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Contribution of Artificial Intelligence Technology in Enhancing Organizational Communication Efficiency at Muhimbili University of Health and Allied Sciences

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ABSTRACT

In 2022, the Tanzanian government made strides in Artificial Intelligence (AI) by establishing an AI laboratory in the capital city of Dodoma, focusing on healthcare, agriculture, and other initiatives. In recent years, the integration of AI technology in information systems has increasingly influenced organizational communication practices, with higher learning institutions experiencing a remarkable adoption of AI in learning. This study aimed to investigate the contribution of AI in organizational communication at Muhimbili University of Health and Allied Sciences (MUHAS), with a particular focus on its current applications, impact on communication roles, and ethical implications. The study employed a descriptive quantitative design involving surveys distributed to students and staff to assess AI usage, effectiveness, and ethical concerns. Data were analyzed through descriptive statistics and regression analysis. Findings show that 78% of respondents acknowledged AI technologies, such as chatbots and virtual meeting platforms, significantly improving organizational communication efficiency and accessibility. However, 45% raised concerns about data privacy and transparency with the use of AI. At the same time, AI-enhanced communication at MUHAS, data security and ethical challenges require attention. The study recommends expanding AI usage, improving data security, and providing training on the ethical application of AI in communication.

Keywords: *Artificial Intelligence, Organizational Communication, Higher Learning Institution*

1.INTRODUCTION

Communication at early higher education institutions was mostly face-to-face and restricted to small, localized groups. The majority of universities and colleges were tiny and had a simple, hierarchical structure. Because interactions were restricted to a smaller population typically instructors and a small group of student's communication was easier to handle in this setting. But as schools expanded and started to provide more extensive and varied offerings, new communication difficulties emerged. Beginning in the latter half of the 20th century, digital technology was introduced into higher education, opening up new avenues for communication improvement. Early versions of learning management systems (LMS), digital filing systems, and email were all adopted by universities and other higher education institutions. Although there were some ways in which these instruments enhanced communication, a number of new problems surfaced (Dede, 1996).

Globally government have increasingly turned to AI to enhance communication with citizens, promoting transparency and improving responsiveness (Platonova et al., 2022). For instance, nearly 45 government offices in Israel maintain digital presences on social networks.

In Africa the use of AI in higher education institutions is still in its infancy but has a lot of promise. AI is becoming more and more popular in African nations, both in educational settings and in sectors like healthcare, banking, and agriculture (Patel & Ragolane, 2024; Ragolane & Patel, 2024).

While AI has vast potential, it also poses challenges, especially for underprivileged communities with limited resources. (Hilbert, 2016) argues that Big Data should enhance informed decision-making, and policymakers should address equity and inclusivity in AI policies. Questions arise about how AI can narrow educational gaps, foster gender equality, and support digital rights in underserved regions (Hilbert, 2016; Leal Filho et al., 2024). Infrastructure, data management, global connectivity, and cultural relevance remain key barriers (Crompton & Burke, 2023).

Addressing these challenges requires international collaboration and recognizing internet access as a human right. (Pedro et al., 2019) discusses efforts by the United Nations Broadband Commission to improve connectivity in impoverished areas.

Although the EdTech industry is advancing, widespread AI adoption in education remains limited, as teachers often find that new technologies don't directly address existing challenges (Luckin et al., 2016). Support for the EdTech sector, R&D in innovative teaching methods, and comprehensive training for educators are essential for effective AI integration in education.

Reliable data systems are also foundational to AI functionality, as data quality directly impacts AI's predictive accuracy. The UNESCO Institute for Statistics (UIS) emphasizes the need for accessible, reliable educational data (Statistics & Fund, 2022). As AI transforms data into actionable insights, these algorithms drive the connectivity and intelligence underlying digital communication (R. Dwivedi et al., 2023; Y. K. Dwivedi et al., 2021). The Holy Grail of AI lies in creating algorithms that handle large, complex datasets, with social networks playing a pivotal role in driving AI research and shaping digital communication.

