Effects of Artificial Intelligence on the Academic Competency of Students of Higher Learning Institutions: A Case Study of Kampala International University in Tanzania

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Abstract:
This study investigated the effects of Artificial Intelligence (AI) on academic competency among students at Kampala International University in Tanzania. It aimed to: (1) assess awareness and utilization of AI, (2) explore the AI technologies used and their impacts—both positive and negative—on students' academic competency, and (3) recommend effective ways to leverage AI for enhancing academic competency. Utilizing a mixed-methods approach, the research included 170 students and 30 teaching and management staff, totaling 200 participants. Simple random sampling selected students, while purposive sampling was used for staff. Data were collected through questionnaires via the Kobo Toolbox survey. Findings indicated a 77% awareness level of AI and a 65% utilization rate. The most commonly used AI technology was content development AI, such as ChatGPT (83.8%). Notably, 63% of respondents acknowledged that AI has both beneficial and detrimental effects on academic competency. Negative impacts included over-dependency and reduced critical thinking, while positive aspects included time savings and easier access to information. The study concluded that AI tools can enhance academic competency but may hinder personal development. It recommended restructuring curricula to incorporate AI skills and adapting assessment strategies to address AI-related challenges.

Keywords: Higher learning institutions, Artificial Intelligence (AI), academic competency.

Peer Reviewed

1. INTRODUCTION

Advancement in science and technology is one of the main driving forces that facilitates the effective provision of education in a country, and all levels of education can utilize science and technology to ensure that teaching- and learning activities are well executed. As a part of a massive revolution in science and technology, the 21st century has been experiencing the evolution of human-like machines that can be used to perform works in different aspects of life, education inclusive. The so-called Artificial Intelligence is a suitable notion to explain the aforementioned idea of having machines, software, and apps that work in a similar way as the human brain. Technically, Artificial intelligence (AI) can be defined as the ability of digital computers, or the development of information technology-based computer systems or other machines to complete tasks that usually require human intelligence and logical deduction (Siau, 2018). Even though AI can make the world a better place, it comes with its own challenges. According to (Yizhi & Siau, 2018), Artificial intelligence (AI) will change the world and higher education is no exception. AI will change the way we work, the way we learn, and the way we live.

Thus, the education sector is currently facing another major debate concerning the new wave of the incorporation of AI into learning and teaching activities. Regardless of the usefulness of AI in education, students in institutions of higher learning around the world are currently tempted to rely on the competence of machines rather than their own. In fact, the future academic competence of many college and university students is under significant threat unless proper measures and efforts are taken to address the effect of Artificial Intelligence within higher learning institutions. Artificial Intelligence's digital and dynamic nature offers opportunities for student engagement that cannot be found in often outdated textbooks or in the fixed environment of a classroom (Subrahmanyam & Swathi, 2018).

However, the claim that AI improves learners' academic competency is still highly debatable. It remains unclear to educators how to take pedagogical advantage of AI on a broader scale and how it can meaningfully impact teaching and learning (Zawacki-Richter, Marín, & Bond, 2019). Furthermore, students in higher learning institutions in Tanzania, particularly at Kampala International University (KIUT), seem to be unaware of the appropriate use of AI in the learning process to improve their academic competence. As a result, they indulge in excessive dependence on generative AI which threatens their academic abilities. If this problematic behaviour is not addressed, higher learning institutions will produce graduates whose approaches to learning are improper. This problematique has spurred the researcher to conduct this exploratory research to examine the effect of Artificial Intelligence on the academic competency of students in higher learning institutions in Tanzania, using KIUT as a case study. The goal is to generate findings that may be useful in enhancing the positive uses of AI technologies

among students, teachers, and other stakeholders in the study area and other higher learning institutions.

1.1 Objectives of the Study

This study aimed at firstly, establishing the level of awareness and utilization of Artificial Intelligence (AI) in the study area. Secondly, exploring Artificial Intelligence technologies used and their consequences on students' academic competence in the study area by considering both positive and negative consequences, and thirdly, suggesting better ways of using Artificial Intelligence to foster the academic competence of students in the study area.

1.2 Research Questions

The following research questions were formulated for the study:

i.   What is the level of awareness and utilization of Artificial Intelligence in the study area?
ii. What Artificial Intelligence technologies are used, and what consequences do they pose to the academic competence of students in the study area?
iii. What are the proper ways of utilizing Artificial Intelligence to foster students' academic competence in the study area?

