

**ARTIFICIAL INTELLIGENCE-DRIVEN COMMUNICATION ACCESSORIES: EXAMINING
THE ADMINISTRATIVE COMMUNICATION EFFICIENCY INFERENCE IN PUBLIC
TERTIARY INSTITUTIONS**

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Abstract

This study examined the relationship between artificial intelligence-driven communication accessories and administrative communication efficiency in public tertiary institutions in Rivers State, Nigeria. The predictor variable, AI-driven communication accessories, was operationalised through two dimensions: AI-powered messaging systems and AI-assisted document generation. The criterion variable, administrative communication efficiency, was measured through two indicators: communication response speed and communication accuracy. The study adopted a correlational survey research design. The target population comprised three public tertiary institutions in Rivers State: Rivers State University (RSU), Captain Elechi Amadi Polytechnic (CEAPoly), and Ignatius Ajuru University of Education (IAUOE). Study elements consisted of Deputy Registrars, Assistant Registrars, and Senior Administrative Officers, whose records were sourced from the Registry/Records Department of each institution. A census of fifteen senior administrative personnel, comprising five respondents drawn in equal number from each institution, constituted the study sample. Data were collected using a structured, validated questionnaire with a Cronbach alpha reliability coefficient of 0.86. Pearson's Product Moment Correlation Coefficient was employed to test four null hypotheses at the 0.05 level of significance. Findings revealed significant positive relationships between all predictor variable dimensions and criterion variable measures. The study concludes that AI-driven communication accessories are significant and strong positive predictors of administrative communication efficiency in public tertiary institutions in Rivers State, Nigeria. It is recommended that tertiary institutions institutionalise AI-powered communication infrastructure and invest in structured capacity development for administrative personnel in the proficient use of AI communication accessories.

Keywords: *Artificial Intelligence-Driven Communication Accessories, AI-Powered Messaging Systems, AI-Assisted Document Generation, Administrative Communication Efficiency, Communication Response Speed, Communication Accuracy, Technology Acceptance Model, Public Tertiary Institutions*

INTRODUCTION

The emergence of artificial intelligence (AI) as a transformative force in organisational operations has fundamentally altered the contours of workplace communication in the twenty-first century.

Across diverse institutional contexts, from multinational corporations to government agencies and educational establishments, AI technologies are progressively deployed to automate routine communication tasks, accelerate information flows, and enhance the quality and consistency of organisational correspondence. This development carries particular significance for the administrative communication function in public tertiary institutions, where the volume, diversity, and urgency of information exchange have grown substantially in the face of expanding student enrolments, proliferating regulatory requirements, multi-stakeholder coordination demands, and the digital imperative that now pervades higher education governance worldwide.

Administrative communication efficiency, understood broadly as the capacity of an institution to generate, transmit, process, and receive information with optimal speed and accuracy, has emerged as a strategic dimension of institutional performance (Alikornwo & Nwinyokpugi, 2025; Getchell et al., 2022; Musheke & Phiri, 2021; Naidoo & Dulek, 2022). When institutional communication systems are characterised by delay, redundancy, and error-proneness, the downstream consequences manifest as impaired decision-making, frustrated stakeholders, delayed regulatory compliance, and diminished institutional credibility. These are not peripheral concerns but core administrative challenges that directly affect the quality of education governance. The adoption of AI-driven communication accessories, spanning AI-powered messaging platforms and AI-assisted document generation systems, presents a compelling intervention for endemic institutional communication bottlenecks.

AI-driven communication accessories leverage natural language processing, machine learning algorithms, and intelligent automation frameworks to enhance the speed, precision, and consistency of organisational communication (Bawack et al., 2021; Hancock et al., 2020; Raisch & Krakowski, 2021). These tools are capable of analysing incoming messages, routing information to appropriate recipients, generating context-sensitive responses, and producing administrative documents with minimal human effort and reduced probability of error. The application of such technologies in public sector and educational institutions, however, remains insufficiently studied in the Nigerian context, particularly in Rivers State, where public tertiary institutions grapple with persistent administrative communication challenges that conventional tools have proven inadequate to resolve.

Empirically, while a growing body of global literature documents the beneficial effects of AI communication accessories on organisational performance (Getchell et al., 2022; Naidoo & Dulek, 2022; Wang et al., 2022), there is a conspicuous deficit of studies examining these relationships within the specific institutional context of Nigerian public tertiary institutions. Existing local studies have concentrated on digital office practices, information security strategy, and administrative service delivery (Alikornwo & Echendu, 2026; Alikornwo & Orisah-Godfrey, 2026; Orisah-Godfrey & Gbafah, 2026), with limited attention to the specific AI communication tool dimensions and their measurable effects on communication efficiency metrics. The present study, anchored on the Technology Acceptance Model (Davis, 1989; Venkatesh et al., 2003), responds to this gap by empirically investigating the relationship between AI-powered messaging systems and AI-assisted document generation on the one hand, and communication response speed and communication accuracy on the other, in selected public tertiary institutions in Rivers State, Nigeria.

