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THE AGA KHAN UNIVERSITY

Graduate School of Media and Communications

EXAMINING THE ROLE OF ARTIFICIAL INTELLIGENCE (AI)

IN TRANSFORMING PRINT JOURNALISM IN UGANDA

By

Robert Mukasa

580166

A capstone project submitted in partial fulfilment of the requirements for the degree of Executive
Master's in Media Leadership and Innovation

Nairobi, Kenya

28/12/2023

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APPROVAL PAGE

The Aga Khan University
Graduate School of Media and Communications

A capstone project submitted in partial fulfilment of the requirements for the degree of Executive
Master's in Media Leadership and Innovation

Members of the Capstone Project Evaluation Committee appointed to examine the project of
ROBERT MUKASA-580166, find it satisfactory and recommended that it be accepted.

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28/12/2023

DECLARATION

EXAMINING THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN TRANSFORMING PRINT JOURNALISM IN UGANDA

I, **ROBERT MUKASA-580166**, declare that this capstone project does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and that, to the best of my knowledge, it does not contain any material previously published or written by another person except where due reference has been made in the text. The editorial assistance provided to me has in no way added to the substance of my capstone project, which is the product of my research endeavours.



Signature

28/12/2023

Date

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I am profoundly grateful to the Aga Khan University Graduate School of Media and Communications for giving me the chance to pursue my Executive Master's degree in Media Leadership and Innovation. The education and experience I have gained are invaluable. I would like to extend my deepest thanks to my lecturers, including my capstone project supervisor, David Aduda. They were thoughtful and supportive, empowered me and boosted my confidence to persevere even in challenging moments. I must also acknowledge my peers at the Graduate School of Media and Communications for their collaboration and generous sharing of insights. The depth of understanding we collectively cultivated during group projects played an instrumental role in shaping this study. Further, I wish to express my gratitude to the management and editorial teams at both The Observer and Daily Monitor. Their willingness to participate in this research was critical to its success. Finally, I am especially thankful to the management of The Observer for affording me the peace of mind and flexibility to focus on my studies, even while fulfilling my professional responsibilities.

ABSTRACT

This study provides an analysis of the current state of artificial intelligence adoption in two privately funded print media houses in Uganda: The Observer and Daily Monitor." The integration of Artificial Intelligence (AI) into journalism has been touted as a transformative force with several advantages and disadvantages, including improvements in workflow efficiency, content accuracy, and audience engagement. Despite this potential, the adoption of AI in Ugandan print journalism has been slow, due to challenges such as limited access to technological resources and a lack of AI literacy among journalists. Using the Technology Acceptance Model as a guiding framework, the study aimed to conduct a comprehensive analysis of the state of AI adoption in Ugandan print newsrooms. The research focused on three objectives that examined the state of AI adoption, identified key drivers of adoption trends and barriers, and assessed its impact on the newsroom workflow efficiency. The significance of this research is multi-layered, impacting not just news organizations but also journalists, policymakers, technology providers, academia, and the public. The findings offer actionable insights that can guide news organizations in modernizing their production processes. The study contributes to policy AI-related initiatives, assists tech companies in customizing AI solutions for Uganda, and provides academia with a reference for future research on AI's role in journalism. The research methodology incorporated a mixed-methods approach, merging both qualitative and quantitative research techniques. The study found that while AI adoption stands at a modest 25 per cent in newsrooms, there is a central understanding of AI's purpose among journalists. However, the adoption of AI technologies remains limited, primarily driven by individual journalists rather than a unified organizational approach. This situation is contrasted with more advanced news organizations globally, where automated journalism powered by AI is more prevalent. The research highlighted the predominant use of AI in tasks such as fact-checking, content generation, and transcription, with a significant majority of journalists relying on free AI tool subscriptions due to financial constraints. Despite regular interaction with AI tools among the respondents, the impact on journalistic quality is varied, underlining the need for increased awareness, training, and institutional support for effective AI utilization in the news industry. A key recommendation is for the leadership of both newsrooms to proactively drive the AI integration process. The implementation of AI in these newsrooms should be guided by the AI Readiness Index (AIRI), a framework developed by AI Singapore (AISG). This framework, as outlined by Grasso (2022), evaluates an organization's preparedness for adopting AI across four pillars and nine dimensions.

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ABBREVIATIONS AND ACRONYMS

AI:	Artificial Intelligence
APA:	American Psychological Association
AIRI:	AI Readiness Index
AISG:	AI Singapore
ICT:	Information and Communication Technology
ROI:	Return on Investment
UJA:	Uganda Journalists Association

OPERATIONAL DEFINITION OF TERMS

AI Adoption:

Refers to the process of integrating AI technologies and applications into the existing workflows and practices of print journalism organizations (Grieco et al., 2022). It involves the utilization of AI tools and solutions to enhance news production processes, improve news accuracy, and engage audiences with personalized content.

Artificial Intelligence (AI):

This refers to the simulation of human intelligence in machines that are programmed to perform tasks that typically require human intelligence, such as problem-solving, learning, and decision-making (Russell & Norvig, 2021). In the context of this study, AI encompasses various technologies and algorithms that are utilized to automate data analysis, generate data-driven articles, and deliver personalized news experiences in the print journalism industry.

Print Journalism:

Encompasses the practice of producing news content for dissemination through traditional print media such as newspapers and magazines (Boczkowski & Papacharissi, 2011). In the context of this study, print journalism includes both physical print publications and their digital equivalents, as news organizations increasingly adapt to digital platforms.

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

In the fast-evolving digital landscape, the journalism industry faces multiple challenges ranging from recurring downturns in advertising to technological disruptions and sociopolitical changes. According to Usher (2011), the current dilemma of the news industry is not uniform across the globe nor is it necessarily a harbinger of its decline. While new technologies are changing the nature of journalism - accelerating news cycles, intensifying competition, and altering consumption habits - they also offer opportunities for adaptive innovations. As legacy news organizations grapple with reduced advertising resources diminishing audiences and cost-cutting, it becomes difficult for journalists to carry out the core function of news journalism: independent reporting that provides reliable information, in-depth investigation and thorough analysis that can help create an informed and engaged citizenry (Usher, 2011). Emerging technologies like artificial intelligence provide avenues for enhanced workflow efficiency and quality. Contrary to the notion that the internet will render newspapers obsolete, evidence suggests that different models of news provision can coexist. These developments underscore the significance of rethinking how journalism is financed and organized in the 21st century, as the function of news provision to society supersedes the specific forms or organizations that have traditionally carried it out (Usher, 2011).

This study therefore aimed to investigate how legacy print media in Uganda are constructing rich processes and systems to catch up with the real-time pace of technological change. The study focused particularly on how traditional journalists - who often work within manual, labour-intensive, and time-consuming processes - are adopting AI-driven automation to work smarter by

enhancing content discovery, generation, editing, and distribution. In doing so, the study set out to understand the technology's impact on newsroom workflow efficiency and profitability and how it strengthens the journalists' core obligation of presenting high-quality information fairly and accurately.

Recent technological advancements have catalyzed significant shifts in journalism as a profession, the process of news creation, and the business models that support news media. Additionally, the evolving media landscape characterized by the proliferation of social media, market fragmentation, and the rapid pace of news dissemination has prompted scholars to scrutinize the sustainability of traditional revenue models in the news media sector (Dwivedi et al., 2021).

