

# Imperatives of Integrating Artificial Intelligence for Shaping Graduates' Employability Skills in Public Tertiary Institutions in Rivers State

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## Abstract

The study investigated the imperatives of integrating artificial intelligence for shaping graduates' employability skills in public tertiary institutions in Rivers State. Three research questions were answered and three hypotheses tested in the study. Descriptive survey design was adopted for the study while the population of the study consisted of all the postgraduate students in all the tertiary educational institutions in Rivers State out of which 384 students were sampled by applying the Cochran formula for the determination of sample size from an unknown population. The respondents were sampled using multistage sampling procedure across all the tertiary educational institutions offering postgraduate programmes in River State. Instrument used for data gathering was a 15 item questionnaire named "Imperatives of Integrating Artificial Intelligence for Shaping Graduates' Employability Skills Questionnaire" (IIAISGESQ). The questionnaire was structured along the line of the four point modified Likert scale of Strongly Agree/ Very High Level, Agree/High Level, Disagree/Low Level and Strongly Disagree/Very Low Level with weighted scores of 4, 3, 2 and 1 respectively which produced an average score of 2.50 which was used for decision making. The questionnaire was face and content validated by three Measurement and Evaluation expert at the University of Port Harcourt and the reliability of the instrument was estimated 0.84 using Cronbach Alpha statistics. Out of the 384 respondents targeted for the study, only 362 (141 males and 221 females) which represented 94% of the targeted sampled respondents provided valid responses which was used for data analysis. The research questions were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance. The findings of the study showed that the students were proficient in the use of AI and that the integration of this technology enables' graduates' employability skills by improving on their digital literacy, improving their communication skills, data analysis skills and innovativeness. However, challenges such as inadequate infrastructure, resistance to change and inadequate AI policy at the institutional level were identified. The study recommended the need for revision of the University curriculum to capture recent employment demands in the society.

**Keywords:** Artificial Intelligence, Graduate Employability, Tertiary Institutions, Education, Rivers State

**DOI:** 10.7176/JEP/17-3-07

**Publication date:** March 28<sup>th</sup> 2026

## Introduction

Employment remains primary in the heart of every graduate as they expect to secure a job after spending years in higher institution. The introduction of entrepreneurship education was primarily to equip students with employment skills for labour market abruption and to reduce the rate of graduate unemployment. However, some graduates go the extra mile by seeking admission into business education programmes in order to acquire more basic business skills. According to Akpakwu (2020), these entrepreneurship and business education programmes are designed to equip students with the comprehensive knowledge, skills, and competencies necessary to navigate and succeed in the dynamic and increasingly complex business environment. Students who acquire these competencies are expected to be self-employed after graduation or even create jobs for others.

The emergence of new technologies such as Artificial Intelligence (AI) have continued to raise questions on whether these technologies create threats or opportunities to employment prospects of students running entrepreneurship and other business education programmes in the University. Ferreira-Meyers (2025) mentioned that the rapid evolution of technology and workplace demands necessitates a transformation in higher education approaches and this is because educational programmes may no longer be relevant if they fail to factor in these technological realities to educational curriculum in this new era. While it is understandable that AI offers a lot of

opportunities, it must be strategically harnessed, especially for the benefit of students of entrepreneurship education programmes in higher educational institutions.

The acquisition of employability skills is important for all students in this technological era and students as well as instructors must rise to this demand. The emergence of AI must therefore be designed to equip graduates with the needed employment skills to be able to compete globally amidst these changes. Chhatwal et al., (2023) pointed out that some of the advantages that AI offers is that it enables personalized learning, tailoring instruction to individual student needs and providing immediate feedback. This means that teachers and students can leverage on this technology to equip graduates with contemporary labour market skills that is needed for self or paid employment.

Ferreira and Ferreira (2021:23) stated that artificial intelligence refers to "the set of algorithms and techniques that allow machines to learn from data and experiences, as well as the ability to perform tasks that previously required human intelligence to be accomplished". This means that this technology can perform the employment activities that humans are expected to execute but can also be used to equip graduates with the competencies that will make them more effective in the business world. It is only when the right educational approaches are developed that these gains can be acquired. Scholars such as Rickardo and Meiriele (2023) pointed out that it is true that many jobs can be replaced by intelligent machines and algorithms such as AI which can lead to job losses in some areas but can also create new employment opportunities in technology and AI-related sectors, such as software development and data engineering. This means that the issue of AI in the current employment landscape has to do with a change in approach which higher educational institutions must lead, to avoid graduate students falling out of employment. Obiigwe (2024) alluded to the fact that AI came with a disruptive approach with economic and employment and as such, relevant institutions including those in the education sector cannot stand aloof while these changes take place. Empirically, it has been estimated by the McKinsey Global Institute that up to 800 million jobs worldwide could be displaced by automation by 2030 (Manyika et al., 2017) and this calls for more reforms and innovations in the education sector such that graduate students can be equipped with new employment skills that will keep them relevant in the emerging AI-driven job market.

