

Higher Education Research in Africa and Artificial Intelligence: A Coerced Partnership Amidst Mystery

Nakazzi Tahiah¹ Chekwoti Aramadhan² Sempijja Emmanuel³ Naiga Rabia Mikdadi⁴
Tumwebaze Alicon Auf⁵

1. Assistant Lecturer, Department of Public Administration, Faculty of Management Studies, Islamic University in Uganda tahiahnt56@gmail.com
2. Assistant Lecturer, Department of Computer Science and Engineering, Faculty of Engineering and Technology, Islamic University in Uganda
3. Graduate Student, Faculty of Research and Management Studies, Makerere University Business School Email: sempijjaemma180gmail.com.
4. Postgraduate student, Faculty of Education, Department of Educational Management, Islamic University in Uganda
5. Lecturer, Psychology, Department of Educational Management, Islamic University in Uganda aliconauf@gmail.com

Abstract

Purpose: The study examined higher education research in Africa and Artificial intelligence: a coerced partnership amidst Mystery. The specific objectives were; i) To examine the readiness in the adoption of AI in research by educational institutions ii) To examine the AI organizational readiness factors of AI in research by educational institutions and iii) To examine the prospects and challenges faced in using AI in research.

Methodology: A correlational research design was used together with a quantitative and qualitative approach to collect data from the 384 students, 96 lecturers, and 3 key informants from the selected participating educational institutions. The results were analyzed using SPSS and conclusions were based on comparing significance levels and the observed P-values.

Findings: The study found that educational institutions demonstrate significant technological ($t=5.518$; $p<0.001$) and environmental readiness ($t=3.048$; $p<0.05$) for AI adoption. However, their overall readiness remains insignificant ($t=0.862$; $p>0.05$). Regarding organizational readiness, institutions exhibit significant readiness in data ($t=2.184$; $p<0.05$) and knowledge ($t=2.718$; $p<0.05$) factors, but lack readiness in culture ($t=1.269$; $p>0.05$) and strategic alignment ($t=1.816$; $p>0.05$). The research also revealed that 95% of respondents believe AI raises significant ethical concerns.

Unique Contribution to Theory, policy, and Practice: Research reveals that while Uganda possesses the potential to leverage AI in research, its institutions lack preparedness. Negative perceptions and ethical concerns surrounding AI hinder its application in research aimed at the transforming of African societies. To address this, policymakers should establish AI-specific laws, either through new legislation or amendments to existing National ICT frameworks, to eliminate barriers to AI adoption. Additionally, the government should invest in improving internet connectivity throughout Uganda. Finally, AI refinement is necessary to minimize unethical content in research applications.

Keywords: *Artificial intelligence (AI), education institutions and research,*

1.0. Introduction

The landscape of higher education in Africa concerning Information and Communications Technology (ICT) reveals a combination of progress and challenges. The integration of ICT in higher education institutions (HEIs) in Africa has been gaining momentum in recent years (Obiri-Yeboah Kwabena, Fosu Collins & Roderick, 2013). African countries, such as Ghana, Kenya, Tanzania, South Africa, and Nigeria, have actively embraced ICT in higher education. This adoption has been driven by various factors, including the acknowledgment of the crucial role of ICT in improving educational outcomes and preparing students for the digital era (Shambare et al., 2022). The COVID-19 pandemic has been a catalyst, pushing institutions to swiftly incorporate ICT tools to support remote learning and ensure educational continuity (Khan et al., 2020), (Plessis, 2022). Furthermore, the liberalization of the ICT sector in Africa has led to positive development benefits, encouraging the integration of ICT in HEIs (Asongu & Odhiambo, 2018). Aligning educational policies with technological advancements to support effective ICT integration in HEIs has been a serious push factor (Tilya, 2018).