In a perpetually changing news ecosystem, embracing, and integrating AI use alongside other emerging technologies in news media serves to enhance the quality of journalism, improve the efficiency of the news production process and ultimately, the profitability of the news organization. Research has shown that traditional media houses that have been able to integrate and use AI-based news production solutions have reported improvements in producing accurate and objective news items (PedreroEsteban & Pérez-Escoda, 2021; Zayani, 2021).

This research primarily aimed to investigate and explain the noticeable discrepancy between the rapidly emerging AI technologies, which are significantly transforming the global media landscape (AI, 2019) and the pace at which Ugandan print media houses are leveraging these innovations. This gap is of particular interest as AI is increasingly considered a pivotal tool in contemporary journalism. The advent of AI has bestowed journalists with unprecedented capabilities, simultaneously raising complex editorial and ethical responsibilities. The long-term implications

of AI on journalism, though speculative, suggest a potential paradigm shift in both news production and consumption (AI, 2019).

AI is driving growth in digital advertising and subscriptions. Many news publishers are now leveraging AI to improve content discovery, processing, and packaging. The aim is to deliver more relevant and engaging content, elevate audience engagement and user experience, cut costs via intelligent automation, and carve out new revenue streams (Kioko, 2022).

Furthermore, AI plays a pivotal role in refining advertising strategies, thereby boosting revenue and the distribution of sponsored content. Using AI algorithms, ads can be targeted based on user behaviours, ensuring that displayed ads resonate with the audience. In the realm of sponsored content, AI ensures its distribution is optimized for utmost relevance and engagement (team, 2023).

This AI influence has ushered in a transition from the conventional linear media distribution approach to one that's personalized and on-demand. AI-backed streaming services and digital platforms are equipping users with content tailored to their preferences, marking a considerable shift from traditional broad-spectrum media distribution. Additionally, AI assists traditional media organizations in fine-tuning content distribution, harmoniously blending the past and present (team, 2023).

In the content creation spectrum, Natural Language Processing (NLP), a subset of AI, offers considerable benefits. Whether it's powering real-time responsive chatbots or automating news article creation, Natural Language Processing stands as a pillar of AI-driven content solutions. Furthermore, Natural Language Processing's prowess in optimizing pre-existing content, rooted in

insights from user behaviour, positions it as a critical tool for enhancing user engagement and conversion rates (team, 2023).

Contrary to the widespread belief that AI may eventually replace journalists, current trends indicate that the technology serves to augment journalistic workflows (AI, 2019). It equips media professionals with sophisticated tools for content discovery, creation, and audience engagement (AI, 2019). The expectation is that AI will not merely optimize news production but also transform newsrooms into interconnected hubs, driven by data analytics. While algorithms are expected to serve as the foundational elements of these operations, invaluable human skills such as editorial acumen and ethical judgment are likely to gain increased prominence.

According to the McKinsey Global Institute, as of 2017, approximately 50 per cent of work activities had the potential to be automated. With the advent of generative AI, estimates suggest that 50 per cent of activities will be automated between 2030 and 2060, marking an accelerated timeline of roughly a decade (McKinsey & Company, 2023).

Tools like ChatGPT and GitHub Copilot have permeated everyday life, offering wide utility from text generation to task automation. However, the adoption of these technologies has not been uniform, often requiring intricate integration into existing workflows and considerations of economic feasibility (McKinsey & Company, 2023).

ChatGPT was released in November 2022. Four months later, OpenAI released a new large language model, or LLM, called GPT-4 with markedly improved capabilities. Similarly, by May 2023, Anthropic's generative AI, Claude, was able to process 100,000 tokens of text, equal to about 75,000 words in a minute—the length of the average novel—compared with roughly 9,000 tokens when it was introduced in March 2023 (McKinsey & Company, 2023).

This transformation is not without its challenges, encompassing economic, ethical, and editorial considerations. As the industry navigates this AI-induced metamorphosis, there exists a pressing need to preserve its core public value amidst a rapidly evolving technological backdrop (AI, 2019). The readiness to adopt AI varies within newsrooms; approximately half consider themselves prepared, while the other half are in the planning or initial stages. Among smaller newsrooms, there exists a palpable fear of falling behind in technological adoption (AI, 2019).

AI's role in journalism represents a potential watershed moment, comparable to the transformative influences of the internet, social media, and mobile communications. The challenge lies in the industry's ability to judiciously harness these advancements while remaining vigilant of associated risks (AI, 2019).

Beckett (2019) states that while many newsrooms are in the early phases of AI adoption, there is a general recognition of the technology's potential to significantly shape the future of journalism.

Therefore, this study specifically set out to assess the state of AI adoption in The Observer and Daily Monitor, analyzed adoption trends and influencing factors (drivers and barriers) and assessed the impact of AI on workflow efficiency in the two newsrooms.

1.2 Background of the Study

Technology has been changing the nature of work globally for decades. Over the years, machines have given human beings various "superpowers". For instance, industrial-age machines enabled workers to accomplish physical tasks beyond the capabilities of their own bodies (McKinsey & Company, 2023). More recently, computers have enabled knowledge workers to perform calculations that would have taken years to do manually. Machines and computers have

historically augmented human work (McKinsey & Company, 2023), and now generative AI models like ChatGPT are poised to do the same for journalism.

Early internet adoption transformed print-based news outlets into digital entities, altering the landscape of news gathering and distribution (Onumah, 2018). The subsequent rise of social media and smartphones further democratized and fragmented news consumption and distribution. Currently, AI technologies offer the prospect of another transformative leap for the industry in terms of productivity and ethical considerations (AI, 2019).

These AI models can generate human-like text, providing valuable tools for journalists and students, though they also raise concerns about data ownership and the integrity of generated content (Ibrahim et al., 2023).

The rapid pace of technological advancements serves as a crucial context for understanding the swift evolution and widespread adoption of AI technologies across sectors, including journalism. Considering declining revenues in traditional print media, this urgency is further accentuated by economic considerations that drive the industry toward cost-effective solutions like AI. Evaluating the cost-to-benefit ratio of integrating AI into print journalism becomes imperative for grasping both its feasibility and scalability. One by one, media houses globally and locally are integrating AI into their journalism workflows, though at their own pace, to improve content quality, production efficiency, and profitability (Ibrahim et al., 2023).

In the United States, news organizations such as The Washington Post and The New York Times have leveraged AI algorithms to automate tasks like data analysis, content curation, and personalized news delivery (Grieco et al., 2022). For instance, The Washington Post employs AI to generate automated news stories, particularly in areas such as sports and elections, enhancing

their coverage and efficiency (Grimm, 2021). The United Kingdom has also witnessed significant AI adoption in journalism. The BBC utilizes AI-driven tools to enhance news production and engagement. AI algorithms automate processes like transcription and translation, allowing journalists to focus on in-depth reporting (Marlow, 2022). Furthermore, AI-powered recommendation systems help tailor content to BBC audiences, thereby increasing user engagement (Grieco et al., 2022).

In China, AI has made substantial inroads in journalism. Xinhua, the country's state news agency, has introduced AI news anchors that utilize natural language processing and machine learning to deliver real-time news updates (Xinhua, 2020). This development exemplifies China's ambition to leverage AI technology to transform the journalism landscape. Bloomberg News has implemented an automated content programme called Cyborg, which produces thousands of articles by transforming financial reports into news stories (Martin, 2023). Similarly, Forbes employs an AI tool named Bertie to provide reporters with initial drafts and templates for news articles (Martin, 2019).

