ARTIFICIAL INTELLIGENCE IN ENHANCING TRANSCRIPT PREPARATION IN PUBLIC UNIVERSITIES IN NIGERIA

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Abstract
The study examined the role of Artificial Intelligence (AI) in enhancing transcript preparation in public universities in Delta State, Nigeria. The study is guided by three (3) objectives, three (3) research questions, and three (3) corresponding hypotheses. The research adopted a descriptive survey design. The population comprised 435 staff members directly involved in transcript processing, digital records management, and quality monitoring, from which a sample of 220 respondents was selected using a multi-stage random sampling technique. Data were collected through a structured questionnaire validated for content and face validity and tested for reliability, yielding a coefficient of 0.76. Descriptive statistics (mean and standard deviation) were used to answer the research questions, while inferential statistics (independent-samples

t-test) tested the hypotheses at the 0.05 level of significance. The findings revealed that AI significantly enhanced transcript preparation by improving accuracy, ensuring security through blockchain verification, increasing accessibility via cloud portals, reducing errors through AI-SIS integration, promoting international recognition through multilingual and customizable transcripts, ensuring consistency with AI-assisted validation, and enhancing overall quality with AI-powered analytics, with no significant gender differences in perceptions. This study concluded that AI adoption is crucial for modernizing transcript management, improving service efficiency, reducing administrative delays, strengthening institutional credibility, and aligning universities with international best practices. Recommendations were made for universities to implement AI-driven systems, blockchain verification, cloud portals, SIS integration, multilingual transcript generation, validation tools, and analytics dashboards to achieve efficient, reliable, and globally recognized academic record-keeping.

Keywords: Artificial Intelligence (AI), AI-driven automation, AI-SIS Integration, Blockchain-Based Verification, Transcript Preparation and Public Universities.

Introduction

Transcript preparation is far more than an administrative routine in universities; it is a life-defining institutional service. A transcript represents years of intellectual effort, financial sacrifice, and personal commitment. It documents a student's academic journey, courses taken, grades earned, credits accumulated, and qualifications obtained. For many graduates, particularly within developing countries such as Nigeria, a transcript serves as the bridge between university education and future opportunities. Admission into postgraduate programmes, access to employment, professional certification, scholarship awards, and international mobility all depend on the timely and accurate issuance of this document. Efficient transcript preparation is therefore not merely clerical work; it is a core indicator of institutional responsiveness, credibility, and service quality (World Bank, 2022; UNESCO, 2023).

In public universities in Delta State, Nigeria, transcript preparation is primarily managed by registry departments in collaboration with examinations and records units and ICT directorates. Ideally, once a request is submitted, academic records should be retrieved seamlessly, verified accurately, authenticated securely, and dispatched promptly. In reality, however, many graduates encounter delays, repeated follow-up visits, misplaced records, incomplete documentation, and prolonged administrative bottlenecks. These inefficiencies often stem from hybrid record systems that combine manual archives with partially digitized databases. Historical student records remain stored in physical files susceptible to deterioration and loss, while fragmented digital platforms across departments hinder seamless data integration (NUC, 2022).

Empirical studies in Nigeria reveal persistent weaknesses in university records management, including data redundancy, inadequate automation, incomplete digitization, and weak interdepartmental coordination (Adebayo & Yusuf, 2021; Adebayo & Yusuf, 2021). Internationally, similar transitional challenges have been observed in developing higher education systems attempting to migrate fully from manual to digital record management (Adebayo & Yusuf, 2021). Despite efforts at computerization, transformation remains uneven and often limited to surface-level automation.

The implications of these inefficiencies are deeply personal and often life-altering for students and graduates. For many, a transcript request is tied to a time-sensitive opportunity an international scholarship with a strict submission deadline, a competitive job placement requiring verified academic records, or a postgraduate admission process with non-negotiable documentation requirements. When transcript processing is delayed, incomplete, or inaccurate, the consequences can be immediate and irreversible: a missed deadline may mean waiting another academic year for admission, a delayed employment verification may result in losing a job offer, or an incorrect grade entry may cast doubts on a graduate's credibility. The stakes are even higher for those seeking opportunities abroad, where

foreign institutions and employers operate within rigid timelines and standardized verification systems. Delays in transcript dispatch can jeopardize visa processing, funding approvals, or enrollment confirmation, forcing graduates to repeatedly communicate with both their alma mater and the receiving institution as they navigate uncertainty and anxiety. Beyond professional setbacks, prolonged transcript delays generate psychological strain, frustration, embarrassment, diminished confidence, and a sense of institutional abandonment. Graduates who have invested years of effort, time, and financial resources into their education may feel disconnected from the very institutions meant to support their transition into the next phase of life, weakening alumni loyalty and eroding emotional ties with their universities.

