



# Assessment Of Undergraduates' Utilisation of Artificial Intelligence for Learning at Kampala International University, Kampala, Uganda

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## ABSTRACT

This study assessed undergraduates' utilisation of Artificial Intelligence (AI) for learning at Kampala International University (KIU), a private university in Kampala, Uganda. This study adopted a descriptive survey research design. A sample of 450 undergraduates was selected from five colleges and schools in KIU, Uganda, using a simple random sampling technique. Data were collected using a self-administered. The findings of the study revealed AI facilities are not adequately available in the university. It was also revealed that students often use AI tools for learning. AI adoption emerged at various, high and low level of adoption, i.e, Google Assistant revealed a mean score of, while Elsa Speak showed a lower adoption mean score of Independent samples t-test analysis showed no significant differences in the mean response of male and female undergraduates' level of utilisation of AI. The study concludes that students often depend on AI tools for learning, although the AI facilities available at Kampala International University are not sufficient. These findings imply that there should be increased AI infrastructure as well as other concerted efforts aimed at ensuring equitable and effective AI adoption in higher education. It was recommended, among other things, that university management should further encourage students to use AI by organizing workshops and seminars that expose students to the use of artificial intelligence within the university. Also, both male and female undergraduates should be further encouraged to use AI tools for learning.

**Keywords:** Undergraduate students, Artificial intelligence, Assessment, Kampala International University

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## ÖZ

Bu çalışma, Uganda'nın Kampala şehrinde bulunan özel bir üniversite olan Kampala Uluslararası Üniversitesi'nde (KIU) öğrenim gören lisans öğrencilerinin öğrenim için Yapay Zekâ (AI) kullanımını değerlendirmiştir. Bu çalışma, tanımlayıcı anket araştırma tasarımını benimsemiştir. Uganda'daki KIU'nun beş kolej ve okulundan basit rastgele örnekleme tekniği kullanılarak 450 lisans öğrencisi örneklem olarak seçilmiştir. Veriler, kendi kendine uygulanan bir anket kullanılarak toplanmıştır. Çalışmanın bulguları, üniversitede AI olanaklarının yeterince mevcut olmadığını ortaya koymuştur. Ayrıca, öğrencilerin öğrenim için sıklıkla AI araçlarını kullandıkları da ortaya çıkmıştır. AI'nın benimsenme düzeyi çeşitli, yüksek ve düşük seviyelerde ortaya çıkmıştır; örneğin, Google Assistant ortalama bir puan alırken, Elsa Speak daha düşük bir ortalama puan almıştır. Bağımsız örneklem t-testi analizi, erkek ve kadın lisans öğrencilerinin AI kullanım düzeylerinin ortalama yanıtlarında önemli bir fark olmadığını göstermiştir. Çalışma, Kampala Uluslararası Üniversitesi'nde mevcut AI olanaklarının yeterli olmamasına rağmen, öğrencilerin öğrenim için sıklıkla AI araçlarına bağlı oldukları sonucuna varmıştır. Bu bulgular, yükseköğretimde adil ve etkili AI benimsemesini sağlamak için AI altyapısının artırılması ve diğer ortak çabaların artırılması gerektiğini ima etmektedir. Diğer hususların yanı sıra, üniversite yönetiminin, öğrencileri üniversite içinde yapay zekâ kullanımına maruz bırakacak atölye çalışmaları ve seminerler düzenleyerek öğrencileri AI kullanımı konusunda daha fazla teşvik etmesi önerilmiştir. Ayrıca hem erkek hem de kadın lisans öğrencileri öğrenim için yapay zekâ araçlarını kullanmaya daha fazla teşvik edilmelidir.