Across Africa, South Africa, Nigeria, and Kenya have experienced notable AI adoption within journalism. In South Africa, the Mail & Guardian newspaper employs AI algorithms to monitor social media trends, analyze public sentiment, and identify potential news stories (Cooke, 2021). This allows journalists to stay ahead of emerging issues and engage with audiences more effectively. In Nigeria, the Premium Times news platform utilizes AI tools to automate fact-checking and verification processes (Edegware, 2021). The application of AI-powered fact-checking systems assists journalists in combating misinformation and enhancing the accuracy of news reports. Kenya, recognized as a technological innovation hub in Africa, has witnessed the integration of AI in newsrooms. East Africa's Nation Media Group (NMG) employs its website's

interactive bot, Nation Kiki (NMG, 2018), to engage followers through automated alerts and conversations (ESJ ISSN: 1857-7881, July 2022 edition, Vol.18, No.22, www.ejournal.org, p. 282). However, Kiki is no longer in use. The organization has also ventured into Augmented Reality (AR), a prominent technology closely related to AI, which was showcased during the live unveiling of its new Nation. Africa platform (NMG, 2020, as cited in Kioko et al., 2022). Platforms like Africa's Talking utilize AI-powered chatbots to deliver news updates to audiences, providing personalized news experiences (Ooko, 2021). These innovations enhance audience engagement and cater to individual preferences.

In Uganda, the integration of artificial intelligence (AI) in print journalism is still in its early stages, but the potential for growth and impact is promising. The country recognizes the transformative power of AI in enhancing journalism practices, storytelling, and audience engagement. The Ministry of Information, Communication Technology, and National Guidance in Uganda has shown keen interest in promoting the adoption of AI in the media sector. The ministry has initiated efforts to create an enabling environment for AI implementation in journalism (Ministry of ICT & National Guidance, 2022). This includes fostering partnerships with technology companies, providing training programmes for journalists on AI technologies, and facilitating access to AI tools and resources.

The Daily Monitor, one of Uganda's leading newspapers, is incorporating AI into its news production process. The Daily Monitor aims to automate data analysis and generate data-driven news articles (Kakembo, 2022). This not only enhances the efficiency of news production but also enables journalists to deliver timely and accurate information to their readers.

AI has the potential to improve audience engagement and personalization of news content. The New Vision, another prominent Ugandan newspaper, is exploring AI-powered recommendation systems to deliver personalized news recommendations to its readers (Kabunga, 2021). Through analyzing user preferences, reading patterns, and behaviour, AI algorithms can provide tailored news content, ensuring that readers receive information that aligns with their interests.

The Ugandan government is also recognizing the potential of AI in journalism for social impact. The Ministry of Gender, Labour, and Social Development has emphasized the role of AI in addressing gender-based violence and promoting gender equality (Ministry of Gender, Labour, and Social Development, 2021). AI-powered tools can help analyze data related to gender-based violence cases, identify patterns, and support evidence-based reporting, raising awareness and facilitating necessary interventions.

Challenges, however, exist in the integration of AI in Ugandan print journalism. Limited access to AI technologies, including hardware, software, and skilled personnel, can hinder widespread adoption. Concerns related to data privacy, algorithmic biases, and ethical implications need to be addressed to ensure responsible AI use in journalism (Kakembo, 2022). To overcome these challenges, collaboration between the government, media organizations, and technology companies is crucial.

Largely, the early initiatives and exploration of AI in Ugandan print journalism demonstrate the country's recognition of the transformative potential of AI in enhancing news production, audience engagement, and social impact. By fostering a conducive environment for AI adoption and addressing challenges, Uganda can harness the power of AI to revolutionize its print journalism industry and provide its readers with timely, accurate, and personalized news experiences.

1.2.1 Conceptual Framework

The conceptual framework, which guided this study was the Technology Acceptance Model (TAM). Developed by Davis in 1989, TAM is a widely used theory in understanding individuals' acceptance and adoption of technology (Davis, 1989). It posits that two key factors influence technology adoption: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). According to TAM, users are more likely to adopt a technology if they perceive it to be useful and easy to use.

In this study, TAM was used to investigate journalists' and newsroom managers' attitudes and behaviours towards AI adoption in the print journalism industry in Uganda. The framework helped examine how perceived usefulness and ease of use influence their adoption of AI technologies.

In this conceptual framework, the independent variable is "Perceived Usefulness (PU)," which represents how journalists and newsroom managers perceive the usefulness of AI technologies. The dependent variable is "AI Adoption in Print Journalism," which covers the actual integration and utilization of AI technologies in news production and content delivery. The moderating variable is "Perceived Ease of Use (PEOU)," which influences the relationship between perceived usefulness and AI adoption based on how easy or challenging AI tools are perceived to be in the journalistic context.

The framework suggests that when journalists perceive AI as useful in automating data analysis, generating data-driven articles, and delivering personalized news experiences, they are more likely to adopt AI technologies in their workflows. The perceived ease of use moderates this relationship. If AI tools are perceived as easy to learn, use, and integrate into existing practices, the positive

relationship between perceived usefulness and AI adoption strengthens. And, if AI tools are perceived as complex and challenging to use, the relationship may weaken.

TAM provided a solid foundation for understanding the factors influencing AI adoption in print journalism in Uganda. Through examining journalists' perceptions of AI's usefulness, the ease of using AI tools, and their impact on actual AI adoption, the study offers valuable insights into adoption trends and influencing factors (drivers and barriers) in the industry. Moreover, by aligning the research with a well-established theoretical framework like TAM, the study enhanced its methodological rigour and validity, allowing for comparisons with other technology adoption studies and facilitating the generalization of findings beyond the Ugandan print journalism context.

The study explored The Observer and Daily Monitor journalists' and managers' perceptions of AI's usefulness in various aspects of print journalism, including automating data analysis, generating data-driven articles, and delivering personalized news experiences. Survey questions or interview prompts assessed participants' views on how AI-enhanced their work processes and contributed to the overall quality of news content.

The facet of Perceived Ease of Use investigated how journalists and newsroom managers perceive the ease of learning and using AI tools in their workflows. The study explored their attitudes towards AI's complexity, accessibility of AI technologies, and ease of integrating AI into existing print journalism practices. Through quantitative and qualitative data, the study assessed participants' comfort and familiarity with AI technology.

Building upon the constructs of Perceived Usefulness and Perceived Ease of Use, the study explored the intention to Adopt AI. This element served to gauge participants' disposition to assimilate AI technologies into their routine journalistic operations. This measured their

willingness to integrate AI into daily routines, based on their perceptions of AI's usefulness and ease of use. The data collected provided insights into the factors influencing the decision-making process regarding AI adoption in the print journalism industry in Uganda.

Through applying TAM in the study, researchers can gain a deeper understanding of the cognitive and behavioural factors that drive or hinder AI adoption among The Observer and Daily Monitor journalists and newsroom managers. The framework helped identify the key drivers of AI adoption, such as perceived usefulness in enhancing news production and delivery, as well as potential barriers, such as concerns about AI's complexity and compatibility with existing workflows.

The application of TAM in recent research has provided valuable insights into technology adoption in various contexts, including AI adoption in journalism (Grieco et al., 2022). Studies based on TAM have shed light on factors influencing users' acceptance of AI technologies and have informed strategies for promoting successful AI integration in different industries. Through leveraging the theoretical framework of TAM, this study aimed to contribute to the growing body of knowledge on AI adoption in print journalism in Uganda. The insights gained from applying TAM not only provided practical implications for media practitioners and policymakers but also contributed to the broader understanding of technology acceptance in developing countries' journalism contexts.

