feature that allows the system to explain how it arrived at a particular decision or recommendation.

2.1.1.1 Specific Uses of Expert System in the Judicial System

i. Legal Consultancy & Advice:

Providing formal consultations and answering legal questions, acting as a source of legal guidance for individuals and other legal professionals.

ii. Case Analysis:

Helping to analyze cases by evaluating evidence and legal factors to predict outcomes or assess the chances of success.

iii. Automated Document Generation:

Creating standard legal documents, contracts, and other forms based on user-provided information.

iv. Electoral Dispute Resolution:

Assisting in handling complex legal scenarios related to elections, such as voter registration issues and candidate eligibility.

v. Domestic Violence Case Management:

Systems like 'UMEED' use AI to provide expert opinions on domestic violence cases, ensuring faster and more informed legal decisions.

vi. Law Enforcement and Profiling:

Tools like PROFILER are used in law enforcement for criminal personality profiling, helping to solve specific types of crime.

2.1.1.2 Benefits of Using Expert System in Judicial System

1. Increased Efficiency:

Automates repetitive and time-consuming tasks, freeing up legal professionals to focus on more complex aspects of their work.

2. Improved Accuracy:

Preserves expert knowledge and can achieve high levels of accuracy by consistently applying rules.

3. Cost-Effectiveness:

Provides affordable and accessible legal assistance to users, reducing the need for costly legal services in certain areas.

4. Enhanced Decision-Making:

Offers insights and recommendations to help legal practitioners make more informed and timely decisions.

2.1.2 Intelligent Agents (IA)

Intelligent agents are software or hardware systems capable of autonomous, flexible decision-making in pursuit of objectives, characterized by reactivity (responding to environmental changes), proactiveness (goal-directed behavior), and social ability (interacting with other agents) (Wooldridge, 2022).

According to McCarville (2025), an intelligent agent in judiciary services refers to an artificial intelligence (AI) system designed to perform tasks autonomously or semi-autonomously within the legal domain by interpreting, reasoning, and making decisions based on legal data and rules. These agents leverage technologies such as machine learning (ML), natural language processing (NLP), and expert systems to assist in judicial processes, enhance efficiency, and improve access to justice

According to IBM Research (2023), an intelligent agent is a computational system that employs machine learning, reasoning, and real-time data processing to autonomously adapt its strategies and achieve user-defined goals, often operating in complex, uncertain environments. Intelligent agents are adaptive systems that learn from interactions with their environment, improving their decision-making policies over time through reinforcement learning or imitation learning, while balancing exploration and exploitation (Stone et al., 2023). The pictorial representation of intelligent agent is explicated on figure 2 below as thus:

Figure 2: Pictorial Representation of Intelligent Agents (IA)



Sources : <https://www.oraclecms.com/blog/different-types-of-intelligent-agents/>

The figure 1 above shows the pictorial representation of intelligent agent used to accomplish specific tasks and achieve desired goals in judiciary service system. It shows how Intelligent agents assist judiciary systems by automating administrative tasks, enhancing legal research and data analysis, and improving access to justice through tools like chatbots and virtual assistants. They help streamline processes, find legal precedents, and offer predictive analytics, though concerns about fairness, transparency, and the impact on human discretion remain significant ethical challenges.

2.1.2.1 The Use of Intelligent Agents in Judiciary Service System

1. Administrative Efficiency:

Document Management: IA helps courts process and manage large volumes of legal documents and case data more efficiently than manual methods.

Digital Recording: IA can assist in the digital recording of hearings and the use of audio-visual links for witnesses, improving administrative processes.

E-Filing and E-Trial Systems: These systems, powered by AI, enable lawyers to access court documents and participate in trials more conveniently.

2. Legal Research and Data Analysis:

Identifying Precedents: AI tools can analyze past rulings to identify relevant case law and legal precedents, helping lawyers and judges.

Pattern Analysis: IA can identify trends in judicial decision-making and legal interpretations, contributing to more consistent application of the law.

Predictive Analytics: Software can analyze data to predict issues like recidivism or potential outcomes, providing support for judges in certain contexts.

3. Access to Justice:

Bridging Gaps: IA-powered platforms can provide affordable legal services, helping to bridge the gap for underprivileged individuals who cannot access high- quality legal services due to financial constraints or distance.

