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Literacy Level and Attitude of Academics towards the Adoption of Artificial Intelligence (AI) in Public Universities in Rivers State

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Abstract

The study focused on literacy level and attitude of academics towards the adoption of AI in public Universities in Rivers State. Three research questions were answered and three hypotheses tested in the study. The study adopted descriptive survey design. Population of the study was 3,766 lecturers in the three public Universities in Rivers State out of which 362 lecturers were sampled using stratified random sampling technique. Instrument used for gathering data was a 15-item questionnaire named "Lecturers Literacy and Attitude on the Adoption of Artificial Intelligence Questionnaire" (LLAAAIQ) which face and content validated by three Educational Management expert at Rivers State University. Cronbach alpha was used to estimate the reliability of the questionnaire and it produced an index of 0.81. There were 362 copies of questionnaire administered while 357 copies (238 males and 119 females) representing 98.6% were retrieved. Research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance. The findings showed that the lecturers had low level of AI literacy but had a good attitude towards its adoption. It was also shown that shortage of AI tools was not a challenge to them but the lack of regulatory framework and security of digital information. It was recommended among others that the lecturers should be trained on the adoption of AI for the discharge of their academic and administrative responsibilities in the University.

Keywords: Artificial Intelligence, Lecturers, Universities, Literacy, Attitude

Introduction

Artificial Intelligence (AI) is one of the modern technologies which was developed to help solve problems that would ordinarily require the human brain to execute in the past. This technology has continued to gain relevance across all sectors of the economy and the education sector is not left out. Seldon and Abidoye (2018) alluded to this when they stated that AI has strategically increased the value of education and this implies that a lot of transformation has been made possible in the education sector since the emergence of AI.

The relevance of AI cuts across all levels of education and lecturers in Universities have continued to explore how this technology can be relevant to their educational service delivery. Yusuf et al., (2022) mentioned that there are several features that makes AI beneficial to users including lecturers in Universities and this is premised on the fact that it is user-friendly, has infinite functions and can simplify complex tasks. However, the extent to which these lecturers can benefit from this technology depends on their level of awareness on its usage as well as the believe they hold about the usefulness of this technology.

So far, Kuleto et al., (2021) pointed out that AI represents the future of work and its adoption in solving educational problems cannot be undermined. Lecturers have several educational roles that they are expected to discharge for the achievement of educational goals and objectives. However, the extent to which they maximize the benefits of this technology will depend on their level of literacy in its adoption and perceived usefulness of the technology to them. This is important to maximize this technology in the lecturer's functions.

Statement of the Problem

Artificial Intelligence (AI) has been in existence for several decades and have been helpful in solving societal problems particularly in the area of finance and health. However, its adoption in the education sector particularly among lecturers in Universities has been very slow. Despite the fact that University administrators encourage lecturers to embrace this new technology, the rate of adoption among lecturers in the discharge of their duties has been epileptic. This experience raises questions as to whether or not these lecturers are literate on the adoption of this technology and if they perceive that the technology will be useful to them in the discharge of their academic and administrative roles and this forms the problem that this study intends to investigate.

Literature Review

Artificial Intelligence (AI) is one of the most talked about technological tool for production of goods and rendering of services all over the world as a result of the several advantages that it possesses. Garcia-Martinez et al., (2023) defined AI as any resource or machine that has the capacity to execute human activities. In a clearer term, it remains to any form of technology that can emulate human reasoning in the execution of simple or complex task. This means that rather than man thinking for himself about how to carry out his or her day-to-day activities, the worries and responsibility is transferred to the machine.

The importance of AI in a knowledge community such as the University cannot be overemphasized as academics who are at the forefront of knowledge production and management require essential tools such as the AI for the execution of their academic and administrative responsibilities. However, the extent to which these academics will familiarize with this technology depends on how knowledgeable they are about this emerging technology. This means that academics must show AI literacy for them to be able to put this technology into meaningful use. Long and Magerko (2020) as well as Miao et al., (2021) both alluded to the fact that AI literacy refers to the set of skills that enable an individual to understand how AI is being used by learning about AI, how it works and how it can be used sustainably.

Furthermore, Ng et al., (2021) pointed out that for an individual to be said to be AI literate, he or she must know and understand AI, use and apply it, evaluate and create things with it and understand the ethics that guides its usage. It is only when this is achieved that a user can be said to be AI literate. This means that University lecturers must understand the basis behind the development of this technology, understand how it can be useful in their own line of duty and also ensure that they are able to adhere to the principles guiding the use of this technology.