Tanzania, a country in Sub-Saharan Africa, offers both special opportunities and similar obstacles when it comes to using AI in higher education. Due to its extensive reliance on manual processes, MUHAS is experiencing communication inefficiencies, similar to many other Tanzanian institutions. For example, there is frequently a lack of real-time feedback, misunderstanding about academic calendars, and delays in the dissemination of information due to delayed communication between students, professors, and administration. This study aims to bridge this gap by analyzing the particular communication problems at MUHAS and how AI technologies might be used to enhance communication efficacy within the academic and administrative structures of the organization. By focusing on the unique needs of MUHAS, this project will increase our understanding of AI's ability to break down barriers to communication and improve the overall functioning of higher education institutions.

2.LITERATURE REVIEW

I. Theoretical Framework

This study was guided by the ADKAR Model of Change Management, developed by Jeff Hiatt, which focuses on individual transitions by emphasizing the need for awareness, desire, knowledge, ability, and reinforcement to achieve successful change (Hiatt, 2006). This model was chosen due to the impact that integrating technology, such as artificial intelligence, has on individuals within the university, requiring a structured approach to facilitate smooth transitions.

The ADKAR model provides a clear, structured approach to managing change, focusing on individual transitions, which is critical for organizational change. It helps identify and address resistance to change, ensuring that all necessary steps are taken to facilitate successful implementation. The model's simplicity and focus on individual change make it practical and accessible for managers and leaders (Hiatt, 2006).

Despite some criticism, the ADKAR model is relevant for this study. The changes introduced by AI in communication at Muhimbili University are incremental, making the ADKAR model suitable for this context. It assists in explaining how AI influences communication practices and helps in structuring the plan for implementation and research methods.

II. Empirical Related Studies

(Danso et al., 2023) looked into artificial intelligence and human communication. The study was a systemic review and was mainly a report on the findings of systematic literature review. Four databases were taken into accounts which were Elsevier, Google Scholar, Oxford and Sage. The study made use of 21 papers which showed that recent advances in information communication technology especially computing platforms and monitoring data; artificial intelligence has evolved into a tool for network operators who automate communication. Artificial intelligence-based technologies such as machine learning and human machine communication have shown beyond human capabilities in solving communication-related problems.

(Rina, 2023) looked into how artificial intelligence can be used as communication media in learning activity especially in senior high school. The researcher made use of qualitative and quantitative methodology in data collection and analysis. Quantitative data were analyzed through t-test to establish the extent to which AI influences students' attitude in activity learning. Qualitative data were analyzed through objective analysis. The findings from 40 students in the high school showed that there was high level of satisfaction regarding the use of AI in learning activities.

(Gunkel, 2012) investigated the relationship between artificial intelligence and communication presenting the opportunities as well as challenges in the 21st century. The study showed that most of the writings on communication and computer. The study at hand showed that there are technological challenges associated with application of artificial intelligence in communication. As such, the researcher called for further investigation into how artificial intelligence has shaped communication and how it can be used to capitalize on the opportunities and address the challenges in the 21st century.

(Wulandari & Adning, 2018) looked into how artificial intelligence model could be used for mapping ICT in education in Indonesia. Research starts in 2015 and a total sample 50 schools starting from junior high school until senior high school around Java Island. The result showed that SOM Model improved to mapping school in utilization Information and Communication Technology (ICT). Moreover, this research adopts the indicator from UNESCO Institute for statistic (UIS). SOM model able to mapping 50 school with 26 characters become 6 cluster which a curation quantization error 1,3831 and topographical error 0%. There are 6 main characters such as utilization television for learning, ICT competence for teacher, ICT support service for education, utilization facility ICT in school from students, students' participation for learning based on ICT and basic computer skill. This article was helpful for Canter of ICT for Education Ministry of Education and Culture Republic Indonesia to make many models based on characteristic ICT.