Furthermore, Governments in sub-Saharan Africa are directing their attention towards ICT investments in higher education, although discrepancies in access and inclusion persist due to socio-economic factors (Thembane, 2023). Also, the willingness to embrace change, has been crucial for the successful integration of technology in HEIs (Ali, 2020). The integration of ICT in higher education institutions in Africa has also been influenced by the digital shift triggered by advancements in technology. Institutions that have embraced Open and Distance Learning (ODL) have positioned themselves as innovative and cost-effective alternatives to traditional classroom settings, better preparing students for the future of university education (Lembani et al., 2019).

African Higher Education Institutions (HEIs) are undergoing a digital revolution, wielding the power of Information and Communication Technologies (ICTs) and Artificial Intelligence (AI) to elevate their research endeavors. This burgeoning toolkit empowers researchers with advanced capabilities for data management, collaboration, and analysis. Cloud-based platforms like Google Scholar, Figshare, and Mendeley have become essential tools for researchers in HEIs in Africa, enabling secure storage and seamless sharing of research data. Google Scholar provides a vast database of scholarly articles and research materials, facilitating access to a wide range of academic resources for researchers across the continent. Figshare, on the other hand, offers a platform for researchers to store and share their research data, ensuring data integrity and accessibility while promoting transparency in research practices. Additionally,

Mendeley serves as a reference management tool that allows researchers to organize their research libraries, collaborate with peers, and discover new research trends, thereby fostering international collaborations among researchers in Africa and beyond (Barsky, 2010).

Furthermore, Statistical software like R, STATA, SPSS and SAS remain cornerstones for data analysis. The availability of these software has facilitated the selection of appropriate statistical methods for data analysis in biostatistics research. AI-powered tools like IBM SPSS Modeler and KNIME provide next-level data mining and visualization, helping researchers uncover hidden patterns within complex datasets (Mattos et al., 2021). Large language models (LLMs) like ChatGPT, Gemini, and Scite are emerging as valuable assets. These AI tools can assist researchers to create human-like text responses, assisting in writing research papers, data analysis, and effective communication research findings (Myszczyńska et al., 2020), (Adams & Chuah, 2022). These AI tools streamline research processes and enhance the rigor and accuracy of scholarly work. Additionally, the integration of AI tools in research activities with HEIs in Africa aligns with global trends in utilizing technology to advance knowledge creation and dissemination, positioning African HEIs at the forefront of research innovation (Popenici & Kerr, 2017).

This digital ecosystem in HEIs in Africa extends to fostering collaboration and communication through various online platforms. Tools such as Zoom, Microsoft Teams, and Google Meet bridge geographical divides within research teams, facilitating real-time interaction and efficient project management (Dawson et al., 2015). These platforms facilitate seamless communication and collaboration among researcher, regardless of their physical locations, thereby enhancing teamwork and productivity in research endeavors (Fogel & Teng, 2016). Open access repositories like African Journals Online (AJOL) and Digital Commons@University of Cape Town promote wider dissemination of African research (Hallikainen, 2014), while social media platforms like ResearchGate and Academia.edu allow researchers to connect with a broader audience and share their work (Gasparyan et al., 2016). Bibliographic databases like Scopus and Web of Science provide access to vast scholarly publications, while AI-powered tools like CiteSpace and VOSviewer help researchers visualize research trends and identify influential scholars (Gentles et al., 2016). Online survey tools like SurveyMonkey and Google Forms allow for efficient data collection from geographically dispersed populations (Harzing & Alakangas, 2015). Some platforms even offer AI-assisted research question generation and literature search optimization, streamlining the research design process (DeJean et al., 2016).

