



## Evaluating Artificial Intelligence's Impact in Higher Education: An Analysis of Njala University Located in Sierra Leone

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### ABSTRACT

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As a university, Njala University continues to be at the forefront of academic issues in Sierra Leone's educational Systems. For the past five years, technology programmes have been offered in a variety of areas. The target population for the study, which used a quantitative methodology based on a survey, consisted 110 students from Njala University. The sample was estimated using Slovin's formula (n). The study's findings demonstrated the significant influence of artificial intelligence among higher education students at Njala University Sierra Leone and highlighted some factors influencing AI adoption. The results show the efficiency and effectiveness of AI in higher education, with 101 (91.82%) students reporting that their academic performance was influenced by AI tools, 1 (0.91%) student stating that their academic performance could not be influenced by AI tools, 8 (7.27%) students unsure whether AI influenced their academic performance, and 66 (60%) students citing lack of awareness. Limited access to resources was mentioned by 73 students (66.4%), technological complexity was mentioned by 64 students (58.2%), high cost was mentioned by 73 students (66.4%), and a lack of technical skills was mentioned by 62 students (56.4%). This study sheds light on how artificial intelligence (AI) might change higher education and help

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## Introduction

Technological advancement has significantly altered teaching management, education innovation, and learning behavior research. Over time, developments in technology and information communication technologies have aided the invention of artificial intelligence.

Artificial intelligence (AI) creates machines that think and act like people. The process by which machines may automatically learn from data and information that has been encoded is known as cognitive tasks. It is also possible to interpret artificial intelligence. One area of computer science that allows machines (computers) to perform tasks just as well as humans. Whether we are aware of it or not, we utilize artificial intelligence on a daily basis. Artificial intelligence has been used in many areas as a benefit of these applications. Artificial intelligence technology describes devices that possess human – like thought processes, action judgement and decision-making abilities. Since artificial intelligence is now being developed extensively, this technology will eventually replace human labour by mimicking and even surpassing it. AI, according to its definition, was developed so that robots and algorithms might behave similarly to human.

Artificial intelligence is being used more and more in a variety of areas, including education to promote innovation and boost productivity. Artificial intelligence is a seemingly all-powerful instrument that can augment or even replace teachers' efforts by tracking students' progress, evaluating their performance, and offering them personalized learning. In order to make informed decisions regarding how best to structure their lessons to support students' learning, teachers may rely on AI (Wang et al., 2023).

Luckin et al. (2016) claimed that artificial intelligence in education (AIED) offers more personalized, flexible, inclusive, and interesting opportunities. It can give educators and learners the resources they need to address the learning objectives, methods and emotional needs of students. It can assist teachers in setting up more complex learning environments than would be feasible on their own and assist students in gaining the knowledge and abilities that companies value. AIED may also encourage collaborative learning by making sure the appropriate group is assembled for the task at hand or by offering timely, focused help, both of which can be challenging for a single instructor to accomplish on their own.

In recent years, the process of sustainable economic development has been evident. This contains artificial intelligence (AI), a component that has been the subject of increased attention since 2010.

Within this framework, an international race to develop, acquire, and finance artificial intelligence technology was noted. As a result, developed and emerging economies grow significantly and sustainably. Artificial intelligence (AI) has shown signs of promise in a number of fields and industries, and its rapid development has occurred (Farchy & Denis, 2020).

The goal of artificial intelligence in education was to improve learning outcomes as well as learning environments and levels. Its applications also try to save instructors' and students' working time at the same time. Simultaneously, it should be noted that parents' ability to participate in their children's education has been impacted by artificial intelligence.

(Mou, 2019).

Previous research in education has shown that providing students with the technology they do not always ensure the success of a system since sometimes the values of services is not recognized. Use and acceptance of ChatGPT rely on the influencing factors. Due to the recent global introduction of ChatGPT, even in a developing nation like Sierra Leone, there are still few studies on the use and adoption in education (Deng & Lin, 2022; Lund & Wang, 2023; Sturgeon, 2021). As a result, this study fills the vacuum by assessing how artificial intelligence has impacted students at higher education institutions (HEIs) in the setting of Sierra Leone.