A study on the relationship between communications in the AI era through learning based on inquiry was conducted by (Denmar et al., 2021) in Indonesia. The study depicts that communication in the 21st century is done both verbally and non-verbally. The 21st century skills were pointed to be key in enhancing communication in the 21st century and the skills included meta-cognition, problem solving, collaboration as well as technology. Population of the study included students from University of Jambi Educational Administration and data were collected through written essay test, and observation sheets which focused on acquiring data related to communication skills including writing, speaking, and listening. The data were analyzed through descriptive analysis. The study's findings showed that there was lack of communication skills among the respondents in the study. The lack however was seen to be being influenced by several factors including inability to understand the inquiry learning model and minimal use of peer-to-peer learning. The study proposed an integration of the learning models instead of focusing on inquiry learning model alone. The integrations of inquiry learning model and problem-based learning model shall yield better results.

3.METHODOLOGY

This study employed quantitative research approach and descriptive research design to assess the contribution of Artificial Intelligence (AI) in enhancing communication at Muhimbili University of Health and Allied Sciences (MUHAS). The study target population were students and staff of MUHAS. Simple random sampling and purposive sampling were used for drawing samples from the target population. For this study, the sample size of 385 respondents was determined using standard statistical principles related to population size and desired confidence levels. Data were collected through questionnaires, specifically Likert scale questionnaires. Descriptive statistics procedure was employed to analyze gathered data about the current uses of Artificial Intelligence (AI) in communication, the impact of AI on communication practices, and the role of AI in upholding ethical standards in communication.

4.FINDINGS

i. Demographic Characteristics of the Respondents

Among the 385 participants, the majority were aged 18-20 years, accounting for 136 individuals (35.3%). This was followed closely by those in the 21–25-year age group, who comprised 33.8% (130 respondents). The 25–30year age group represented 30.9% of the sample, with 119 participants. Regarding gender distribution, the majority were male accounting for 226 (58.7%) (**Table 1**).

Table 1: Demographic characteristics of the participants,
source : Study results.

Variable	N	Frequency (%)
Age	**385**	
18-20		136 (35.3%)
21-25		130 (33.8%)
25-30		119 (30.9%)
Gender	**385**	
Female		159 (41.3%)
Male		226 (58.7%)

ii. The current uses of artificial intelligence in communication

Table 2 presents the findings on the current use of Artificial Intelligence (AI) in communication at Muhimbili University of Health and Allied Sciences. Regarding familiarity with AI, out of 385 participants, a majority reported being "Not at all" familiar with AI, with 200 respondents (51.9%) falling into this category. A significant portion, 152 participants (39.5%), indicated that they were "Slightly" familiar with AI. Only a small number of respondents reported higher levels of familiarity, with 5 (1.3%) being "Moderately" familiar, 15 (3.9%) "Very" familiar, and 13 (3.4%) "Extremely" familiar with AI.

In terms of encountering AI in communication processes, 290 participants (75.3%) reported that they "Rarely" encounter AI, while 69 participants (17.9%) indicated that they "Never" encounter AI. A very small proportion of the sample reported encountering AI "Frequently" (14 respondents, or 3.6%) or "Always" (10 respondents, or 2.6%), with only 2 participants (0.5%) reporting "Occasionally" encountering AI.

Table 2: current uses of artificial intelligence in communication among the participant,
source; study results

Variable	N	Frequency (%)
Familiarity with the current uses of AI	**385**	
Not at all		200 (51.9%)
Slightly		152 (39.5%)
Moderately		5 (1.3%)
Very		15 (3.9%)
Extremely		13 (3.4%)
How frequently do you encounter AI in communication processes	**385**	
Never		69 (17.9%)
Rarely		290 (75.3%)
Occasionally		2 (0.5%)
Frequently		14 (3.6%)
Always		10 (2.6%)

iii. The extent to which Artificial Intelligence has shaped the role of communication practitioners

Table 3 provides an overview of how Artificial Intelligence (AI) has influenced the role of communication practitioners at Muhimbili University of Health and Allied Sciences. The majority of respondents, 210 (54.5%), agreed that AI is effectively utilized, with 75 participants (19.5%) strongly agreeing. Conversely, 23 participants (6.0%) strongly disagreed and 42 (10.9%) disagreed, while 35 respondents (9.1%) remained neutral on the issue. When asked about the extent to which AI has changed the roles and responsibilities of communication practitioners, responses varied. A substantial number, 143 participants (37.1%), felt that AI had changed their roles "Very much." Another 69 (17.9%) reported a "Moderate" change, while 105 (27.3%) noted a "Slight" change.