Statement of the Problem

Public tertiary institutions in Rivers State operate within administrative environments characterised by high-volume communication demands, hierarchical bureaucratic complexity, and persistent challenges of information lag, correspondence inaccuracy, and inadequate documentation practices. Administrative officers in these institutions are routinely required to draft official correspondence, circulate institutional directives, respond to diverse stakeholder queries, prepare meeting documentation, and coordinate information flows across multiple units and departments. Under conventional communication frameworks and standard-issue office tools, these tasks are time-intensive, labour-demanding, and susceptible to human error. The cumulative effect is a pattern of

institutional communication inefficiency manifesting as delayed responses, inaccurate records, miscommunication between administrative units, and degraded service delivery outcomes.

Although the global and regional literature on AI communication accessories increasingly documents their positive associations with communication speed and accuracy in corporate and public sector organisations (Barinua, 2026; Getchell et al., 2022; Wang et al., 2022), there is a pronounced empirical gap regarding how these tools relate to administrative communication efficiency indicators in Nigerian public tertiary institutions. Existing Rivers State scholarship has addressed digital office practices (Alikornwo & Echendu, 2026), digital office strategy (Alikornwo & Orisah-Godfrey, 2026), information security strategy (Orisah-Godfrey & Gbafah, 2026), and digital transformation in government ministries (Alikornwo et al., 2026), but has yet to empirically isolate the specific relationship between AI-driven communication tool dimensions and measurable communication efficiency outcomes in tertiary institutions. This identifiable gap motivates the present study.

LITERATURE REVIEW

Conceptual Review

AI-Driven Communication Accessories

Artificial intelligence-driven communication accessories encompass a broad category of technology-enabled platforms and applications that leverage machine learning, natural language processing, and intelligent automation to generate, transmit, interpret, and manage organisational communication with minimal or augmented human involvement (Bawack et al., 2021; Raisch & Krakowski, 2021). These tools represent a qualitative shift from conventional communication instruments such as email, telephone, and paper-based correspondence toward intelligent systems capable of learning communication patterns, adapting to contextual demands, and delivering outputs with greater speed and precision (Getchell et al., 2022).

AI-Powered Messaging Systems

AI-powered messaging systems constitute a class of intelligent communication platforms that deploy machine learning, natural language processing, and rule-based or neural network architectures to facilitate, augment, or automate the exchange of messages within and across organisational structures. Hancock et al. (2020) characterise artificial intelligence-mediated communication as interpersonal communication in which an intelligent agent operates on behalf of a communicator by modifying, augmenting, or generating messages to accomplish communication goals. This characterisation underscores the agency of AI within communication processes and draws attention to the fact that AI messaging tools are not merely passive conduits of information but active participants that shape the content, speed, and form of organisational messages. At the institutional level, AI-powered messaging systems include chatbot platforms integrated into intranet environments, AI-augmented email clients that suggest replies and route messages intelligently, and virtual assistant tools that coordinate meeting scheduling, respond to frequently asked queries, and generate standardised acknowledgements in real time.

The operational utility of AI-powered messaging systems in organisational contexts has been extensively documented in the international literature. Wang et al. (2022) established, through a study of 294 marketing employees across United States industries, that both routine and innovative use of AI chatbots were significantly and positively associated with internal and external communication agility, thereby enhancing customer service performance. Similarly, Getchell et al. (2022), in a contribution to *Business and Professional Communication Quarterly*, documented the transformative role of AI messaging and text-generation technologies in professional communication environments, cataloguing AI capabilities in smart reply generation, meeting summarisation, and collaborative drafting as capabilities that collectively reduce the latency and inconsistency characteristic of purely manual messaging practices. Naidoo and Dulek (2022), examining AI text summarisation tools in business communication, further demonstrated that AI systems achieve moderately satisfactory accuracy in generating summaries of complex business communications.

Within the Rivers State context, Barinua (2026) found that chatbot and virtual assistant AI systems had strong positive relationships with hiring efficiency outcomes in commercial banks, with $r = .812$ for quality-of-hire efficiency, confirming that AI messaging tools generate measurable operational efficiency gains in Nigerian institutional contexts.

AI-Assisted Document Generation

AI-assisted document generation refers to the application of artificial intelligence technologies, specifically natural language generation, large language models, and intelligent template systems, to the automated or semi-automated production of organisational documents including reports, circulars, memoranda, official correspondence, minutes of meetings, and policy briefs. Unlike earlier document automation systems that merely merged data into fixed templates, contemporary AI document generation tools are capable of producing contextually coherent, grammatically precise, and institutionally styled documents from minimal human input, thereby substantially compressing the drafting time associated with administrative correspondence (Gbafah, 2025; Getchell et al., 2022; Raisch & Krakowski, 2021). Naidoo and Dulek (2022) examined an AI-based text summarisation system for business documents and demonstrated its capacity to extract relevant content with moderate accuracy, providing empirical evidence that AI document tools are capable not only of speed acceleration but also of producing outputs with satisfactory linguistic quality.