Citizen Support: User-friendly IA interfaces can assist citizens in understanding their rights and navigating legal procedures, democratizing access to legal information.

2.1.2.2 Key Characteristics of Intelligent Agents (IA) in Judicial System

1. **Autonomy:** Intelligent agents operate without continuous human guidance, making decisions based on predefined rules and real-time data analysis
2. **Adaptability:** They learn from historical data and user interactions, improving their performance over time.
3. **Reasoning Capabilities:** These agents analyze complex legal texts, identify patterns, and generate insights or recommendations
4. **Task-Specific Focus:** They are often designed for specific judicial functions, such as legal research, document review, or predictive analytics

2.1.2.3 Benefits of Intelligent Agents in Judicial System

i. Increased Efficiency:

IA accelerates legal processes, reduces manual tasks, and manages vast amounts of data more quickly than human methods.

ii. Improved Consistency:

By analyzing patterns, IA can contribute to a more standardized interpretation of laws and more consistent with the application of judicial decisions.

iii. Enhanced Access to Justice:

IA tools can make legal resources and information more accessible to the public, potentially democratizing access to the legal system.

2.1.2.4 Challenges and Concerns of Intelligent Agents in Judicial System

i. Transparency and Accountability:

The “black box” nature of some AI systems raises concerns about their lack of transparency, which can go against the principles of open justice and due process.

ii. Ethical Considerations:

The use of IA in decision-making, especially in areas like risk assessment, brings up significant ethical questions regarding accountability and fairness.

iii. Human Discretion:

There is a fundamental concern that IA-assisted decision- making might not uphold the values of judicial discretion, as law involves practical reasoning and evaluative judgment that may not be replicable by IA.

iv. Bias:

IA models can inherit biases from the data they are trained on, leading to unfair or biased outcomes if not carefully managed

2.2 Theoretical Framework

The theoretical framework which gives the meaning of a word in terms of the theories on the role of artificial intelligence in Judiciary system established in this study is Technology Acceptance Model Theory

2.2.1 The Technology Acceptance Model (TAM)

This study was guided by the Technology Acceptance Model (TAM) adapted to the judicial context. Technology acceptance model was developed by Davis in 1989 from the Massachusetts Institute of Technology (MIT). The theory offers valuable intuitions on the efficiency and effectiveness of the use of artificial intelligence within the accounting field, judiciary system and other related areas. TAM, a well-established theory, was initially crafted to predict and elucidate how individuals engage with or reject information and communication technology (ICT). Rooted in the Theory of Reasoned Action (TRA), TAM centers on two pivotal factors influencing the adoption of technology: perceived usefulness and perceived ease of use. These factors now play a crucial role in comprehending how professionals perceive and use AI in judiciary system.

TAM provides a theoretical framework for understanding how users come to accept and use technology, focusing on perceived usefulness and perceived ease of use as key determinants of technology adoption. In the judicial context, this framework helps analyze how judges, lawyers, court staff, and litigants might respond to AI technologies based on their perceptions of these systems' utility and usability (Igbokwe, 2024; Omaliko & Akpukpu, 2025).

Additionally, the theory posits on how organizational structures, norms, and practices within the judiciary influence technology adoption processes. The diffusion of TAM informs how AI technologies spread through judicial systems and the factors that accelerate or hinder their adoption (Bello & Ogunfere, 2025).

This theoretical perspective provides complementary lenses for understanding the complex interplay of technological, organizational, and environmental factors that shape AI implementation in judiciary services. Thus, the study was anchored on Technology Acceptance Model Theory.

