UTILIZATION OF ARTIFICIAL INTELLIGENCE SOFTWARE FOR EFFICIENT RESEARCH PROCESS IN SCHOOL OF BUSINESS STUDIES, AKANU IBIAM FEDERAL POLYTECHNIC

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Abstract

The study ascertained the ways artificial intelligence software is utilized for efficient research process in School of Business Studies, Akanu Ibiam Federal Polytechnic, Unwana. Four research questions guided the study and one null hypothesis was tested at 0.05 level of significance. In carrying out this investigation, a survey design was used. The population of the study consisted of all staff and students of School of Business Studies, Akanu Ibiam Federal Polytechnic Unwana which totalled 1631. A sample size of 430 was used for the study in line with the approved table for determining sample size from a given population developed by Krejcie and Morgan. A five point scale structured questionnaire with 26 items was used. The questionnaire was entitled 'Utilization of Artificial Intelligence Software for Effective Research Process (UTAISERP)'. The data collected were analysed using mean statistics and standard deviation to answer the research questions and t-test for the hypotheses. The result showed that ChatGPT artificial intelligence software is utilized for research process in drafting, data analysis, and others; Elicit artificial intelligence software is also used in research process in finding author related papers; Litmaps is used in the research process in generating visual maps and Quillbot artificial intelligence software is used in citation generation, grammar check and so on. It was also found that Lecturers' and students' mean responses did not differ significantly on the utilization of Artificial Intelligence software for effective research process. Based on the findings of the study, it was concluded that artificial intelligence software gives credence to efficient research process thereby helping in timely production of quality research papers. Therefore, the study recommended among others, that Government/School management should ensure availability and adequacy of power supply and ICT facilities to improve usage as this software cannot be utilized in isolation of ICT facilities and internet connectivity.

Keywords: Utilization, Artificial Intelligence, School of Business Studies, Efficiency, Research Process.

Introduction

Artificial Intelligence research tools are becoming increasingly important in academic environments as they offer various benefits. Kandari (2023) avers that Artificial Intelligence (AI) software are helping scholars and students to gather better information. It has simplified research processes and learning, making education process easier for students and scholars. One significant advantage is the ability to access relevant repositories and analyse complex data sets easily. This allows researchers to gather necessary information efficiently. Additionally, these tools aid publishers in identifying potential reviewers and in combating plagiarism. The integration of Artificial Intelligence technologies to academic environments leads to streamlined processes, improved research outcomes, and fosters innovation (Akinola, 2024).

Popenici and Kerr (2017) describe artificial intelligence as computer software that has the capacity to carry out human-like processes such as learning, adaptation, synthesis, self-correction and the use of data for complex processing of tasks. It is a machine-like software system that interact with the environment. In the opinion of Purdy and Daugherty (2016) artificial

intelligence refers to various technologies that can be combined in different ways to sense, comprehend and act.

Researchers can utilize AI algorithms to quickly and efficiently analyse large amounts of data. The integration of artificial intelligence research tools in academics is revolutionising the landscape, offering researchers and publishers valuable tools to enhance their work and ensure integrity. The use of artificial intelligence in academic research is therefore becoming more prominent as professionals recognise the advantages it brings in terms of efficiency and productivity. Artificial intelligence software can be utilized in various aspects of research, including writing, editing and citing research papers, contributing to the improvement of the overall research process. It is most vital for researchers to be aware of the benefits and opportunities artificial intelligence offers to enhance research quality. However, it is equally important to acknowledge the challenges that may arise when incorporating AI tools into academic research (Akinola, 2024)

Akanu Ibiam Federal Polytechnic Unwana is actively integrating artificial intelligence (AI) into its academic and research framework. The polytechnic is committed to leveraging technology to enhance education and research, with notable focus on AI, data science and cyber-security (Akanu Ibiam Federal Polytechnic, n.d., para. 3). While, the institution does not have a formal public policy on the use of AI software for staff and students in the research process, there is evidence that the institution is engaging with AI both in its curriculum and in academic research. The institution even though remotely situated has evidence of growing awareness of AI's potentials in fields like architectural design; as indicated by study involving students from the polytechnic revealing a growing awareness of AI's potentials in fields like architectural design (Cheche, Johnson, Odom & Eguzonuwa 2024). Academics from the polytechnic have published research articles that utilized AI-related concepts. This demonstrates the practical application of AI in engineering research and highlights a nascent but significant interest in using AI tools for practical, real-world applications in research.