The conceptual significance of AI-assisted document generation for administrative communication is further illuminated by Raisch and Krakowski (2021), who argued in their paper on the automation-augmentation paradox that AI tools in management simultaneously automate routine tasks, thereby eliminating the time burden of repetitive drafting, and augment human capacity by freeing cognitive resources for more complex communication functions. Applied to the administrative context of Nigerian tertiary institutions, this paradox is particularly instructive: when AI systems handle the drafting of standard administrative correspondence, officers are liberated from time-consuming manual drafting, resulting in faster document production cycles and a reduction in the typographic, factual, and structural errors that characterise rushed human-authored administrative documents. Bawack et al. (2021) identified comprehension and action as two of the four core AI capabilities, noting that AI tools applying these capabilities to document tasks are able to understand contextual demands and produce outputs that mirror institutional communication standards. Alikornwo et al. (2026), in a study of information management in digitally enabled offices in Rivers State government ministries, confirmed through Pearson correlation analysis that records automation and digital filing systems shared significant positive relationships with information accessibility and data security, outcomes that are proximate to the communication accuracy dimension examined in this study.

Administrative Communication Efficiency

Administrative communication efficiency refers to the degree to which information is exchanged within and across organisational structures in a manner that is timely, accurate, and purposeful, thereby facilitating effective coordination and decision-making (Getchell et al., 2022; Orisah-Godfrey & Gbafah, 2026). Efficient administrative communication is distinguished by two key attributes: communication response speed and communication accuracy. Communication response speed denotes the rate at which administrative units respond to inquiries, directives, and correspondence, measured by the interval between receipt and action on a communication (Naidoo & Dulek, 2022; Wang et al., 2022). In institutional environments where information must flow rapidly across hierarchical levels, communication response speed is a determinant of operational fluency and stakeholder satisfaction.

Communication Response Speed

Communication response speed refers to the rate at which an organisation, unit, or individual responds to incoming messages, directives, queries, and correspondence, measured by the temporal interval between the receipt of a communication and the initiation or completion of the appropriate

response action (Musheke & Phiri, 2021; Wang et al., 2022). In institutional settings, response speed is a critical operational efficiency indicator because it directly determines the pace at which decisions are made, services are rendered, stakeholders are satisfied, and administrative workflows are completed. Slow communication response speed creates bottlenecks across institutional processes, stalls interdepartmental coordination, and signals institutional dysfunction to regulatory bodies and accreditation agencies. Hancock et al. (2020) observe that AI-mediated communication systems fundamentally alter response dynamics by compressing the deliberation, drafting, and transmission intervals that determine institutional response speed, thereby enabling real-time or near-real-time administrative responsiveness that was previously impossible under manual communication regimes.

In the Nigerian tertiary institution context, communication response speed has received growing attention as a determinant of administrative effectiveness. Kalagbor and Adiele (2026) identified information access speed as a critical variable between digital governance practices and public sector accountability outcomes in Rivers State, implying that the pace of institutional information exchange is a governance imperative rather than a mere administrative convenience. Iganibo et al. (2023), examining digital security as an index of administrative efficiency in Local Government Areas in Rivers State, established that the speed of information retrieval and routing within digitised administrative systems significantly predicted administrative efficiency scores. Musheke and Phiri (2021), in a quantitative study of 88 respondents, found that communication timeliness was the most statistically potent predictor of organisational performance outcomes in their sample, confirming the centrality of response speed to institutional effectiveness.

Communication Accuracy

Communication accuracy denotes the degree to which administrative messages faithfully, completely, and unambiguously convey the intended meaning to recipients, free from factual errors, linguistic imprecision, structural inconsistencies, and formatting deficiencies that could distort interpretation or require clarification follow-ups (Getchell et al., 2022; Musheke & Phiri, 2021). In tertiary institutions, communication accuracy carries institutional, legal, and academic implications that render it qualitatively different from general conversational accuracy. An inaccurate circular or directive may trigger policy non-compliance; an error-laden examination correspondence may disenfranchise students; an imprecisely worded letter to a regulatory body may jeopardise institutional accreditation. Communication accuracy is therefore a non-negotiable dimension of administrative communication efficiency, one that must be actively maintained through systems and practices that reduce human error susceptibility in correspondence production.

Accuracy in administrative communication is shaped by multiple interacting factors including the cognitive load on message senders, the adequacy of institutional communication templates, the quality of review processes, and the extent to which AI tools assist in drafting and verifying correspondence (Bawack et al., 2021; Getchell et al., 2022). Raisch and Krakowski (2021) observe that the augmentation dimension of the automation-augmentation paradox is particularly salient in relation to accuracy: when AI tools serve as intelligent drafting assistants, they enforce grammatical standards, apply institutional style guides consistently, flag potential factual discrepancies, and reduce reliance on individual human memory and proofreading, all of which are mechanically linked to higher communication accuracy outputs. Orisah-Godfrey and Gbafah (2026), examining information security strategy and administrative risk management in public tertiary institutions in Rivers State, found significant positive relationships between cybersecurity policy implementation and risk mitigation effectiveness ($r = .618$, $p < .05$), demonstrating that technology-backed administrative processes in Rivers State tertiary institutions produce measurably superior outcomes relative to unstructured approaches.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM), originally propounded by Davis (1989) and subsequently extended by Venkatesh and Davis (2000) into TAM2, and further consolidated by Venkatesh et al. (2003) into the Unified Theory of Acceptance and Use of Technology (UTAUT). In its foundational formulation, TAM posits that an individual's adoption and sustained use of a technology is determined by two primary cognitive beliefs: perceived usefulness, defined as the degree to which the user believes the technology enhances job performance, and perceived ease of use, defined as the degree to which the technology is expected to be free of cognitive effort. These two belief constructs jointly determine attitude toward technology use, which in turn shapes behavioural intention and actual system use behaviour. Davis (1989) empirically validated TAM across multiple organisational settings, establishing its predictive power for technology adoption across diverse user populations and task types.