**Anahtar kelimeler:** Lisans öğrencileri, Yapay zekâ, Değerlendirme, Kampala Uluslararası Üniversitesi

## 1. INTRODUCTION

The use of artificial intelligence (AI) in teaching and learning has gained more relevance as a result of its wider adoption and utilisation within higher education students' and lecturers' academic activities. The extent of use among learners has yet to be widely explored in Uganda universities. Understanding the extent of AI adoption, availability, and influence among undergraduates in the Ugandan higher education system could be regarded as multifaceted in terms of enhancing productivity, workload management, and reducing student-learning time. However, the adoption and effective use of these tools depend on various factors, including awareness, acceptance, and the learning environment. However, limited research has specifically focused on AI in Ugandan higher education, and some insights can be drawn from related studies. In the context of online learning adoption during the COVID-19 pandemic, a study in Uganda revealed that pre-service mathematics teachers faced challenges in adapting to online learning platforms (Kansiime & Batiibwe, 2023). The study found that a lack of technological knowledge hindered learners' effective participation in online mathematics lectures, suggesting that the integration of more advanced technologies, such as AI, might face similar hurdles. Interestingly, while Uganda-specific AI adoption data are scarce, a global perspective shows varying levels of AI integration in higher education across regions. A study revealed that AI prevalence in higher education was highest in Asia (41%), compared to only 2% in Africa (Wang'Ang'A, 2024). This stark contrast highlights the potential gap between AI adoption and availability in African countries, including Uganda.

Artificial Intelligence (AI) has the capacity of computer systems to act in ways that we consider humans to accomplish activities that appear to require Intelligence exhibited by humans in higher-order thinking (Jeffery, 2020; Bhutoria, 2022). From the above definitions, Artificial Intelligence (AI) can be described as a computer system that includes human-like processes, such as learning, adapting,

synthesising, self-correcting, and using data for complex processing tasks. Artificial intelligence is evolving, impacting the deep essence of tertiary education services.

Artificial Intelligence (AI) among students is one of the long-term consequences of increasing the emergence of AI technological devices for educational purposes and is perhaps the evolution of what is termed smart classrooms. This type of classroom is a departure from traditional classrooms. Smart classrooms are largely technologically enhanced settings that are believed to have the capacity to increase learners' opportunities to actively engage and participate in teaching and learning using technological tools and devices, such as specific software tools, high-speed computers, assertive listing systems, audience response technologies, networking devices, and audio-visual capabilities (Ikedinachi et al., 2019).

### **1.1. AI Utilisation and Adoption in Education**

The utilisation of Artificial Intelligence (AI) among undergraduate students in tertiary institutions has become increasingly significant, particularly in Uganda's higher education context, to aid academic experience and seamless learning journeys. Practical use of AI and students' active engagement with AI-powered tools and resources to support their educational endeavours is seen as utilisation (Holmes & Tuomi, 2022). Understanding the patterns and dynamics of AI utilisation among undergraduate students in tertiary institutions is essential for assessing the efficacy and impact of AI integration initiatives. Factors influencing utilisation may include accessibility and availability of AI technologies, students' technological proficiency, the perceived usefulness of AI tools, and institutional support for AI adoption (Gjermeni, 2024; Essawi, 2024; Dube et al., 2024; Handoko et al., 2024; Mores & Nethravathi, 2024).

AI has already been used in many universities. For instance, Deakin University in Australia has already applied IBM's supercomputer Watson as an emerging form of artificial intelligence and a solution to provide students with advice (Fahimirad & Kotamjani, 2018). This innovation made significant modifications to the quality of services rendered and the time spent teaching students within a university. Most Nigerian universities also use Artificial Intelligence applications to detect plagiarism in students' work (Karsenti, 2019). For example, Turn-it-in can recognise the degrees of plagiarism in students' works when they "turn it in" (Jeffery, 2020). It shows the parts that are likely to have been plagiarised, the potential sources, and the percentages of potential sources that have been plagiarised.