2.3 Empirical Review

Bello and Ogunfere (2025) evaluated the emerging artificial intelligence legal-judicial system's interface: Assessing the state of Nigeria's judicial readiness by exploring the challenges associated with the adoption of AI in the legal sector, including ethical considerations, data privacy and job displacement. The study concludes by advocating that the Nigeria's judicial system should be reviewed with a view to aligning with the technological revolution driven by AI. By addressing the challenges and implementing the recommended strategies, Nigeria can harness the potential of AI to transform its legal and judicial systems and improve access to justice for its citizens. Against this background, the study recommended for the Nigerian judicial system to effectively navigate the integration of AI into its operations. These should see enhanced digital infrastructure, development of AI-specific policies and regulations, investment in education and training for judges and legal professionals and the fostering of public trust and acceptance of AI technologies. Khadijat (2025) investigated the impact of artificial Intelligence (AI) on legal system in Nigeria. The study noted that the ability of AI to emulate human thinking, sift through immense quantities

of information, and learn and enhance with each iteration has immense innovation potential in legal frameworks. Legal practitioners, like professionals in most fields, are now embracing AI-driven tools that promote productivity, improve operations, and improve decision-making processes. The study went further to stress that the incorporation of AI into the legal profession is promising to yield advantages such as cost reduction, improvement of efficiency, and improved accuracy in legal decision making. With more influence of AI entering legal practice, however, it introduces a host of ethical, legal, and regulatory challenges. Also, the study reported that AI poses problems for traditional legal systems, as they were designed to take into account passive systems, not active ones. The study therefore recommended the need for a balanced regulatory environment for ensuring ethical use of AI while protecting individuals' rights and upholding justice in the legal system.

Kehinde et al. (2024) ascertained the relationship between artificial intelligence and judicial system in Nigeria. The study noted that artificial intelligence (AI) is the development of machine technology to mimic human intelligence, resulting in increased efficiency in the performance of jobs previously undertaken by humans. Over time, research into AI has revealed that it is a fascinating contribution to the world of technology as we know it, as well as other fields of human endeavor such as legal practice, justice administration, financial services, insurance, health, and so on. In the field of law, the emergence of artificial intelligence (AI) in developed countries has had an impact on their legal systems. The study concluded that it is nearly impossible for a legal practitioner to do well without technology due to its efficacy. Thus, the introduction of artificial intelligence into law makes the creation of legal databases easier and portable, communication and processing faster and more efficient, and, most importantly, data research easier and more reliable. The study therefore recommends that the Nigerian government and all relevant stakeholders should ensure that AI is introduced to the judicial system in the country.

Ubanyionwu (2024) examined the potential benefits of artificial intelligence in improving efficiency and accuracy in legal proceedings in the Nigerian legal system. The study found that the application of AI in legal contexts is not uniform across jurisdictions, but there has been a discernible trend towards its adoption, particularly in advanced legal systems in the United States, the European Union and in Asia countries like China. The integration of Artificial Intelligence (AI) into the Nigerian legal system holds significant potential for enhancing the efficiency and accuracy of legal proceedings. With the adoption of artificial intelligence (AI) in the Nigerian judicial system, the numerous challenges like delays in case resolution, a backlog of cases, and inconsistencies in judicial decisions would be things of the past. The study therefore recommends for the use of artificial intelligence in judicial system as it addresses all issues by automating routine tasks, predicting case outcomes, and ensuring consistent application of the law.

Adeoye (2023) investigated the role of artificial intelligence (AI) in revolutionizing criminal justice in Nigeria. The study found that AI is increasingly being deployed to automate repetitive tasks, streamline processes, and handle vast amounts of data, resulting in more efficient case management and faster resolution of criminal cases. The study went further to note that AI makes data-driven decision-making possible through algorithms that can analyze large datasets, identify patterns, and provide insights for quick and quality decision-making by stakeholders. Also, the study found that some of the challenges limiting the development include concerns about privacy and data security, lack of requisite training and expertise in handling AI systems, skepticism from stakeholders and potential biases in AI algorithms, among others. It argues that the technical and ethical concerns associated with AI should not be ignored in order to build public trust and confidence in its integration. Conclusively, it recommends that collaborative efforts among all

stakeholders are indispensable in charting a sustainable path towards leveraging AI for a more efficient criminal justice system.

3. Methodology

The study adopted a survey design in order to examine the role of artificial intelligence in service delivery in judiciary system in Nigeria Anambra state judicial system as a reference point. It is a design that incorporates personal interview, observation, and questionnaire to ensure corroboration of facts, thus ensuring the validity and reliability of the data collected. The Anambra State Judiciary system covered in the study includes High Court, Magistrate Court and Customary Court at Awka Metropolis. Data for the study was collected through the use of e-questionnaire survey (Google Form) sent to the respondents (judicial officers and administrative personnel of Anambra State Judiciary System) through their WhatsApp group platform out of which 52 responses were recorded and received and were used in the data analysis. The e-questionnaire survey was designed where respondents were asked to assess the role of artificial intelligence in service delivery in Anambra State Judiciary system in Nigeria using Likert five point scales referred as: (1) To a Very High Extent (THE), (2) To a High Extent (HE), (3) Neutral (N), (4) To a Very Low Extent (TLE) and (5) To a Low Extent (LE).