Venkatesh et al. (2003) extended and consolidated the TAM tradition into the UTAUT, integrating eight preceding technology acceptance models and identifying performance expectancy, effort expectancy, social influence, and facilitating conditions as the four core determinants of technology use intention and behaviour. Performance expectancy in the UTAUT framework aligns conceptually with perceived usefulness in TAM, while effort expectancy aligns with perceived ease of use. The extension introduced moderating variables including gender, age, experience, and voluntariness of use, providing a richer explanatory architecture for understanding technology acceptance in organisational settings characterised by diverse user populations, as is the case in public tertiary institutions. TAM and its extensions have been extensively applied in information systems and office management research to explain the adoption of digital technologies in educational and public sector contexts (Alikornwo & Echendu, 2026; Bawack et al., 2021; Orisah-Godfrey & Gbafah, 2026).

The relevance of TAM to the present study is direct and substantial. AI-driven communication accessories represent precisely the class of technologies whose adoption by administrative officers in tertiary institutions is mediated by perceptions of usefulness and ease of use. When administrative officers perceive AI messaging platforms as useful for accelerating response cycles and reducing drafting effort, and when they perceive AI document generation tools as easy to use and capable of producing accurate outputs, they are more likely to adopt and consistently use these tools, generating the speed and accuracy improvements posited in the study hypotheses. TAM thus provides the causal theoretical logic underlying the four hypotheses of this study: technology adoption driven by perceived usefulness and ease of use is expected to manifest as measurable improvements in communication response speed and communication accuracy, the two indicators of administrative communication efficiency examined in this study.

Empirical Review

Getchell et al. (2022) conducted a comprehensive review of the evolving landscape of AI in business communication, mapping current AI capabilities, scholarly gaps, and a proposed research agenda across topics including AI implementation, grammar and lexicographic assistance, AI-assisted collaboration, communication design, trust, bias, and managerial communication concerns. Published in *Business and Professional Communication Quarterly*, the study established that AI tools are fundamentally reshaping professional communication across institutional contexts by compressing drafting time, standardising language, and enabling scalable correspondence generation. The authors called for deeper empirical investigation into specific AI communication applications and their measurable performance outcomes. The present study directly responds to that call within the Rivers State tertiary institutional context.

Naidoo and Dulek (2022) investigated the application of AI to business communication through an empirical assessment of automated text summarisation systems, employing the ROUGE-1 metric to assess the accuracy of AI-generated summaries of complex business reports. Their findings demonstrated that extraction-based AI summarisation systems achieved moderately satisfactory accuracy in rendering key information from source documents, establishing an empirical benchmark

for the communication accuracy potential of AI document-handling tools. The study provides direct empirical evidence linking AI document processing tools to measurable accuracy outcomes in communication, mirroring the AI-assisted document generation and communication accuracy hypothesis of the present study.

Raisch and Krakowski (2021), in a contribution published in the *Academy of Management Review*, introduced the automation-augmentation paradox to describe the dual and interdependent roles of AI in management. They argued that AI simultaneously automates routine tasks, thereby eliminating the time burden associated with repetitive administrative functions, and augments human capacity by freeing cognitive resources for complex and judgment-intensive tasks. Their framework is foundational for understanding how AI-powered messaging systems and AI-assisted document generation relate to communication response speed: automation reduces the time interval between communication need and response delivery, while augmentation ensures that faster response delivery is not accompanied by degradation in communication quality.

Wang et al. (2022) empirically examined how AI chatbots create business agility in a study of 294 marketing employees across multiple United States industries. Employing a structured questionnaire and regression-based analysis, the study demonstrated that both routine and innovative use of AI chatbots were significantly and positively associated with internal and external communication agility, which in turn significantly predicted customer service performance outcomes. The finding that innovative chatbot use generated particularly strong agility effects provides micro-level empirical support for the relationship between AI-powered messaging systems and communication response speed posited in the present study.

Bawack et al. (2021) proposed a comprehensive classification framework for AI research in information systems, grounded in a systematic review of 103 practitioner documents and 110 information systems publications. Their framework identified four core AI capabilities, namely perception, comprehension, action, and learning, as the operational architecture through which AI tools generate value in organisational settings. Applied to communication accessories, the comprehension and action capabilities are directly relevant: AI-powered messaging systems comprehend the content and urgency of incoming messages and act to generate contextually appropriate responses, while AI-assisted document generation tools comprehend institutional communication requirements and act to produce complete, styled documents with minimal human drafting effort.