The knowledge vis-à-vis literacy of lecturers about AI cannot be of great benefit if they do not develop the right perception about this technology. There is no doubt that while some lecturers have heard about the emergence of AI and how it can be used in their line of duty, they are still skeptical about whether or not they should adopt it. This means that their perception about this technology is not strong enough to compel them to adopt the technology. West and Allen (2018) pointed out that it was not until recently when the scientific community began to engage with AI has some have previously expressed fear about this technology which has affected their willingness to deploy it even in the education sector. The wrong notion that people hold about AI has therefore limited the pace at which it is being deployed by lecturers even in the Universities.

Additionally, there are several other factors that hinder lecturers from deploying AI at work and the issue of policy surrounding its use, security and data issues about AI were dominant (Onaolapo & Onifade, 2020). Furthermore, Alam et al., (2024) stated that there are other challenges that hinder lecturers' adoption of AI at work and this includes issues about the low level of expertise, privacy and security issues, the capital intensive nature of AI integration, resistance to change, problem of data quality and availability, lack of training and so on. Therefore, except these challenges are systematically addressed, the issue of AI among lecturers

in the ivory towers will continue to wobble as its adoption will be undermined by those who are supposed to promote its usage.

Empirical Review

Studies have continued to be conducted by scholars on the adoption of AI across different levels of education. Woodruff et al., (2023) looked into how educators in the fifty US states felt about AI adoption and what obstacles they faced. According to the study, people's perceptions of AI were generally positive and they were open to integrating it. Nonetheless, there were differences in the comfort level and accessibility of technology amongst the various age, gender, and regional groups. Alam et al., (2024) conducted a study on artificial intelligence (AI) literacy in university libraries in Zambia. The study concentrated on the perspectives and utilization of AI by librarians. 82 different participants provided the data, which was collected by convenience and purposive sampling techniques. The results show that Zambian librarians have a strong grasp of AI principles and a favorable outlook on the technology's potential to improve library services. Nonetheless, obstacles like the requirement for more advanced AI knowledge, opposition to change, and financial limitations are noted.

Alnasib (2023), on the other hand, concentrated on the elements influencing faculty members' preparedness to include artificial intelligence into their instruction within the framework of Saudi Higher Education. The study included 465 faculty members from King Faisal University in Saudi Arabia as a sample. To gather information, a 46-item online survey was employed. According to the findings, the respondents were generally prepared to include artificial intelligence (AI) into their lessons (M = 3.40, SD = 0.841). At the 0.01 significance level, statistically significant correlations were discovered between the perceived benefits of artificial intelligence (AI) in teaching and higher education, faculty members' readiness to incorporate AI into their lessons, their attitudes toward AI, their behavioral intentions to use AI, and the supportive environments for AI use. Regarding faculty members' preparedness to incorporate AI into their instruction, significant variations were observed based on gender, age, and prior teaching experience at the 0.05 significance level. However, when it came to faculty members' preparedness to incorporate AI into their instruction, there were no statistically significant variations discovered at the 0.05 significance level based on the type of college or academic rank.

Another study on the potential and difficulties of artificial intelligence in Tehran's higher education was carried out by Jafari and Keykha in 2023. The study used a qualitative methodology and underwent thematic analysis. The study involved 15 purposively sampled AI

PhD students from Tehran University in 2022–2023 who were interviewed as part of the study. The results of the study demonstrated that participants thought about eight secondary subthemes which were faculty members, students, the teaching and learning process, assessment, the development of educational structures, the development of research structures, the development of management structures, and the development of academic culture—when examining the opportunities that AI creates for higher education. Additionally, it was demonstrated that AI presents certain difficulties for higher education.

O'Shaughnessy et al. (2023) carried out a study that was relevant to the topic of creating inclusive and efficient governance structures as well as public outreach plans for the adoption of AI. For the study, a sample of 3,524 and 425 technology specialists was taken. The study's conclusions indicated that cultural values, risk aversion, and techno-skepticism are the main influences on AI attitudes. The data gathered from them was examined using structural equation modeling. In the study, experts expressed a more positive opinion about AI than did the general public, but they did not agree to demand regulation, which they both view as essential. Therefore, these results indicate that in order for academics to fully embrace AI as a tool for efficient service delivery in their universities, rules and procedures need to be strengthened.