The school of business studies is one of the faculties in the institution. It is made up of six departments: Accountancy, business administration, library and information science, marketing, office technology and management, and public administration. Besides the lecturers' research activities as scholars, the students carry out project work in their final national and higher national diploma certificate pursuit. The process of this research work is quite tasking and engaging AI software is expected not only to expedite the research process but make it effective.

The utilization of AI in the institution is expected to align with broader global trends including: data analysis and modelling, automated literature review, content generation, and plagiarism detection. In the opinion of Akinola (2024) researchers should not overlook the potentials that artificial intelligence holds in academia. By embracing artificial intelligence technology and understanding its potential limitations, researchers can harness its advantages to drive innovation and elevate the quality of their research. Artificial intelligence is revolutionising the field of academic writing by providing researchers with various tools to enhance their productivity and efficiency. Artificial intelligence software now enables researchers to generate grants, write books, and even compose articles for scientific and social journals. Some of this software according to Akinola (2024) comprise ChatGPT, Elicit, Litmaps, Quillbot and others. Additionally, this software also helps researchers in editing their articles ensuring grammatical accuracy in their writing.

ChatGPT assists in research feedback and writing skill enhancement, and is further distinguished by its multilingual translation capabilities. This AI tool stands apart from standard search engines by providing precise, targeted responses. Beyond assisting researchers ChatGPT offers personalized learning experiences, enabling researchers to engage with contents, tailored to their unique needs and pace, enhancing the overall educational process without replacing teachers.

In the views of Pinzolits (2023), Elicit is an artificial intelligence-powered research assistant that uses language models to find relevant academic papers even without a perfect keyword match. It can also summarize and extract key information, support various research tasks, and integrate with citation managers. Litmaps is also another artificial intelligence research software that streamlines the literature review process by generating a visual map of relevant articles (Pinzolits, 2023). It analyses citation patterns to find the most relevant and related articles, reducing the time it takes to complete a literature review while enhancing its quality. Litmaps seems to be popular among PhD candidates, science communicators, and offers benefits such as finding overlooked articles, keeping users informed about new publications and facilitating effective communication and collaboration among colleagues.

Fitria (2022) described Quillbot as an online tool that helps writers paraphrase their writing, prevent plagiarism, summarize lengthy sentences, and enhance their grammar for more clarity and a more polished appearance. Quillbot has become an online paraphrasing tool that students often rely on to paraphrase and produce originality in their academic writing products. Kurniati and Fithriani (2022) aver that majority of graduating students frequently utilize Quillbot, when compared to other digital tools such as Grammarly, Turnitin, and Mendeley, to help them with their academic writing assignments, among the many now-accessible digital resources.

There are also some recent attempts to support students in writing scientific papers using AI-based technologies. The use of an online paraphrasing tool as an artificial intelligence-based technology that assists students in paraphrasing is one benefit of using AI in the academic field. It is based on the foregoing that it becomes imperative to ascertain the utilization of artificial intelligence software for effective research process in School of Business Studies having seen evidence of AI deployment in school of science and others.

Statement of the Problem

Conducting academic research generally has been a herculean task before the advent of internet technology. Researchers had to visit various libraries in different tertiary institutions in search of research materials such as books, journals and other publications relevant to their research topics. The introduction and utilization of artificial intelligence software have made research easier and streamlined. Artificial Intelligence software now enables researchers to generate research grants, write books, and compose articles for journals. In the view of Akinola (2024) AI software aid researchers in editing their articles, ensuring grammatical accuracy in their writing.

Even though there are evidences of engagement of AI tools in the engineering and other faculties of Akanu Ibiam Federal Polytechnics, Unwana, the rate at which School of Business Studies' researchers encounter challenges in their research activities suggest that they might be facing delays in accessing research materials, editing their research publications and others, and therefore bring to question the ways students/lecturers utilize artificial intelligence in their research processes. The core problem of this study is the lack of empirical understanding regarding the current level of AI software utilization, the operational and ethical barriers preventing its effective adoption, and the resulting gap between traditional research inefficiencies and the potential performance gains offered by AI tools within the School of Business Studies at Akanu Ibiam Federal Polytechnic.