One of the primary strengths of TAM is its simplicity. The model posits that perceived ease of use and perceived usefulness are the key determinants influencing an individual's decision to accept or reject technology (Davis, 1989). This simplicity allows for easy application and adaptability across various types of technologies and user groups.

The constructs of perceived usefulness and ease of use have garnered strong empirical support in predicting technology acceptance behaviours (Venkatesh & Davis, 2000). Several studies have validated the model's accuracy across various sectors, from healthcare to education.

One important limitation is that TAM ignores several relative factors like organizational setting, task complexity, and individual differences (Benbasat & Barki, 2007). Such omissions limit its ability to fully capture the multifaceted nature of technology acceptance.

TAM hugely assumes that users rationally weigh the advantages and disadvantages of technology use (Davis, 1989). However, this assumption has been criticized for ignoring emotional, spontaneous, and non-conscious aspects of decision-making (Beaudry & Pinsonneault, 2010).

Although TAM has been successful in predicting general technology acceptance, it often falls short in predicting actual usage behaviour, suggesting a gap between intention and action (Mathieson, Peacock, & Chin, 2001).

In summary, the Technology Acceptance Model offered a valuable framework for understanding user behaviour with its simplicity and empirical robustness. However, the model also suffers from noteworthy limitations such as the omission of contextual factors and a limited focus on rational decision-making processes. Future work in technology acceptance research should aim to address these weaknesses by integrating more complex and context-specific variables.

1.3 Rationale of the Study

The adoption of Artificial Intelligence (AI) is uneven across newsrooms. Research indicates that the social and economic advantages of AI are predominantly concentrated in the Global North (America, Europe), largely due to existing infrastructure and resources (Beckett & Yaseen, 2023).

Conversely, the Global South faces complex challenges rooted in the repercussions of post-independence colonialism (Beckett & Yaseen, 2023).

The benefits of AI remain disproportionately distributed, with the Global North enjoying advantages due to superior technical infrastructure, abundant capital, and well-funded research institutions (Beckett & Yaseen, 2023).

This gap in research on adoption is not merely a regional concern but a global one, as it fails to offer a comprehensive understanding of the AI ecosystem in journalism across diverse geopolitical landscapes. There is an urgent need to focus on the adoption of AI in African newsrooms and even more specifically in Uganda for several compelling reasons.

The existing research has primarily been skewed toward better-resourced and technologically developed markets (AI, 2019). While these studies offer valuable insights into how AI technologies are being adopted and perceived, they hardly provide a global picture. The distinct sociocultural and economic contexts within which African and Ugandan newsrooms operate may present unique challenges and opportunities for AI adoption that are not captured when focusing solely on Western markets. Thus, a geographically narrow scope of existing studies limits the transferability of their findings to African and Ugandan settings.

The evolving nature of artificial intelligence in journalism necessitates continual examination, especially in less explored markets such as Uganda. Most current research respondents are still in the early stages of AI adoption, although they acknowledge its future significance in the industry (AI, 2019). Given this nascent stage, it was critical to investigate how these evolving tools could be contextualized and effectively utilized in less explored markets like Uganda. This could provide

actionable insights for newsrooms in Africa and Uganda which are often resource-strained and could benefit from the efficiency and potential revenue streams that AI offers.

The research scrutinized key trends in AI adoption and how AI impacted workflow in print newsrooms and proposed viable recommendations. This will enable organizations to adapt and sustain themselves in a transforming media landscape. Policymakers and regulatory bodies will also gain from these insights, enabling them to come up with policies conducive to responsible and equitable AI adoption (Grieco et al., 2022). Such an environment will stimulate investment in AI infrastructure while maintaining ethical standards and data privacy.

Therefore, the significance of this study lies in its potential to spur positive transformations within the Ugandan print journalism industry. This research endeavoured to underpin media innovation, enhance the calibre and precision of news reporting, and contribute to the sustainable advancement of the industry in an increasingly digital and AI-driven era.

1.4 Current Literature Review

The emerging literature on the adoption of Artificial Intelligence (AI) in journalism reflects the growing interest and transformative potential of AI technologies in various industries, particularly in the realm of print journalism.

Studies from the global perspective have highlighted the transformative power of AI in journalism. Grieco et al. (2022) discuss key trends, opportunities, and challenges of AI in journalism, emphasizing its potential in automating data analysis, generating data-driven stories, writing, editing and personalizing news experiences for readers. The authors highlight examples from

renowned news organizations around the world, such as The New York Times and The Guardian, which have successfully incorporated AI technologies into their news production processes.

According to Martin (2019), major publications are adopting machine learning tools to generate content, raising questions about the future of journalism. Carlson (as cited in Martin, 2019) explains that algorithms can convert data into narrative news text in real time, leading to an increase in financially focused news stories due to the availability of frequently calculated and released data. Bloomberg News, for instance, has implemented an automated content program called Cyborg, which produced thousands of articles by transforming financial reports into news stories (Martin, 2023). Similarly, Forbes employs an AI tool named Bertie to provide reporters with initial drafts and templates for news articles (Martin, 2019). The Washington Post utilizes a robot reporting program called Heliograf, which generated approximately 850 articles in its first year (Martin, 2019). Heliograf detects finance and big data trends to assist reporters in their work, rather than replacing them (Martin, 2023). The LA Times also employs AI to report on earthquakes and track homicide information, using a machine-generated site called "Homicide Report" (Martin, 2019).

Journalists have expressed concerns about AI's impact on their profession, fearing job loss and a potential decline in quality content (Martin, 2019). However, media outlets employing AI assert that it is meant to assist journalists in higher-value work rather than replace them (Martin, 2019). Patterson (as cited in Martin, 2023) suggests that AI can help reporters focus on deeper analysis rather than merely reporting initial figures when financial earnings are released. Despite worries, media executives argue that AI can enhance the quality of journalism by enabling reporters to concentrate on storytelling and content creation, while AI handles fact-checking and research tasks (Martin, 2019). The AP estimates that AI frees up approximately 20 per cent of reporters' time

spent on financial earnings coverage, leading to improved accuracy and more time for in-depth reporting (Martin, 2019). Ultimately, these developments have the potential to benefit the field of journalism by allowing journalists to focus on the creative and critical aspects of their work (Martin, 2023; Gibbs as cited in Martin, 2019).

In the Ugandan context, however, there is a lack of comprehensive research on the adoption of AI in print journalism. Limited studies have examined the challenges and barriers specific to the Ugandan media landscape. Kakembo (2022) conducted a study on AI journalism and the future of news in Uganda, highlighting the importance of AI technologies in the country's media sector. However, there is a need for further research to delve deeper into the barriers and propose practical solutions for effective AI integration in Ugandan print journalism.

1.4.1 Current State of AI Adoption in Print Journalism

The advent of Artificial Intelligence has had a big impact on various industries, including journalism. Print journalism has been significantly influenced by AI's transformative potential. As news organizations strive to adapt to the digital age, AI adoption has emerged as a promising avenue for enhancing news production, automating data analysis, generating data-driven articles, and delivering personalized news experiences to readers. This literature review delved into recent studies and research findings concerning the current state of AI adoption in print journalism, explored key adoption trends and influencing factors (drivers and barriers) and evaluated the actual impact of AI on local newsroom workflow efficiency.

AI Adoption in Newsrooms

The literature highlights a shift towards AI integration in newsrooms. Researchers have documented how AI-driven tools and algorithms are being harnessed to optimize various aspects of news production (Dörr & Safadi, 2021). News organizations worldwide are utilizing AI technologies to automate data analysis, fact-checking, and content generation, leading to increased efficiency and improved accuracy in reporting (Casero-Ripollés et al., 2022). The adoption of AI has enabled journalists to handle vast datasets, identify patterns and trends, and produce data-driven news articles with greater speed and precision.