### **Problem Analysis**

Academic difficulties in Sierra Leone's educational systems are still being addressed by Njala University. If artificial intelligence is proactively and strategically adopted to fulfil the purpose of universities and colleges, as producers and consumers of useful knowledge and information, the institution's goals can be greatly enhanced. The opposite disruptive effect of technology may occur if we are reactive. A science and technology foundation must be developed in order to keep up with the development of emerging technologies like artificial intelligence (AI), which is occurring throughout the world, including at Njala University Sierra Leone. This is in line with Vision 2025 in Sierra Leone, which calls for the advancement and promotion of positive aspects of our national culture. Artificial Intelligence is gaining popularity and is always evolving. Its use in teaching also bears this out. This will offer students with logical concepts and significantly improve the effectiveness of instruction. It is making already-existing disparities worse. I evaluated the impact of AI in higher education using Njala University as a case study in order to investigate the aforementioned research gaps.

### **Aims of the study**

The major objective of this study was to assess the impacts of artificial intelligence on higher education learners by using Njala University in Sierra Leone as a case study.

**The following specific objectives are pertinent to this study:**

1. Assessing the impact of Artificial Intelligence among higher education students
2. Factors influencing adoption of Artificial Intelligence Technologies (tools)

### **Methodology**

This research focuses on a mixed method for gathering data. Using Njala University as a case study, a descriptive and analytical case study aims to evaluate the impact of AI on higher education. Study demographic, using a properly structured Google form questionnaire, 110 randomly selected students were chosen from the targeted demographic at the Njala University campus Sierra Leone, the case study location.

### **Design of Sampling and Data Collection Process**

For this research, primary and secondary sources of data were gathered. Using a devised method (a semi-structured form questionnaire and critical informants interview guide), primary data was obtained directly from respondents. A range of resources, such as publications, journals, and online resources, were used to collect secondary data. This was carried out in order to give the investigation a strong basis and to direct the researcher throughout the investigation.

### **Data Analysis Procedure**

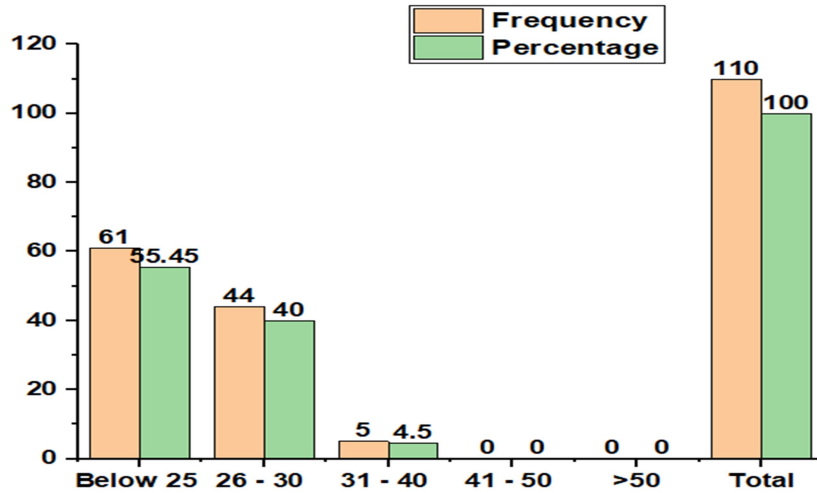
Following the collection of all relevant data from the sample size selected, the researcher classified and summarized all of the responses based on the information provided by the responders. OriginPro 2024 and Microsoft Excel were used to analyse the data. Tables and graphs showing the analysis's findings were displayed.

## **Results and Findings**

### **Demography**

#### **Age structure**

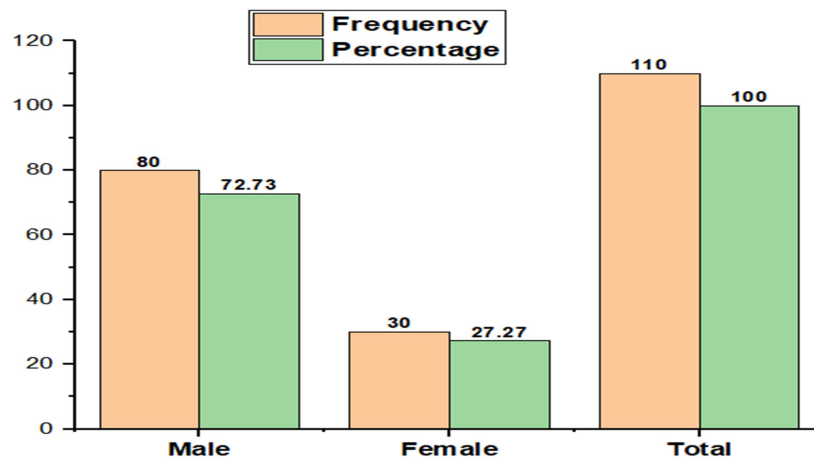
Figure 1 presents the findings of the assessment of the age structure. The findings indicate that **61 (55.45%)** of the respondents were under **25 years**, **44 (44.00%)** were between **26 - 30 years** old, and **5 (4.5%)** were between **31 - 40 years** old. This suggests that youthful Njala University students made up the majority of the responders.