Despite the immense potential of Information and Communication Technologies (ICTs) to transform research in African HEIs, several challenges impede their full implementation. Uneven internet access, limited ICT infrastructure, expertise in AI development, and unreliable power supplies restrict access to online resources and disrupt research activities (Friederici et al., 2017). Financial constraints limit access to premium online resources, AI software, cloud resources, and infrastructure maintenance, while inconsistent ICT policies (Olugbenga, 2017). Ethical concerns regarding data privacy, security, and potential biases within AI algorithms necessitate robust frameworks (Mugimu, 2022). These challenges, coupled with potential power imbalances highlight the need for African HEIs to focus on infrastructure development, capacity building, and responsible ICT adoption strategies to maximize the positive impact of ICTs on research across the continent. As much as AI is trending other parts of the world, this study is interested in assessing the potential partnership between AI and research in Africa.

1.2. Problem Statement

Nakatumba-Nabende, Suuna, & Bainomugisha, (2023) posit that research in higher education in Africa encounters various obstacles, including inadequate funding, limited infrastructure, and a shortage of skilled staff. These challenges are worsened by the rapid global advancement of technologies like Artificial Intelligence (AI), which have the potential to transform research methods and results (Omweri, F. S. (2024). However, Mistretta, (2024) highlights that the integration of AI into higher education research in Africa has been slow and fragmented, necessitating collaboration amidst uncertainties about AI's capabilities and applications. This has led to a significant discrepancy in the application of AI to improve research efficiency and effectiveness.

In Uganda's context, these difficulties are particularly prominent. Despite the government and educational institutions' efforts to enhance research capabilities, Ugandan universities face challenges in incorporating AI into their research frameworks. Limited availability of AI technology, lack of expertise, and inadequate training programs hinder the effective utilization of AI in research. This disparity not only impacts the quality and volume of research outcomes but also constrains the country's capacity to compete globally in terms of pioneering and influential research (UNCHE, 2022)

Existing studies tend to emphasize general challenges in African higher education without adequately exploring the obstacles specific to AI adoption. This study aims to fill this gap by conducting a thorough analysis to pinpoint the main factors hindering AI integration. By providing actionable recommendations to Ugandan universities and the government, the

research seeks to enhance research capabilities using AI and contribute to the advancement of higher education research in Africa.

1.3. Specific Objectives

Specifically, this study sought to examine;

- i. The readiness in the adoption of AI in research by educational institutions
- ii. The AI organizational readiness factors of AI in research by educational institutions
- iii. The prospects and challenges faced in using AI in research

1.4. Research questions

- i. How ready are Uganda's education institutions to adopt AI in research?
- ii. What factors affect readiness of educational institutions to adopt AI in research?
- iii. What are the prospects and challenges faced in using AI in research?

2.0. Literature Review

2.1. The potential of AI revolutionizing research and innovation in HEIs

A number of studies (Madan & Ashok, 2023; Adams & Chuah, 2022; Kumar et al., 2017) have been carried out to investigate how AI can be applied in research and innovation for the better. Specifically, innovation is thought to originate from research and results of the latter are based on plethora of data analysis that AI can perform. Existing evidence (Mugimu, 2022; Asongu & Odhiambo, 2017) points to the fact that AI uses hindsight to identify patterns and relationships in historical data and this is a cheaper and faster alternative to vector autoregressive analysis or the complicated time series analyses yet the fact that little has been documented in regards to the state of affairs in Uganda and the analysis based on qualitative analysis further limits the credibility and consistency of applying the results in other countries in Uganda's HEIs.

Other scholars (Papageorgiou et al., 2022; Ma et al., 2021; Tiensuu et al., 2020; Mueller et al., 2018) have documented that AI also uses Insight to understand the root causes of events, behaviors, and outcomes and this is an improvement of the tedious Root Cause Analysis (RCA) and in the case of HEIs, this can be fundamental in improving the efficiency and effectiveness of the learning process and ensuring that the adverse effects of Ivory tower principle are mitigated. Before investigating how important it would be, adoption and the factors responsible for adoption have to be critically studied especially in the Ugandan case.

Lastly, compared to other statistical analyses, the predictive power of AI especially in analyzing the likelihood of success through AI's foresight cannot be unmatched (Zhang et al., 2021). However, in many a case, reliance on the algorithms developed by human-like intelligence to make inferences can be disastrous and the developed world is already grappling with these issues, especially in their security.