The collected data was transformed to scale measurement using Likert five-point scale and the hypotheses were statistically tested using Least Squares Regression Model with the aid of E-Views 12.

3.1 Model Specification

In line with the previous studies, the present study designed a model to examine the role of artificial intelligence in service delivery in Anambra State Judiciary system. The functional model for the study is shown below as thus:

$$SD = F(ES, IA)$$

The explicit form of regression designed for the study is shown in equation below as thus:

$$SD = \beta_0 + \beta_1 ES + \beta_2 IA + \varepsilon$$

SD = Service Delivery

ES = Expert System

IA = Intelligent Agents

μ = Stochastic Term

$\beta_1 - \beta_2$ = Coefficient of Regression Equation

β_0 = Constant coefficient (intercept) of the model

'A Priori' is given as: $\beta_0, \beta_1, \beta_2 > 0$

Decision Rule: accept H_0 if P-value $> 1-5\%$ significant level otherwise reject H_0

4. Data Analysis and Results

4.1 Distribution of Respondents Responses

The distribution of the respondents responses was exposted on table 4.1.1 below as thus:

Table 4.1.1: Analysis of the Respondents Responses

Item	Respondents	Percentage
Courts		
1 Anambra State High Court	28	54
2 Anambra State Magistrate Court	16	31
3 Anambra State Customary Court	8	15
Total	52	100.00

Source: Field Survey (2025)

Table 4.1.1 above shows that 28 respondents representing 54% of the respondents were the judicial officers and administrative personnel of Anambra State High Court; 16 respondents representing 31% of the respondents were the judicial officers and administrative personnel of Anambra State Magistrate Court while the remaining 8 respondents representing 15% of the respondents were the judicial officers and administrative personnel of Anambra State Customary Court.

4.2 Descriptive Statistics

The descriptive summary is a set of methods used to summarize and describe the main features of a dataset such as its central tendency, variability and distribution. Thus provides an overview of the data and help identify patterns and relationships between variables. This is shown on table 4.2.1 as thus:

Table 4.2.1: Descriptive Statistics

	SD	ES	IA
Mean	4.520000	4.550000	4.340000
Median	4.500000	4.500000	4.400000
Maximum	4.700000	4.650000	4.600000
Minimum	4.400000	4.200000	3.900000
Std. Dev.	0.109545	0.130384	0.296648
Skewness	0.867528	0.363173	-0.562764
Kurtosis	2.729167	1.628028	1.897340
Jarque-Bera	0.642452	0.502060	0.517224
Probability	0.725259	0.777999	0.772123
Sum	22.60000	21.30000	21.70000
Sum Sq. Dev.	0.048000	0.063000	0.352000
Observations	5	5	5

Source: E-View 12 Computational Results (2025)

From Table 4.2.1 above, the mean (average), maximum values, minimum values, standard deviation and Jarque-Bera Statistics (Normality Test) were shown. The results provide some insight into the determinants AI (expert system and intelligent agents) and its effect on judicial system in Anambra State Nigeria. Firstly, it can be observed that the sampled respondents were characterized by a positive service delivery (SD) value of 4.52. This implies that service delivery