2.   LITERATURE REVIEW

2.1 Conceptual Review

This study adopted the concept of Artificial Intelligence as an independent variable and academic competence as a dependent variable. The relationship between Artificial Intelligence (AI) and academic competency is multifaceted and dynamic. AI technologies, such as adaptive learning systems, intelligent tutoring systems, Generative AI such as ChatGPT and numerous others, are designed to enhance educational experiences by personalizing learning pathways based on the needs of individual student. These tools can analyze student performance data in real-time, allowing educators to identify areas where students are weak, and provide targeted support (Luckin et al., 2016).

Academic competency, defined as the capability to apply knowledge effectively in various contexts, is significantly influenced by the integration of AI in educational settings. For instance, AI can facilitate immediate feedback on assessments, enabling students to understand their mistakes and learn from them more effectively. It can also enable students to find solutions to assignments or other components of their assessments. However, there is a concern that excessive reliance on AI can undermine critical thinking and problem-solving skills, as students may become dependent on automated responses rather than developing their analytical abilities (Hwang & Chang, 2018). Thus, while AI has the potential to enhance academic competency, it is crucial to strike a balance to ensure that it complements rather than replaces traditional learning methods.

2.2 Empirical Review

A growing body of empirical research has explored the impact of AI on academic competency in various educational contexts. One notable study by Zawacki-Richter et al. (2019), titled "Systematic Review of Research on Artificial Intelligence in Higher Education" aimed to evaluate the effectiveness of AI applications in enhancing student learning outcomes. The researchers employed a systematic review methodology, analyzing over 100 studies. Their findings indicated that AI technologies positively influenced academic performance by providing personalized learning experiences and enabling efficient feedback mechanisms. However, they also highlighted a gap in understanding how these technologies affect critical thinking skills, suggesting a need for more comprehensive studies.

Another significant work was conducted by García-Peñalvo et al. (2020) under the title "Artificial Intelligence in Education: A Review of the Current State and Future Perspectives." The study used a qualitative approach, conducting interviews with educators and students. The authors found that while AI tools improved engagement and provided valuable resources for learning, they also raised concerns about the potential for decreased interpersonal interaction and the importance of maintaining a human element in education.

In a more recent study, Chen et al. (2021) investigated the effects of AI-based learning platforms on students' academic achievement in "The Role of Artificial Intelligence in Higher Education: A Study of AI-Assisted Learning." Their experimental design involved a control group and an experimental group using AI tools. The results showed that students using AI-assisted platforms scored significantly higher on assessments compared to those who did not, thereby underscoring the positive impact of AI on academic performance. However, the authors cautioned that over-reliance on AI could lead to a decline in self-directed learning skills.

2.3 Theoretical Framework

The theoretical framework for this study is grounded in the Constructivist Learning Theory, which posits that learners construct knowledge through experiences and interactions with their environment (Piaget, 1973). AI technologies can facilitate this process by providing adaptive learning experiences tailored to individual needs, thereby promoting deeper understanding and retention of information. Additionally, the Technology Acceptance Model (TAM) which explores users' acceptance of technology based on perceived ease of use and perceived usefulness (Davis, 1989), is applicable in this context. This model can help elucidate how students and educators perceive AI tools and their willingness to integrate these technologies into their learning processes. Understanding these perceptions and behaviors is crucial for effectively implementing AI in higher education and maximizing its benefits for academic competency.

3. RESEARCH METHODOLOGY

This study employed a case study design accompanied by an exploratory research design; both qualitative and quantitative research approaches were well integrated together to provide clear presentation of the research problem. In the case of targeted population; students, teaching and administrative staff of Kampala International University in Tanzania were taken the targeted population from whom data was collected.

3.1 Sample size and Sampling Procedures

The researcher employed purposive sampling procedure and simple random sampling strategy to recruit the respondents to be used in the study. Purposive sampling was used to select 30 teaching and administrative staff as it was time saving and did not require prior knowledge of the targeted population size. On the other hand, simple random sampling was used to recruit a sample size of 170 students. This was utilized to provide a chance for each student to be included and to prevent bias in the selection of students. Thus, the entire study had a sample size of 200 respondents.

3.2 Instrumentation

The study employed the questionnaire method where a survey tool was formulated through Kobo Toolbox account and launched, with the link shared to the targeted respondents to provide their responses to maximize ease and economy. In some cases, the researcher had to administer a hardcopy of the survey questionnaire to the respondents. The questionnaires included both open ended and close ended questions with respect to the nature of information needed to fulfil the set objectives.

3.3 Reliability and Validation of the Research Instruments

In order to ensure that the research tool was reliable, the study utilized a test retest through pretesting techniques (Pilot study). The survey questionnaires were administered first and then pretested before the actual data collection, and then retested again to ensure reliability. The results from the two tests (containing 14 items each) were compared and generated an index of 8.2 Cronbach Alpha and achieved an acceptance level. Moreover, to ensure validity of the tool, content validity was performed by involving experts who judged how well the instruments met standards and could provide the intended results. The researcher also performed a criterion-related validity by predicting some of the outcome.