Following this development, Waring (2024) identified the need for educational institutions to reassess their curricula which is expected to focus more on issues of AI literacy and ethical decision-making skills to ensure graduates remain valued by employers. Furthermore, Cazzaniga *et al.*, (2024) noted these changes will not only affect low skill jobs, but also middle and high level jobs and this calls for more reawakening in the formation of new employment skills. It is only through this strategizing that graduates' employment skills can remain optimal amidst the changes introduced by AI in the labour market. Otherwise, Brown (2023) pointed out that the use of AI may likely place a premium on critical thinking skills, including the ability to challenge and interrogate knowledge, when students are not trained to adapt to this change for employment purposes. Ejjami (2024) hence identified the need to build capacity of AI to enhance educational achievements using tailored learning, adaptable platforms, immediate feedback, and simulations. It is only on this ground that graduates' employment skills can be better appreciated amidst the changes introduced by AI.

### **Empirical Reviews**

Empirically, Obiigwe (2024) investigated Artificial Intelligence and employability opportunities for undergraduate business education students in Rivers State. The study adopted the correlational research design. The sample for this study was 384 undergraduate students, representing a sample size drawn from a population of 2,559 business education undergraduate students across all four years (Y1 to Y4) of their program, enrolled during the 2021/2022 academic sessions. The instruments for data collection were self-developed by the researcher titled; "Artificial Intelligence Questionnaire (AIQ)" and Employability Opportunities Questionnaire (EOQ)". The instruments were validated by my supervisor and other experts and their reliability was tested using the Cronbach alpha correlational analysis technique and the result yielded .977 and .888 respectively. Data gathered were analyzed using Pearson Product Moment Correlation to answer the research questions and test the hypotheses. The findings of the study revealed that the integration of AI-related dimensions such as computer vision, cybersecurity and digital marketing has been shown to significantly boost students' practical skills, technical expertise, and readiness for the evolving job market.

On their part, Itasanmi *et al.*, (2025) conducted a study on assessment of Artificial Intelligence (AI) proficiency and its demographic dynamics among Open Distance Learning (ODL) students in Nigeria. There were 301 students selected using a convenience sampling technique who participated in the study. A structured questionnaire consisting of demographic information and 29 items adapted to measure AI Proficiency indicators served as the data collection instrument for the study. The items were anchored on a 4 point Likert scale from not

at all =1, to a great extent =4. Participation in the study was through an online survey. The data generated from the study were analysed using descriptive statistics (frequency counts, percentages, mean, and standard deviation) and inferential statistics (multiple linear regression analysis, Pearson correlation, T-test, ANOVA, and MANOVA). Results of the study revealed that while the majority of ODL students exhibited high AI literacy, slightly above half of them had low AI self-efficacy. However, most ODL students reported a high level of AI self-competence. Similarly, the study found AI literacy and AI self-efficacy jointly predict ODL students' AI self-competency. However, AI self-efficacy is the prominent factor. Further, the result revealed that males exhibited significantly higher AI literacy than females. Moreover, the study established that ODL students' AI proficiency is shaped by intersectional demographic factors. Combined factors (age and programme level; marital status and employment status; and employment status and programme level) influence the AI proficiency of ODL students more than single demographics.

Similarly, Emiri et al., (2024) carried out a related study on digital literacy among lecturers in the age of Artificial Intelligence. The study employed a descriptive survey design, the research targeted a population of 545 lecturers and drew a sample of 231 using Yamane's formula. Data were collected via a structured questionnaire—validated and found reliable ( $r = 0.84$ )—and analyzed using descriptive statistics (frequencies, percentages, and weighted means). Findings indicate that while lecturers' digital literacy concerning AI is slightly above moderate, their actual use of AI tools remains low. Common applications include research and writing, plagiarism detection, data analysis, presentations, content creation, and idea generation. Key barriers comprise inadequate internet services, limited management support, difficulties integrating AI into traditional pedagogy, time constraints, and high software costs.