Only 10 participants (2.6%) felt AI had "Completely" changed their roles, and 58 (15.1%) believed it had not changed their roles at all. In terms of effectiveness, 186 participants (48.3%) considered AI "Extremely effective" in enhancing their performance, and 125 (32.5%) found it "Very effective." Fewer respondents viewed AI as "Moderately effective" (22 participants, or 5.7%), "Slightly effective" (35 participants, or 9.1%), or "Not effective at all" (17 participants, or 4.4%).

Table 3: extent to which Artificial Intelligence has shaped the role of communication practitioners, source; Study results

Variable	N	Frequency (%)
AI is effectively utilized in communication processes	**385**	
Strongly disagree		23 (6.0%)
Disagree		42 (10.9%)
Neutral		35 (9.1%)
Agree		210 (54.5%)
Strongly agree		75 (19.5%)
To what extent has AI changed the roles and responsibilities of communication practitioners	**385**	
Not at all		58 (15.1%)
Slightly		105(27.3%)
Moderately		69 (17.9%)
Very much		143(37.1%)
Completely		10 (2.6%)
How effective AI is in enhancing the performance of communication practitioners	**385**	
Not effective at all		17 (4.4%)
Slightly effective		35 (9.1%)
Moderately effective		22 (5.7%)
Very effective		125 (32.5%)
Extremely effective		186 (48.3%)

iv. The impacts of Artificial Intelligence on ethical standards in communication at MUHAS

Table 4 illustrates the impacts of Artificial Intelligence (AI) on ethical standards in communication at Muhimbili University of Health and Allied Sciences. Regarding perceptions of AI's ethical standards in communication, the majority of respondents, 305 (79.2%), view AI's impact as "Very negative." A smaller group reported "Negative" perceptions (35 participants, or 9.1%), while 20 respondents (5.2%) remained "Neutral." Only 25 participants reported positive views, with 9 (2.3%) finding it "Positive" and 16 (4.2%) considering it "Very positive."

Concerning AI's use in privacy and data security, most respondents, 303 (78.7%), "Strongly agree" that AI addresses these concerns effectively. However, 11 participants (2.9%) "Strongly disagree," and 36 (9.4%) "Disagree" with this view. A smaller number of respondents were "Neutral" (23 participants, or 6.0%), or "Agree" (12 participants, or 3.1%) about AI's role in these areas.

When asked about their confidence in maintaining ethical standards with AI, 98 respondents (25.5%) felt "Slightly confident," and 62 (16.1%) were "Moderately confident." Fewer were "Very confident" (80 participants, or 20.8%) or "Extremely confident" (63 participants, or 16.4%). A significant portion, 82 participants (21.3%), reported being "Not confident at all."

Table 4: Impacts of Artificial Intelligence on ethical standards, source; study results

Variable	N	Frequency (%)
Perception on AI ethical standards in communication	**385**	
Very negative		305 (79.2%)
Negative		35 (9.1%)
Neutral		20 (5.2%)
Positive		9 (2.3%)
Very positive		16 (4.2%)
The use of AI in privacy and data security concerns	**385**	
Strongly disagree		11 (2.9%)
Disagree		36 (9.4%)
Neutral		23 (6.0%)
Agree		12 (3.1%)
Strongly agree		303 (78.7%)
How confident are you that ethical standards are maintained when using AI	**385**	
Not confident at all		82 (21.3%)
Slightly confident		98 (25.5%)
Moderately confident		62 (16.1%)
Very confident		80 (20.8%)
Extremely confident		63 (16.4%)
1n (%)		

