Influence of Artificial Intelligence Tools on Professional Development of Academic Staff in Public Universities in Rivers State

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Abstract
This study investigated influence of Artificial Intelligence tools on professional development of academic staff in public universities in Rivers State. Three objectives, three research questions and three hypotheses guided the Study. A descriptive research design was adopted for the study. A population of 3,356 male and female lecturers from the three Public Universities in Rivers State were used for the study. A sample size of 357 male and female lecturers was used for the study. The sample size was determine using Taro Yamane formula, while proportionate stratified sampling technique was adopted in selecting a total of 159 male lecturers and 198 female lecturers from the three Public Universities in Rivers State. A self-developed questionnaire titled Influence of AI tools on Professional Development of Academic Staff Questionnaire (IAITPDAS) was used to collect data for the study. The instrument was validated by three experts in Department of Educational Management and Measurement and Evaluation, Rivers State University. A reliability index of 0.82 was obtained for the instruments using Cronbach Alpha method. Mean and Standard deviation were used to analyze the research questions while Z-test statistics was used to test the hypotheses at 0.05 level of significance. The findings of the study revealed that to a high extent ChatGPT, Grammarly and Scholarcy influences the professional development of academic staff in Public Universities in Rivers State. Results from the hypotheses also reveal that there is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT, Grammarly and Scholarcy on professional development of academic staff in public universities in Rivers State. In view of the above, it was recommended among others, that institutions should organize regular workshops and seminars to educate academic staff on the use of AI tools such as ChatGPT, Grammarly, and Turnitin.

Introduction

Professional development refers to the ongoing process by which educators, professionals, and employees enhance their skills, knowledge, and competencies throughout their careers (Guskey, 2020). Professional development aims to improve an individual's professional capabilities, leading to better job performance, higher levels of expertise, and the ability to adapt to changing industry demands. Professional development allows staff to acquire specialized skills that are directly applicable to their roles within the university system. For instance, administrative staff can benefit from targeted training in areas such as financial management, project management, and data analysis (Eze in Nwuke and Nwanguma, 2024). It encompasses a wide range of activities, including workshops, conferences, formal education, informal learning opportunities, and reflective practice. Effective professional development is considered crucial for career progression and maintaining relevance in an ever-evolving work environment (Guskey, 2020). Professional development can take various forms, depending on the field, objectives, and individual needs.

According to Schon (2011) reflective practice is a critical component of effective professional development. It involves the process of continuous reflection on one's experiences and practices to learn from them and improve future performance. This reflective process encourages professionals to critically analyze their work, identify areas for improvement and set personal development goals. Engaging in reflective practice helps individuals to become more self-aware and responsive to the needs of their profession, ultimately leading to better decision-making and professional growth. Effective professional development has a direct impact on an individual's job performance.

With the rapid advancement of technology and the increasing complexity of many professions, the future of professional development is likely to be more dynamic and personalized. Online learning platforms, artificial intelligence, and data analytics are expected to play significant roles in delivering tailored professional development experiences. Moreover, there is a growing emphasis on continuous professional development, where learning is seen as an ongoing process rather than a one-time event. As the workplace evolves, so too will the methods and approaches to professional development, ensuring that professionals remain competent and competitive in their fields (Knight, 2022). This professional development will ensure that staff in the organization are professional trained to enhance improved staff performance.

Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, particularly computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions), and self-correction. Chukwuma in Nwuke, and Yellowe. (2025) sees artificial intelligence (AI) as the development of computer systems capable of performing tasks that typically require human intelligence, such as problem-solving, decision-making, and imitating the human knowledge. AI is a broad field that encompasses various subfields such as machine learning, natural language processing, robotics, and computer vision. The ultimate goal of AI is to create systems that can perform tasks that typically require human intelligence, such as understanding natural language, recognizing patterns, solving problems, and making decisions (Russell & Norvig, 2016). Tuomi (2018) highlights that there are numerous interpretations of artificial intelligence, including machines that think, understand language, solve problems, diagnose medical conditions, drive cars, play chess, and paint like Van Gogh. Nilsson in Tuomi (2018) defines artificial intelligence as a computer system capable of carrying out tasks typically associated with intelligent beings. For the purpose of this study, we are going to consider the following as variables for the study; ChatGPT, Grammarly and Scholarcy.