Portocarrero et al., (2025) also conducted another study on Artificial Intelligence skills and their impact on the employability of university graduates. The survey was conducted with a sample of 148 undergraduate and graduate graduates. The data were analyzed using descriptive statistics and visualized using graphs. The results indicated that graduates who report greater knowledge and more frequent use of AI tools, especially generative ones such as ChatGPT, are more likely to be employed in areas related to their majors and to perceive higher productivity and better professional alignment. However, a generational gap in digital skills was also identified, as well as a widespread feeling of insufficient preparation for the challenges of the current labor market. The conclusion is that AI skills are consolidating as a key differentiating factor in employability and that their formal incorporation into university curricula is urgently needed

Furthermore, Ukala and Iheukwumere (2025) focused their study on integrating Artificial Intelligence (AI) in Technical and Vocational Education and Training (TVET) in public institutions in Abia State, Nigeria. Descriptive survey design was adopted for the study. The population of the study consisted of 94 academic staff from School of Business and Management Technology, Abia State Polytechnic, Aba, and 240 managers from the 240 SMEs in Aba making a population of 334. Data for the study were collected through a structured questionnaire on a four-point Likert scale. Internal consistency of the research instrument was tested using Cronbach alpha and a reliability coefficient of 0.88 was obtained. Data collected were analyzed using mean and standard deviation. Findings from the study revealed among others that the availability of AI tools in Abia State - Nigeria TVET programs are not sufficient to effectively support students' learning and skill development. These studies establish the need for more effort in the integration of AI in the education sector for labour market relevance among graduates.

### **Objectives of the Study**

The aim of the study was to investigate the imperatives of integrating artificial intelligence for shaping graduates' employability skills in tertiary institutions in Rivers State. The specific objectives of the study were to:

1. determine the level of AI proficiency among graduates in public tertiary institutions in Rivers State.
2. ascertain the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State.
3. examine the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State.

### **Research Questions**

The research questions that guided the study were as follows:

1. What is the level of AI proficiency among graduates in public tertiary institutions in Rivers State?

2. In what ways does the integration of AI into public tertiary institutions curriculum enhance graduates' employability skills in Rivers State?
3. What are the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State?

### Hypotheses

The following hypotheses were tested at 5% significance level:

1. There is no significant difference between the mean ratings of male and female students on the level of AI proficiency among graduates in public tertiary institutions in Rivers State.
2. There is no significant difference between the mean ratings of male and female students on the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State.
3. There is no significant difference between the mean ratings of male and female students on the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State.

### Methodology

Descriptive survey design was adopted for the study as it focused on examining an ongoing issue. The population of the study consisted of all the postgraduate students in all the tertiary educational institutions in Rivers State out of which 384 students were sampled by applying the Cochran formula for the determination of sample size from an unknown population. The respondents were sampled using multistage sampling procedure across all the tertiary educational institutions offering postgraduate programmes in River State. Instrument used for data gathering was a 15 item questionnaire named "Imperatives of Integrating Artificial Intelligence for Shaping Graduates' Employability Skills Questionnaire" (IIAISGESQ). The questionnaire was structured along the line of the four point modified Likert scale of Strongly Agree/ Very High Level, Agree/High Level, Disagree/Low Level and Strongly Disagree/Very Low Level with weighted scores of 4, 3, 2 and 1 respectively which produced an average score of 2.50 which was used for decision making. The questionnaire was face and content validated by three Measurement and Evaluation expert at the University of Port Harcourt and the reliability of the instrument was estimated 0.84 using Cronbach Alpha statistics. Out of the 384 respondents targeted for the study, only 362 (141 males and 221 females) which represented 94% of the targeted sampled respondents provided valid responses which was used for data analysis. The research questions 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

**RQ1:** What is the level of AI proficiency among graduates in public tertiary institutions in Rivers State?

**Table 1: Mean and standard deviation scores on the level of AI proficiency among graduates in public tertiary institutions in Rivers State**

S/No	Items	Male Students n=141		Female Students n=221		Average Mean X $\bar{X}$	Remark
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD		
1	Usage for data analysis	2.45	0.96	2.42	0.90	2.44	Low Level
2	Usage for creating visual contents	2.85	0.83	2.92	0.81	2.89	High Level
3	Usage for text based contents	2.87	0.81	2.95	0.80	2.91	High Level
4	Understanding of ethical guidelines	2.53	0.91	2.55	0.85	2.54	High Level
5	Usage for presentation	2.48	0.97	2.41	0.88	2.45	Low Level
	<b>Average</b>	<b>2.64</b>	<b>0.90</b>	<b>2.65</b>	<b>0.85</b>	<b>2.64</b>	<b>High Level</b>

Table 1 showed that, following the decision rule with the criterion mean value of 2.50, there was a low level to which AI was used for data analysis as well as for presentation, but was used to a high level for creation of visual content, text based contents and understanding of ethical guidelines. In summary, the grand mean value of 2.64 implied that there was a high level of AI proficiency among graduates in public tertiary institutions in Rivers State.