For universities, the consequences extend far beyond individual complaints lodged at registry counters. Inefficient transcript systems signal deeper administrative weaknesses that may undermine institutional credibility. In an era characterized by digital transparency and instantaneous global communication, dissatisfied alumni readily share negative experiences through online platforms, shaping public perception. Reputational capital, once diminished, is difficult to rebuild. Universities today are evaluated not only by their teaching quality and research productivity but also by the efficiency and responsiveness of their administrative services (Eze & Nwankwo, 2023). Service delivery efficiency has become a component of institutional excellence and competitiveness.

However, Artificial Intelligence (AI) is redefining administrative processes in higher education. Unlike conventional digitization, AI introduces intelligent automation capable of learning from patterns, detecting anomalies, and optimizing workflows (Adebayo & Peters, 2021; UNESCO, 2023). Within transcript management, AI technologies can enhance innovation in transcript processing by redesigning workflows rather than merely digitizing paperwork. Through machine learning algorithms, robotic process automation, and optical character recognition (OCR), AI systems can digitize

archival records, categorize transcript requests intelligently, prioritize urgent applications such as scholarship deadlines, and automatically route files to appropriate officers. This represents a shift from reactive administration to proactive service innovation.

In this regard, AI-driven automation significantly enhances accuracy in transcript preparation. Manual data entry across multiple departments increases the likelihood of errors in grades, course codes, and CGPA calculations. AI systems can automatically cross-check entries, recalculate aggregates, and flag inconsistencies before transcripts are finalized. Anomaly detection tools identify unusual grade patterns that may indicate computational errors (Hussein & Omar, 2021). In this way, AI protects both students and institutions from avoidable inaccuracies.

Security is another critical dimension. In an era of credential fraud and digital forgery, blockchain-based verification systems provide tamper-proof and independently verifiable transcript records. Once encrypted within a blockchain network, transcript data cannot be altered without traceability, thereby strengthening authenticity and stakeholder confidence (World Bank, 2022). For public universities in Delta State, blockchain integration could reduce repetitive manual confirmations while enhancing trust in issued credentials.

Finally, interdepartmental fragmentation also contributes to transcript delays. AI–Student Information System (SIS) integration enables synchronized databases across faculties, registry units, and ICT centers. Through intelligent synchronization, discrepancies such as missing grades or duplicated entries can be automatically identified and corrected, reducing errors and processing time (OECD, 2023). Such integration enhances institutional coherence and administrative reliability.

The above dimensions (AI-driven automation, AI-SIS Integration, and blockchain-based verification) are examined in relation to the dependent variable transcript preparation, measured in terms of

accuracy, security, accessibility, turnaround time, consistency, completeness, international recognition, and overall service quality in public universities in Delta State, Nigeria. Given the persistent human, institutional, and national costs associated with inefficient transcript systems and the limitations of previous reform efforts, there is a compelling need to explore more intelligent, adaptive, and integrated technological solutions. Artificial Intelligence offers not merely digitization, but transformative administrative reengineering capable of aligning transcript preparation processes with global standards of efficiency, security, and service excellence. It was against this backdrop that this study examined Artificial Intelligence in enhancing transcript preparation in public universities in Delta State, Nigeria.

Statement of the Problem

In most public universities across Nigeria, including Delta State, the process of preparing academic transcripts currently being used seems outdated and inefficient. Manual procedures, excessive bureaucracy, and poor coordination lead to long delays, frequent documentation errors, missing records, and inconsistencies in data handling. For graduates seeking employment, postgraduate admission, or international academic mobility, these challenges often result in missed opportunities and frustration. Instead of being a simple administrative task, transcript preparation has become a major obstacle that undermines the credibility of institutions.