3.4 Method of analysis

The study used both descriptive statistics and inferential statistics to analyze the collected data which involved computation of frequency, percentages and mean. Computations were done through the use of the Statistical Package for Social Science (SPSS) version 25. Built-in features of Kobo Toolbox were then used to ascertain the analysis of the data provided from the respondents.

Data Presentation, Analysis and Interpretation

Awareness of Artificial Intelligence at Kampala International University in Tanzania

Table 1: Awareness about Artificial Intelligence

Responses	Frequency	Percent	Valid Percent	Total Percent
Yes (I am aware)				
Student	128	64.0	75.3	
Teaching & Administrative staff	26	13.0	86.7	77.0
No (I am not aware)				
Students	42	21.0	24.7	
Teaching & Administrative staff	4	2.0	13.3	23.0
Total	**200**	**100.0**	**200.0**	**100.0**

The survey data in Table 1 revealed that out of the total 200 respondents, 170 (85%) were students, and 30 (15%) were teaching and administrative staff. Further analysis showed that 128 students, which translates to 64% of the total respondents, were aware of AI, while 42 students (21%) were unaware. Regarding the teaching and administrative staff, 26 respondents (13% of the total) claimed to be aware of AI, and only 4 (2%) were unaware. When the data is analyzed on a per-category basis, the findings show a stark similarity in the awareness levels between the two respondent groups. Among the students, 75.3% were aware of AI, while 24.7% were unaware. Interestingly, the awareness level among the teaching and administrative staff was even higher, with 86.7% being aware and 13.3% being unaware.

Overall, the findings suggest a significant level of awareness about AI in the educational context at KIUT. Out of the total of 200 respondents, 154 (77%) were aware of AI, while only 46 (23%) were unaware. These results indicate a strong understanding and familiarity with AI technologies among the university's student population and teaching and administrative staff. The high level of AI awareness observed across both student and staff categories at Kampala International University suggests a proactive and engaged educational environment that values the integration of emerging technologies. This awareness likely stems from the university's efforts to incorporate ICT technology and resources, as well as the ongoing professional development and training provided to both students and staff.

Utilization of Artificial Intelligence at Kampala International University in Tanzania

Table 2: Users of Artificial Intelligence

Responses	Frequency	Percent	Valid Percent	Total Percent
Yes (I am a user)				
Student	119	59.5	70.0	
Teaching & Administrative staff	11	5.5	36.7	65.0
No (I am not user)				
Students	51	25.5	30.0	
Teaching & Administrative staff	19	9.5	63.3	35.0
Total	**200**	**100.0**	**200.0**	**100.0**

The data presented in Table 2 reveals a significant disparity in the utilization of artificial intelligence (AI) between students and teaching and administrative staff at Kampala International University in Tanzania. Out of the 200 total respondents, 119 (59.5%) students claimed to be users of AI, while 51 (25.5%) students did not identify as users of AI. In contrast, 11 (5.5%) of the teaching and administrative staff acknowledged being users of AI, and 19 (9.5%) claimed not to be users.

Analyzing the data per category, the findings show that 70% of the student respondents (119 out of 170) agreed that they were users of AI, while 30% (51 out of 170) claimed to be non-users. Conversely, the teaching and administrative staff demonstrated a reverse trend, with 63.3% (19 out of 30) claiming not be users of AI, and only 36.7% (11 out of 30) admitting to be users. These results suggest that students at Kampala International University are significantly more engaged with AI technologies compared to the teaching and management staff, with a ratio of approximately 7 out of 10 students being users, while only about 4 out of 10 staff members are users.

Moreover, the findings indicate that the general level of AI utilization at Kampala International University in Tanzania (KIUT) is not as high as the awareness levels. Because, awareness level was at 77% out of the 200 respondents, while the utilization level was at 65% out of 200 respondents. This discrepancy between awareness and utilization indicates the need for the university to promote and facilitate the adoption of AI-based tools and resources among both the student population and the teaching and administrative staff. Effective training, integration of AI into the curriculum, and the provision of necessary infrastructure and support can help to bridge this gap and ensure a more comprehensive and equitable utilization of AI technologies across the university community.