**RQ<sub>2</sub>:** In what ways does the integration of AI into public tertiary institutions curriculum enhance graduates' employability skills in Rivers State?

**Table 2: Mean and standard deviation scores on the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State**

S/No	Items	Male Students n=141		Female Students n=221		Average Mean $\bar{X}$	Remark
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD		
6	Improved digital literacy	2.88	0.77	2.86	0.84	2.87	Agree
7	Improved critical thinking ability	2.44	0.93	2.40	0.95	2.42	Disagree
8	Improved communication ability	2.91	0.76	2.95	0.80	2.93	Agree
9	Better data analysis	2.82	0.80	2.75	0.86	2.79	Agree
10	Enhanced creativity and innovation	2.84	0.78	2.82	0.85	2.83	Agree
	<b>Average</b>	<b>2.78</b>	<b>0.81</b>	<b>2.76</b>	<b>0.86</b>	<b>2.77</b>	<b>Agree</b>

Table 2 established that AI contributes to graduates' employability skills by improving their digital literacy, communication skill, data analysis ability and creativity and innovation competence. This was because the mean value of these items were above the criterion mean score of 2.50 used for decision making but they disagreed that this technology improved critical thinking and this was because the value of this item was less than the criterion mean value of 2.50 used for decision making.

**RQ<sub>3</sub>:** What are the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State?

**Table 3: Mean and standard deviation scores on the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State**

S/No	Items	Male Students n=141		Female Students n=221		Average Mean $\bar{X}$	Remark
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD		
11	Insufficient infrastructure	2.80	0.85	2.86	0.84	2.83	Agree
12	High cost of technology	2.75	0.88	2.88	0.81	2.82	Agree
13	Resistance to change among users	2.41	0.99	2.77	0.97	2.59	Agree
14	Lack of institutional policies	2.70	0.90	2.81	0.89	2.76	Agree
15	Obsolete nature of educational curriculum	2.81	0.84	2.84	0.85	2.83	Agree
	<b>Average</b>	<b>2.69</b>	<b>0.89</b>	<b>2.83</b>	<b>0.87</b>	<b>2.76</b>	<b>Agree</b>

Table 3 indicated that insufficient infrastructure, high cost of technology, resistance to change, lack of institutional policies and obsolete nature of the educational curriculum were challenges to the integration of AI into public tertiary institutions curriculum in Rivers State and this was because these items had mean values that were more than the criterion mean score of 2.50 used for decision making.

#### Test of Hypotheses

**HO<sub>1</sub>:** There is no significant difference between the mean ratings of male and female students on the level of AI proficiency among graduates in public tertiary institutions in Rivers State.

**Table 4: z-test analysis of no significant difference between the mean ratings of male and female students on the level of AI proficiency among graduates in public tertiary institutions in Rivers State**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Students	141	2.64	0.90	360	0.11	1.96	0.05	Null Hypothesis was Not Rejected
Female Students	221	2.65	0.85					

Table 4 revealed that the estimated value of z-cal. of 0.11 was less than the z-crit. value of 1.96 and as such, the null hypothesis was not rejected and this indicated that there was no significant difference between the mean ratings of male and female students on the level of AI proficiency among graduates in public tertiary institutions in Rivers State.

**HO<sub>2</sub>:** There is no significant difference between the mean ratings of male and female students on the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State.

**Table 5: z-test analysis of no significant difference between the mean ratings of male and female students on the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Students	141	2.78	0.81	360	0.22	1.96	0.05	Null Hypothesis was Not Rejected
Female Students	221	2.76	0.86					

Table 5 indicated that the estimated value of z-cal. of 0.22 was less than the z-crit. value of 1.96 and as such, the null hypothesis was not rejected and this revealed that there was no significant difference between the mean ratings of male and female students on the ways the integration of AI into public tertiary institutions curriculum enhances graduates' employability skills in Rivers State.

**HO<sub>3</sub>:** There is no significant difference between the mean ratings of male and female students on the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State.