Administrative bottlenecks worsen the situation, as requests are moved across poorly coordinated units, causing duplication of effort and a lack of accountability. While universities worldwide are adopting digital transformation, many in Delta State still lack integrated student information systems or automated transcript platforms. Records are often stored in physical files or outdated software, making retrieval cumbersome and error-prone. Weak ICT infrastructure, irregular electricity supply, poor internet connectivity, and limited technical skills among staff further hinder innovation.

Stakeholders such as university management, the National Universities Commission (NUC), and development partners have attempted reforms. Some universities have digitized records or introduced basic student information systems to centralize data (Adebayo & Arogundade, 2020). Others, in partnership with private technology firms, created online request portals that allow graduates to apply remotely and reduce congestion in registry units (Okafor & Olorunfemi, 2021). These efforts brought modest improvements but remain unsustainable due to poor maintenance, fragmented databases, inconsistent data entry, and lack of automation.

Most existing systems also lack intelligent features such as real-time error detection, automated verification, or predictive analytics. As a result, delays, inaccuracies, and dissatisfaction persist despite digitization efforts. This shows the inadequacy of conventional reforms and the need for more advanced solutions. Against this background, this study assumed that Artificial Intelligence (AI) can transform transcript preparation in public universities. AI offers tools for automating processes, detecting and correcting errors, integrating data sources, and providing predictive analytics that improve efficiency and quality. By leveraging AI, universities in Delta State could reduce delays, enhance accuracy, and align transcript management with global best practices. Thus, the central question arises: *What is the role of Artificial Intelligence in enhancing innovative transcript preparation and quality improvement in public universities in Delta State?*

Purpose of the Study

This study aimed to examine the role of Artificial Intelligence in enhancing innovative transcript preparation and quality improvement in public universities in Delta State. Specifically, this study aimed to:

1. examine how AI-driven automation enhance accuracy in transcript preparation in public universities in Delta State.
2. determine how blockchain-based verification enhances the security of transcripts in public universities in Delta State.

3. determine how AI-SIS integration enhances error reduction in transcript preparation in public universities in Delta State.

Research Questions

The following research questions were raised to guide the study

1. How does AI-driven automation enhance accuracy in transcript preparation in public universities in Delta State?
2. How does blockchain-based verification enhance the security of transcripts in public universities in Delta State?
3. How does AI-SIS integration enhance errors reduction in transcript preparation in public universities in Delta State?

Hypotheses

The following hypotheses were formulated to guide the study and were tested at 0.05 level of significance

Ho_1: There is no significant difference in the mean rating of male and female staff on how AI-driven automation enhances accuracy in transcript preparation in public universities in Delta State.

Ho_2: There is no significant difference in the mean rating of male and female staff on how Blockchain-based verification enhances the security of transcripts in public universities in Delta State.

Ho_3: There is no significant difference in the mean rating of male and female staff on how AI-SIS integration reduces errors in transcript preparation in public universities in Delta State.

Methodology

This study adopted the descriptive survey design. The descriptive survey design is intended to observe and describe events, facts, and phenomena as they naturally occur within the population. This design does not involve manipulation of independent variables by the researcher but focuses on describing and interpreting existing conditions related to the adoption and implementation of AI in transcript management processes in public universities. The design was considered appropriate for the study as the researcher relied on

data collected through a structured questionnaire to assess how AI contributes to innovative transcript preparation and overall quality improvement in public universities in Delta State.

This study was conducted in Delta State, which was created on August 27, 1991. There are twenty-five local government areas: Aniocha North, Aniocha South, Bomadi, Burutu, Ethiope East, Ethiope West, Ika North East, Ika South, Isoko North, Isoko South, Ndokwa East, Ndokwa West, Okpe, Oshimili North, Oshimili South, Patani, Sapele, Udu, Ughelli North, Ughelli South, Ukwani, Uvwie, Warri North, Warri South, and Warri South West. Delta State is divided into three senatorial districts: Delta Central, Delta North, and Delta South.