***Figure 1: Age (Years) distribution of respondents***

**Gender status of worker**

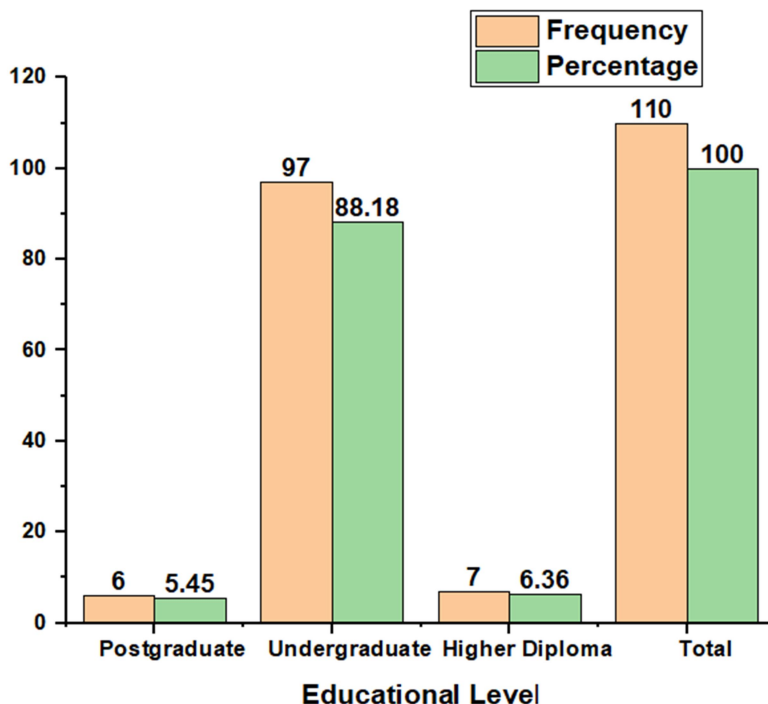
The figure shows that **80 (72.73%)** respondents were male, and **30 (27.27%)** were female, according to the analysis of gender distribution. This indicates that the research captured more males than females in the study sample.



***Figure2: Gender Status***

**Educational Level**

The figure shows that **97 (88.18%)** respondents were **Undergraduates**, **7 (6.36%)** had **higher diplomas**, and **6 (5.45%)** were **Postgraduates**, according to the analysis of educational level. This indicates that the research captured more **Undergraduate students** in the study sample.



***Figure 3: Educational Level***

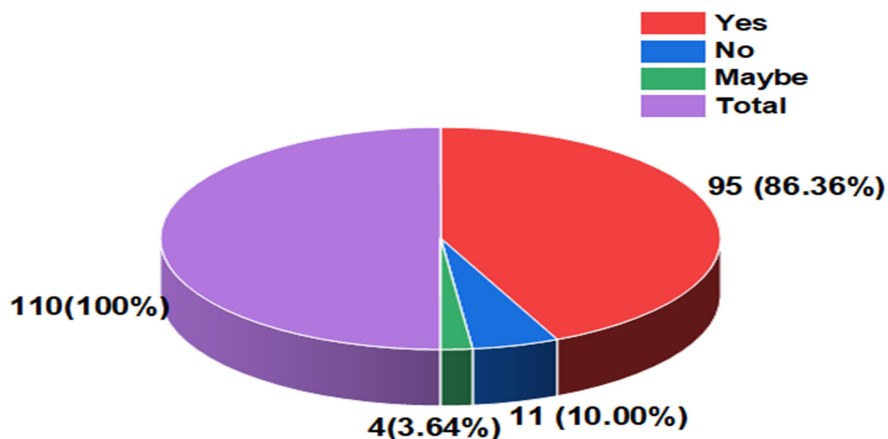
**Evaluating the Impact of AI on Njala University's Higher Education Students in Sierra Leone.**

This research objective sought to assess the impact of AI among higher education students using Njala University as a case study.