Hancock et al. (2020) defined AI-mediated communication as interpersonal communication in which an intelligent agent operates on behalf of a communicator by modifying, augmenting, or generating messages to accomplish communication goals. They proposed a research agenda for AI-mediated communication spanning linguistic and communication processes, relational dynamics, and ethical and policy implications, arguing that the emergence of AI-mediated communication requires a re-evaluation of established computer-mediated communication theories and frameworks. Their definitional and conceptual contribution provides the foundational framework within which AI-powered messaging systems are theorised and operationalised in the present study.

Musheke and Phiri (2021) examined the effects of effective communication on organisational performance based on systems theory in a quantitative study of 88 respondents. Their findings, derived through descriptive statistics and Pearson correlation, established that communication timeliness and accuracy were the two most significant predictors of organisational performance in their sample. The study is directly relevant to the present research because it provides empirical grounding for the criterion variable of administrative communication efficiency and demonstrates that communication speed and accuracy are not merely stylistic preferences but performance-critical attributes with measurable organisational consequences.

Barinua (2026) examined the relationship between artificial intelligence adoption and hiring efficiency in commercial banks in Rivers State, Nigeria, using a sample of 60 human resource management personnel from 23 banks. Pearson correlation analysis revealed a strong positive relationship between chatbot and virtual assistant AI systems and quality-of-hire efficiency and

retention rate efficiency. These findings provide a local empirical anchor for the present study, confirming that AI communication accessories produce significant and substantial efficiency gains in Rivers State institutional contexts.

Alikornwo and Echendu (2026) examined digital office practices and information management effectiveness in tertiary institutions in Rivers State, Nigeria. Pearson correlation analysis revealed significant positive relationships between electronic records management and digital communication systems on the one hand, and information accessibility and information security on the other. This study is methodologically and contextually proximate to the present research, employing the same institutions, population category, statistical technique, and epistemological orientation, while examining digital communication systems as a predictor of information accessibility, an outcome that overlaps conceptually with communication accuracy.

Orisah-Godfrey and Gbafah (2026), examining information security strategy and administrative risk management in tertiary institutions in Rivers State, Nigeria, reported through Pearson correlation analysis that cybersecurity policy implementation significantly and positively predicted risk identification efficiency and risk mitigation effectiveness. The methodological architecture of that study, a correlational survey design with Pearson correlation and Cronbach alpha reliability assessment, directly models the methodological approach adopted in the present study.

Minima and Obara (2023), in a study of enterprise resource planning as a determinant of administrative efficiency of indigenous oil and gas companies in Rivers State, found significant positive relationships between enterprise system deployment and administrative efficiency outcomes. Alikornwo et al. (2026), in a study of information management in digitally enabled offices in Rivers State government ministries, found through Pearson correlation analysis that records automation and digital filing systems significantly predicted information accessibility and data security outcomes. Kalagbor and Adiele (2026), examining e-governance and democratic accountability in Rivers State public sector institutions, further confirmed that digital information management tools significantly enhanced administrative transparency and responsiveness, outcomes that are functionally related to the communication accuracy and response speed dimensions of this study.

Based on the reviewed empirical literature, the following null hypotheses were tested at the 0.05 level of significance:

- H₀₁:** There is no significant relationship between AI-powered messaging systems and communication response speed in public tertiary institutions in Rivers State, Nigeria.
- H₀₂:** There is no significant relationship between AI-powered messaging systems and communication accuracy in public tertiary institutions in Rivers State, Nigeria.
- H₀₃:** There is no significant relationship between AI-assisted document generation and communication response speed in public tertiary institutions in Rivers State, Nigeria.
- H₀₄:** There is no significant relationship between AI-assisted document generation and communication accuracy in public tertiary institutions in Rivers State, Nigeria.

METHODOLOGY

This study adopted a correlational survey research design. The correlational design was considered most appropriate because the study sought to establish the nature and direction of the statistical relationship between the two dimensions of the predictor variable, AI-driven communication accessories, and the two measures of the criterion variable, administrative communication efficiency, without any manipulation of the study variables. The target population comprised three selected public tertiary institutions in Rivers State, Nigeria: Rivers State University (RSU), Captain Elechi Amadi Polytechnic (CEAPoly), and Ignatius Ajuru University of Education (IAUOE). These institutions were purposively selected as representative of the three distinct categories of public higher education establishment in Rivers State. Study elements consisted of Deputy Registrars, Assistant Registrars, and Senior Administrative Officers, whose nominal records were sourced from the Registry/Records Department of each institution. The macro-level character of the study

required that institutions, rather than individuals, served as the primary unit of representation, with senior administrative personnel drawn in equal number from each institution to ensure comparable institutional coverage.

The census sampling technique was adopted for this study. A total of fifteen senior administrative personnel were studied, comprising five respondents drawn in equal number from each of the three institutions: RSU (five), CEAPoly (five), and IAUOE (five). The census approach was appropriate given the macro-level design of the study, which required representation of each institutional type rather than probabilistic coverage of a heterogeneous population. Data were collected using a structured questionnaire developed by the researchers and validated through expert review by three academic staff in the field of office and information management. The questionnaire comprised two sections: Section A gathered respondent demographic data, while Section B contained 20 Likert-scaled items measuring the four constructs of the study, namely AI-powered messaging systems, AI-assisted document generation, communication response speed, and communication accuracy, rated on a five-point scale ranging from Strongly Agree (5) to Strongly Disagree (1). Face and content validity were established through expert review and revision. A pilot test conducted on 20 administrative officers from the University of Port Harcourt, excluded from the main study, yielded a Cronbach alpha reliability coefficient of 0.86 for the overall instrument, confirming its internal consistency and suitability for deployment. The criterion mean for decision on research questions was set at 3.00. Data were analysed using descriptive statistics, specifically mean scores and standard deviations, to address the research questions, and Pearson's Product Moment Correlation Coefficient to test the four null hypotheses at the 0.05 level of significance. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 27.0.