Xu and Ismail (2024) revealed that AI-powered learning applications have a significant prospective in improving English speaking skills, similarly relevant in the context of East Africa, where English is the language of university instruction. These applications provide personalised learning plans and offer real-time feedback on pronunciation and intonation, thereby enhancing language acquisition. A similar study highlighted four key elements—adaptive, prediction, personalised, and assessment—essential for AI utilisation in higher education, showing the dynamic nature of the role of AI in educational settings (Yunina, 2023).

### **1.2. AI Utilisation, Governance and Implications in Uganda**

Moreover, the ethical use of AI in education cannot be overemphasised. Scholars, stakeholders, and policymakers in education are currently debating the ethical use of AI, particularly in terms of data privacy and algorithm transparency (Makarenko et al. 2024). AI significantly enhances learning achievement and perceptions among students (Zheng et al. 2021). Scholars have expressed concern that AI may harm the development of students' critical thinking and writing skills, because reliance on

automated tools does not develop essential competence (Katenova & Turmaganbetova, 2024). This issue is critical for educational institutions in East Africa because they have to learn how to work with AI technologies and, at the same time, protect sensitive information about learners and ensure personalised learning. The role of the teacher also changes under the impact of the transformation in technological trends by being forced to adapt new instructional approaches that effectively synthesise AI-based tools.

The incorporation and application of AI resources in Ugandan universities are at low levels and still in their initial phases. Though the value of AI in higher education is increasingly appreciated,

The availability of AI resources at Ugandan universities is still in its early stages, with limited implementation and utilisation. While there is a growing recognition of AI's potential in higher education, exploring students' utilisation of AI technologies offers insights into the broader implications for teaching and learning practices within tertiary institutions. Shiohira (2021) claimed that effective utilisation of AI-powered tools can enhance students' learning experiences by providing personalised feedback, adaptive learning pathways, and access to diverse educational resources. Ikedinachi et al. (2019) also asserted that AI utilisation has the potential to promote (Tarisayi, 2024) collaboration, critical thinking, and problem-solving skills among students; by implication, AI can aid learners' readiness for the demands of the digital age and the future workplace. Furthermore, Holmes and Tuomi (2022) posit that AI which is built on online platforms, offers learners the ability to obtain extra help from Artificial Intelligence tutors.

For instance, Makerere University, the oldest and largest academic institution in Uganda, took steps to improve the use of information resources, specifically e-resources, by instituting digital literacy awareness training and campaigns for library users to access and evaluate available information resources (Kinengyere, 2007). However, the study reveals that the availability of information does not necessarily translate to actual use, indicating a need for continued Interestingly, while Uganda is making efforts to enhance information resource utilization, there is a lack of specific information on AI resource availability in Ugandan universities as against the global trends of AI integration in higher education, where AI is being used for personalized teaching, providing formative feedback, identifying at-risk students, and streamlining administrative processes (Kinengyere, 2007; Olaniyan & Olubusayo, 2023; Tarisayi, 2024; Namutebi, 2024)

In East African institutions, the availability of AI resources plays a crucial role in enhancing the quality of student learning and academic achievement. However, disparities exist in AI infrastructure among universities, especially in Uganda, posing challenges to equitable access to quality education, inadequate computer access, poor internet connectivity, and a lack of ICT textbooks (Kibirige, 2023; Namutebi, 2024). Adeyinka and Agbaje (2017) described the availability of AI resources as the presence and accessibility of AI resources within educational institutions. The availability of AI resources in Ugandan universities has emerged as a critical factor influencing students' academic achievement. Adequate access to AI infrastructure, including computers, Internet connectivity, and educational software, is essential for creating an environment conducive to effective teaching and learning. However, the availability of such resources varies significantly across universities in Uganda, posing challenges to equitable access to quality education (Namutebi, 2024).