The frequency of Artificial Intelligence Use at Kampala International University in Tanzania
Table 3: Frequently using Artificial Intelligence Technologies

Responses	Frequency	Percent	Cumulative Percent
Very frequently	4	3.1	3.1
Frequently	67	51.5	54.6
Normal	49	37.7	92.3
Less frequently	8	6.2	98.5
Very less-frequently	2	1.5	100.0
Total	**130**	**100.0**	

The data presented in Table 3 provides insight into the frequency of AI utilization among the 130 respondents who claimed to be users of AI technology at KIUT. The findings indicate that the majority of these users, 67 respondents (51.5%), reported using AI frequently. This was followed by 49 respondents (37.7%) who use AI at a normal frequency. Only a small fraction, 4 respondents (3.1%), claimed to use AI very frequently, while 8 (6.2%) and 2 (1.5%) used it less frequently and very less frequently, respectively.

These results suggest that the overall level of AI utilization among students at Kampala International University in Tanzania is relatively high, with 92.3% of the users employing the technology at a normal or higher frequency. The high frequency of AI usage among the student population indicates that they are actively leveraging AI-powered tools and resources to support their academic pursuits, potentially enhancing their learning experiences and improving their educational outcomes.

However, the presence of a small percentage (7.7%) of respondents who use AI less frequently or very less frequently raises some cautionary notes. This may suggest that there are challenges or barriers that hinder more widespread and consistent AI adoption among the KIUT population, or that some users have identified potential negative consequences of over-reliance on AI. It is crucial for the university to address these concerns and ensure that the integration of AI into the educational ecosystem is balanced and sustainable, mitigating any risks of over-dependence or the potential stifling of critical thinking skills. By fostering a well-rounded approach to AI utilization, KIUT can empower its students to harness the vast benefits of the technology while maintaining a healthy and productive learning environment.

Artificial Intelligence Technologies used at Kampala International University in Tanzania Table 4: Artificial Intelligence Technologies with Majority of Users

Artificial Intelligence Technologies	Population	Frequency	Percent
Content Development (e.g. ChatGPT, OpenAI, Copilot, etc.)	130	109	83.8
E-Learning and Library	130	94	72.3
Language Assistant (e.g. Microsoft editor, Grammarly, etc.)	130	82	63.1
Entertainment (e.g. Video games, AI cam, Image creator etc.)	130	76	58.5
Transportation (e.g. Google Map, Bolt, Uber, etc.)	130	64	49.2
Math's Solver	130	35	26.9

The data presented in Table 4 provides a detailed overview of the AI technologies commonly used by the student respondents at Kampala International University in Tanzania. The findings reveal that the majority of AI-using students, over 83%, reported utilizing content development tools such as ChatGPT, AskAI, OpenAI, and Copilot. This indicates a strong reliance on AI-powered content creation and assistance, potentially employed by students in answering assignments and other written exercises. While these technologies can enhance academic productivity, the over-dependence on AI-generated content raises concerns about the development of students' own writing and critical thinking skills.

The next most popular AI applications were in the areas of e-learning and library resources (72.3%), as well as language assistance tools like Microsoft Editor and Grammarly (63.1%). These findings suggest that students are leveraging AI to enhance their academic productivity, improve their writing skills, and access educational materials more efficiently. This aligns with the university's efforts to integrate technology into the learning environment and provides insights into students' adaptability to AI-driven educational tools.

Interestingly, a significant portion of students (58.5%) also reported using AI-powered entertainment technologies such as video games, AI-generated art and image creation tools. This could indicate that students are not only using AI for academic purposes but are also exploring its applications in recreational and creative domains, demonstrating a well-rounded engagement with the technology.

In contrast, the relatively lower usage of AI-powered transportation (49.2%) and math solver (26.9%) technologies suggests that students may be less reliant on these

types of AI applications in their academic pursuits at KIUT. This may be attributed to the specific course requirements, or the availability and integration of these technologies within the university's infrastructure.

Effects of Artificial Intelligence on Students' Academic competency
Table 5: Perceptions about Effects of AI on Students' Academic Performance

Responses	Frequency	Percent	Cumulative Percent
Both (Positive & Negative)	97	63.0	63.0
Positive effects	32	20.8	83.8
Negative effects	25	16.2	100.0
Total	**154**	**100.0**	

It was found that (Table 5) out of the 154 respondents who claimed to be aware of the concept of AI in education, a significant majority, 97 respondents (63%), recognized that the utilization of AI in academic pursuits has both positive and negative consequences. This finding suggests that the KIUT population has a clear understanding of the impact of AI on their academic competence. They are able to critically evaluate the multifaceted nature of AI's influence, acknowledging that it can yield both beneficial and detrimental outcomes. In addition, a smaller proportion of respondents, 32 (20.8%), expressed the view that AI has predominantly positive consequences for learners' academic competency. This indicates that a subset of the respondents is more optimistic about the potential benefits of AI in supporting and enhancing academic performance. Conversely, 25 respondents (16.2%) believed that the impact of AI is primarily negative, posing a risk to learners' academic competence.