**Table 6: z-test analysis of no significant difference between the mean ratings of male and female students on the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Students	141	2.69	0.89	360	1.47	1.96	0.05	Null Hypothesis was Not Rejected
Female Students	221	2.83	0.87					

Table 5 showed that the estimated value of z-cal. of 1.47 was less than the z-crit. value of 1.96 and as such, the null hypothesis was not rejected and this indicated that there was no significant difference between the mean ratings of male and female students on the challenges to the integration of AI into public tertiary institutions curriculum in Rivers State.

### Discussion of Findings

The result from the findings of the study indicated that there was a moderate level of proficiency among graduates in tertiary institutions. The study showed that while the students are highly proficient in some areas, they were somewhat deficient in other areas. This means that there is a mix of AI proficiency among users as a

similar study by Itasanmi *et al.*, (2025) also revealed that while the majority of Open and Distance Learning (ODL) students exhibited high AI literacy, slightly above half of them had low AI self-efficacy. In the study, it was found that there was a low level to which AI was used for data analysis as well as for presentation. However, it can be argued that these students are likely to be deficient in areas that they do not always utilize in their day-to-day activities as expertise may be built from regular use of certain tools. Related study by Obiigwe (2024) indicated that the integration of AI-related dimensions such as computer vision, cybersecurity and digital marketing has been shown to significantly boost students' practical skills, technical expertise, and readiness for the evolving job market and these students may continue to develop expertise as they use these technologies for their day-to-day activities. However, there was a high level of proficiency in the areas of creation of visual content, text based contents and understanding of ethical guidelines. This finding suggests that it is possible that students are more proficient in areas that they usually utilize or find more interesting. The quality of instructors may also play an intervening role in this regards as Emiri *et al.*, (2024) also reported that while lecturers' digital literacy concerning AI is slightly above moderate, their actual use of AI tools remains low, and this can affect how students also learn to use these tools. The implication of this is that the use of AI must be made appealing to students and should be used on regular basis in order to improve students' proficiency in the utilization of this technology.

The study also showed that AI contributes to graduates' employability skills by improving their digital literacy, communication skill, data analysis ability and creativity and innovation competence. This means that the adoption of this technology, holds a lot of promises for students if properly integrated into the curriculum. A related study by Portocarrero *et al.*, (2025) indicated that graduates who report greater knowledge and more frequent use of AI tools, especially generative ones such as ChatGPT, are more likely to be employed in areas related to their majors and to perceive higher productivity and better professional alignment. These benefits which are still evolving can be more useful in the future, if only students are adequately prepared in advance. However, the respondents disagreed that this technology improved critical thinking and this establishes the fear of several scholars that AI limits the ability of humans to put their thinking ability to use. However, students must be taught how to support their human thinking with AI and not to use AI as a replacement for their critical thinking ability, across all their endeavours.

The respondents also identified some challenges to the integration of this technology which they pointed out to include the issues of insufficient infrastructure, high cost of technology, resistance to change, lack of institutional policies and obsolete nature of the educational curriculum which were challenges to the integration of AI into public tertiary institutions curriculum in Rivers State. The issue of infrastructure no doubt plays an important role in the institutionalization of emerging technologies and the cost of digital tools must also be taken into consideration as the institution may not be able to afford personalized tools for all staff and students. This finding aligns with the outcome of the study by Ukala and Iheukwumere (2025) which also revealed that the availability of AI tools in Abia State, Nigeria TVET programs are not sufficient to effectively support students' learning and skill development. This among others makes the integration of AI challenging both at the institutional and individual level. These challenges must therefore be adequately addressed to make this new technology more useful and impactful for educational activities across all levels and spheres.

## Conclusion

The study concluded based on its findings that students are proficient in the use of AI and the integration of this technology enables' graduates' employability skills by improving on their digital literacy, improving their communication skills, data analysis skills and innovativeness. However, the integration of this technology can be better maximized if issues of inadequate infrastructure, resistance to change and inadequate AI policy at the institutional level are better dealt with

## Recommendations

The following recommendations were proffered based on the findings of the study:

1. The curriculum of Universities need to be revised to capture and inculcate into students, more contemporary digital skills that they need in the world of work
2. Adequate soft and hard digital infrastructure need to be provided across all Universities so as to equip staff and students with the digital skills and environment they require to maximize the benefits of AI.
3. There is need for adequate sensitization and awareness creation within and outside the University community on the benefits and strategies for responsible use of AI in today's global community.
4. Universities must also mandate lecturers to put the use of AI into practice under established institutional guidelines as this will improve on the AI proficiency of students in the long run.

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