ChatGPT is an advanced artificial intelligence (AI) language model developed by OpenAI, based on the Generative Pre-trained Transformer (GPT) architecture. This AI chatbot is designed to understand and generate human-like text, making it a valuable tool in various fields such as education, business, healthcare, and customer service (Brown, Mann & Ryder, 2020). ChatGPT operates using deep learning techniques, specifically a neural network trained on vast amounts of text data, enabling it to generate responses that are coherent, contextually relevant, and natural-sounding.

Grammarly is also an advanced artificial intelligence (AI)-driven writing assistant designed to improve the clarity, coherence, and correctness of written communication. Developed by Grammarly Inc., this tool leverages natural language processing (NLP) and machine learning algorithms to analyze text, detect grammatical errors, and provide suggestions for enhancing writing style. Grammarly functions as both a proofreading tool and a stylistic enhancer, making it widely used by students, professionals, and academic researchers to refine their written work (McCulloch, 2019). By offering real-time feedback on spelling, punctuation, and sentence structure, Grammarly helps users produce polished and professional content. Grammarly offers a range of features that cater to different aspects of writing. The tool checks for basic grammar and spelling errors, identifies complex sentence structures, and provides style suggestions based on context. One of its key capabilities is tone detection, which helps users adjust their writing style to fit various audiences and purposes.

Scholarcy is an AI-powered summarization tool designed to assist researchers, academics, and students in quickly understanding and managing large volumes of academic literature. Developed as an intelligent reading assistant, Scholarcy automatically analyzes research papers, book chapters, and reports, generating concise summaries that highlight key findings, methodologies, and conclusions. By leveraging natural language processing and machine learning techniques, Scholarcy simplifies complex academic texts, making it easier for users to grasp essential information without reading entire documents (Shahid & Ahmad, 2021). This tool is particularly useful for literature reviews, allowing scholars to efficiently filter and organize relevant studies for their research.

Statement of the Problem

In this era where artificial intelligence (AI) is increasingly integrated into various sectors, its potential to transform higher education, particularly in the professional development of academic staff, is profound. AI offers innovative tools for personalized learning, real-time feedback, and data-driven decision-making, which can enhance the effectiveness of professional development programs. However, there is a gap in understanding how these AI-driven innovation tools are perceived by academic staff and how they influence their performance in Public Universities in Rivers State. Despite the growing interest in AI applications in education, limited empirical research has been conducted to explore its influence on the professional development of academic staff. Specifically, there is a lack of evidence on whether AI-driven professional development tools are beneficial or detrimental to academic staff, and how these influence their professional growth and performance outcomes as regards to the extent to which ChatGPT, Grammarly, Scholarcy, influence the professional development of academic staff. Moreover, the rapid pace of AI development may pose some challenges in ensuring that academic staff are adequately prepared to engage and enjoy the benefit of these technologies. This study seeks to address this gap by investigating the Influence of Artificial Intelligence tools on professional development of academic staff and its subsequent effect on their performance in public universities in Rivers State.

Purpose of the Study

The study examined the influence of Artificial Intelligence tools on professional development of academic staff in public universities in Rivers State. Specifically, the study sought to achieve the following objectives;

1. determine the extent to which ChatGPT influences the professional development of academic staff in public universities in Rivers State.
2. examine the extent to which Grammarly influences the professional development of academic staff in public universities in Rivers State.
3. ascertain the extent to which Scholarcy influences the professional development of academic staff in public universities in Rivers State.

Research Questions

The following research questions guided the study.

1. To what extent does ChatGPT influence the professional development of academic staff in public universities in Rivers State?
2. To what extent does Grammarly influence the professional development of academic staff in public universities in Rivers State?
3. To what extent does Scholarcy influence the professional development of academic staff in public universities in Rivers State?

Hypotheses

The following null hypotheses were tested at 0.05 level significance.

1. There is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff in public universities in Rivers State.
2. There is no significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff in public universities in Rivers State.
3. There is no significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff in public universities in Rivers State.