Newsrooms of varying sizes and geographical locations continue to adopt AI unevenly. Research indicates that the social and economic advantages of AI are predominantly concentrated in the Global North, largely due to existing infrastructure and resources (Beckett & Yaseen, 2023). Conversely, the Global South faces complex challenges rooted in the repercussions of post-independence colonialism (Beckett & Yaseen, 2023).

Significantly, over 75 per cent of surveyed newsrooms employ AI in at least one domain within the news value chain, including news gathering, production, and distribution (Beckett & Yaseen, 2023). The main drivers for AI adoption are identified as increased efficiency and productivity, which free up journalists for creative endeavours (Beckett & Yaseen, 2023).

The benefits of AI remain disproportionately distributed, with the Global North enjoying advantages due to superior technical infrastructure, abundant capital, and well-funded research institutions (Beckett & Yaseen, 2023).

In recent decades, the terminology of Global North and South has evolved, effectively replacing earlier descriptions of world order. The term Global North encapsulates countries like the United States, Canada, members of the European Union, Singapore, Japan, South Korea, Australia, and New Zealand. In contrast, the Global South includes countries formerly colonized such as those in Africa, Latin America, the Middle East, Brazil, India, and parts of Asia (Beckett & Yaseen, 2023).

AI Adoption trends

According to Kioko et al. (2022), traditional media entities have experienced profound transformations in various aspects such as newsroom operations, news gathering and writing, and methods of news dissemination and audience engagement, largely due to the integration of AI and digital technologies. The depth of AI integration within these media houses can be categorized into three distinct levels based on the extent of automation across key stages of the news production process: research, production, and dissemination (Munoriyarwa et al., 2021).

Munoriyarwa et al. (2021) describe "Holistic AI Appropriation" as a stage where the bulk of news production tasks are taken over by AI, leaving limited functions to journalists. In contrast, "Technological Appropriation" involves the use of AI-embedded equipment for news gathering, but human intervention remains paramount in tasks such as editing and writing. The "Partial Appropriation" level, meanwhile, employs AI for specific roles within the various stages of the news production process, promoting a notable level of human-AI collaboration.

While many media establishments in developed nations have seamlessly transitioned towards both full and partial AI appropriation, their counterparts in developing countries are still grappling with the challenges of AI integration (Mutsvairo et al., 2020 as cited in Kioko et al. 2022). Nonetheless,

recent technological advancements have catalyzed significant shifts in journalism as a profession, the process of news creation, and the business models that support news media. Additionally, the evolving media landscape characterized by the proliferation of social media, market fragmentation, and the rapid pace of news dissemination has prompted scholars to scrutinize the sustainability of traditional revenue models in the news media sector (Dwivedi et al., 2021 as cited in Kioko et al. 2022).

The integration of artificial intelligence alongside other burgeoning technologies in media is pivotal for bolstering profitability by streamlining the news production process. The research underscores that traditional media organizations adept at incorporating AI-driven news production tools have discerned marked enhancements in the precision and objectivity of news articles (PedreroEsteban & Pérez-Escoda, 2021; Zayani, 2021). Media entities in the Global South are progressively aligning with this trajectory. There's a noted surge in the employment of AI in the domains of investigative and data journalism, leveraging tools encompassing machine learning, computer vision, speech recognition, and robotic technologies (Pedrero-Esteban & Pérez-Escoda, 2021; Zayani, 2021). Significantly, investigative journalists can harness AI-powered instruments such as bots and drones equipped with facial recognition to amass data and evidence from secure vantage points. When weaving together narrative elements to craft interactive visual narratives, the deployment of AI-aided programs for tasks like graphic design, translations, transcription, and video editing becomes essential. Consequently, AI emerges as a pivotal instrument in amplifying the representation of the Global South within global narratives (Pedrero-Esteban & Pérez-Escoda, 2021; Zayani, 2021 as cited in Kioko et al. 2022).

1.4.2 Facilitators and Barriers to Adoption and Use of AI

The adoption of Artificial Intelligence (AI) within newsrooms is a complex issue, particularly in the context of Kenya, influenced by various determinants (Kioko et al., 2022). One significant factor in the AI adoption process, as emphasized by the study's key informants (The Adoption of Artificial Intelligence in Newsrooms in Kenya: A Multi-case Study, European Scientific Journal), is the commitment and willingness of news organization leadership, often referred to as "management buy-in." In settings where numerous pressing priorities exist, AI may not be viewed as a prudent investment, especially considering the initial costs related to infrastructure, staff training, and substantial changes in news operations. In the current economic climate, management's concerns are frequently focused on immediate operational challenges.

The hesitancy surrounding the integration of AI in newsrooms is also influenced by the skepticism of mid-level management, particularly editors and producers. These professionals express concerns about AI potentially surpassing experienced journalists, citing unresolved ethical and operational challenges associated with automated news production. Similar sentiments have been documented in contexts such as South Africa and Nigeria (Munoriyarwa et al., 2021; Guanah et al., 2020; Nwanyanwu & Nwanyanwu, 2021). However, media organizations that foster a culture of innovation and openness to technological advancements have successfully incorporated AI, streamlining the roles of journalists and other production personnel. Implementations like automated news dissemination address staffing constraints and ensure timely news delivery. Additionally, robotic journalists can autonomously edit headlines to enhance user experiences.

Nevertheless, the financial implications linked to the development, deployment, and maintenance of AI serve as significant determinants for its adoption. As highlighted by a senior manager at

RAG, the initial expenses, including IT setup, talent acquisition and training, and newsroom restructuring, can be substantial. Therefore, organizations must carefully evaluate the potential return on investment. Notably, media outlets with resource-rich parent companies, such as BBC - Africa, tend to have more extensive AI adoption compared to entities like RAG. Moreover, access to proficient talent capable of handling AI systems remains a critical driver of adoption (Kioko et al., 2022). However, there is a noticeable skills gap between developers and many newsroom personnel, with journalists often lacking the technical expertise required for AI model creation. The demand for such specialized talent extends beyond the media industry, making them highly sought after across various sectors. Some firms offer competitive salaries and flexible work arrangements, further intensifying the recruitment challenge for media houses (Roussi, 2021).

To facilitate more extensive AI adoption, the study underscores the importance of robust collaboration among management, tech specialists, and journalists.

Despite the potential benefits, several barriers impede widespread AI adoption in print journalism. Researchers have identified factors such as limited access to AI technologies, high implementation costs, and the need for AI expertise among journalists and newsroom managers (Grieco et al., 2022). Additionally, cultural and contextual factors may influence news organizations' perceptions and willingness to embrace AI technologies.

Other barriers include limited access to AI technologies. Small and financially constrained news organizations often face challenges in acquiring and implementing AI-driven tools and platforms (Dörr & Safadi, 2021). The cost of acquiring and maintaining advanced AI technologies such as ChatGPT can be prohibitive for many newsrooms, leading to disparities in AI integration across the industry.

High implementation costs pose a significant challenge for news organizations looking to embrace AI technologies. Integrating AI-driven solutions requires substantial investment in hardware, software, and skilled personnel to manage and optimize AI systems effectively (Casero-Ripollés et al., 2022). The initial and ongoing expenses associated with AI implementation may deter some newsrooms from fully adopting AI technologies.