Research Questions

The following questions guided the study:

1. In what ways are ChatGPT artificial intelligence software utilized for efficient research process?
2. In what ways are Elicit artificial intelligence software utilized for efficient research process?
3. In what ways are Litmaps artificial intelligence software utilized for efficient research process?

4. What are the ways Quilboat artificial intelligence software utilized for efficient research process?

Hypothesis

The null hypothesis that guided the study was tested at 0.05 level of significance.

Ho_1 There is no significant difference in the mean scores of students and lecturers on the utilization of artificial intelligence software in research process in School of Business Studies, Akanu Ibiam Federal Polytechnics, Unwana.

Method

The study adopted descriptive survey research, which entailed the researcher going into the field to administer structured questionnaire to the respondents. The population of the study consisted of all staff and students of School of Business Studies, Akanu Ibiam Federal Polytechnic Unwana which totalled 1631. A sample size of 430 was used for the study in line with the approved table for determining sample size from a given population developed by Krejcie and Morgan (cited in Igwe, 2018). Stratified sampling technique was used to select this sample size from the staff and students. A five-point rating scale questionnaire with 26 items was used for data collection. The instrument was validated by three experts from Computer Science. It was subjected to a reliability test using Cronbacch Alpha, which gave a coefficient of 0.80. Mean and standard deviation were used to analyse the research questions while t-test was used to test the null hypothesis at 0.05 level of significance. Mean values of 3.0 and above were regarded as Agree while those below 3.0 were regarded as Disagree. Hypothesis of no significant difference was retained when the calculated value was less that the tale value at 0.05 level of significance. otherwise, it was accepted.

Results

Research Question 1

In what ways are ChatGPT artificial intelligence software utilized for efficient research process?

Table 1: Mean and standard deviation of responses on the utilization of ChatGPT artificial intelligence software for effective research process in school of business studies

S/N	Items	Lecturers $\bar{x}$	STD	Students $\bar{x}$	STD	Total $\bar{x}$	STD	Decision
1	Drafting research papers	3.9	1.9	4.2	1.9	8.2	3.9	Agree
2	Text generation for research topic	3.5	1.8	3.3	1.8	6.8	3.7	Agree
3	Text summarization for research topic	3.0	1.8	3.8	1.9	6.8	3.7	Agree
4	Literature review	3.4	1.8	3.8	1.9	7.3	3.8	Agree
5	Grammar check	3.1	1.7	4.0	2.0	7.1	3.8	Agree
6	Language checking	3.6	1.8	4.0	2	7.6	3.9	Agree
7	Data collection	2.8	1.6	4.1	2.0	4.8	3.7	Agree
8	Data analysis	3.8	1.9	4.3	2.1	8.2	4.9	Agree
9	Data presentation	2.6	1.6	3.8	1.9	6.4	3.6	Agree

The analysis of data presented in Table 1 shows that the mean score of items 7 and 9 by lecturers were 2.8 and 2.6 with standard deviation of 1.6, while items 1-6 and 8 shows mean rating ranging between 3.0 to 3.9. This indicates that lecturers disagree that they utilize ChatGPT in data collection and presentation while agreeing that it is utilized in drafting research papers, text generation for research topic, text summarization for research topic, literature review, grammar check, language checking and data analysis. However, the students mean response which ranges between 3.3-4.2 shows their acceptance that all the items are ways ChatGPT artificial intelligence software is utilized for efficient research process. The close range of the

standard deviations shows that the respondents were not very far from each other in their responses. This implies that ChatGPT artificial intelligence software is used in drafting research papers, text generation for research topics and others.

Research Question 2

In what ways are elicit artificial intelligence software utilized for effective research process?

Table 2: Mean and standard deviation of responses on the utilization of Elicit artificial intelligence software for effective research process in school of business studies

S/N	Items	Lecturers		Students		Total		Decision
		$\bar{x}$	STD	$\bar{x}$	STD	$\bar{x}$	STD	
10	Use of elicit language models to find relevant academic papers	3.8	1.9	3.8	1.9	7.6	3.8	Agree
11	Use of elicit citation managers to find author related papers	3.5	1.8	3.5	1.8	7	3.6	Agree
12	Use of elicit to understand outcome of related previous related research studied	3.0	1.7	3.9	1.9	6.9	3.6	Agree
13	Use of elicit research assistant to generate research questions	3.4	1.8	3.9	1.9	7.3	3.7	Agree
14	Use of elicit to find information about population	3.5	1.8	3.4	1.8	6.9	3.6	Agree

Data presented in Table 2 above indicates that the mean scores are between the ranges of 3.0 to 3.9. This shows that the items are the ways Elicit artificial intelligence software is utilized for efficient research process in School of Business Studies, Akanu Ibiam Federal Polytechnic, Unwana.