Aim and Objectives of the Study

The aim of the study was to investigate literacy level and attitude of academics towards the adoption of AI in public Universities in Rivers State. Specifically, the study sought to:

1. determine the level of AI literacy among academics in public Universities in Rivers State.
2. ascertain the attitude of academics towards the adoption of AI in public universities in Rivers State.
3. examine the challenges to academics' adoption of AI in public Universities in Rivers State.

Research Questions

The following research questions guided the study:

1. What is the level of AI literacy among academics in public Universities in Rivers State?
2. What is the attitude of academics towards the adoption of AI in public universities in Rivers State?
3. What are the challenges to academics' adoption of AI in public Universities in Rivers State?

Hypotheses

The following hypotheses were tested at 5% significance level:

1. There is no significant difference between the mean opinion score of male and female lecturers on the level of AI literacy among academics in public Universities in Rivers State.
2. There is no significant difference between the mean opinion score of male and female lecturers on the attitude of academics towards the adoption of AI in public universities in Rivers State.
3. There is no significant difference between the mean opinion score of male and female lecturers on the challenges to academics' adoption of AI in public Universities in Rivers State.

Methodology

This study employed descriptive survey design as it sought to interrogate an ongoing phenomenon. The population of the study consisted of all the 3,766 lecturers in the three public Universities in Rivers State. There were 362 lecturers (241 males and 121 females) who were sampled for the study using stratified random sampling technique. The sample size was estimated using the Taro Yamane minimum sample size determination formula. The instrument used for the collection of data was a 15-item questionnaire tagged "Lecturers Literacy and Attitude on the Adoption of Artificial Intelligence Questionnaire" (LLAAAIQ). The instrument was responded to on a four-point Likert rating scale of Very High Level (VHL=4), High Level (HL=3), Low Level (LL=2) and Very Low Level (VLL=1) for research question one and Strongly Agree (SA=4), Agree (A=3), Disagree (D=2) and Strongly Disagree (SD=1) for research questions two and three. These weights were summed and divided by 4 to arrive at 2.50 which is the decision mean. The instrument was face and content validated by three Educational Management expert at Rivers State University. The reliability was estimated using Cronbach alpha and the index was 0.81 which showed that the questionnaire was reliable. There were 362 copies of questionnaire administered by the researcher and three trained research assistance but 357 copies (238 males and 119 females) which represented 98.6% were retrieved. The research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance.

Results

Answer to Research Questions

Research Question One: What is the level of AI literacy among academics in public Universities in Rivers State?

Table 1: Mean and Standard Deviation Scores on the Level of AI Literacy Among Academics in Public Universities in Rivers State

S/No	Items	Male Lecturers n=238		Female Lecturers n=119		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$	Decision
1	Lecturers understand how AI can be applied in their line of duty	2.42	0.68	2.42	0.68	2.42	Low Level
2	Understanding of the ethics guiding the use of AI	2.39	0.69	2.35	0.72	2.37	Low Level
3	AI has been used to solve educational problems	2.37	0.70	2.38	0.70	2.38	Low Level
4	Lecturers know how to create educational contents using AI	2.44	0.67	2.33	0.73	2.39	Low Level
5	Lecturers exhibit emotional balance in the use of AI	2.46	0.66	2.40	0.69	2.43	Low Level
	Grand Mean and Standard Deviation	**2.42**	**0.68**	**2.38**	**0.70**	**2.40**	**Low Level**

Table 1 showed that with an average mean set score of 2.40, there was a low level of AI literacy among academics in public Universities in Rivers State and this applied to both the male and female lecturers given the grand mean scores of 2.42 and 2.38 which were also below the criterion mean score of 2.50 used for decision making. It was revealed in the study that lecturer application of AI, its ethics, its adoption for problem solving, creation of educational content and exhibition of emotional balance were all at a low level.

Research Question Two: What is the attitude of academics towards the adoption of AI in public universities in Rivers State?