RESULTS

Descriptive Statistics

All fifteen questionnaires administered to the census respondents were retrieved and found usable, yielding a cent per cent return rate. Table 1 presents the descriptive statistics for all study variables. A criterion mean of 3.00 was adopted for decision-making, with mean scores at or above 3.00 indicating respondent agreement with the construct items. A five-point decision scale was applied: 4.50 to 5.00 denotes strong agreement; 3.50 to 4.49 denotes agreement; 2.50 to 3.49 denotes indecision; 1.50 to 2.49 denotes disagreement; and 1.00 to 1.49 denotes strong disagreement.

Table 1: Descriptive Statistics for Study Variables (N = 15)

Variable	N	Min	Max	Mean	SD	Decision
AI-Powered Messaging Systems	15	4.40	5.00	4.69	0.20	Strongly Agreed
AI-Assisted Document Generation	15	4.20	4.80	4.60	0.19	Strongly Agreed
Communication Response Speed	15	4.40	5.00	4.73	0.22	Strongly Agreed
Communication Accuracy	15	4.40	5.00	4.75	0.18	Strongly Agreed

Note. Decision scale: 4.50-5.00 = Strongly Agreed; 3.50-4.49 = Agreed; criterion mean = 3.00.

The results in Table 1 reveal that the mean scores for all four constructs exceeded the criterion mean of 3.00 and fell within the strongly agreed range (4.50 to 5.00) of the decision scale. Communication accuracy recorded the highest mean ($M = 4.75$, $SD = 0.18$), followed by communication response speed ($M = 4.73$, $SD = 0.22$), AI-powered messaging systems ($M = 4.69$, $SD = 0.20$), and AI-assisted document generation ($M = 4.60$, $SD = 0.19$). These results indicate that the census respondents, comprising Deputy Registrars, Assistant Registrars, and Senior Administrative Officers across the three institutions, strongly agreed with the items measuring each construct, reflecting a consensus perception that AI-driven communication accessories are present

and beneficial in their institutional settings, and that both communication response speed and communication accuracy are positive features of their administrative communication environment. The low standard deviation values across all constructs (ranging from 0.18 to 0.22) indicate high respondent homogeneity, reflecting convergent perceptions among the senior administrative cadre.

Hypotheses Testing

Four null hypotheses were tested using Pearson's Product Moment Correlation Coefficient at a 0.05 level of significance. The decision rule was as follows: if the p-value is less than or equal to 0.05, reject the null hypothesis and conclude that a significant relationship exists; if the p-value is greater than 0.05, fail to reject the null hypothesis. The results are presented in Tables 2 through 5.

Hypothesis 1 (H₀₁): There is no significant relationship between AI-powered messaging systems and communication response speed in public tertiary institutions in Rivers State, Nigeria.

Table 2: Pearson Correlation: AI-Powered Messaging Systems and Communication Response Speed

Variable	Pearson r	p-value	N	Decision
AI-Powered Messaging Systems ** Communication Response Speed	.929**	.000	15	Significant

Note. **Correlation is significant at the .01 level (2-tailed). N = 15.

Table 2 shows the Pearson correlation result for H₀₁. The analysis yielded $r = .929$, $p = .000$. Since the p-value (.000) is less than the .05 significance level, H₀₁ is rejected. This result indicates a significant, very strong positive relationship between AI-powered messaging systems and communication response speed in public tertiary institutions in Rivers State, Nigeria. The coefficient of determination ($r^2 = .863$) implies that AI-powered messaging systems account for approximately 86.3% of the variance in communication response speed among the census respondents, a finding that reflects the substantial time-compression properties of AI messaging platforms in real-time institutional communication contexts.

Hypothesis 2 (H₀₂): There is no significant relationship between AI-powered messaging systems and communication accuracy in public tertiary institutions in Rivers State, Nigeria.

Table 3: Pearson Correlation: AI-Powered Messaging Systems and Communication Accuracy

Variable	Pearson r	p-value	N	Decision
AI-Powered Messaging Systems ** Communication Accuracy	.887**	.000	15	Significant

Note. **Correlation is significant at the .01 level (2-tailed). N = 15.

Table 3 presents the Pearson correlation result for H₀₂. The analysis yielded $r = .887$, $p = .000$. Since the p-value (.000) is less than the .05 significance level, H₀₂ is rejected. This result indicates a significant, very strong positive relationship between AI-powered messaging systems and communication accuracy in public tertiary institutions in Rivers State, Nigeria. The coefficient of determination ($r^2 = .786$) implies that AI-powered messaging systems account for approximately 78.6% of the variance in communication accuracy, establishing that the standardisation, intelligent quality-checking, and consistency enforcement mechanisms embedded in AI messaging platforms are substantially associated with higher accuracy in administrative correspondence among the census institutions.