Methodology

This study adopted a descriptive research design to examine the influence of Artificial Intelligence (AI) tools on the professional development of academic staff in public universities in Rivers State. The population consisted of 3,356 academic staff from the University of Port Harcourt, Rivers State University, and Ignatius Ajuru University of Education. Using Taro Yamane's formula and proportionate stratified sampling, a sample of 357 respondents was drawn to ensure fair representation of the three universities. Data were collected with a self-developed questionnaire titled "Influence of Artificial Intelligence Tools on Professional Development of Academic Staff Questionnaire (IAITPDASP)," consisting of two sections and 42 items structured on a four-point rating scale. The instrument was validated by experts in Educational Management and Measurement and Evaluation, and a pilot test produced a Cronbach Alpha reliability coefficient of 0.82. The questionnaires were personally administered with the help of research assistants, and all copies were retrieved. Mean and standard deviation were used to answer the research questions,

while z-test statistics tested the hypotheses at 0.05 significance level, with a decision criterion mean of 2.50.

Analysis of Data and Result

Research Question 1: To what extent does ChatGPT influence the professional development of academic staff in public universities in Rivers State?

Table 1: Mean summary on the extent to which ChatGPT influence the professional development of academic staff in public universities

S/N	Items	Male N = 159			Female N = 198		
		Mean	**Std**	**Remark**	**Mean**	**Std**	**Remark**
1	I use ChatGPT to generate ideas for academic papers, presentations, or lectures.	2.76	1.01	High Extent	2.51	1.08	High Extent
2	ChatGPT enhances academic staff ability to stay updated with the latest research in their field	2.65	0.85	High Extent	2.69	0.77	High Extent
3	ChatGPT improves my critical thinking and problem-solving skills in research	2.76	0.96	High Extent	2.88	0.84	High Extent
4	ChatGPT aids in exploring interdisciplinary connections in my research	2.89	0.92	High Extent	2.71	0.91	High Extent
5	I use ChatGPT to design student-centered learning activities	2.61	1.02	High Extent	2.66	0.85	High Extent
6	I use ChatGPT to improve my academic writing and communication skills	2.91	0.94	High Extent	2.71	0.98	High Extent
7	ChatGPT contributes to my continuous learning and professional growth	2.87	0.93	High Extent	3.08	0.83	High Extent
	Average Mean	**2.78**	**0.95**	**High Extent**	**2.75**	**0.89**	**High Extent**

Data presented in the above Table with a questionnaire items of 1-7 showed that mean value of male respondents 2.76, 2.65, 2.76, 2.89, 2.61, 2.91, 2.87 and the mean value of female respondents 2.51, 2.69, 2.88, 2.71, 2.66, 2.71, and 3.08. Hence, with the average mean values of 2.78 from male and 2.75 from female show that to a high extent ChatGPT influence the professional development of academic staff in public universities in Rivers State.

Research Question 2: To what extent does Grammarly influence the professional development of academic staff in public universities in Rivers State?

Table 2: Mean summary on the extent to which Grammarly influence the professional development of academic staff in public universities

S/N	Items	Male N =159			Female N = 198		
		Mean	**Std**	**Remark**	**Mean**	**Std**	**Remark**
8	Grammarly helps improve the clarity of my academic writing	2.89	0.92	High Extent	2.62	0.91	High Extent
9	Grammarly assists in structuring my research papers effectively	2.57	1.13	High Extent	2.58	0.90	High Extent
10	Grammarly enhances the grammatical accuracy of my publications	3.07	0.77	High Extent	3.05	0.80	High Extent
11	Grammarly enables me to draft error-free official documents	2.85	0.79	High Extent	2.78	0.74	High Extent
12	Grammarly enables me to maintain consistency in citation and referencing	2.74	0.76	High Extent	2.71	0.76	High Extent
13	Grammarly helps in meeting journal publication language requirements	2.64	0.74	High Extent	2.63	0.90	High Extent
14	Grammarly enables me to provide better feedback on students' work	3.04	0.75	High Extent	2.80	0.81	High Extent
	Average Mean	**2.83**	**0.84**	**High Extent**	**2.74**	**0.83**	**High Extent**

Data presented in the above Table with a questionnaire items of 8-14 showed that mean value of male respondents 2.89, 2.57, 3.07, 2.85, 2.74, 2.64, 3.04 and the mean value of female respondents 2.62, 2.58, 3.05, 2.78, 2.71, 2.63, and 2.80. Hence, with the average mean values of 2.83 from male and 2.74 from female show that to a high extent Grammarly influences the professional development of academic staff in public universities in Rivers State.