These findings suggest that while the majority of respondents acknowledged the dual-edged nature of AI's impact, there is still a significant percentage of respondents who hold either an overly positive or overly negative perception of the technology's role in academic pursuits. This dichotomy implies the need for the university to provide comprehensive guidance and education on the balanced and responsible use of AI, empowering students to harness the technology's benefits while mitigating its potential drawbacks.

Better Ways of utilizing Artificial Intelligence for Better Academic Competency

Table 6: Better Ways of Utilizing Artificial Intelligence in Higher Learning Institutions

S/N	Proper ways of Utilizing Artificial Intelligence
1	Students must use Artificial Intelligence technology only when it is necessary.
2	Give a Break, do not be too dependent on Artificial Intelligence.
3	Students should avoid copy-and-paste behaviour.
4	It has to be used by learners and teachers for further reading, and not as the primary source of knowledge for both learners and teachers.
5	The student or user should have the basic knowledge of what they want and be confident with information they are looking for.
6	Artificial Intelligence should be used but its usage should be limited to some issues, for other issues which need brainstorming by students, AI should not be allowed.
7	Students should only use AI under the guidance of experts.
8	AI Should only be used for specific reasons or used when the task given is not compatible with human capability.
9	It would be better if information from AI could refer to the books or articles from which it has summarized its best answers.
10	Assignments given to students should be presented by students themselves to make them master and understand what they have written. Even if they have got some help from AI, making them present and own it will make them learn in the process.
11	Al should only be used by students to increase knowledge after being taught by teachers.

The research findings (Table 6) suggest that students utilize AI only when it is necessary, thereby avoiding over-dependence and maintaining a healthy balance between AI-assisted tasks and independent learning. By limiting the use of AI to specific applications such as research support or problem-solving in areas incompatible with human capabilities, institutions can ensure that students develop critical thinking skills and a deep understanding of the subject matter. Furthermore, the researcher emphasizes the importance of providing students with guidance and oversight in the use of AI through the introduction of dedicated courses or workshops. This will equip learners with the knowledge and ethical framework to leverage AI responsibly, preventing the temptation of plagiarism or over-reliance on AI-generated content. The researcher also found that AI is used by both learners and teachers as a supplementary resource for further reading and research, not as the core source of knowledge. Ultimately, the researcher's findings

emphasize the need for a comprehensive strategy that integrates AI as a supplementary tool, rather than a replacement for the holistic development of students in the study area.

4. DISCUSSION OF THE FINDINGS

4.1 Level of awareness and Utilization of Artificial Intelligence (AI) in the study Area

This explorative study revealed that the level of awareness about artificial intelligence (AI) in the educational context at KIUT was notably high. Specifically, 77% of the 200 total respondents agreed that they were aware of the pace of integration AI into education, while only 23% were unaware. This suggests that in a group of 100 individuals at the university, approximately 77 are aware of AI in education. This aligns with the findings reported by Zawacki-Richter and Latchem (2018). They noted that there is a growing awareness and recognition of the potential benefits of AI-powered technologies in enhancing teaching and learning practices in higher education (Zawacki-Richter & Latchem, 2018).

The study also examined the awareness levels across different stakeholder groups. Among the student population, 75.3% of the 170 student respondents indicated they are aware of the revolution of AI in higher education, while the remaining 24.7% are unaware. Interestingly, the level of AI awareness among the teaching and administrative staff at the university is even higher, with 86.7% being aware and only 13.3% unaware. This discovery is supported by the work of Becker et al. (2017). They suggest that faculty members and administrators tend to have a deeper understanding of the implications and applications of AI in the educational context which can be attributed to their roles and responsibilities in shaping the institutional policies and strategies (Becker et al., 2017).

However, the study also found a decline in the level of actual usage of AI technologies compared to the level of awareness. While 77% of the respondents were aware of AI in education, only 65% of the total respondents accepted that they were users of AI technologies, a decrease of 12%. This finding suggests that being aware of AI does not necessarily translate to being a user of it, implying that there may be barriers or challenges that prevent the full integration and utilization of AI into the educational setting, even among those who are aware of its potential benefits. This finding is supported by the work of Gwagwa et al., (2021) as they argued that there is an uneven pace of development of AI technology that necessitates institutions to awaken their engagement in the field of AI.