in judiciary system is determined by artificial intelligence. The distribution is platykurtic since the kurtosis (2.73) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.73 is greater than 0.05, which means that the distribution of service delivery in Anambra State Judicial System comes from a normal distribution. The average value of expert system (ES) for the sampled respondents was 4.55 with a standard deviation value of 0.13. This implies that expert system enables services delivery in Judicial System in Anambra State at a degree risk of 13%. There is also a variation in maximum and minimum values of ES which stood at 4.65 and 4.20 respectively. This wide variation in ES values among the sampled respondents justifies the need for this study that expert system is a determinant of effective service delivery in Anambra State Judicial System in Nigeria. The distribution is platykurtic since the kurtosis (1.63) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.78 is greater than 0.05, which means that the distribution of expert system is not different from a normal distribution. The mean value of intelligent agents (IA) for the sampled respondents was 4.34. This means effective service delivery in Anambra State Judicial System is determined by the intelligent agents. There is also a variation in maximum and minimum values of IA which stood at 4.60 and 3.90 respectively. This high variation in IA values among the sampled respondents justifies the need for this study that effective service delivery in Anambra State Judicial System is determined by intelligent agents at a degree risk of 30%. The distribution is platykurtic since the kurtosis (1.89) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.77 is greater than 0.05, which means that the distribution of intelligent agents does not deviate from normal distribution.

4.3 Correlation

Table 4.3.1: Correlation Matrix

	SD	ES	IA
SD	1.0000		
ES	0.2910	1.0000	
IA	0.4139	-0.8608	1.0000

Source: E-Views 12 (2025)

Table 4.3.1 above shows the relationship between all pairs of independent variables and dependent variables used in the regression model. It reveals that all the independent variables have positive correlation with the dependent variable (SD) while some of the components of artificial intelligence has negative relationship with one each other. The values on the diagonal are all 1.0000 which shows that each variable is perfectly correlated with itself.

In checking for multi-collinearity, we noticed that no two explanatory variables were perfectly correlated. This means that there is an absence of multi-collinearity in our models. Multi-collinearity between the explanatory variables may result to wrong signs or implausible magnitudes in the estimated model coefficients and the bias of the standard errors of the coefficients.

4.4: Test of Hypothesis

Table 4.4.1: Result on the Role of AI in Service Delivery in Anambra State Judiciary System

Dependent Variable: SD

Method: Least Squares

Date: 09/04/25 Time: 10:48

Sample: 1-5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ES	0.167362	0.037653	4.444852	0.0004
IA	0.408994	0.105913	3.861603	0.0029
C	8.366768	1.464375	5.713542	0.0000
R-squared	0.757441	Mean dependent var	1.028979	
Adjusted R-squared	0.729419	S.D. dependent var	3.015098	
S.E. of regression	2.939653	Akaike info criterion	5.006985	
Sum squared resid	2030.766	Schwarz criterion	5.050753	
Log likelihood	592.8312	Hannan-Quinn criter.	5.024624	
F-statistic	7.160587	Durbin-Watson stat	2.230972	
Prob(F-statistic)	0.000958			

Source: E-View Computational Results (2025).

4.5: Discussion of Findings.

The coefficient of determination R^2 shows 0.76 indicating that the overall model explained 76 percent of the total variations in the dependent variable (service delivery in Anambra State Judicial System). Thus, shows that these variables (ES, IA) can only explain 76 percent of change in service delivery in the system leaving 24 percent unexplained. This is to say that there are other factors that can contribute to effective service delivery in Anambra State Judicial System other than the use of AI. The sig. (or p-value) is .0001 which is below the .01 level; hence, we conclude that the overall model is statistically significant, or that the variables have a significant and joint effect on the dependent variable. With this, the researcher affirms the validity of the regression model adopted in this study.

The results of the regression are therefore slated below as follows:

H₀₁: The use of expert system has no significant effect on service delivery in Anambra State judiciary service.

This hypothesis was tested and the result of this regression as expounded on table 4.4.1 indicates that the relationship between ES and SD is positive and significant. This is justified with the P-value (significance) of 0.0004 which is less than the 1% level of significance adopted. Likewise the result of positive coefficient of 0.167 indicates that expert system is a determinant of effective service delivery in Judicial system in Anambra State Nigeria. We consequently rejected null hypothesis and accepted the alternate hypotheses which contends that the use of expert system has significant effect on service delivery in Anambra State Judicial Service. This is in tandem with the

finding of Bello and Ogunfere (2025), Khadijat (2025) and Adeoye (2023) who found that the use of AI ensures service delivery in judicial system.

H₀₂: The use of intelligent agents has no significant effect on service delivery in Anambra State judiciary service.