The cost of AI tools and solutions can vary depending on the specific functionalities and providers. Many newsrooms in the Global South, may need to outsource or purchase off-the-shelf AI solutions due to limited internal technological capacity. It is essential to consider user-friendly tools suitable for beginners with low AI technical expertise. Subscription costs for AI tools can vary, and careful evaluation should be conducted to determine the most cost-effective options (Burns, 2021).

The lack of AI expertise among journalists and newsroom managers represents another critical barrier to AI adoption. Successful integration of AI technologies requires a level of technical proficiency and understanding of AI applications (Grieco et al., 2022). News organizations may be hesitant to adopt AI-driven solutions if their staff lacks the necessary skills and knowledge to leverage AI effectively.

Cultural and contextual factors can significantly influence newsrooms' readiness to embrace AI technologies. Organizational culture, established workflows, and traditional practices may resist significant changes, making it challenging to integrate AI into existing newsroom operations (Dörr & Safadi, 2021). Additionally, the perception of AI's impact on journalism may vary across different media markets and regions, leading to variations in AI adoption rates.

The integration of AI in print journalism not only raises data privacy and security concerns but also highlights the lack of clear regulatory frameworks for AI adoption in journalism, creating uncertainty for news organizations. Policymakers and media regulators are grappling with the need to develop guidelines and policies to govern the use of AI in journalism (Tandoc, 2021). AI systems rely on vast amounts of data to function effectively, and ensuring the responsible handling and protection of user data is essential (Casero-Ripollés et al., 2022). News organizations must address these concerns to build public trust and confidence in AI-driven solutions.

The literature on barriers hindering the adoption of AI in print journalism underscores the complexities and challenges that news organizations face in embracing AI technologies. Limited access to AI technologies, high implementation costs, the need for AI expertise, cultural factors, ethical considerations, regulatory uncertainty, and data privacy concerns all contribute to the barriers encountered in the adoption of AI. By acknowledging and addressing these barriers, newsrooms can develop effective strategies to harness the transformative potential of AI.

1.4.3 AI Impact on Workflow Efficiency

In the dynamic landscape of the news industry, the integration of Artificial Intelligence (AI) and other cutting-edge technologies has been proven to bolster profitability by enhancing the efficiency of the news production process (Kioko et al., 2022). Studies indicate that traditional media outlets, which have adeptly incorporated and utilized AI-driven news production techniques, have observed notable advancements in the precision and objectivity of news items (Pedrero-Esteban & Pérez-Escoda, 2021; Zayani, 2021).

Researchers have also extensively explored AI's potential in automating data analysis and its implications for journalism. AI-powered analytics tools can efficiently process large volumes of data, enabling journalists to extract valuable insights and trends (Dörr & Safadi, 2021). The integration of AI in data analysis has revolutionized how news organizations uncover critical information, leading to more informed reporting and in-depth investigative journalism.

Personalization in news delivery has become a pivotal aspect of AI adoption in print journalism. AI algorithms analyze user preferences and behaviour to customize news content for individual readers (Alcaraz Sintés & Casero-Ripollés, 2022). This hyper-targeted approach to content delivery aims to enhance audience engagement and user satisfaction. News organizations are experimenting with AI-driven content recommendation systems to provide readers with relevant and tailored news articles, thereby fostering greater audience loyalty.

The literature suggests multiple strategies to help news organizations overcome challenges in adopting AI. Researchers argue that forming partnerships and sharing resources can make AI technologies accessible to smaller newsrooms (Casero-Ripollés et al., 2022). Investment in AI training and skill development is crucial for empowering journalists to use AI effectively in their work (Dörr & Safadi, 2021). Open-source AI solutions are highlighted as cost-effective alternatives to expensive proprietary technologies (Grieco et al., 2022). Ethical AI frameworks are essential for building trust and maintaining credibility (Lambrecht & Tucker, 2019). Regulatory support provides a secure environment for responsible AI adoption (Tandoc, 2021). Capacity-building initiatives and public-private partnerships can further facilitate AI integration in journalism (Grieco et al., 2022; Casero-Ripollés et al., 2022). By adopting these strategies, news organizations can optimize news production, engage audiences better, and grow the industry.

The existing literature on the role of AI in journalism paints a picture of promise limited by practical and ethical challenges. Global studies show that while major newsrooms are leveraging AI for tasks like data analysis, content generation, and editing, widespread adoption is still not the norm. Ethical issues such as algorithmic bias and practical concerns like high costs and skill deficiencies present obstacles. However, the consensus is that AI is more of an assistant to human journalists than a replacement, potentially liberating them from ordinary tasks to focus on in-depth reporting. Despite these global insights, there is a deficiency of research specific to the Ugandan print media context, highlighting an area for future study. In summary, AI presents transformative potential for journalism, but its responsible and effective integration requires a multi-pronged approach involving strategic planning, workforce training, ethical considerations, and collaborative initiatives.

1.5 Problem Statement

Artificial intelligence is increasingly becoming an essential tool for the media (Flexicles, 2023). The importance of AI literacy extends beyond legal and operational considerations such as website scraping and copyright issues. It also plays a crucial role in planning how AI can be employed in the production of impactful journalism and enhanced audience engagement. Flexicles (2023) argues that in an era where AI has the potential to transform the media landscape, news organizations that harness its capabilities innovatively are likely to thrive.

The slow adoption of AI technologies hampers news organizations' ability to improve efficiency, accuracy, and audience engagement. For instance, the lack of automated data analysis deprives journalists of valuable insights and trends (Kakembo, 2022). This problem is further magnified by

the scarcity of AI resources, which is often attributed to high costs and limited access (Kakembo, 2022).

In the realm of reporting tools, AI's capabilities go beyond traditional boundaries to offer new paradigms for journalistic discovery and alert mechanisms. Although AI's utility in primary reporting may be limited - especially in contexts that require the generation of novel information not existing on the internet - its value in aiding human journalism is significant (Flexicles, 2023). For instance, AI's role in investigative journalism is becoming increasingly apparent, as demonstrated by The Wall Street Journal's use of machine learning models to uncover insights that would be elusive to human reporters alone.

The limited adoption of Artificial Intelligence (AI) in print journalism in Uganda hinders the industry's potential for transformation (Kakembo, 2022). While the global landscape showcases the benefits of AI integration in journalism (Grieco et al., 2022), the current state of AI implementation in Ugandan print journalism falls short of its envisioned impact in terms of automating data analysis, generating data-driven articles, and delivering personalized news experiences to readers. The Ministry of Information, Communication Technology, and National Guidance in Uganda has recognized the importance of AI in the media sector but acknowledges the existing challenges in its adoption (Ministry of ICT & National Guidance, 2022). Limited access to AI technologies and resources, including tools, hardware, software, and skilled personnel, impedes the widespread use of AI in Ugandan print journalism (Kakembo, 2022).

Artificial Intelligence (AI) has also revolutionized content distribution in multiple dimensions, reshaping user experiences and redefining how we consume content. This technological advance

harnesses algorithms, machine learning, and vast data processing to foster enhanced user engagement and satisfaction and drive up revenue streams (team, 2023).

Through examining the adoption trends and influencing factors (drivers and barriers), such as available technological infrastructure, organizational willingness, AI technical skillset, limited access to AI resources, concerns about data privacy and biases, the need for contextual adaptation, and the necessity for capacity building in AI, the study aimed to provide insights into how news organizations can overcome these challenges and fully leverage the transformative potential of AI in Ugandan print journalism. The study sought to contribute to the knowledge and understanding of AI integration in the Ugandan print journalism industry and offer practical recommendations to foster effective AI adoption in this context.