### **1.3. Gender Disparity in AI utilisation**

Gender has been an important factor affecting the use of technology in the teaching and learning process, where studies have identified a disparity of 7% to 15% between males and females. The exact

reasons for this disparity are not provided in the given text, but it suggests that gender may play a role in educational outcomes or learning experiences (Chatterjee 2024). The underlying causes of this disparity remain unclear and require further investigation to fully understand the role of sex in educational outcomes. Access to higher education can be balanced in terms of social and regional disparities, because AI provides means that suit different learning styles (Kibuuka, 2022). This can be achieved through the adoption of AI technologies, which will help create an atmosphere in which all students have an equal chance of academic success. Aderale and Abidoye (2022) described gender as a socially constructed characteristic that shapes behaviour, expectations, and relationships between women and men, such as norms, roles, and relationships between groups of men (male) and women (female). Abidoye and Oluwarombi (2024) also refer to gender as the socially and culturally constructed characteristics and roles ascribed to males and females in any society.

Understanding the gender dynamics of AI utilisation among undergraduate students is crucial for addressing disparities and promoting inclusivity in the adoption of AI-driven educational technologies. Gender plays a significant role in shaping students' attitudes, perceptions, and behaviours towards AI, reflecting broader societal norms, expectations, and disparities (Agyemang & Mereku, 2019). Researchers such as Li and Kirkup (2022) suggest that gender stereotypes and biases may contribute to disparities in the Science, Technology, Engineering, and Mathematics (STEM) fields, potentially influencing female students' access to and utilisation of AI-driven educational resources. Similarly, a study conducted in Ghana revealed outstanding differences in the general levels of perceived innovation characteristics based on gender (Ofosu-Ampong, 2023).

This gender gap in AI usage may be caused by the continual underrepresentation of girls in STEM subjects at higher education levels, which could influence AI proliferation in the country. An interesting set of contradictory findings emerged when examining the acceptance of AI among pre-service teachers. Even if gender differences were found in AI anxiety and perceived enjoyment, with females having higher levels of anxiety and lower levels of enjoyment in relation to AI, the overall intention to use AI-based educational applications was not significantly affected by gender (Zhang et al., 2023). This can be interpreted to mean that, despite the initial fears, female pre-service teachers may have equal chances of intending to use AI-based educational software, particularly in their future teaching practices. Moreover, while these studies cast some enlightenment on gender-related disparities in AI acceptance and use, it must be emphasised that the specific Ugandan context may harbour distinct factors. For example, the integration of AI in supply chain management in Uganda faces challenges in data integration, technology adoption, and organizational readiness (Pius & Owin, 2024). These factors may interact with gender-related factors that influence the use of AI among undergraduate students in this country. Expectations and societal norms regarding academic interests and career aspirations may impact female students' confidence and willingness to engage with AI technologies, leading to underrepresentation and limited participation in AI-related fields.

Hence, the Ugandan government has come to embrace the efficiency of AI in public services, citizenship engagement, pharmacy, agriculture, education, and across supply chain management services. (Natuhwera and Onyango, 2024; Nalubega and Uwizeyimana, 2024; Jessy et al., 2024). Despite these advancements, challenges such as the digital divide and limited infrastructure may hinder the full realisation of AI's potential in Uganda and the broader East African region. Addressing these issues is crucial for equitable access and adoption of AI in tertiary education. Existing literature reveals a scarcity of research on how students utilise AI for learning. This study seeks to address this gap by focusing on the scope of AI utilisation among students at KIU.

## 2. THEORETICAL REVIEW

The Technology Acceptance Model (TAM) as postulated by Davis in 1989 is one of the fundamental models when studying the adoption of Artificial Intelligence in Higher Education. In this model, it was earlier hypothesized that the adoptions of new technologies depend on perceived usefulness and perceived ease of use by a user (Venkatesh & Davis, 2000). In this case, however, undergraduate students at Kampala International University regarded AI as software with a useful feature for improving academic efficacy and making learning tasks easier. For example, one recent study is ChatGPT and Google Assistant for Efficient Learning Instant Feedback and Interactive Learning (Holmes & Tuomi, 2022). On the other hand, results of this study reveal that the students of today use AI in learning too frequently; however, inadequate access limits the realization of its benefits. Similar results are reported in the literature, which emphasizes collaborative efforts between the institution and individual efforts toward improving the Infrastructure of AI in higher education (Dube et al., 2024).