The study's findings revealed an intriguing paradox regarding the usage of AI technologies among the different stakeholder groups at Kampala International University in Tanzania. Despite the teaching and administrative staff exhibiting a remarkably higher level of awareness about AI (86.7%) compared to the student's (75.3%), the actual utilization of AI was relatively unimpressive. The study found that students were much

more active users of AI, with 70% of them identified as users, while the level of AI usage among staff was significantly lower at only 36.7%. The phenomenon of individuals with lower awareness exhibiting higher usage of emerging technologies has been documented in various studies. For instance, a study by Venkatesh et al. (2003) on the Unified Theory of Acceptance and Use of Technology (UTAUT) model found that performance expectancy, effort expectancy and social influence were key determinants of technology usage rather than the level of awareness alone. This suggests that factors such as perceived usefulness, ease of use, and social pressures can influence the adoption and utilization of technologies, even among individuals with relatively lower awareness (Venkatesh et al., 2003).

This complex paradox highlights a troubling trend where individuals with less awareness of a particular matter tend to exhibit a sense of overconfidence and act as if they possess extensive knowledge about it, while those who actually have a deeper understanding tend to be more cautious and introspective in their approach. This phenomenon is not limited to the academic realm but also been observed in other aspects of society, including the political sphere where individuals with limited knowledge and competence often find themselves in positions of power, while those who are truly equipped to lead are relegated to the sidelines, watching helplessly as the "pretenders" continue to make decisions that may have profound implications. This situation is particularly worrying in the context of the integration of AI in education as it raises the risk of learners engaging excessively with AI technologies without an understanding of their appropriate and responsible utilization. Such a scenario could lead to a dangerous dependency syndrome, where students become overly reliant on AI without developing the necessary critical thinking and problem-solving skills that are essential for their academic and personal growth. This is a matter of great concern as it has the potential to undermine the foundations of strong learners.

The study delved deeper into the frequency of the utilization of AI among students at Kampala International University in Tanzania and found that the overall level of AI usage was relatively high. The data revealed that 92.3% of the student users employed AI-powered tools and resources at a normal (37.7%) or higher frequency (54.6%), while 45.4% were used them at a normal (37.7%) or lower frequency (7.7%). This high frequency of AI usage among the student suggests that they actively rely on these technologies to support their academic pursuits, potentially enhancing their learning experiences and improving their educational outcomes. However, while acknowledging the potential benefits of the integration of AI, the study also underscores the need to consider the possible negative implications that may arise from the excessive and unchecked utilization of these technologies by learners in higher education institutions.

Drawing a parallel to the late President John Pombe Magufuli's warning about the potential self-serving motives of capitalist countries in the context of the COVID-19 pandemic when he said "Let's not think that they love us very much. This country is rich.

Africa is rich, and everyone is jealous of our vast wealth. We must be very careful." (The Citizen, 2021), this study raises concerns about the possibility of learners being adversely affected by the overreliance on AI as also argued by Resnick et al. (2020). The researchers warned that if students become overly dependent on AI-based solutions, it could lead to a decline in their ability to engage in independent problem-solving and analytical reasoning (Resnick et al., 2020).

If the current high frequency of the usage of AI by students continues unabated, the possibility of a decline in critical thinking abilities, increased laziness and lower creativity cannot be ruled out. This scenario may result in a significant portion of learners being highly affected (54.6%), with a substantial number experiencing normal levels of impact (37.7%) and a smaller percentage being less affected (7.7%). This revelation correlates with the argument made by Zakaria (2017) that AI will bring structural challenges that can hinder the progress of a healthy adoption of AI.

Given these concerns, the study emphasizes the need for educational stakeholders to intervene and establish appropriate policies and standards for the utilization of AI in higher learning institutions. This position was advocated by Zakaria (2017) who observed that education systems need to adapt quickly and new frameworks need to be created for teachers and students to effectively integrate emerging technologies into the teaching and learning environment. This proactive measure is crucial in preserving the academic competency of learners and ensuring that they develop the necessary critical thinking, problem-solving and creative skills required for their success and the betterment of the country.

4.2 Type of Artificial Intelligence Technology Used

This finding reveals that the majority of AI technology users (over 83%), reported utilizing content development tools such as ChatGPT, AskAI, OpenAI, Copilot and other similar applications. This indicates a strong reliance on AI-powered content creation and assistance potentially employed by students in answering assignments and other written exercises. While these technologies can enhance academic productivity, the over-dependence on AI-generated content raises concerns about the development of students' own writing and critical thinking skills. On the other hand, the findings portray the painful truth that nowadays, students may not put much effort into doing or writing assignments on their own. Instead, they generate answers from AI-powered applications, which can instantly produce essays spanning several pages. Hence, it appears necessary for lecturers and educators to reshape their assessment strategies. However, according to Lyimo (2023), while ChatGPT may provide quick and accurate results in various questions, it cannot replace the need for critical thinking

Arguably, giving students homework assignments or term papers that need answers by a deadline is not an effective means of assessment nowadays because no matter how difficult a question may seem to be, students may use AI tools to quickly

complete their assignments. Therefore, it would be better to utilize on-the-spot assignments, presentations or verbal answers. Similarly, a study by Brauner and Zierer (2020), suggests a significant reliance on AI-powered content creation tools among university students. Their research, which surveyed students across multiple institutions revealed that over 75% of respondents reported using AI-assisted writing tools such as ChatGPT to complete their assignments (Brauner & Zierer, 2020).