Research Question 3: To what extent does Scholarcy influence the professional development of academic staff in public universities in Rivers State?

Table 3: Mean summary on the extent to which Scholarcy influence the professional development of academic staff in public universities

S/N	Items	Male N =159			Female N = 198		
		Mean	**Std**	**Remark**	**Mean**	**Std**	**Remark**
15	Using Scholarcy has enhanced my capacity for producing well-structured research content	3.04	0.78	High Extent	2.59	0.83	High Extent
16	Scholarcy serves as an essential tool for academic self-evaluation	2.69	0.91	High Extent	2.51	1.02	High Extent
17	Scholarcy helps in maintaining academic integrity in my work	2.67	0.75	High Extent	2.89	0.81	High Extent
18	Scholarcy helps me stay updated on best practices in academic writing	3.06	0.88	High Extent	2.82	0.93	High Extent
19	Scholarcy has improved my confidence in submitting academic manuscripts	3.02	0.66	High Extent	2.80	0.75	High Extent
20	Scholarcy is a valuable tool for my professional development	2.74	0.85	High Extent	2.66	0.69	High Extent
21	I frequently use Scholarcy to check my research papers before submission	2.63	0.96	High Extent	2.91	0.90	High Extent
	Average mean	**2.84**	**0.83**	High Extent	**2.74**	**0.85**	High Extent

Data presented in the above Table with a questionnaire items of 15-21 showed that mean value of male respondents 3.04, 2.69, 3.67, 3.06, 3.02, 2.74, 2.63 and the mean value of female respondents 2.49, 2.51, 2.89, 2.82, 2.80, 2.66, and 2.91. Hence, with the average mean values of 2.84 from male and 2.74 from female show that to a high extent Scholarcy influences the professional development of academic staff in public universities in Rivers State.

Hypotheses Testing

Hypothesis 1: There is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff in public universities in Rivers State.

Table 4: Z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff

Respondents	N	**Mean**	Std	df	**LS**	**Z**-cal.	**Z**-crit.	Decision
Male	159	2.78	0.95	355	0.05	0.3	±1.96	*
Female	198	2.75	0.89					

*** = Significant at 0.05 alpha level; N = 357**

The data presented in Table 4. indicates that the z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff is not significant at the 0.05 alpha level, because the z-cal. value of 0.3 is less than the z-crit. value of 1.96 at 0.05 alpha level with 355 degrees of freedom. Therefore, the null hypothesis which states that, there is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff in public universities in Rivers State is accepted. Hence, alternative hypothesis which states that there is a significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff in public universities in Rivers State is rejected.

Hypothesis 2: There is no significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff in public universities in Rivers State.

Table 45: z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff

Respondents	**N**	**Mean**	**Std**	**df**	**LS**	**Z-cal.**	**Z-crit.**	**Decision**
Male	159	2.83	0.84	355	0.05	1	±1.96	*
Female	198	2.74	0.83					

*** = Significant at 0.05 alpha level; N = 357**

The data presented in Table 5 showed that the z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff is not significant at 0.05 alpha level, because the z-cal. value of 1 is less than the z-critical value of 1.96 at 0.05 alpha level with 355 degrees of freedom. Hence, the null hypothesis which state that there is no significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff in public universities in Rivers State was accepted. Therefore, the alternative hypothesis, which states that there is a significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff in public universities in Rivers State is rejected.

Hypothesis 3: There is no significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff in public universities in Rivers State.