1.6 Objectives

1.6.1 Main Objective

The main objective of this study is to analyze the current state of AI adoption in two print media houses in Uganda: The Observer and Daily Monitor.

1.6.2 Specific Objectives

- i. To assess the current level of AI adoption in print journalism in Uganda
- ii. To analyze adoption trends and influencing factors (drivers and barriers)
- iii. To assess the impact of AI on workflow efficiency in print newsrooms.

1.6.3 Research Questions

- i. What is the current level of AI adoption in print journalism in Uganda?

- ii. What are the key adoption trends and influencing factors (drivers and barriers)?
- iii. What is the impact of AI on local newsroom workflow efficiency?

1.7 Research Methodology

This section outlines the research methodology employed to investigate the adoption of Artificial Intelligence (AI) in print journalism in Uganda. The methodology encompasses the study design, data collection procedures, variables examined, and data analysis techniques.

1.7.1 Research Design

The research design chosen for this study was a mixed-methods approach, combining both qualitative and quantitative methods. This design was selected to ensure a comprehensive exploration of the adoption of Artificial Intelligence (AI) in two print media houses in Kampala: The Observer and Daily Monitor."

The mixed-methods approach allows for the triangulation of data from different sources, providing a more robust and nuanced understanding of the research problem (Johnson & Onwuegbuzie, 2004).

The qualitative component of the research design involves in-depth interviews with key editors and some experts in the field of AI. These qualitative methods enabled the researcher to gather rich and detailed insights into the experiences, perceptions, and challenges faced by The Observer and Daily Monitor in adopting AI technologies. The qualitative data helped the researcher identify and analyze specific adoption trends and influencing factors (drivers and barriers) and assess the impact of AI on workflow efficiency, journalistic quality, and ethical considerations.

According to Kioko et al. (2022), qualitative research offers an opportunity for researchers to go beyond a surface-level comprehension of the problem to a deeper understanding. Further, it provides a chance to elicit the viewpoints and experiences of the participants, as well as get a better insight into the problem from the perspective of the study participants. (Daymon & Holloway, 2010 as cited in Kioko et al. 2022).

Sampling Technique: For the study in question, purposive sampling is employed to select six key informants. Such a strategy is adopted as it enables the researcher to choose specific participants believed to enhance understanding of the research problem (AI adoption) and central phenomena (Creswell & Poth, 2018). In essence, the chosen participants possessed the requisite knowledge, skills, expertise, and experience pertinent to the adoption problem.

1.7.2 Research Methods

The following data collection methods will be utilized:

In-depth Interviews: In-depth interviews were conducted with journalists, newsroom managers, and experts in the field of AI and journalism. The interviews explored their experiences, perceptions, and challenges related to AI adoption in print journalism. The qualitative data obtained through in-depth interviews provided valuable insights into the complexities of AI integration and the specific barriers faced by news organizations.

Surveys: Surveys were administered to a representative sample of journalists from two print media organizations (The Observer and Daily Monitor) in Uganda. The survey questionnaires were designed to gather quantitative data on the level of AI adoption, challenges faced, and perceptions regarding AI technologies in journalism. The use of surveys allowed for data collection from a larger sample, enabling the examination of trends and patterns in AI adoption.

1.7.3 Research Approach

The mixed-methods research design was justified because it allowed the study to leverage the strengths of both qualitative and quantitative methods. The qualitative data offered rich insights into the complexities and nuances of AI adoption, while the quantitative data provided broader patterns and trends. As a result of combining these approaches, the study gained a more comprehensive and holistic understanding of adoption trends, drivers and barriers, and potential solutions related to AI adoption in Ugandan print journalism. This approach enhanced the validity and reliability of the study findings, ensuring that the research outcomes are well-grounded and applicable to the real-world context of the print journalism industry in Uganda (Creswell & Plano Clark, 2017).

1.7.4 Population

The population of the study comprised journalists, newsroom managers, and experts in the field of Artificial Intelligence working within print media organizations in Uganda. According to data from the Uganda Journalists Association (UJA), there are approximately 1,500 registered journalists (including broadcast, digital and photojournalists) in the country. However, the study focused on about 50 print journalists from The Observer Media Limited and Daily Monitor. These individuals collectively constitute the study population for the research.

1.7.5 Data Analysis

Thematic analysis was employed to find patterns, themes, and trends in the qualitative data gathered from interviews. This data was transcribed and systematically analyzed to highlight

recurring topics and insights related to AI adoption in journalism. The data was interpreted to gain a full understanding of the challenges and possible solutions for integrating AI. These interpretations were then compared to underscore key findings and draw meaningful conclusions.

In the section on quantitative data analysis, Google Docs were employed to summarize the quantitative data collected from surveys. This offered insights into the extent of AI adoption and associated factors in *The Observer* and *Daily Monitor*. For Data Visualization, the quantitative data was depicted through charts and tables, providing a visual representation of trends and patterns to facilitate better understanding and communication of the research's findings. The process of Member Checking and Validation involved sharing summarized findings with certain participants to ensure the research's interpretations are accurate and authentic.

By adhering to a comprehensive data analysis process, this research endeavoured to gather significant insights, formulate evidence-based conclusions, and augment the understanding of AI adoption in Ugandan print journalism.

1.7.6 Ethical Considerations

Regarding ethical considerations, throughout the research process, a set of ethical principles was adhered to to ensure the integrity and well-being of all participants. Before their participation, all individuals were informed about the study, and their informed consent was secured. The identities of participants were safeguarded, and all identifying information was either removed or anonymized in the research materials. Participation in the research was voluntary. There were measures to secure and store all collected data. The research was approached with sensitivity, especially when discussing distressing topics.

Respect and professionalism were paramount in interactions with participants. Researchers remained introspective throughout the study. They were aware of and addressed their biases to ensure objectivity. Ultimately, the research aimed to contribute to the understanding of AI adoption in print journalism.

In summary, these ethical considerations formed the foundation of a rigorous and responsible research approach, safeguarding the rights and well-being of participants and ensuring the validity and trustworthiness of the study's findings.

1.8 Scope and Limitations

The study examines the current state of integration of Artificial Intelligence in two privately funded print media houses in Uganda: The Observer and Daily Monitor. The study aimed to assess the current state of AI integration in the two legacy print media houses, examined the key adoption trends and influencing factors (drivers and barriers) and evaluated the actual impact of AI on local newsroom workflow efficiency, while also presenting practical solutions. It examined how journalists employ AI in at least one domain within the news value chain, including news gathering, production, and distribution and deliver personalized news experiences to readers in the print journalism industry.

The reason for the choice of The Observer and Daily Monitor stemmed from the underrepresentation of perceptions about AI among journalists from these organizations. Thus, the news outlets were fertile grounds for harvesting multiple viewpoints that enriched the study. The New Vision, a government-owned newspaper that has been the focus of previous research endeavours, was excluded.

1.9 Structure of the Document

Chapter One introduces the topic of the study, and provides a background as well as existing literature, while at the same time outlining the rationale, problem statement, objectives and research methodology deployed. Chapter Two presents the study's findings, while Chapter Three contains the conclusions drawn from the study as well as the recommendations.

1.10 Summary

This chapter of the study presented an overview of the Ugandan media scene, specifically the selected case studies – Daily Monitor and The Observer. It also examined the adoption of Artificial Intelligence (AI) globally, continentally and in Ugandan newsrooms. The researcher also outlined the problem statement, objectives of the study, the research questions, the scope and limitations of the study, rationale/ justification of the study, the operational objectives, the literature review, research methodology and finally, ethical considerations.