The next most popular AI applications used by students were the one developed for e-learning and library resources (72.3%) as well as language assistance tools like Microsoft Editor and Grammarly (63.1%). These findings suggest that students at KIUT who employ AI to enhance their academic productivity, improve their writing skills and access educational materials more efficiently. This aligns with the university's efforts to integrate technology into the learning environment and provides insights into the students' adaptability to AI-driven educational tools. (Zawacki-Richter et al., 2019). Both students and staff may invest their time on e-learning and library resources empowered by AI to harness valuable resources and to increase their competency (Timmis et al., 2022).

Similarly, the study found that a significant percentage of students (58.5%) also reported using AI-powered entertainment technologies such as video games, AI-generated art and image creation tools. This could indicate that students do not only use AI for academic purposes but also explore its application in recreational and creative domains, demonstrating a well-rounded engagement with the technology. In contrast, the relatively lower usage of AI-powered transportation (49.2%) and math solver (26.9%) technologies suggest that students may be less reliant on these types of AI applications in their academic pursuits at KIUT. This could be attributed to the specific course requirements or the availability and integration of these technologies within the university's infrastructure.

4.3 Perceptions on Effects of Artificial Intelligence Technology

The study's findings reveal that out of the 154 respondents who claimed to be aware of the concept of AI in education, a significant majority, 97 respondents (63%), recognized that the utilization of AI in academic pursuits has both positive and negative consequences for learners' academic competency. This finding suggests that the KIUT population has a clear understanding of the multifaceted impact of AI on their academic performance. They are able to critically evaluate the dual nature of AI's influence, acknowledging that it can yield both beneficial and detrimental outcomes. Additionally, a smaller proportion of respondents, 32 (20.8%), expressed the view that AI has predominantly positive consequences for learners' academic competence. This indicates that a subset of the respondents is more optimistic about the potential benefits of AI in supporting and enhancing academic performance. In contrast, 25 respondents (16.2%) believed that the impact of AI is primarily negative, posing a risk to learners' academic

competence. While this group represents a smaller proportion of the respondents, their views should not be dismissed as the implications of their concerns warrant a careful consideration.

4.4 Effects of Artificial Intelligence Technology

One of the key positive impacts of AI found in this study is the time-saving benefits of AI which allows students to work more efficiently and focus on higher-level tasks as argued by Brynjolfsson and McAfee (2014). AI can free up students' time, enabling them to engage in more complex and creative work. This aligns with the observations that AI can enhance data processing and information retrieval, empowering students to gather information and insights more readily (Davenport & Ronanki, 2018).

The study also discovered that AI can assist students in mastering languages and improving their grammar skills, thereby enhancing their overall academic communication abilities. This finding is consistent with the research conducted by Zheng and Gao (2020), who reported that AI-powered language learning tools can significantly improve language proficiency and communication skills.

Moreover, the flexibility and adaptability of AI-driven learning which enables students to personalize their educational experiences were also highlighted as notable impacts of AI. This observation echoes the findings of Palaigeorgiou and Konstantinidis (2019), who noted that AI-powered adaptive learning systems can tailor the learning experience to individual needs and preferences. In addition to these benefits of AI to learner's academic competence, this study acknowledges the potential of AI in catalyzing new technological innovations, reducing costs, imparting knowledge, improving student engagement and even serving as a source of income if utilized effectively. These multifaceted advantages highlight the transformative role that AI can play in elevating the academic competence and overall learning experience of students in higher education institutions.

However, concerns have been expressed about the impact of AI on students. Arisen. The primary shortcoming is the potential for students to become overly dependent on AI leading to the loss of critical thinking and independent problem-solving abilities (Brynjolfsson & McAfee, 2014). As AI-powered solutions become increasingly accessible, there is a risk that students may grow accustomed to relying on pre-existing answers rather than engaging in the creative and analytical processes necessary for genuine learning and growth (Makridakis, 2017).

Another pressing issue is the threat of copyright violations and unauthorized access to academic materials. The ease with which AI-enabled tools can gather and disseminate information raises ethical and legal concerns, potentially undermining the principles of academic integrity and intellectual property (Cath et al., 2018). Higher education institutions must proactively address these challenges to safeguard the rights of content creators and ensure a fair and equitable learning environment.