Nonetheless, the predictive analytics and scenario planning capabilities of AI help HEIs to create forward-looking and adaptable strategies for improvements in the learning process and sustainability. Research (Makridakis, 2017) has indicated that the results can help in the advancement of innovation by introducing new technologies or improving the existing ones.

2.2. Mysteries surrounding AI in research

There are several mysteries surrounding AI in research in HEIs and these emanate from several factors such as the development of human-like intelligence whose algorithms can pose significant threats to security and the banking sector. Research (Garcia-Murillo & MacInnes, 2019; Niewiadomski & Anderson, 2016) has indicated that AI is a technology that would significantly affect employment yet other studies (Aleven et al., 2016) refute the same. In addition to the above, AI has human-like intelligence but whether it possesses consciousness in research and data analysis is a mystery and a number of scholars (Ng & Leung, 2020; Wang, 2020; Haladjian & Montemayor, 2016) have indicated that AI can perform complex tasks though lacks the emotions and self-awareness associated with humans.

2.3. Challenges of integrating AI in research

Reading has been dubbed as one of the essential instruments for research in academic and action research and this will, in the long run, be replaced by sounds or images, which will ultimately impede large-scale implementation of AI (Papageorgiou et al., 2022). In addition, the invasion of personal space and security in any research undertaking will be at high level since AI will not contact anyone about using their data and the respondent may even never know that their data has been used. Other scholars argue that with AI, there will always be a decrease the level of social interaction, severely diminishing the role of the researcher in the research process. Further, AI is limited to a specific context or set of data ultimately sabotaging the human need for lifelong learning, implicitly ethical issues (Gînguță et al., 2023), and moral ones (Saghiri et al., 2022). Whereas all the above have been documented, there was a knowledge void regarding how AI could be harnessed in researching for Ugandan HEIs and the challenges that could be faced in doing so

3.0. Methodology

This section presents a detailed explanation of how the task was executed, including the process design, sample selection, data collection methods, and tools, as well as data analysis and presentation.

3.1. Research Design and Strategy

The study adopted a correlational research design to examine the views of students and lecturers regarding the potential partnership between AI and research in Africa. This design

was selected because it allows for examination of relationships, eases quantitative analysis and the collection of data from the two main stakeholders involved.

3.2. Target Population

The target population for this study included students and lecturers from Higher Education Institutions (HEIs). Specifically, the study involved 384 students and 96 lecturers, selected randomly to minimize sampling errors (around 5% for students and 10% for lecturers). Additionally, three key informants were purposively selected to provide experienced judgments, opinions, feelings, and thoughts on the problem being studied.

3.3. Data Collection Techniques

The main data collection tools used in this study included the Self-Administered Questionnaire that was distributed to students and lecturers online for its efficiency in reaching a large number of respondents and ensuring convenience in data collection. The study also employed a structured interview guide that was used to collect data from key informants so as to gain in-depth insights and experienced perspectives on the research topic.

These data collection tools were subjected to validity and reliability tests to ensure their accuracy and consistency. Noteworthy, the content validity index (CVI) for the questionnaire and refutational analysis for the interview guide to check validity and for reliability, Interrater reliability for the questionnaire and triangulation for the interview guide.

3.3. Analysis

Quantitative Data was analysed using one-sample tests run in SPSS and conclusions were based on comparing the set significance level and the observed p-values. Qualitative Data on the other hand was computed by interpreting the narratives from the interviewees. The collected Data was coded and themed to make sense of the qualitative insights provided by the key informants.

The findings from the quantitative analysis were presented using statistical tables, charts, and graphs to visually depict the relationships and trends observed in the data. This approach facilitated a clear understanding of the numerical results and their implications.

For the qualitative data, the themes and codes derived from the narratives were organized into comprehensive reports. Direct quotes from key informants were included to enrich the analysis and provide a deeper context to the findings.