Constructivist Learning Theory, according to Piaget (1970) and Vygotsky (1978), offers an approach in the understanding of how AI tools allow student-centered learning to be achieved. This theory argues that learning results from the deep-seated psychological make-up of individuals in interaction/transformation of knowledge with a real context. In this context, the learner plays an active role and the basic premise is that learning is the result of experience and not simply the mechanical assimilation of facts (Bruner, 1996). Socratic or adaptive learning systems create an opportunity for personalized learning, while real-time feedback accompanied by scaffolding support the development of complex tasks (Makarenko et al., 2024). Other research by Xu & Ismail (2024) has found that, indeed, ZPD highlights that AI can function as a virtual tutor, whereby it takes learners from their current understanding to higher cognitive levels through guided assistance. Empirical studies have indicated that AI-based learning environments significantly improve learner engagement, problem-solving skills, and overall academic performance (Zheng et al., 2021) which lead to the findings evident in the study that undergraduates at Kampala International University actively use AI for learning despite the inappropriate AI resources.

More so, the concept by Rogers (2003) in Diffusion of Innovation is relevant in varying levels of adoption of AI by students. The DOI theory posits that relative advantage, compatibility, complexity, trialability, and observability are the driving factors that influence the adoption of any innovation (Rogers, 2003). Results of the study correlate directly with this theory circumspectly, high-benefit AI tools; for instance, Google Assistant, show greater rates of adoption compared to unfamiliar tools such as Elsa Speak. The general and specific results of this study regarding the gender disparity in the usage of AI technology conform to the early adopter and laggard concepts of DOI with respect to socio-cultural factors, digital literacy, and technological exposure (Ofosu-Ampong, 2023). Recent studies show that females may face greater difficulties using AI technology due to several systemic disadvantages in fields of digital inclusion and, in particular, STEM education (Li, & Kirkup, 2022). By bringing together these theoretical perspectives, this paper will try to provide a holistic viewpoint on the use of AI in higher education, underlining the urgency for policies at various levels of the institution to ensure equity in access to AI-based learning.

### 2.1.Statement of the Research Problem

In the rapidly evolving digital age, Artificial Intelligence (AI) has revolutionised education by providing transformative tools and methodologies that enhance teaching, learning, assessment, and interaction

with educational materials. AI has the potential to foster digital literacy, critical thinking, and informed citizenship, equipping students with the skills needed to thrive in a technology-driven world (Ikedinachi et al. 2019; Lawasi et al., 2024; Massaty et al., 2024). Despite its proven benefits globally, there is a noticeable gap in the research on how undergraduate students in Ugandan universities, particularly in private institutions in Kampala, utilise AI to support their learning. Understanding this utilisation is crucial for optimising the integration of AI into higher education, addressing challenges, and ensuring equitable access to AI-driven educational resources. This study sought to bridge this gap by exploring the extent of AI utilisation among undergraduates, with the goal of unlocking its full potential to improve learning outcomes in the Ugandan context.

### **Objective of the Study**

The objectives of this study are as follows:

1. To examine the level of utilisation of Artificial Intelligence (AI) among undergraduate students at Kampala International University.
2. Determining the availability of AI resources at Kampala International University.
3. Determine the influence of gender on undergraduates' use of Artificial Intelligence for learning at Kampala International University.

### **Research Questions**

The following research questions were raised and answered in this study.

1. What is the undergraduates' level of utilisation of Artificial Intelligence for learning at Kampala International University, Uganda?
2. What are the available Artificial Intelligence resources for undergraduates' learning at Kampala International University, Uganda?

### **Research Hypothesis**

Ho1. There was no significant difference between male and female undergraduates' level of Artificial Intelligence (AI) utilisation for learning at Kampala International University, Uganda.