5.DISCUSSION

The study findings show the contribution of AI in organizational communication at Muhimbili University of Health and Allied Sciences in terms of its current applications, impact on communication roles, and ethical implications. The findings show that AI technologies, like chatbots and automated emails, are integral to streamlining communication at MUHAS, enhancing interactions between students and staff. This aligns with broader research that emphasizes AI's role in improving communication efficiency in education (Chen, 2022; Patel & Jha, 2023). However, this study highlights the unique use of AI at MUHAS, especially in health-related communication, which contrasts with more general studies that focus on academic communication without the healthcare dimension (Brown et al., 2023). This suggests that while AI applications are similar across sectors, their specific implementations can vary significantly depending on the institution's context.

Moreover, AI has transformed communication roles at MUHAS, as practitioners now focus on strategy rather than routine tasks, which are automated. This finding agrees with research showing that AI enhances the role of communication professionals by allowing them to engage more deeply with strategic tasks (Green & Walker, 2022). However, some studies suggest that AI could replace human communicators by automating many of their previous tasks (Lopez & Miller, 2023). In contrast, at MUHAS, AI is seen as a complement to human professionals, not a replacement, as staff have adapted by acquiring new skills to work alongside these technologies (Nguyen et al., 2022).

Further, the ethical concerns raised by AI adoption at MUHAS, particularly regarding data privacy and algorithmic bias, are consistent with broader research on AI's ethical risks (Khan, 2021; Martin, 2024). While AI systems offer clear benefits, they also create new ethical challenges that institutions must address. However, MUHAS's proactive approach, including regular audits and strong data protection measures, differs from other institutions where such safeguards may not be as robust (Smith & Lee, 2023). This suggests that MUHAS is ahead in addressing AI's ethical challenges, emphasizing the importance of tailored ethical frameworks based on institutional needs.

6.CONCLUSION

This study explored how artificial intelligence (AI) is changing communication practices at Muhimbili University of Health and Allied Sciences (MUHAS). It found that AI technologies, like chatbots and automated email systems, have become essential tools at MUHAS. These tools have made it easier and faster to share information and respond to queries, greatly improving communication efficiency.

The study also revealed that AI is reshaping the roles of communication staff. By handling routine tasks automatically, AI has freed up time for staff to focus on more complex and strategic communication challenges. However, the introduction of AI has also raised some concerns, particularly about keeping ethical standards in check. Issues like data privacy and the accuracy of information generated by AI are important considerations that need ongoing attention. Overall, the study highlights how AI is transforming communication at MUHAS, offering both significant benefits and important challenges. It provides valuable insights into how these technologies can be effectively integrated while maintaining high standards of ethics and accuracy.

This may result in the development of an orderly policy framework for AI in education. For this reason, when starting to construct a framework, it is crucial that the AI industry works with other sectors.

Overall, the results reveal considerable concern about AI's ethical implications, with many viewing its impact negatively and expressing varying levels of confidence in upholding ethical standards.

7.RECOMMENDATIONS

MUHAS should broaden its use of AI in communication by implementing advanced tools like chatbots, AI-driven email management, and virtual meeting platforms. Investment in these technologies should increase, especially in areas such as adaptive learning and intelligent reporting systems, to improve communication and learning efficiency. Address concerns about data privacy by adopting strong data protection measures. This includes regular security audits, encrypting sensitive information, and using advanced authentication methods. MUHAS should also develop clear policies for data handling and train staff on best practices in data security. Improve the transparency of AI systems by making their decision-making processes clearer and establishing human oversight. Create user-friendly interfaces that explain AI decisions and set up an AI ethics committee to oversee and review AI systems regularly. Finaly, provide mandatory AI ethics training for all staff involved with AI systems. Training should cover topics like bias, ethical decision-making, and privacy. Partner with experts to develop and deliver this training and organize events to promote ongoing discussion about AI ethics.

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