**Are you familiar with or have you heard about artificial intelligence?**

The question asked about their familiarity with or what they had heard about AI.

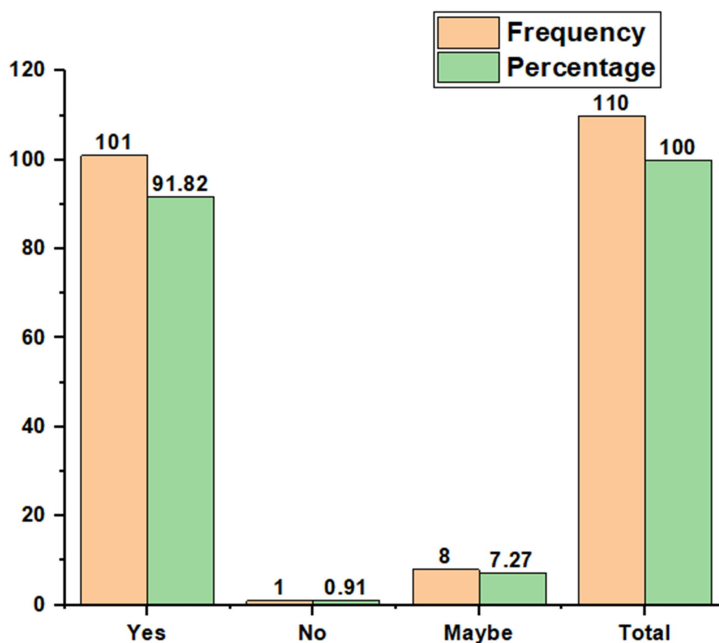
**95(86.36%)** students said they have heard about artificial intelligence, **11(10.00%)** students said they have yet to hear about AI, and **4(3.64%)** students said they are not sure about the emerging technology.



***Figure 4: Awareness of AI***

**Do you believe that tools (ChatGPT) with artificial intelligence influence your academic performance?**

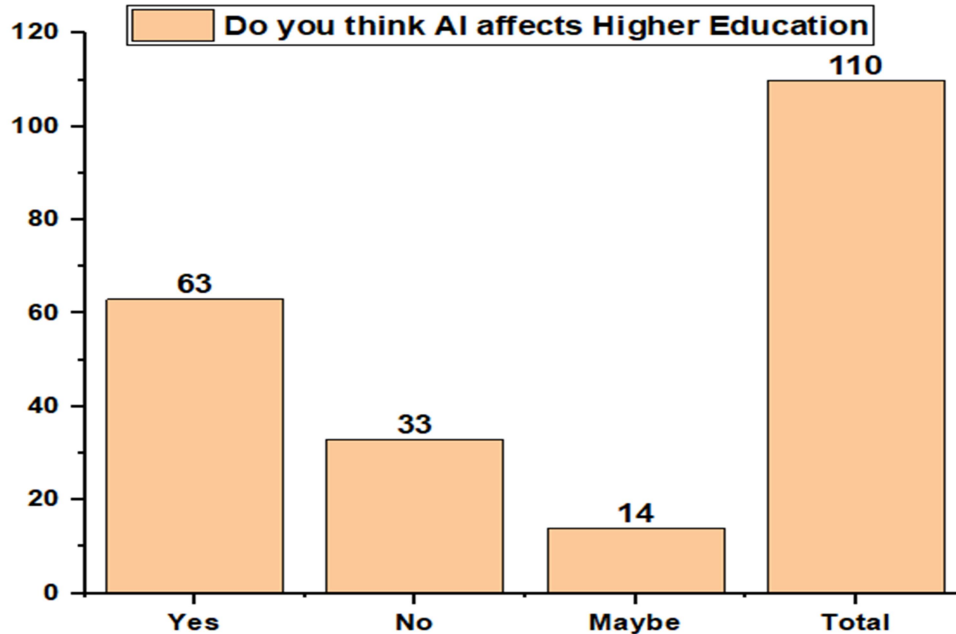
Under the question of tools (ChatGPT) with AI influencing academic performance **101(91.82%)** students said tools with AI influenced their academic performance, **1(0.91%)** student said tools with AI could not influence their academic performance, and **8(7.27%)** students are still determining if AI influenced their academic performance.