Hypothesis 3 (H₀₃): There is no significant relationship between AI-assisted document generation and communication response speed in public tertiary institutions in Rivers State, Nigeria.

Table 4: Pearson Correlation: AI-Assisted Document Generation and Communication Response Speed

Variable	Pearson r	p-value	N	Decision
AI-Assisted Document Generation ** Communication Response Speed	.832**	.000	15	Significant

Note. **Correlation is significant at the .01 level (2-tailed). N = 15.

Table 4 presents the Pearson correlation result for H_{03} . The analysis yielded $r = .832$, $p = .000$. Since the p-value (.000) is less than the .05 significance level, H_{03} is rejected. This result indicates a significant, very strong positive relationship between AI-assisted document generation and communication response speed in public tertiary institutions in Rivers State, Nigeria. The coefficient of determination ($r^2 = .692$) implies that AI-assisted document generation accounts for approximately 69.2% of the variance in communication response speed. This finding directly reflects the time-compression effect of AI document generation tools, which reduce the drafting interval associated with administrative correspondence substantially, enabling faster communication response cycles within institutional workflows.

Hypothesis 4 (H_{04}): There is no significant relationship between AI-assisted document generation and communication accuracy in public tertiary institutions in Rivers State, Nigeria.

Table 5: Pearson Correlation: AI-Assisted Document Generation and Communication Accuracy

Variable	Pearson r	p-value	N	Decision
AI-Assisted Document Generation ** Communication Accuracy	.873**	.000	15	Significant

Note. **Correlation is significant at the .01 level (2-tailed). N = 15.

Table 5 presents the Pearson correlation result for H_{04} . The analysis yielded $r = .873$, $p = .000$. Since the p-value (.000) is less than the .05 significance level, H_{04} is rejected. This result indicates a significant, very strong positive relationship between AI-assisted document generation and communication accuracy in public tertiary institutions in Rivers State, Nigeria. The coefficient of determination ($r^2 = .762$) implies that AI-assisted document generation accounts for approximately 76.2% of the variance in communication accuracy, affirming that AI document generation tools substantially enhance the precision and institutional conformity of administrative correspondence outputs.

Summary of Hypotheses Testing Results

Table 6 presents a comparative summary of all four hypothesis testing outcomes.

Table 6: Summary of Pearson Correlation Results for All Hypotheses

H#	Predictor Dimension	Criterion Measure	r	p	Decision
H_{01}	AI-Powered Messaging Systems	Communication Response Speed	.929**	.000	H_{01} Rejected
H_{02}	AI-Powered Messaging Systems	Communication Accuracy	.887**	.000	H_{02} Rejected
H_{03}	AI-Assisted Document Generation	Communication Response Speed	.832**	.000	H_{03} Rejected
H_{04}	AI-Assisted Document Generation	Communication Accuracy	.873**	.000	H_{04} Rejected

Note. **Correlation is significant at the .01 level (2-tailed). N = 15.

The summary in Table 6 confirms that all four null hypotheses were rejected at the .05 level of significance. All Pearson r values are positive and fall within the very strong range (.832 to .929), indicating consistently significant positive relationships between AI-driven communication tool dimensions and administrative communication efficiency measures across the three sampled public tertiary institutions in Rivers State. The strongest relationship is between AI-powered messaging systems and communication response speed ($r = .929$), while the comparatively moderate, though still very strong, relationship is between AI-assisted document generation and communication response speed ($r = .832$).

DISCUSSION OF FINDINGS

The finding that AI-powered messaging systems share a significant and very strong positive relationship with communication response speed ($r = .929$, $p < .001$) is consistent with both the theoretical expectations of the Technology Acceptance Model and the empirical evidence of Wang et al. (2022), who demonstrated that routine and innovative use of AI chatbots significantly predicted internal and external communication agility outcomes in a sample of United States marketing employees. The particularly high coefficient of determination obtained in the present study ($r^2 = .863$), suggesting that AI-powered messaging systems account for approximately 86.3% of the variance in communication response speed, may be attributed to the macro-level, senior cadre character of the census sample: Deputy Registrars, Assistant Registrars, and Senior Administrative Officers occupy strategic communication nodes within institutional hierarchies, and their use of AI messaging platforms directly shapes the pace of institutional response cycles in ways that may not be equally evident in more dispersed or heterogeneous population samples. Bawack et al. (2021), whose classification framework positions AI-powered messaging systems as tools of comprehension and action, provide further theoretical support: systems capable of comprehending incoming messages and generating or routing responses autonomously eliminate the deliberation intervals that constitute the primary sources of communication lag in administrative institutions. At the local level, Barinua (2026), reporting $r = .812$ between chatbot and virtual assistant AI systems and quality-of-hire efficiency in Rivers State commercial banks, corroborates the finding that the efficiency-generating properties of AI messaging tools are operationally active in the Rivers State institutional context.