Additionally, the study rightly expresses concerns about the potential decline in students' thinking capacity and analytical reasoning skills due to excessive reliance on AI (Carr, 2014). The fear is that the convenience and efficiency offered by AI-driven solutions may inadvertently cultivate a culture of intellectual laziness, where students become less inclined to undertake independent research and engage in deep critical analysis. Perhaps the most alarming concern is the risk of AI triggering psychological issues such as suicidal tendencies if students were to access harmful or inappropriate content through the technology (Przybylski & Weinstein, 2019). This emphasizes the need for higher education institutions to prioritize the mental health and well-being of their students and implement robust safeguards and support systems to mitigate the potential negative impacts of the integration of AI.

As the adoption of AI in higher education continues to accelerate, it is crucial for institutions to develop comprehensive policies, guidelines and support structures that prioritize the holistic development and well-being of students (Cath et al., 2018). It is only through a balanced and responsible approach, that the transformative potential of AI can be harnessed while safeguarding the core values of higher education and ensuring the long-term success and well-being of the student population.

4.5 Are there better ways of utilizing Artificial Intelligence to improve the Academic Competence of Students in the Study Area?

Zawacki-Richter et al. (2019) emphasized the importance of avoiding over-reliance on AI and maintaining a healthy mix of technology-assisted learning and self-directed learning. This view was expressed to draw attention to the necessity of using AI as a complementary tool rather than a replacement for their students' own critical thinking and problem-solving skills. The avoidance of "copy-and-paste behavior" has been proposed as a means to eliminate the negative consequences of utilizing AI on student academic competence. The finding is in harmony with Luckin et al. (2016) who argued that AI-powered tools should be used to expand and enhance students' writing and research capabilities rather than enabling academic dishonesty. The researcher emphasizes the need for institutions to implement vigorous plagiarism detection tools, and academic integrity policies as well, in order to ensure that students engage in authentic, original work.

Aligning with the respondents' recommendation for AI-use guidance, Popenici and Kerr (2017) advocate the integration of AI literacy, responsible and fair usage training into university curricula. This study suggests that such courses should focus on equipping students with the necessary skills to critically evaluate the strengths, limitations and ethical implications of AI technologies in their academic pursuits. Furthermore, the idea of students presenting their own work verbally, even if it were generated with AI assistance, resonates with the findings of Bichsel (2018), who emphasizes the importance of maintaining student's originality, authorship and ownership in the learning process.

The researcher suggests that institutions should encourage students to reflect on and articulate their AI-supported learning experiences, fostering a deeper understanding of the subject matter.

Moreover, the current research findings also align with the recommendations of Zawacki-Richter and Latchem (2018), who advocate for the strategic and selective integration of AI in higher education. The researcher emphasizes that AI should be used for specific tasks and challenges that are well-suited to the technology's capabilities while preserving the human-centric and exploratory nature of the learning experience. Based on the foregoing suggestions, this study proposes the formula below, on how to foster positive impacts and avoid the negative consequences of AI.

In most cases, the negative consequences of the utilization of AI in the educational environment are as a result of the failure of users to apply the negative consequences formula which is presented in this study as: $N_c = f(G + C + P - L)$, where N_c (Negative consequences) is a function (F) of multiple factors such as; G (Generate idea through AI powered tools), C (Copy the generated idea) and then Paste (P) the generated ideas as your own, without a Limit (L) on your dependence on AI generated ideas. Consequently, learners will compromise their academic competency.

On another hand, in order to promote the positive effects of AI on students and other educational stakeholders, users should apply the: $P_c = f(G + E + S + D + L)$ which implies that: Positive consequences (P_c) is a function of multiple factors such as: firstly, Generate (G) idea through AI powered tools, Evaluate (E) that idea for potential strength or weakness, Synthesize (S) the positive parts of the idea, then Develop (D) your own idea from the synthesized positive parts, and lastly remember to maintain a reasonable Limit (L) on your dependence on AI generated ideas. By utilizing the P_c formula, users can avoid the negative impact of AI powered tools, and instead will improve their academic competence.

5. CONCLUSION

This study concludes that, while the use of AI-powered academic tools can enhance academic competency, it can also negatively impact the development of students' abilities and as a result, reduce their academic competency. This necessitates the need for a balanced approach to the integration of AI in the academic environment.

Recommendations

i.   Students should be encouraged to use AI as a complementary tool rather than a replacement for their own critical thinking and problem-solving skills.
ii. There is need for institutions to implement vigorous plagiarism detection and academic integrity policies to ensure that students engage in original work.

iii. AI should be used for specific tasks and challenges that are well-suited to the technology's capabilities, while preserving the human-centric and exploratory nature of the learning experience.

iv. Governments, through the respective regulatory agencies, should provide clear policies on the adoption of AI in educational institutions.

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