***Figure 5: Tools with AI academic performance***

**Do you think AI affects Higher Education?**

Under this research question, **63(57.27%)** students said AI does affect higher education, **33(30.00%)** said AI does not affect higher education, and **14(12.73%)** students are not sure that AI affects higher education.



**Figure 6: Does AI affect higher education**

**Factors Influencing Adoption of AI Technologies**

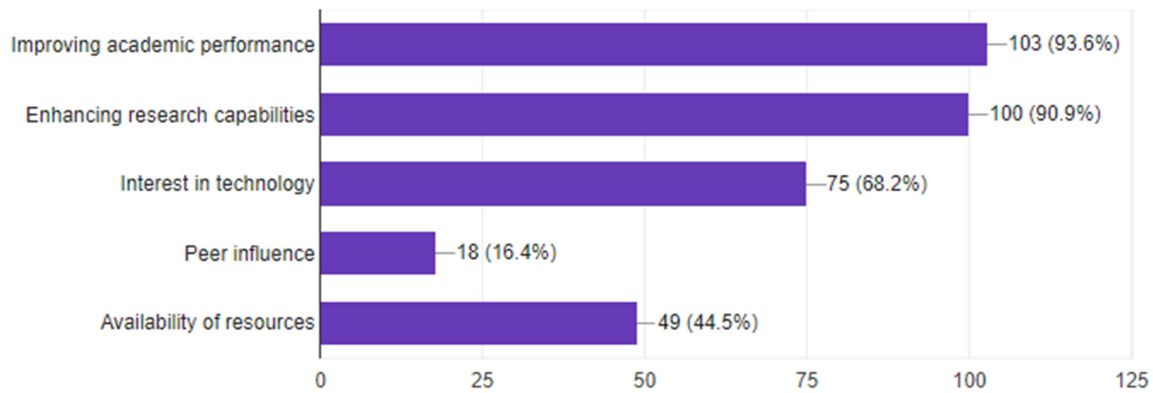
This research objective also sought to assess the factors influencing the adoption of AI among Higher Education students using Njala University as a case study.

**What motivates you to adopt AI technologies? (Check all that apply)**

This question sought to know what motivated students to adopt artificial intelligence.

**103(93.6%)** students said it improves their academic performance, **100(90.9%)** students said it enhances their research capabilities, **75(68.2%)** students said they have interest in the technology, **18(16.4%)** students said is due to peer influence and **49(44.5%)** students said is due to availability of resources.



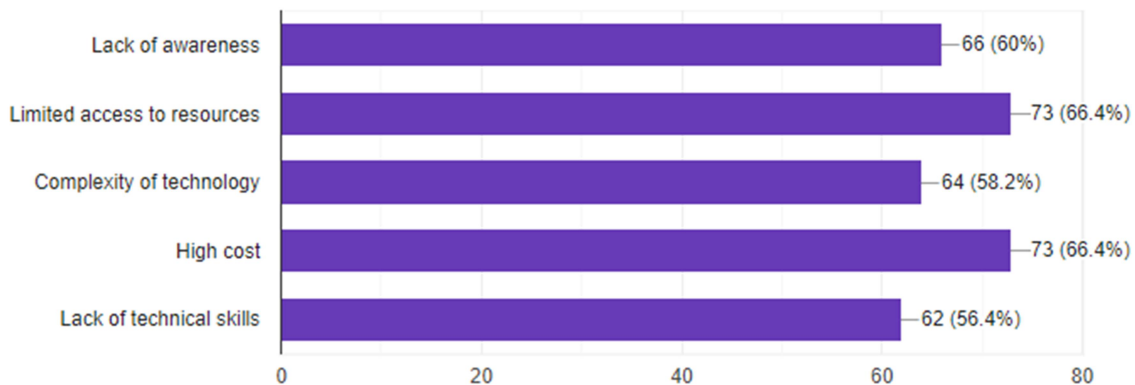


***Figure 7: Adoption of AI technologies***

**What challenges do you face in adopting AI technologies? (Check all that apply)**

This question sought to identify the challenges students faced in adopting AI technologies.

**66(60%)** students said it lack of awareness, **73(66.4%)** students said limited access to resources, **64(58.2%)** students said is due to complexity of the technology, **73(66.4%)** students said is due high cost and **62(56.4%)** students said is due to lack of technical skills.