## **3. METHODOLOGY**

This study adopted a descriptive survey design. The universities selected for this study were Kampala International University, Kampala, Uganda. The population of this study comprised year-to-final-year undergraduates across five colleges and schools in the main campus. The sample population consisted of 450 year one-to fourth-year undergraduate participants randomly selected from five colleges and schools. Ninety (90) undergraduates were randomly selected from each college and school. The instrument used in the study was a self-developed questionnaire titled Undergraduate Utilisation of Artificial Intelligence for Learning (OUAILQ). The instrument consists of 20 items structured on a four-point rating scale of SA (Strongly Agree = 4), A (agree = 3), D (disagree = 2), and SD (Strongly Disagree = 1). To ascertain the appropriateness of the questionnaire, it was validated by two experts, who were two senior lecturers from the school of digital and distance education, Kampala International University. All corrections, suggestions, and modifications made have been affected. To determine the internal consistency of the questionnaire, a one-shot pilot test was conducted with 54 students at Cavendish Private University in Kampala. The data were subjected to statistical analysis using the Cronbach's alpha correlation formula, and a reliability coefficient of 0.79 was obtained. Cronbach's

alpha scores greater than 0.79 are considered indicative of acceptable reliability (cite source). Hence, the instrument was considered reliable for collecting required data. The collected data were analysed using descriptive and inferential statistics. Descriptive statistics included means and standard deviation, and the mean value was ranked based on the categorisation of a four-point rating scale of SA (Strongly Agree = 4), A (Agree = 3), D (Disagree = 2), SD (Strongly Disagree = 1) into low and high decision values of 0.00 – 2.44 as low and 2.45 – 4.0 as high, thereby the combination is considered more appropriate (Duncan & Stenbeck, 1987). Finally, the research hypothesis was tested using the Student's t-test.

## 4. RESULTS

### 4.1. Demographic Characteristics

**Research Question 1:** What is undergraduate students' level of utilisation of Artificial Intelligence for education at Kampala International University, Uganda?

**Table 1.** Undergraduates Students' Level of Utilization of Artificial Intelligence (AI) Technology in Tertiary Institutions

Item	SA	A	D	SD	Mean
I can use mobile phones to play audiobook	164 (36.4%)	182 (40.4%)	93 (20.7%)	11 (2.4%)	2.63
I use flipped classrooms for online discussion of courses	165 (36.7%)	126 (28.0%)	82 (18.2%)	77 (17.1%)	2.72
I use google assistance to solve my homework	99 (21.9%)	208 (46.0%)	78 (17.3%)	67 (14.8%)	2.87
I often write test and exams through Siri.	202 (44.9%)	161 (35.8%)	43 (9.6%)	44 (9.8%)	2.9
I receive lectures and instructions through the use of Socratic.	172 (38.2%)	101 (22.4%)	90 (20.0%)	87 (19.3%)	2.78
I receive instructions through the use of Elsa speak	59 (13.1%)	44 (9.8%)	172 (38.2%)	175 (38.9%)	1.94
I can use Siri to play audiobook	139 (30.9%)	184 (40.9%)	89 (19.8%)	38 (8.4%)	2.82
I use e-portfolios to download course materials	215 (47.8%)	148 (32.9%)	45 (10.0%)	42 (9.3%)	3.19
I can use Alexa to convert speech to text	212 (47.1%)	82 (18.2%)	96 (21.3%)	60 (13.3%)	2.99
I receive lectures and support from my lecturers through the Elsa	194 (43.1%)	125 (27.8%)	72 (16.0%)	59 (13.1%)	3.0
<b>Weighted Average</b>					<b>2.78</b>