Research Question 3

In what ways are Litmaps artificial intelligence software utilized for effective research process?

Table 3: Mean and standard deviation of responses on the utilization of Litmaps artificial intelligence software for effective research process in school of business studies

S/N	Items	Lecturers		Students		Total		Decision
		$\bar{x}$	STD	$\bar{x}$	STD	$\bar{x}$	STD	
15	To generate a visual map of relevant articles	4.0	2	4.4	2.1	8.4	4.1	Agree
16	To analyse citation	3.2	1.7	3.8	1.9	7	3.7	Agree
17	To keep users informed about new publications	3.0	1.7	3.6	1.9	6.6	3.6	Agree
18	To facilitate effective communication among co-authors	3.5	1.9	3.8	1.9	7.3	3.7	Agree
19	Use litmaps collaboration tools to collaborate among colleagues	3.3	1.8	3.9	1.9	7.2	3.7	Agree

In Table 3, above the mean rating of lecturers in item 15 shows 4.0 showing strongly agree and items 16-19 have mean scores ranging 3.0 – 3.5 depicting agree. The mean ratings of students for item 15 shows 4.4 which is strong agreement and items 16-19 show 3.6 – 3.9 indicating agree. The implication is that respondents agree that all items are ways Litmaps artificial intelligence software is utilized for efficient research process.

Research Question 4

What are the ways Quillboat artificial intelligence software utilized for effective research process?

Table 4: Mean and standard deviation of responses on the utilization of Quillbot for effective research process in school of business studies

S/N	Items	Lecturers $\bar{x}$	SD	Students $\bar{x}$	STD	Total $\bar{x}$	STD	Decision
20	Use of quillbot paraphraser	4.2	2.0	4.4	2.1	8.6	4.1	Strongly agree
21	Use of quillbot grammar checker	3.8	1.9	4.5	2.1	8.3	4	Agree
22	Use of quillbot AI detector	3.8	1.9	4.1	2.0	7.9	3.9	Agree
23	Use of quillbot summarizer	3.5	1.9	4.2	2.0	7.7	3.9	Agree
24	Use of quillbot translator	3.4	1.8	3.6	1.9	7	3.7	Agree
25	Use of quillbot citation generator	3.6	1.9	3.7	1.9	7.3	3.8	Agree
26	Use of quillbot chatflow	3.2	1.8	3.9	1.9	7.1	3.7	Agree

The data presented in Table 4 show that items 20 and 21 have average mean of 4.3 and 4.1 respectively depicting strongly agree, while items 22 to 26 show average mean ranging from 3.5 and 3.9 depicting agree. This implies that the items are the ways quillbot is utilized for efficient research process in school of business studies, Akanu Ibiam Federal Polytechnic, Unwana.

Test of Hypothesis

Ho There is no significant difference in the mean scores of students and lecturers on the utilization of artificial intelligence software in research process in School of Business Studies, Akanu Ibiam Federal Polytechnics, Unwana.

Table 5: Summary of t-test analysis of students and lecturers of school of business studies on the utilization of artificial intelligence software in their research process.

Group	N	Mean	SD	Df	t-cal	t-crit	Decision	Significance
Lecturers	20	3.42	0.126					
				3	0.868	0.425	Accept	Not Significant
Students	410	3.46	0.100					

From the table above, the calculated t-value of 0.868 is less than the t-critical value of 0.425, at
0.05 level of significance; therefore, the null hypothesis is accepted. Thus, there is no significant difference in the mean responses of lecturers and students on the utilization of artificial intelligence software in research process in School of Business Studies, Akanu Ibiam Federal Polytechnics, Unwana.