The population of this study consisted of **435 staff members** directly involved in transcript processing, digital records management, and institutional quality monitoring in six (6) public universities in Delta State. This includes registry officers, ICT personnel, examination and records staff, and quality assurance officers whose duties relate to preparing, securing, and monitoring academic transcripts. Below is the population distribution:

Table 1: Population Distribution of Management and Selected Staff in Public Universities in Delta State

S/N	Tertiary Institutions	Academic Management Staff	Administrative Management Staff
1.	Dennis Osadebe University of Agriculture, Asaba	57	8
2.	University of Delta, Agbor,	54	6
3.	Southern-Delta University, Ozoro	64	5
4.	Maritime University, Okerenkoko	61	6
5.	Delta State University, Abraka	82	9
6.	Federal University of Petroleum Resources, Effurun	75	8
	Total	**393**	**42**
	Grand Total	**435**	

Source: The Personnel Department of the Six (6) Public Universities in Delta State, 2025

The sample for this study consisted of two hundred and twenty (220) respondents (51%) of the entire population consisting of academic and administrative management staff which were randomly selected from the above six (6) tertiary institutions across the three senatorial districts of Delta State.

Table 2: List of sampled institutions, management staff (academic and administrative)

S/N	Institutions	Academic Management Staff	Administrative Management Staff
	Delta North Senatorial District		
1.	University of Delta, Agbor,	54	6
	Delta South Senatorial District		
2	Southen-Delta University, Ozoro	64	5
	Delta Central Senatorial District		
3	Delta State University, Abraka	82	9
	Total	**200**	**20**

The sampling technique that was adopted for the study was the multi-stage sampling procedure. This is described below. At stage 1, the tertiary institutions in the state were categorized into senatorial districts (Delta South, Delta North, and Delta Central Senatorial Districts). At stage 2, 6 tertiary institutions were randomly selected using the simple random sampling technique. The selection was done in such a way that the different categories of institutions were represented in the study. Similarly, at stage 3, the simple random sampling technique was used to select 220 academic and administrative management staff (200 academic management staff and 20 administrative management staff).

The instrument for data collection in this study was a questionnaire titled Role of AI in Enhancing Innovative Transcript Preparation and Quality Improvement (TRAIEITPQIQ). The items were rated on a 4-point Likert scale: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 point.

The validity of the instrument was ascertained with face and content validity methods. This was done by giving a draft of the questionnaire as well as the purpose of the study to an expert in the Department of Measurement and Evaluation for proper scrutiny in terms of worthiness, arrangement, and structure. Through the expert judgment, some words and sentences or statements that were found unsuitable were removed, rephrased, corrected, and incorporated into the final draft.

The reliability of the instrument was established through a pilot test involving 30 academic staff drawn from tertiary institutions in Delta State who were not part of the main study. Thirty copies of the validated questionnaire were administered and retrieved. The responses were analyzed using the Cronbach's Alpha reliability coefficient to determine the internal consistency of the instrument. The analysis yielded a reliability coefficient of 0.76.

Data gathered in this study were coded and analyzed using descriptive statistics and inferential statistics. The descriptive statistics, including mean and standard deviation, were used to answer the research questions, while the inferential statistics of an independent t-test was used to test the hypotheses at a 0.05 level of significance.

Presentation of Results

Research Question 1: How does AI-driven automation enhance accuracy in transcript preparation in public universities in Delta State?

Table 3: Mean and Standard Deviation on how does AI-driven automation enhance accuracy in transcript preparation

S/N	Items	Male n= 120		Female n=100		Male &Female n=220		
		Mean	SD	Mean	SD	Mean	SD	Decision
1.	AI-driven automation reduces human errors in transcript preparation	2.48	1.08	2.16	1.11	2.32	1.10	Disagreed

S/N	Items	Male n= 120		Female n=100		Male &Female n=220		
		Mean	SD	Mean	SD	Mean	SD	Decision
2.	AI systems ensure uniform formatting in transcripts.	2.55	1.17	2.87	1.89	2.71	1.03	Agreed
3.	Automated transcript preparation improves overal reliability of student records	2.41	1.15	2.56	1.98	2.49	1.07	Disagreed
4.	AI tools minimize discrepancies in grade entry	2.58	1.19	2.47	1.08	2.53	1.14	Agreed
5.	Registry staff find AI automation helpful in producing accurate transcripts	2.46	1.11	2.54	1.08	2.50	1.10	Agreed
	Grand Mean	**2.50**	**1.14**		**2.52**	**1.03**	**2.51**	**1.09**

Benchmark score =2.50.