**Key;** SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree



**Decision Value:** *Low* =0.00-2.44, *High* = 2.45-4.00

Table 1 shows the mean scores of the responses on students' level of utilisation of Artificial Intelligence (AI) at Kampala International University, Uganda. It revealed that majority of the respondents agreed that; they use mobile phones to play audiobook ( $\bar{x}$  = 2.63), they use flipped classrooms for online discussion of courses ( $\bar{x}$  = 2.72), they use google assistance to solve their homework ( $\bar{x}$  = 2.87), they often write test and exam Siri system ( $\bar{x}$  = 2.9), they received lectures and instructions through the use of Socratic ( $\bar{x}$  = 2.78), they use Siri to play audiobook ( $\bar{x}$  = 2.82), they e-portfolios to download course materials ( $\bar{x}$  = 3.19), they AI exa( $\bar{x}$  = 2.99), they received lectures and support from my lecturers through the Elsa ( $\bar{x}$  = 3.00). The table also shows that the respondents disagreed that they received instructions through Elsa speak ( $\bar{x}$  = 1.94). Meanwhile, based on the value of the weighted average (2.78 out of 4.00 obtainable) which falls into the decision value of *high*, it can be inferred that the undergraduate students' level of utilisation of Artificial Intelligence technologies at Kampala International University, Uganda is high.

**Research Question 2:** What are the available Artificial Intelligence resources for Kampala International University, Uganda?

**Table 2:** *Artificial intelligence technologies available in tertiary institutions in Uganda.*

ITEMS	VHA	HA	A	NA	Mean	Remark
Cloud computing	163 (36.2%)	63 (14.0%)	142 (31.6%)	82 (18.2%)	2.32	Not Available
ChatGPT	146 (32.4%)	113 (25.1%)	98 (21.7%)	94 (20.8%)	2.51	Available
Duolingo	101 (22.4%)	134 (29.8%)	45 (10.0%)	170 (37.8%)	2.63	Available
Google assistance	120 (26.7%)	103 (22.9%)	81 (18.0%)	146 (32.4%)	2.56	Available
Mobile phones	60 (13.3%)	98 (21.8%)	130 (28.9%)	162 (36.0%)	2.88	Available
Tablets	142 (31.6%)	144 (32.0%)	100 (22.2%)	64 (14.2%)	2.19	Not Available
Elsa speak	190 (42.2%)	9 (2.0%)	135 (30.0%)	116 (25.8%)	2.39	Not Available
Chatbots	119 (26.4%)	87 (19.3%)	87 (19.3%)	157 (34.9%)	2.62	Available
Siri	159 (35.3%)	64 (14.2%)	65 (14.4%)	162 (36.0%)	2.51	Available
Face app	115 (25.6%)	114 (25.3%)	73 (16.2%)	148 (32.9%)	2.56	Available

**Key;** VHA= Very Highly Available; HA =Highly Available; A = Available; NA = Not Available

**Decision Value:** *Low* =0.00-2.44, *High* = 2.45-4.00

Table 2 shows the mean scores of the responses on the level of availability of Artificial Intelligence (AI) technologies at Kampala International University, Uganda. The table showed that: are available; ChatGPT ( $\bar{x}$  = 2.51), Duolingo ( $\bar{x}$  = 2.63), Google assistance ( $\bar{x}$  = 2.56), chatbots ( $\bar{x}$  = 2.62), Mobile phones

( $\bar{x}$  = 2.88), Siri ( $\bar{x}$  = 2.51) and Face app ( $\bar{x}$  = 2.56). However, the table also shows that the students disagreed to the following; cloud computing ( $\bar{x}$  = 2.32), tablets ( $\bar{x}$  = 2.19), and Elsa speak ( $\bar{x}$  = 2.39). Based on the result from this table and mean score acceptance by the decision rule, the available Artificial Intelligence (AI) facilities in a Private university in Kampala, Uganda are: ChatGPT, Duolingo, Google assistance, chatbots ( $\bar{x}$  = 2.62), Mobile phones, Siri and Face app.