This hypothesis was tested and the result of this regression as exposit on table 4.4.1 indicates that the relationship between IA and SD is positive and significant. This is justified with the P-value (significance) of 0.0029 which is less than the 1% level of significance adopted. Likewise, the result of positive coefficient of 0.4089 indicates that intelligent agents ensure effective service delivery in Anambra State Judiciary System in Nigeria. We consequently rejected null hypothesis and accepted the alternate hypotheses which contends that intelligent agents has significant effect on service delivery in Anambra State Judiciary Service in Nigeria. This is in agreement with the priori expectations of Kehinde et al. (2024) and Ubanyionwu (2024) who reported that artificial intelligence usage enables effective service delivery in judicial process in Nigeria.

5. Conclusion

The study examined the role of artificial intelligence in Anambra State judiciary service delivery. In addressing this role, the study employed a survey research design, using e-questionnaire sent through an online platform seeking responses from judicial officers and administrative personnel of Anambra State Judiciary System. The results from the inferential analysis revealed that judiciary service delivery in Anambra State Nigeria is positively affected by the application of artificial intelligence. Thus, the study concludes that the use of AI has enabled and ensured effective service delivery in Anambra State Judiciary System. Also, it has contributed to a more standardized interpretation of laws and more consistent with the application of judicial decisions.

5.1 Recommendation

In lieu of the findings of the study, the following recommendations were made:

1. The study recommends that the application of expert system in Anambra State Judicial System should be encouraged as the use of it has contributed to a more standardized interpretation of laws.
2. Anambra State Judicial System should also embrace the application of intelligent agents considering its economic value and improvement on service delivery in the system

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Appendix 1

QUESTIONNAIRE

SECTION A: Personal Data of Respondent

Sex: Male ☐ Female ☐

Table Water Brands: Ugochukwu Nwankwo and Co Chartered Accountants ☐, Muobike & Co Chartered Accountants ☐, Okwudili & Associates ☐, Nnamdi Azikiwe University Consultancy Services (NAUCS) ☐, Eze & Eze Chartered Accountants ☐

SECTION B: Questionnaire Items

Instruction: Kindly read through all the item statements carefully and indicate your response against each statement by ticking [☒] in the appropriate column using the following response:

To a Very High Extent (TVHE)

To a High Extent (THE)

Neutral (N)

To a Low Extent (TLE)

To a Very Low Extent (TVLE)

CLUSTER I: Service Delivery (Dependent Variable)

S/N	STATEMENTS	TVHE	THE	N	TLE	TVLE
1	How does the integration of AI tools influence the accuracy and efficiency of service delivery in Judicial System in Anambra State?					
2	How does organizational culture, regulatory frameworks, or resource limitations contribute to these challenges of AI adoption?					
3	To what extent do AI-driven judicial system introduce ethical risks, such as algorithmic bias or reduced transparency, and how can it mitigate these concerns?					
4	How are AI technologies reshaping the roles and skill requirements of staff of Anambra State Judicial System, and what training or reskilling strategies are necessary to bridge emerging competency gaps?					
5	Does future trends in AI hold the greatest potential to revolutionize service delivery in Judicial System in Anambra State?					

CLUSTER II: Expert System

S/N	STATEMENTS	TVHE	THE	N	TLE	TVLE
1	How prevalent is the adoption of expert systems in Anambra State Judicial System, and what factors drive or hinder their usage?					
2	Do expert systems enhance decision-making accuracy in complex judicial process scenarios within Nigeria?					
3	These are the primary challenges (e.g., cost, training, resistance) judicial system face when implementing expert systems					

4	Compliance checks and risk assessment are most transformed by expert systems in Anambra State Judicial System Nigeria?					
5	How might expert systems reshape the service delivery in Anambra State Judicial Process over the next decade?					

CLUSTER III: Intelligent Agents

S/N	STATEMENTS	TVHE	THE	N	TLE	TVLE
1	How do intelligent agents streamline real-time monitoring and reporting in Anambra State Judicial System?					
2	Transaction tracking, documentation review) are most automated by intelligent agents in Nigeria?					
3	How do the staff of Anambra State Judicial System view the balance between intelligent agent autonomy and human oversight?					
4	Cybersecurity risks emerge from deploying intelligent agents in Anambra State Judicial Ecosystems?					
5	To what extent could intelligent agents reduce operational costs in Anambra State Judicial System?					