Table 6: z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff

Variables	N	Mean	Std	df	LS	Z-cal.	Z-crit.	Decision
Male	159	2.84	0.83					
				355	0.05	1	±1.96	*
Female	198	2.74	0.85					

*** = Significant at 0.05 alpha level; N = 357**

The data presented in Table 6 revealed that the z-test analysis on the significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff is not significant at 0.05 alpha level, because the z-cal. value of 1 is less than the z-critical value of 1.96 at 0.05 alpha level with 355 degrees of freedom. Therefore, the null hypothesis was accepted. The alternative hypothesis which states that there is a significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff is rejected.

Discussion of Major Findings

The findings of the study were discussed under the 6 research questions and hypotheses postulated for the study.

Research question 1 sought to find the extent to which ChatGPT influences the professional development of academic staff in public universities in Rivers State. A total of seven (7) items were presented to the respondents for this. The response from the respondents revealed that ChatGPT influences the professional development of academic staff to a high extent. The corresponding hypothesis 1 revealed that there is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT on professional development of academic staff in public universities in Rivers State. This finding support that of Dwivedi, Hughes, Baabdullah, Ribeiro-Navarrete, Giannakis, AI-Debei & Wamba (2023), which states that AI models like ChatGPT improve the productivity of researchers by automating repetitive cognitive tasks such as literature synthesis, citation formatting, and language editing. With ChatGPT, lecturers and researchers can quickly generate summaries of academic papers, identify gaps in literature, and refine research questions. This accelerates the research process and enables more efficient exploration of complex topics. Lund, Wang, Mannuru, Shimray & Wang (2023), posited that ChatGPT supports academic staff in curriculum development and instructional design. It assists in generating lesson plans, explaining difficult concepts in simple language, and offering creative teaching strategies tailored to specific subjects.

Research question 2 revealed the extent to which Grammarly influences the professional development of academic staff in public universities in Rivers State. A total of seven (7) items were presented to the respondents for this. The finding revealed that Grammarly influences the professional development of academic staff to a high extent. The corresponding hypothesis 2 revealed that there is no significant difference in the mean score of male and female academic staff on the influence of Grammarly on professional development of academic staff in public

universities in Rivers State. This finding supports the findings of Adegbite & Akinbobola (2022), which states that Grammarly helps to bridge this gap by offering real-time feedback and correction, thus contributing to higher quality research outputs and publications. Okolie & Nwachukwu (2021), posited that Grammarly enhances self-directed learning and continuous professional improvement. Through frequent interaction with the tool, academic staff become more confident and proficient in academic communication, which is vital for lecturing, publishing, and professional networking.

Research question 3 revealed the extent to which Scholarcy influences the professional development of academic staff in public universities in Rivers State. A total of seven (7) items were presented to the respondents for this. The finding revealed that Scholarcy influences the professional development of academic staff to a high extent. The corresponding hypothesis 3 revealed that there is no significant difference in the mean score of male and female academic staff on the influence of Scholarcy on professional development of academic staff in public universities in Rivers State. The finding supports in the findings of Kern, Arnett, & Martinez (2021), states that scholarcy automatically summarizes articles, highlighting key points, and generating flashcards, enabling faster comprehension of complex texts.

Conclusion

This study investigated the influence of Artificial Intelligence tools on professional development of academic staff in public universities in Rivers State. Based on the findings, it was concluded that to a high extent ChatGPT, Grammarly and Scholarcy influences the professional development of academic staff in public universities in Rivers State. Result from hypotheses also revealed that there is no significant difference in the mean score of male and female academic staff on the influence of ChatGPT, Grammarly, Scholarcy, Turnitin, QuillBot, and Scite on professional development of academic staff in public universities in Rivers State.

Recommendations

Based on the findings of the study, the following recommendations have been made;

1. Institution should organize regular workshops and seminars to educate academic staff on the use of AI tools such as ChatGPT, Grammarly, Turnitin, and QuillBot.
2. School management should encourage interdisciplinary collaboration through AI tools that identify potential research partners or themes globally.
3. Academic staff should Use AI translation tools (e.g., QuillBot, DeepL, Google Translate) to aid academic staff in publishing or collaborating internationally.

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