Discussion of Findings

Research question one sought data on the ways of utilization of ChatGPT artificial intelligence software for efficient research process. The findings showed that drafting research papers, text generation for research topic, text summarization for research topic, literature review, grammar check, language checking, as well as data analysis, are the ways respondents use ChatGPT in their research process for efficiency. The lecturers however disagree on the use of ChatGPT in data collection and presentation. The finding is in line with the stand of Singh and Singh (2023) that ChatGPT helps researchers, collect, analyse large amounts of data, make discoveries and optimize scientific and academic research experiments. This also buttresses the emphasis of Akinola, (2024) that scholars view ChatGPT and other large language models (LLMs) as powerful tools for enhancing efficiency of the research process though there is also emphasis on the significant risks and limitations in the use of the software, which underscores the need for a

formal public policy on the use of AI software in the research process. ChatGPT as a language model AI allows people to interact with a computer in a more natural and conversational way.

Findings in research question two which sought information on the ways Elicit artificial intelligencesoftware is utilized for efficient research process indicate that the software is used thus: finding academic papers, citation management, find author related papers, understand outcome of related previous research studied, generate research questions, as well as find information on population. These findings corroborate the views of Byun and Andreas (2023) that researchers can easily expand answers to see details about a paper with Elicit AI software and that a researcher can also select a particular result from a paper and Elicit will show more papers like the selected result. Moreover, the findings are also in line with the assertion of Joharder, (2025) that elicit is a powerful tool for research. He views elicit as a practical tool for streamlining the literature review process. In his opinion, elicit excels at specific amount of a researcher's time, thereby making the research process more efficient.

The study, in research question three, table 3 revealed that Litmaps artificial intelligence software is utilized in research process in generating visual maps of relevant articles; keep users informed about new publications, facilitate effective communication among co-authors and for collaboration among colleagues. Amanpreet (2022) concurs to this result in his submission that Litmaps is an interface for discovering the scientific literature that helps to visualize key literature, iteratively expand research and notify new articles connected to the maps. Moreover, according to Marjit (2020), Literature-maps have helped researchers curb the challenge of obtaining new academic literature in the ocean of research-based database resources. Litmaps enables the features of visualizing literature maps containing key articles in desired research in various visualization modes. The papers with more citations have larger circles as the size of the node is proportionate to the log of the citation count.

The result in research question four, on the ways Quillbot artificial intelligence software is utilised in research process to make for efficiency indicates that respondents agree that Quillbot, is used in paraphrasing, grammar checking, summarizing, translating and others which agrees with the opinion of Rahmani, (2023) that Quillbot is an artificial intelligence powered writing assistant that assist users in generating coherent, accurate and well-structured content. Fitra (2021) also corroborates this finding in his submission that Quillbot is an online tool that helps writers paraphrase their writing, prevent plagiarism, summarize lengthy sentences and enhance their grammar for more clarity and polished appearance. Quillbot is a user-friendly online paraphrasing tool that can be accessed both for free or paid with features that make it easy for students and scholars to enhance their paraphrasing skills.

The result of the hypothesis showed that significant difference did not exist between the mean scores of Lecturers and Students in School of Business Studies, Akanu Ibiam Federal Polytechnic, Unwana on the ways AI software are utilized for efficient research process. This stand correlates the general position that AI is a powerful tool for enhancing efficiency by automating tedious and time-consuming tasks. It is utilized in literature review and synthesis; writing and editing; data analysis and visualization; citation and referencing (OpenAI, 2025)

Conclusion

The study concludes that the four artificial intelligence software are all relevant and efficient in enhancing efficient and quality research work. Therefore, for researchers in school of business studies. Akanu Ibiam Federal Polytechnic to produce quality and timely research projects there is need to combine the use of this software. This is in view of the fact that each has separate function that can conveniently align with the others to help one achieve the objectives of any research project.

Recommendations.

Based on the findings of the study the following recommendations were made:

1. Government/school management should ensure availability and adequacy of power supplies, ICT facilities, and internet connectivity to improve usage as these software cannot be utilized in isolation of ICT facilities and internet connectivity.
2. Researchers (lecturers and students) should continuously upgrade their skill in the use of artificial intelligence software and should not be cut up in manual research process, this will enable them to efficiently utilize the software to aid their research as these software are continuously evolving
3. Stakeholders should ensure that artificial intelligence software skills are integrated in the curriculum, and students should be taught research processes using artificial intelligence software.
4. Lecturers should ensure that students are kept active in learning ICT and digital-skills related courses and software which has continuously changed the manual methods or research process.

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