The significant and very strong positive relationship between AI-powered messaging systems and communication accuracy ($r = .887$, $p < .001$) extends the conceptual and empirical foundation laid by Naidoo and Dulek (2022), who demonstrated that AI-based text processing tools achieve moderately satisfactory accuracy in producing business communication outputs, and by Hancock et al. (2020), who observed that AI-mediated communication accessories, by modifying and generating messages on behalf of communicators, introduce systematic consistency into messaging that reduces the idiosyncratic variability and error susceptibility of purely human-authored correspondence. The implication for the present study is that when senior administrative officers deploy AI-powered messaging platforms to compose and route correspondence, the standardisation and intelligent quality-checking embedded in these platforms constrain the introduction of errors and promote higher accuracy in administrative messages. Getchell et al. (2022) situate this finding within a broader framework, noting that AI tools enhance grammatical precision, contextual appropriateness, and stylistic consistency in professional communication, all of which are constituent elements of the communication accuracy construct measured in this study. Musheke and Phiri (2021), who found communication accuracy to be a primary predictor of organisational performance, provide the broader institutional context for appreciating why the accuracy enhancement enabled by AI messaging tools carries governance significance beyond mere administrative convenience.

The finding that AI-assisted document generation shares a significant and very strong positive relationship with communication response speed ($r = .832$, $p < .001$) aligns directly with the automation dimension of Raisch and Krakowski's (2021) automation-augmentation paradox. The paradox theory anticipates that automation of routine drafting tasks produces measurable time

compression in document production cycles, translating into faster communication responses. This theoretical expectation is confirmed by the present finding, which establishes that the use of AI-assisted document generation systems is associated with faster administrative communication at a statistically significant and practically substantial magnitude ($r^2 = .692$). Getchell et al. (2022) similarly noted that AI document drafting and revision tools substantially reduce the time burden of professional correspondence, and the present study provides empirical quantification of this effect within a Rivers State tertiary institutional context. Alikornwo et al. (2026), who found significant positive relationships between digital filing systems and information accessibility in Rivers State government ministries, offer a contextually proximate empirical basis for the present finding, confirming that technology-mediated document management tools consistently improve communication speed-related outcomes across public sector institutions in Rivers State.

The significant and very strong positive relationship between AI-assisted document generation and communication accuracy ($r = .873$, $p < .001$) further validates the theoretical position that AI document tools enhance the precision and consistency of institutional correspondence. Bawack et al. (2021) identified comprehension and action as AI capabilities directly relevant to document generation tasks: AI systems comprehend institutional communication requirements embedded in templates and previous correspondence and act to generate outputs that conform to these requirements with higher consistency than individual human drafters can reliably achieve under routine administrative workload conditions. Naidoo and Dulek (2022), who provided direct empirical evidence of AI's capacity for accurate text extraction from business documents, support this conclusion. Orisah-Godfrey and Gbafah (2026), who found that technology-backed administrative risk management systems significantly enhanced risk mitigation accuracy in Rivers State tertiary institutions ($r = .618$, $p < .05$), provide a methodologically parallel local finding confirming that technology-based administrative tools consistently improve accuracy-related outcomes in the same institutional setting. The coefficient of determination ($r^2 = .762$) confirms that AI-assisted document generation accounts for a preponderant share of the variance in communication accuracy, underscoring the practical institutional case for its adoption in public tertiary institutions in Rivers State.

CONCLUSION

This study has empirically established, through correlational survey research conducted among senior administrative personnel in three public tertiary institutions in Rivers State, Nigeria, that artificial intelligence-driven communication accessories, operationalised through AI-powered messaging systems and AI-assisted document generation, share significant and very strong positive relationships with the two measured dimensions of administrative communication efficiency: communication response speed and communication accuracy. All four null hypotheses were rejected at the .05 level of significance, with Pearson correlation coefficients ranging from $r = .832$ to $r = .929$, collectively affirming that both AI communication tool dimensions are meaningful positive predictors of both communication efficiency outcomes. The study extends the growing body of empirical evidence on AI in business and institutional communication (Getchell et al., 2022; Naidoo & Dulek, 2022; Raisch & Krakowski, 2021; Wang et al., 2022) into the Rivers State tertiary institutional context, and contributes to the emerging corpus of Rivers State office and information management scholarship (Alikornwo & Echendu, 2026; Barinua, 2026; Minima & Obara, 2023; Orisah-Godfrey & Gbafah, 2026). The study validates the Technology Acceptance Model as an appropriate theoretical anchor for studying the AI-communication-efficiency nexus in Nigerian higher education institutions and positions AI-driven communication accessories as a strategically significant lever for administrative communication transformation in public tertiary institutions.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are made:

1. The management of public tertiary institutions in Rivers State should prioritise the procurement and institutional deployment of AI-powered messaging platforms, including

intelligent email systems, chatbot-assisted intranet tools, and virtual assistant applications. The significant and very strong positive relationship established between AI-powered messaging systems and communication response speed in this study provides a compelling administrative performance basis for such investment.

2. Tertiary institutions in Rivers State should invest in AI-assisted document generation systems for the production of administrative correspondence, circulars, policy briefs, and minutes of meetings. Given the significant and very strong positive relationships established between AI-assisted document generation and both communication response speed and communication accuracy, the adoption of such systems represents a dual investment in institutional efficiency and correspondence quality, with measurable administrative performance returns.

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