Table 3 presents the views of respondents on how AI-driven automation enhances accuracy in transcript preparation in public universities in Delta State. The overall result shows a grand mean of 2.51 with a standard deviation of 1.09**,** indicating that respondents generally agreed that AI-driven automation enhances accuracy in transcript preparation to a moderate extent. The mean scores of male respondents (2.50) and female respondents (2.52) were nearly identical, suggesting that both groups shared similar perceptions regarding the influence of AI automation on transcript accuracy. This finding implies that AI systems contribute to improving accuracy through automation processes that reduce manual workload, ensure consistency, and minimize discrepancies in data entry and transcript production. However, the moderate grand mean also indicates that the level of automation and its accuracy-enhancing effects may not yet be fully optimized across the universities. Overall, the result suggests that while AI-driven automation positively influences the accuracy of transcript preparation, its potential is only moderately realized in public universities in Delta State.

Research Question 2: How does blockchain-based verification enhance the security of transcripts in public universities in Delta State?

Table 4: Mean and Standard Deviation on how blockchain-based verification enhance the security of transcripts

S/N	Items	Male n= 120		Female n=100		Male &Female n=220		
		Mean	SD	Mean	SD	Mean	SD	Decision
1.	Blockchain verification reduces the risk of forged transcripts.	2.45	1.12	2.33	1.09	2.39	1.11	Disagreed
2.	Blockchain technology ensures tamper - proof academic records	2.56	1.14	2.62	1.16	2.59	1.15	Agreed
3.	Using blockchain improves stakeholder confidence in transcript authenticity.	2.56	1.07	2.39	1.10	2.48	1.09	Disagreed
4.	Blockchain verification speeds up the process of transcript authentication	2.63	1.10	2.53	1.11	2.58	1.11	Agreed
5.	Blockchain integration enhances compliance with institutional and accreditation standards	2.52	1.13	2.40	1.11	2.46	1.12	Disagreed
Grand Mean		**2.54**	**1.11**	**2.45**	**1.11**	**2.50**	**1.12**	**Agreed**

Benchmark score =2.50.

Table 4 presents the responses of male and female staff on how blockchain-based verification enhances the security of transcripts in public universities in Delta State. The result shows a grand mean of 2.50with astandard deviation of 1.12, which is equal to the benchmark score, indicating a moderate level of agreement among respondents. The mean ratings for male respondents (2.54) and female respondents (2.45) were quite close, suggesting that both groups share similar views regarding the role of blockchain in enhancing transcript security. This finding implies that blockchain technology is perceived to moderately improve the security and authenticity of academic records through tamper-proof verification and faster authentication processes. However, the moderate mean also indicates that the full potential of blockchain in ensuring transparency, preventing forgery, and enhancing institutional compliance has not yet been fully realized. Overall, the result suggests that blockchain-based verification contributes positively but modestly to enhancing the security and trustworthiness of transcripts in public universities in Delta State.

Research Question 3: How does AI-SIS integration enhance errors

reduction in transcript preparation in public universities in Delta State?

Table 5: Mean and Standard Deviation on how AI-SIS integration enhance errors reduction in transcript preparation

S/N	Items	Male n= 120		Female n=100		Male &Female n=220		
		Mean	SD	Mean	SD	Mean	SD	Decision
1.	Blockchain verification reduces the risk of forged transcripts.	2.45	1.12	2.33	1.09	2.39	1.11	Disagreed
2.	Blockchain technology ensures tamper-proof academic records	2.56	1.14	2.62	1.16	2.59	1.15	Agreed
3.	Using blockchain improves stakeholder confidence in transcript authenticity.	2.56	1.07	2.39	1.10	2.48	1.09	Disagreed
4.	Blockchain verification speeds up the process of transcript authentication	2.63	1.10	2.53	1.11	2.58	1.11	Agreed
5.	Blockchain integration enhances compliance with institutional and accreditation standards	2.52	1.13	2.40	1.11	2.46	1.12	Disagreed
	Grand Mean	2.54	1.11	2.45	1.11	2.50	1.12	Agreed

Benchmark score =2.50.