3.4. Ethical Considerations

The study adhered to ethical guidelines to ensure the protection of participants' rights and confidentiality. Informed consent was obtained from all participants before data collection commenced. Participants were assured of the confidentiality of their responses and were informed of their right to withdraw from the study at any time without any repercussions.

3.5. Limitations of the Study

While the study aimed to provide valuable insights, several limitations were acknowledged:

1. **Sample Size:** Although the sample size was determined using statistical formulas, it may still not fully represent the diverse views of all students and lecturers in African HEIs.
2. **Response Bias:** The reliance on self-reported data could introduce response bias, where participants might not accurately reflect their true opinions or behaviors.

3. **Scope of Study:** The focus on a specific population within HEIs may limit the generalizability of the findings to other educational contexts or regions.

3.6. Results

Out of the 480 individuals surveyed (384 students and 96 lecturers), only 243 respondents completed the data tools accurately, resulting in a response rate of 50.6%. Interestingly, the study did not uncover significant differences in responses among the participants compared to the variables examined.

Table 1: Showing the Prospects of AI in research in Africa

	Agree		Disagree	
	N	%	N	%
Manage large amounts of data	218	89.7	25	10.3
Discover missing patterns in the data	198	81.5	45	18.5
Aid the planning of experiments	160	65.8	83	34.2
Reduce bias in the collection and analysis of data	126	51.9	117	48.1
Reduce errors/increase accuracy	119	49.0	124	51.0
Discover new knowledge that could have been hidden	69	28.4	174	71.6

Source: Field data

Based on the findings, it is evident that the majority of respondents identified managing large volumes of data (89.7%) and uncovering patterns within the data (81.5%) as the primary benefits of AI in research. Additionally, a notable proportion of respondents indicated that AI would be valuable in aiding experiment planning (65.8%) and reducing bias in data analysis and collection (51.9%). However, some respondents expressed concerns about AI's limitations in fieldwork, suggesting that it is not well-suited for remote research. Furthermore, respondents disagreed that AI can effectively reduce errors (51%) and facilitate the discovery of new knowledge (71.6%), arguing that its capabilities are contingent on the quality of the input data.

Concurrent with the above quantitative results, the key informant noted that;

“...AI has the potential to revolutionize everything and, in all fields, in education and product development, AI is relevant for total continuous improvements, the success of experiments and so on...for online searches, it is easy to use AI to get content that has a 70%-80% match...this would save us time...although it is computer based and if the wrong information is fed in, you will automatically get the wrong answer...” Interview response of Ass. Prof. CoCIS, Makerere University

The readiness for the adoption of AI in research by educational institutions

Using One Sample t-tests, the readiness of the institutions with respect to AI adoption in research was captured based on Gabriel Smith's (2023) AI adoption readiness Framework, and the results captured in the table below.

Table II: Showing the readiness for the adoption of AI in research by educational institutions

	Test Value = 3.45					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Technological readiness	5.518	242	.000	.16180	.1040	.2196
Institutional Readiness	.862	242	.390	.02942	-.0378	.0967
Environmental Readiness	3.048	242	.003	.12531	.0443	.2063

In Smith's (2023) AI Adoption Framework, technological readiness includes relative advantage and compatibility. Organizational readiness encompasses management, institutional size, and resources allocated for AI adoption. Environmental readiness factors in competitive pressure from other institutions and government regulations of AI.

According to the findings, there is a notable positive average difference between the expected and actual attitudes of the survey participants across all readiness indicators of the universities. Despite this, the analyzed institutions demonstrated significant technological readiness ($t=5.518$; $p<0.001$) and significant environmental readiness ($t=3.048$; $p<0.05$). However, the universities exhibited insignificant readiness ($t=0.862$; $p>0.05$) in adapting to the pressure and government regulations associated with the adoption of AI in research.