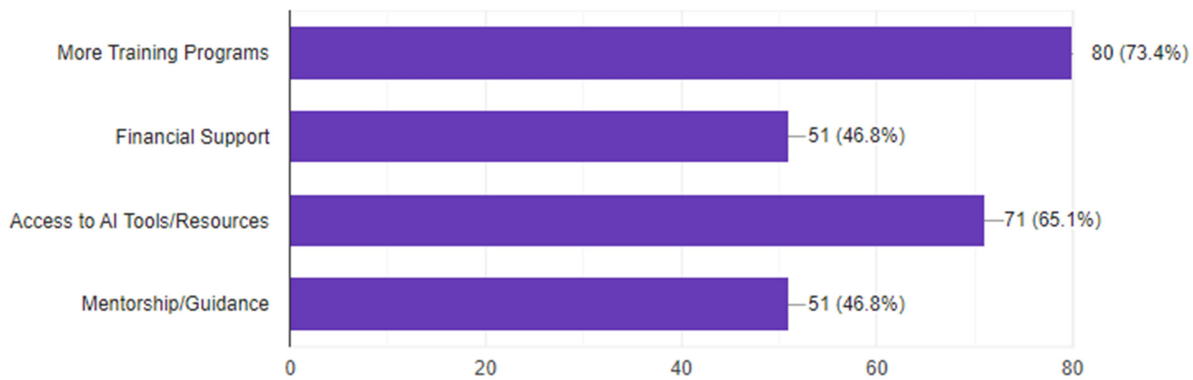


***Figure 8: Challenges in Adopting of AI technologies***

**What type of support would help you in adopting AI technologies? (Select all that apply)**

This question sought to identify the support students need in adopting AI technologies.

**80(73.4%)** students said more training programs, **51(46.8%)** students said financial support, **71(65.1%)** students said they need support on access to AI tools, and **51(46.4%)** students said it is due to lack of technical skills.



***Figure 9: Support in Adopting of AI technologies***

### Findings

#### **Evaluating the Impact of AI on Njala University's Higher Education Students in Sierra Leone.**

Artificial intelligence and its effects on students' higher education of Njala University Sierra Leone is made clear as **95(86.36%)** students said they have heard about artificial intelligence, **11(10.00%)** students said they have not heard about AI, and **4(3.64%)** students said maybe that they are not sure about the emerging technology. It has influenced their academic performance as **63(57.27%)** students said AI does affect higher education, **33(30.00%)** said AI does not affect higher education, and **14(12.73%)** students are not sure that AI affects higher education.

#### **Factors Influencing Adoption of AI Technologies**

Findings on factors influencing the adoption of artificial intelligence also clearly show students faced with some pros and cons in adopting AI tools. **103(93.6%)** students said it improves their academic performance, **100(90.9%)** students said it enhances their research capabilities, **75(68.2%)** students said they have interest in the technology, **18(16.4%)** students said is due to peer influence and **49(44.5%)** students said is due to availability of resources and **66(60%)** students said it lack of awareness, **73(66.4%)** students said limited access to resources, **64(58.2%)** students said is due to complexity of the technology, **73(66.4%)** students said is due high cost and **62(56.4%)** students said is due to lack of technical skills.

### Conclusions

In this study, Njala University in Sierra Leone was used as a case study to evaluate the effects of artificial intelligence on students pursuing higher education. As such, it places a strong emphasis on the ethical implications for both students' future employment and the future of humanity. Students pursuing higher education are consequently greatly impacted by AI.

The literature study results proposed by (Chin, 2018 Ma & Siau, 2018; Jabar & Yousif, 2011) are consistent with the latter finding. Many students who responded to the survey on issues influencing their adoption of AI cited lack of technical skills, resource scarcity, and the complexity of the technology.

### Recommendation

The following suggestions could be made based on the study's findings:

Artificial intelligence applications in higher education must be done ethically, and it dramatically impacts students' educational experiences. However, students reported improvements in their academic standing, capacity for independent study, and enthusiasm for cutting-edge technologies. The government of Sierra Leone should concentrate on implementing emerging technologies and creating a suitable learning environment for educators and students through the Ministry of Higher Education. This can be achieved by offering resources, educating educators and students about artificial intelligence, and raising awareness of the implications of these emerging tools.

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