Table 2: Mean and Standard Deviation Scores on the Attitude of Academics Towards the Adoption of AI in Public Universities in Rivers State

S/No	Items	Male Lecturers n=238		Female Lecturers n=119		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$	Decision

6	Lecturers have intention to use AI when necessary	2.62	0.62	2.66	0.64	2.64	Agree
7	AI is a threat to the duties of lecturers and should be avoided	2.60	0.63	2.69	0.61	2.65	Agree
8	Acquiring AI skills is a complex experience for lecturers	2.43	0.67	2.42	0.68	2.43	Disagree
9	The use of AI can affect the quality of a lecturers work negatively	2.65	0.60	2.67	0.62	2.66	Agree
10	The use of AI can expose the lecturer to cyber threats	2.70	0.59	2.71	0.61	2.71	Agree
	Grand Mean and Standard Deviation	**2.60**	**0.62**	**2.63**	**0.63**	**2.62**	**Agree**

Table 2 indicated from the mean set score of 2.60 which was above the criterion mean score of 2.50 used for decision making that the respondents agreed on the attitude of the lecturers towards the adoption of AI. The lecturers agreed that they have intention to use AI, see it as an academic threat, see that it can affect academic originality and that it can expose them to cyber threats but they disagreed that acquiring AI skills is a complex task for them. The male and female lecturers agreed to these given their grand mean scores of 2.60 and 2.63 which were above the criterion mean score used for decision making.

Research Question Three: What are the challenges to academics' adoption of AI in public Universities in Rivers State?

Table 3: Mean and Standard Deviation Scores on the Challenges to Academics' Adoption of AI in Public Universities in Rivers State

S/No	Items	**Male Lecturers n=238**		**Female Lecturers n=119**		**Mean Set**	
		Mean $\bar{X}_1$	**SD**	**Mean** $\bar{X}_2$	**SD**	X $\bar{X}$	**Decision**
11	There are no sufficient training for lecturers to adopt AI	2.73	0.58	2.72	0.61	2.73	Agree
12	Shortage of AI tools that can be used by lecturers	2.35	0.71	2.33	0.73	2.34	Disagree
13	Lack of regulatory framework to guide the adoption of AI	2.77	0.56	2.70	0.62	2.74	Agree

14	The use of AI overrides originality	2.79	0.55	2.81	0.57	2.80	Agree
15	Digital information theft is a bane to AI adoption	2.71	0.59	2.63	0.64	2.67	Agree
	Grand Mean and Standard Deviation	**2.67**	**0.60**	**2.64**	**0.63**	**2.65**	**Agree**

Table 3 indicated that with the mean set average of 2.65, the respondents agreed on the challenges to academics' adoption of AI in public Universities in Rivers State. This means that the male and female lecturers agreed that insufficient training, lack of regulatory framework, theft of digital information and the fact that AI overrides originality were challenges faced in its adoption. The however disagreed that the shortage of AI tools was a challenge to its adoption. Summarily, the grand mean scores of 2.67 and 2.64 from the male and female lecturers indicated that they agreed on the challenges to academics' adoption of AI in public Universities in Rivers State.

Test of Hypotheses

HO_1: There is no significant difference between the mean opinion score of male and female lecturers on the level of AI literacy among academics in public Universities in Rivers State.

Table 4: Summary of z-test Analysis on the Difference between the Mean Opinion Score of Male and Female Lecturers on the Level of AI Literacy Among Academics in Public Universities in Rivers State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Lecturers	238	2.42	0.68	355	0.51	1.96	0.05	Null hypothesis not rejected
Female Lecturers	119	2.38	0.70					

The value of z-cal. of 0.51 in Table 4 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was not rejected and this indicated that there was no significant difference between the mean opinion score of male and female lecturers on the level of AI literacy among academics in public Universities in Rivers State.

HO_2: There is no significant difference between the mean opinion score of male and female lecturers on the attitude of academics towards the adoption of AI in public universities in Rivers State.

Table 5: Summary of z-test Analysis on the Difference between the Mean Opinion Score of Male and Female Lecturers on the Attitude of Academics Towards the Adoption of AI in Public Universities in Rivers State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Lecturers	238	2.60	0.62	355	0.43	1.96	0.05	Null hypothesis not rejected
Female Lecturers	119	2.63	0.63					

The value of z-cal. of 0.43 in Table 5 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was not rejected and this indicated that there was no significant difference between the mean opinion score of male and female lecturers on the attitude of academics towards the adoption of AI in public universities in Rivers State.

HO_3: There is no significant difference between the mean opinion score of male and female lecturers on the challenges to academics' adoption of AI in public Universities in Rivers State.

Table 6: Summary of z-test Analysis on the Difference between the Mean Opinion Score of Male and Female Lecturers on the Challenges to Academics' Adoption of AI in Public Universities in Rivers State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Lecturers	238	2.67	0.60	355	0.43	1.96	0.05	Null hypothesis not rejected
Female Lecturers	119	2.64	0.63					

The value of z-cal. of 0.43 in Table 6 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was not rejected and this indicated that there was no significant difference between the mean opinion score of male and female lecturers on the challenges to academics' adoption of AI in public Universities in Rivers State.