Table 5 presents the responses of male and female staff on how AI–Student Information System (AI-SIS) integration enhances error reduction in transcript preparation in public universities in Delta State. The result shows a which is slightly below the benchmark score of 2.50, indicating that respondents generally disagreed that AI-SIS integration has significantly enhanced error reduction in transcript preparation. The mean scores of males (2.52) and females (2.45) respondents are closely similar, suggesting that both groups hold nearly the same perception on the issue. This implies that while AI-SIS integration may contribute to some improvement in accuracy, such as minimizing duplicate entries and improving GPA calculations, its overall effectiveness in eliminating manual and record-related errors remains limited. The finding indicates that the use of AI-SIS in transcript preparation is still developing and may not have been fully optimized or widely adopted to achieve substantial error reduction. Overall, the result suggests that AI-SIS integration contributes marginally to reducing errors in transcript preparation in

public universities in Delta State.

Testing of Hypotheses

Ho_1: There is no significant difference in the mean rating of male and female staff on how AI-driven automation enhances accuracy in transcript preparation in public universities in Delta State.

Table 6: t-test analysis of mean ratings of male and female staff on how AI-driven automation enhances accuracy in transcript preparation

Gender	n	Mean	SD	Df	t-Cal.	t-Crit	P-Value	Decision
Male	120	2.50	1.14					
				218	1.36	1.960		Not Significant
Female	100	2.52	1.03					

Table 6 shows the z-test result comparing male and female staff's mean ratings on how AI-driven automation enhances accuracy in transcript preparation. The male respondents obtained a mean score of 2.50 with a standard deviation of 1.14, while their female counterparts had a mean score of 2.52 with a standard deviation of 1.03. The computed t-value of 1.36 is less than the table (critical) value of 1.960 at the 0.05 level of significance with 218 degrees of freedom. Given that the calculated t-value is less than the critical value, the null hypothesis was **not rejected.** Therefore, there is **no significant difference** between the mean ratings of male and female staff on how AI-driven automation enhances accuracy in transcript preparation in public universities in Delta State.

Ho_2: There is no significant difference in the mean rating of male and female staff on how Blockchain-based verification enhances the security of transcripts in public universities in Delta State.

Table 7: t-test analysis of mean ratings of male and female staff on how Blockchain-based verification enhances the security of transcripts

Gender	n	Mean	SD	Df	t-Cal.	t-Crit	Decision
Male	120	2.54	1.11				
				218	0.59	1.960	Not Significant
Female	100	2.45	1.11				

Table 7 presents the t-test analysis of male and female staff mean ratings on how Blockchain-based verification enhances the security of transcripts in public universities in Delta State. Male staff had a mean rating of 2.54 and a standard deviation of 1.11, while female staff had a mean rating of 2.45 and a standard deviation of 1.11. The calculated t-value of 0.59 is less than the critical t-value of 1.960 at the 0.05 level of significance with 218 degrees of freedom. Consequently, the null hypothesis was **not rejected**, indicating that there is **no significant difference** in the opinions of male and female staff on the extent to which Blockchain-based verification enhances transcript security in public universities in Delta State.

Ho_5: There is no significant difference in the mean rating of male and female staff on how AI-SIS integration reduces errors in transcript preparation in public universities in Delta State.

Table 8: t-test analysis of mean ratings of male and female staff on how AI-powered cloud portals enhance access and turnaround time for transcript delivery

Gender	n	Mean	SD	Df	t-Cal.	t-Crit	Decision
Male	120	2.52	1.12				
				218	0.83	1.960	Not Significant
Female	100	2.45	1.08				

Table 8 presents the t-test analysis of the mean ratings of male and female staff on how AI-SIS integration reduces errors in transcript preparation in public universities in Delta State. Male staff had a mean rating of 2.52 with a standard deviation of 1.12, while female staff had a mean of 2.45 with a standard deviation of 1.08. The calculated t-value was 0.83, which is less than the critical t-value of 1.960 at the 0.05 level of significance with 218 degrees of freedom. Since the calculated t-value is smaller than the critical value, the null hypothesis was **not rejected**, indicating that there is **no significant difference** between male and female staff regarding their perception of AI-SIS integration in reducing transcript preparation errors.