In addition to the above study results, the following qualitative results were obtained;

“...we all accept that AI is of importance in research...talk about reliability, validity and so on...indeed, it is one of the greatest innovations in the 21st century...we have been ready to embrace ICT through evolving with evolving technologies (computers, scanners, 3D devices, internet etc.) and on behalf of this institution, it is clear that the environment for ICT in research is conducive, for AI in research, not very...” Interview response of Dean CoCIS, Makerere University

The institutional readiness factors of AI in research by educational institutions

Based on Gabriel Smith's (2023) AI adoption readiness Framework, the institutional readiness factors for AI adoption in research was investigated and the results captured in the table below.

Table III: Showing analysis institutional readiness factors of AI in research by educational institutions

	Test Value = 3.450					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Strategic alignment	1.816	242	.071	.08555	-.0073	.1784
Knowledge	2.718	242	.007	.15183	.0417	.2620
Data	2.184	242	.030	.12339	.0121	.2347
Culture	1.269	242	.206	.08364	-.0463	.2136
Resources	-.963	242	.336	-.06009	-.1830	.0629

In Smith's (2023) AI adoption Framework, the Strategic alignment category includes factors such as AI-business potential, Customer AI readiness, Top management support, AI process fit, and data-driven decision-making. The Resources category comprises financial budget, personnel, and IT infrastructure. Knowledge factors cover AI awareness, upskilling, and AI ethics, while Culture includes innovativeness, collaborative work, and change management. Lastly, Data factors encompass Availability, quality, accessibility, and data flow.

The analysis demonstrates a clear positive mean difference between the expected and actual attitudes of the respondents across all organizational readiness factors of the universities. The findings indicate significant readiness in terms of data ($t = 2.184$; $p < 0.05$) and knowledge ($t = 2.718$; $p < 0.05$) factors. However, there was a lack of significant readiness in culture ($t = 1.269$; $p > 0.05$) and strategic alignment ($t = 1.816$; $p > 0.05$) factors. Additionally, the research revealed a lack of preparedness in terms of resource factors, suggesting insufficient financial budget, personnel, and IT infrastructure to leverage AI in research ($t = -.963$; $p > 0.05$) as perceived by the respondents.

The findings confirm that the presence of AI cultures at universities and research institutions, the limitations in resources for integrating AI into research projects, and the lack of alignment of AI with the strategic plans of universities would hinder the possibility of forming partnerships between AI and research in Africa. In addition to the above study results, the following qualitative results were obtained;

“...institutions have priorities and budgets in which to operate...it's not about doing so in a vacuum...for AI and ICT in particular, resources must be available because they evolve by the day...we unfortunately, we do not have that muscle to keep pace...though, it is being aligned to the strategic plan...the culture is improving...but they improve at a snail's pace...”
 Interview response of Dean ICT, Nkumba University

Table IV: Challenges of AI in research

	Agree		Disagree	
	N	%	N	%
Negative attitudes towards AI by university administrators	227	93.4	16	6.6
AI has a number of ethical issues that need refinement	231	95.1	12	4.9
The resources for adopting AI by universities are constrained	199	81.9	44	18.1
Low levels of internet connectivity in most parts of the country	209	86.0	34	14.0
AI sometimes creates content that is irrelevant to LDC research	182	74.9	61	25.1
Legal and institutional framework for AI absent	144	59.3	99	40.7

Source: Primary data

Based on the initial study, it was found that the primary obstacle to the integration of AI in research is the widespread belief that AI raises numerous ethical concerns (95.1%), leading to a general reluctance (93.4%) among academic institution administrators in Uganda to embrace it. Moreover, financial limitations (81.9%), inadequate high-speed internet access (86%), and the perceived lack of relevance of AI applications to the country's research needs (74.9%) were identified as additional challenges, albeit with a less pronounced negative impact. Despite the existence of an ICT legal framework in Uganda, regulations specifically addressing AI are scarce, hindering the collaboration between AI and research in Africa.