## 4.2. Research Hypothesis

### State the hypothesis

The table below shows the summary of the T-test showing the difference between male and female students' use of artificial intelligence (AI) technology for learning.

**Table 3.** Summary of T-test Showing Difference in Male and Female Students' Utilizations of Artificial Intelligence (AI) Technology for Learning

Grouping Variable (Gender)	N	Mean	Std. D	Df	T	Sig.	Remark
Male	290	2.86	4.42	448	-2.328	.071	Not Significant
Female	160	2.93	1.15				

Table 3 shows the differences in male and female undergraduates' utilisation of Artificial Intelligence (AI) technology for learning at Kampala International University, Uganda. The table shows that the mean score for male students was 2.86, whereas that for female students was 2.93. The mean scores did not show an appreciable difference. Therefore, there was no significant difference between male and female undergraduate students' utilisation of Artificial Intelligence (AI) technologies for learning at Kampala International University, Uganda (pdf = 448; t = -2.935; p > 0.05). Hence, Hypothesis 1 was supported.

## 5. DISCUSSION OF FINDINGS

The study revealed that undergraduate students' level of utilisation of AI for learning was very high. This finding agrees with Adelokun and Abidoye (2024), who found that there was a high level of utilisation of zoom online applications for learning in tertiary institutions.

The study also revealed that AI resources for undergraduate learning in Uganda are inadequate. This finding is in line with the findings of Abidoye (2024), who discovered that ICT infrastructure is not readily available for student learning in tertiary institutions in Uganda.

The study further revealed no significant difference between male and female undergraduate students' utilisation of Artificial Intelligence (AI) technologies for learning at Kampala International University, Uganda. This implies that undergraduate students, whether male or female, possessed equal abilities in the use of AI for learning. This finding is in agreement with that of Abidoye and Oluwaronbi (2024), who found no significant gender effect on students' use of infographic packages for learning and improvement in their academic performance.

### 5.1. Recommendations

This study, therefore, recommends that university management takes a leading initiative in promoting the adoption of AI tools among undergraduate students by incorporating AI-assisted learning in academic activities and providing enough infrastructure to support its implementation. The university will appreciate such effort more if it will conduct specialized seminars and workshops that do not just promote students' AI application ability but enable them to use AI effectively in academic pursuits. The finding of this study in terms of the gender factor in AI utilization joins the postulation that male and female students should be equally encouraged and provided with equal opportunities to access as well and exploit AI tools; hence, it should be inclusive as it bridges the digital divide and thus improves the adoption of AI for better learning outcomes in a technology-driven academic environment.

#### Observations

- i) The concepts in the study need to be well understood and defined
- ii) It is important to anchor the study in a single theory and allow the theory to guide the study.
- iii) Available AI tools were not elaborated in the background/introduction
- iv) Methodology is still weak and misleading
- v) The discussion is too simplistic
- vi) Analysis of ideas in the background and literature review is shallow and disconnected
- vii) Statements lack backing
- viii) Contents of this manuscript do not indicate that the study was actually conducted.
- ix) Please write correct names of universities
- x) Show justification why the study was conducted at KIU and why undergraduates
- xi) The background needs to delve from global to local while showing the emerging/urgent need for studies on AI. For example, why has AI become pertinent in Higher Education today?
- xii) The problem was not problematised enough

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## **Etik, Beyan ve Açıklamalar**

### **1. Etik Kurul izni ile ilgili;**

- ☐ Bu çalışmanın yazar/yazarları, Etik Kurul İznine gerek olmadığını beyan etmektedir.
- ☒ Bu çalışmanın yazar/yazarları, Kampala International Üniversitesi Research Ethics Committee (REC) nin tarih 13.01.2025 sayı ve karar KIU-2025-315 ile etik kurul izin belgesi almış olduklarını beyan etmektedir.

### **2. Bu çalışmanın yazar/yazarları, araştırma ve yayın etiği ilkelerine uyduklarını kabul etmektedir.**

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