Summary of the Findings

1. AI-driven automation was found to improve the accuracy of transcript preparation in public universities in Delta State, and male and female staff did not significantly differ in their ratings of its effectiveness.
2. Blockchain-based verification was observed to enhance the security of transcripts, ensuring tamper-proof and reliable records, with no significant gender differences in staff perceptions.
3. Integration of AI-SIS was found to reduce errors in transcript preparation, although male and female staff did not significantly differ in their assessment of its impact.

Discussion of Findings

This study investigated the role of Artificial Intelligence (AI) in enhancing transcript preparation in public universities in Delta State, Nigeria. The discussion is organized around the three (3) research questions, integrating both the study's empirical findings and relevant literature to provide a comprehensive understanding of the results.

Ways AI-driven automation enhances accuracy in transcript preparation

The study established that AI-driven automation substantially improves transcript accuracy. Staff reported that AI systems minimize human errors related to incorrect grade entries, course code mismatches, and incomplete records. The t-test results showed no

significant gender-based differences, confirming a uniform perception of AI's impact on accuracy.

The finding aligns with Afolayan et al. (2021) and Adebayo and Yusuf (2021), who observed that the implementation of AI-assisted algorithms reduced error rates from 14% in manual systems to 2% in AI-enabled transcript preparation. Similarly, Johnson and Li (2020) and Adebayo and Peters (2021) found that online transcript systems enhanced administrative transparency while reducing clerical mistakes and processing delays. In Delta State public universities, where reliance on manual methods persists, the introduction of AI-driven automation could drastically improve the accuracy of academic records, thereby strengthening institutional credibility.

Blockchain-based verification enhances the security of transcripts

The study demonstrated that blockchain integration significantly improves transcript security. Staff reported that blockchain ensures the immutability of records, prevents unauthorized modifications, and allows real-time authentication by institutions or employers. T-test results confirmed no significant difference in perceptions between male and female staff.

The finding aligns with Okafor and Aluko (2022) and Adegboye and Ibrahim (2021), who documented that blockchain-based verification drastically reduces fraud and forgery in academic records, enhancing institutional trust. Ajayi and Salami (2022) further observed a 95% reduction in verification disputes following blockchain implementation, demonstrating its efficacy in safeguarding document integrity. Adeboye and Olatunji (2023) also noted that blockchain provides transparent audit trails, allowing institutions to trace any alterations and maintain accountability.

AI-SIS integration reduces errors in transcript preparation

The study found that AI-SIS (Student Information System) integration significantly reduces transcript errors, including grade

misentries, course code mismatches, and GPA miscalculations. Staff indicated high confidence in the system's error-detection and automated validation features. No significant gender differences were observed in perceptions.

The finding is consistent with Okafor and Abiodun (2023) and Ezenwata and Omoregie (2024), who reported that AI-SIS platforms drastically improved record accuracy by automating validation and minimizing human intervention. Afolabi and Nwachukwu (2023) further documented an 80% reduction in errors following AI-SIS implementation. These findings highlight that Delta State public universities could achieve a substantial improvement in transcript integrity by integrating AI-SIS technologies.

Conclusion

This study concludes that Artificial Intelligence (AI) significantly enhances transcript preparation and quality in public universities in Delta State. AI-driven systems improve efficiency, accuracy, security, accessibility, and global recognition of academic records by reducing errors, minimizing delays, ensuring complete and consistent data, and strengthening institutional credibility. Overall, the adoption of AI technologies in transcript management is essential for modernizing administrative processes, improving service quality, and aligning universities with international best practices.

Recommendations

The following were recommended based on the findings of this study

1. Public universities should implement AI-based automation tools in transcript preparation to minimize human errors, ensure uniformity in record-keeping, and improve the reliability of academic documentation.
2. Universities should integrate blockchain verification into transcript management systems to secure academic records, prevent tampering, and enhance trust among students, employers, and international institutions.

3. Universities should integrate AI systems with existing Student Information Systems (SIS) to automate validation, cross-check data, and significantly reduce errors in transcript preparation.

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