Discussion of Findings

The data collected and analyzed from the lecturers showed that there was a low level of AI literacy among the lecturers and there was no significant difference between the opinion of the male and female lecturers on the AI literacy of academics in public Universities in Rivers State. This finding differs from the outcome of the study by Woodruff et al., (2023) which showed

that Zambian librarians have a strong grasp of AI in their institutions. This may however be because AI is a tool that they must use in their line of duty as librarians as there are slimmer alternatives to their job. It was shown in the study that lecturers do not have full grasp of how AI can be applied in their various lines of duty. Similarly, they showed from their responses that they do not fully understand the ethics that guide the adoption of AI which is very important to avoid bridging extant guidelines. Similarly, the respondents indicated that there was a low level to which they had adopted AI in solving educational problems. This means that the lecturers do not fully understand how they can deploy AI in solving some of their educational needs. The ability to crate educational content and showcase emotional balance in the use of AI was also very low and this calls for more training for these lecturers on how they can adopt this technology in their various areas of responsibilities.

Furthermore, the lecturers showed a mix of attitude towards the adoption of AI and the male and female lecturers did not differ in this regard. The study by O'Shaughnessy et al. (2023) supported this finding as it shows that technology experts showed more connection and interest to AI more than the public and this is simply because it is a terrain that they are familiar with. Although, the male and female lecturers showed that they had intention to use AI, they also perceived AI to be a threat which supports the finding of the study by O'Shaughnessy et al. (2023). This finding suggests that the low literacy of the academics in terms of AI does not imply that they are unwilling to use the technology and this was further alluded to by the fact that they are afraid of the threats that may come with the use of this technology. These lecturers must therefore be enlightened for them to develop the right attitude towards this technology. Their response also showed that they disagreed that acquiring AI skills was a complex experience and this again shows their willingness to learn how this technology can be used. This means that these lecturers believe that they can acquire AI skills if they are provided the opportunity to do so. This agree with the findings of the study by Alnasib (2023) which indicated that lecturers have a positive interest in the use of AI in their schools. They however agree that AI can affect the quality of their work and this is premised on the fact that if this technology is not properly used, it can erode originality and affect lecturers' creativity. The current wave of cyber insecurity also showed in their responses as they indicated that this technology can expose them to cyber threat which intuitively is one of the challenges with this kind of technology.

According to the lecturers, they agree that there are challenges to their adoption of AI and this applies to both the male and female academics. The lecturers agreed that there is no adequate

training on how the lecturers can adopt AI and this reflected in most of their responses implying that there is still a knowledge gap among the lecturers on how they can deploy AI at work. The lecturers also agree that the lack of regulatory framework in AI adoption is also a challenge. This is not only restricted to the Universities alone as AI policy and framework is still scanty at the national and international level. The lecturers alluded to the fact that AI can override academic originality and that it can expose them to digital information theft but they disagree that there is shortage of AI tools for its adoption. This study shows that a lot needs to be done in the Universities for lecturers to embrace AI as an integral part of their functions as custodians of knowledge in the nation's ivory towers. Jafari and Keykha (2023) discovered and pointed this out in their study as it was revealed that the adoption of AI requires management support and no institution of learning should shy away from this.

Conclusion

The Study concludes based on the findings that there is a low level of AI literacy among the academics, but the academics showed the right attitude towards its adoption. The low literacy may be as a result of several challenges faced by the lecturers in the adoption of AI and the male and female lecturers did not differ in their opinion about the adoption of AI in the Universities.

Recommendations

The recommendations that emanated from the findings of this study are as follows:

1. There is need for capacity building programmes to be organized for these lecturers on how AI can be adopted in their various activities as this will promote the acceptance and adoption of AI by these academics as a professional tool for the discharge of their duties.
2. University administrators need to provide incentives for these academics for the adoption of AI through the provision of essential AI resources as well as suitable policies that will encourage the lecturers to deploy this tool in their various personal and professional activities.
3. Lecturers in these Universities must collaborate with colleagues in order institutions of higher learning on the adoption of AI as this will help to strengthen their awareness, skills and benefits from the use of AI. Similarly, belonging to associations that promote the use of AI will assist these academics to be more informed on the adoption of AI in their various areas of service delivery.

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