4.0. Discussion

In research, AI is prospected to aid the management of large amounts of data because of the fact that it has an efficient data filtration system that can provide researchers with all content related to the topic with pinpoint precision. For example, whereas most current search engines emphasize on key words, AI would ensure that the key words and well as the key variables are put into consideration when researching about anything. The fact that AI provides reliable tools for research, Adams & Chua (2022) noted that when adopted in scholarly and policy-based research, AI can improve the efficiency and timeliness of research endeavors and the results of Khan et al. (2020) are in support of this based on the perceptions of the students. In line with the above, Asongu and Odhiambo (2018) as well as DeJean et al. (2016) argue that with AI, it is very easy to discover missing patterns in the data for the analysis other than the usual searches and data analysis software where a researcher needs to critically cross examine the data to discover them. Whereas the previous studies based their findings on qualitative analyses, it is important to note that using objective quantitative research improves the validity of the findings on the same.

With regard to readiness for ensuring a sound partnership of AI in research, the results show that technologically and environmentally, the country is significantly ready to harness the potential of AI in research yet institutions are not well set for the same. These findings reveal that whereas connectivity is improving in Kampala and the surrounding 30km radius, other regions (where fieldwork is predominantly done) are starved of this service and the lack of institutional frameworks governing AI exacerbate the issue at hand. Just like in other parts of the less developed world especially where Friederici et al. (2017) and Lembani et al. (2019) made their findings on ICT in research and the future of adopting it in research, the current findings reveal that with a few improvements, the country, universities and research institutions would be ready to harness the potential of AI in research.

Despite the potential of partnering AI and research in Africa, the study, just like the scholarly work of Mugimu (2022), Shambare et al. (2022), Tilya (2018) and Olugbenga (2017), has recognized that negativity towards its application as well as the unethical issues attached to AI inhibit its application in meaningful research for transformation of African societies. However, the usual issues of lack of and insufficiency of financing for AI powered tools in research also constrains the partnership between AI and research in Africa. Perhaps, the most significant yet given limited consideration is related with the disparities in internet connectivity across the different regions of this country.

4.0. Conclusion

From the study findings, three main conclusions were drawn;

First and foremost, the dynamic role of partnering AI and research cannot be underestimated because errors in research are significantly reduced with AI and this improves the accuracy of the results. Still, compared with the existent engines, AI has the potential to quickly discover missing patterns in the data which would be vital for improvements and re-direction wherever required.

Secondly, developing a sound partnership between AI and research requires that all systems be ready and in the case of Uganda, though institutions have the required technology and the existence of an environment for supporting AI partnership with research, constraints are still evident when it comes to having sound legal and institutional frameworks specifically designed to support AI adoption in research.

In addition, the current study investigated the challenges of partnering AI in research and it was revealed that the negativity of the top bosses especially as informed by ethical issues surrounding AI constrains the adoption of AI in research yet many other factors such as limited internet connectivity, and the lack of resources for developing and incorporating AI in research exacerbate the issue at hand.

6.0. Recommendations

From the study findings, three main recommendations could be drawn;

First and foremost, the existing institutional framework is meant for ICT use in general and not AI in research which creates a bit of confusion. To this end, the study recommends that policymakers design AI-specific laws that will remove all impediments to adopting AI in research. This can be done by either amalgamating new laws or amending the National ICT laws and frameworks so that the potential of AI partnership with research is improved.

Secondly, more resources should be provided by the government to improve internet connectivity in all parts of Uganda. This is based on the reasoning that AI moves with internet connectivity and where it is constrained, AI in research would be impeded. This can come forth with sufficient awareness about the potential of AI in particular and ICT in general as applied to research settings.

Last but most importantly, AI must be refined to ensure that unethical content is minimized for research purposes. This is so because of the fact that each country has a set of values and norms contrary to which is a violation of the law. In this way, the designers of AI must place content only fit for the cultural needs of a specific geographical area.

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