CHAPTER TWO

ANALYSIS AND PRESENTATION OF FINDINGS

2.1 Introduction

This chapter presents the findings of the study on the level of adoption of artificial intelligence (AI) within two Ugandan newspapers; The Observer and the Daily Monitor. The responses from the participants are analysed and presented in line with the study objectives, which included analysing AI adoption trends and influencing factors (drivers and barriers) and assessing the impact of AI on workflow efficiency in the two print newsrooms. Data from different participants and the in-depth interviews was triangulated and presented to respond to the research objectives. Interview responses from the editors in Daily Monitor are attributed by the initials DM 1 and DM II and responses from editors in The Observer are attributed by OB I and OB 2.

2.1.1 Demographics and Response Rate

The study was conducted based on a survey of 33 journalists from the two newsrooms out of a targeted total of 40 respondents. Four potential respondents declined to fill out the survey and two editors declined to field interviews citing limited knowledge about artificial intelligence. Detailed interviews were also carried out with four key editors who play an active role in the daily planning, deployment, editing of content and supervision of journalists. These editors provided valuable insights into the patterns and findings derived from the survey responses.

The majority of the 33 respondents were male (77.4 per cent), while the remaining 22.6 per cent were female. Approximately 45.2 per cent of the respondents were from The Observer, and 41.9

per cent were associated with The Monitor. And 12.9 per cent identified with other categories (freelance and correspondents).

The respondents represented a diverse range of roles and expertise within the two newsrooms. The largest group (45.2 per cent) consisted of reporters, followed by approximately 38.7 per cent who held editor positions, 9.7 per cent identified as correspondents, and the remainder were freelance journalists.

In terms of age distribution, the largest proportion of respondents (41.9 per cent) were 37 years and above. And 25.8 per cent of respondents were aged between 18-24 years, while the remaining 32.2 per cent were distributed among the 25-to-36-year age groups. All these respondents were drawn from The Observer and The Monitor. Not every respondent answered every question. That explains why the total responses in each category do not equal the number of 33 surveyed respondents.

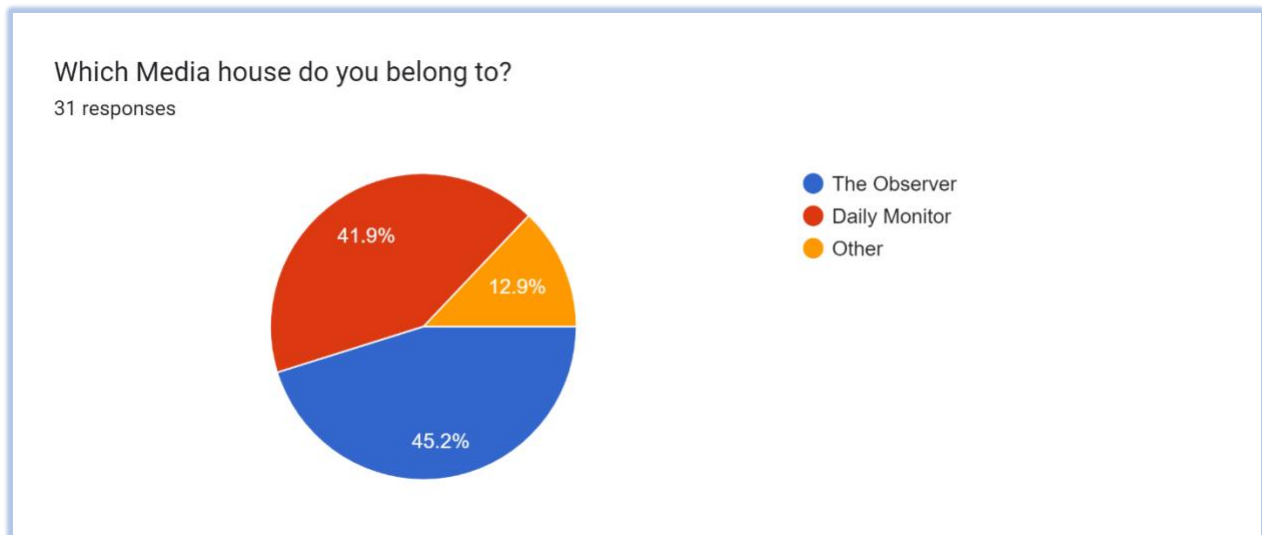


Figure 1: Media affiliation of respondents

2.2 Findings

2.2.1 Knowledge of AI and Adoption Level

Research Objective One aimed to assess the level of AI adoption in both newsrooms. To achieve this, the study initially aimed to gauge the journalists' familiarity with AI. The findings indicated that all the surveyed journalists have a clear understanding of AI, as illustrated in Figure 2 below.

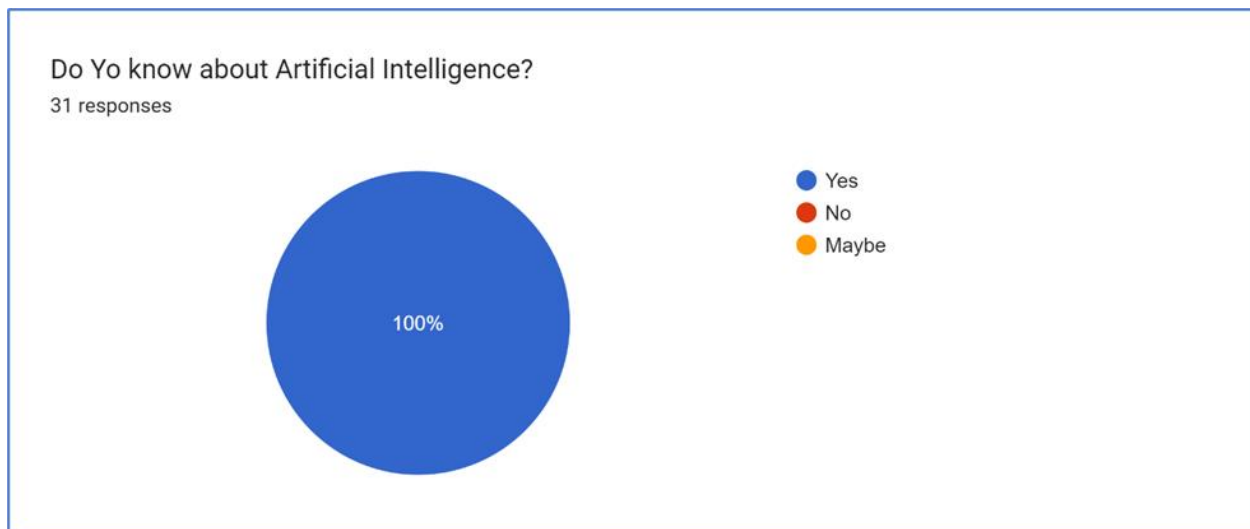


Figure 2: Knowledge of AI

Asked to define AI, most respondents showed a basic understanding of AI's purpose - to emulate human-like intelligence and decision-making in machines. However, the breadth and depth of this understanding varied, and some responses were quite brief or imprecise. Some respondents highlighted AI's benefits in terms of efficiency and task simplification, others emphasized its role as a problem-solving technology, others portrayed it as a tool or assistant for enhancing productivity, and some emphasized its speed and efficiency in processing data.

Level of AI Adoption

Most respondents (41.9 per cent) observed that AI is not currently used in their respective newsrooms. About 32.3 per cent said maybe and 25.8 per cent said AI is used in their newsrooms as illustrated in Figure 3 below.

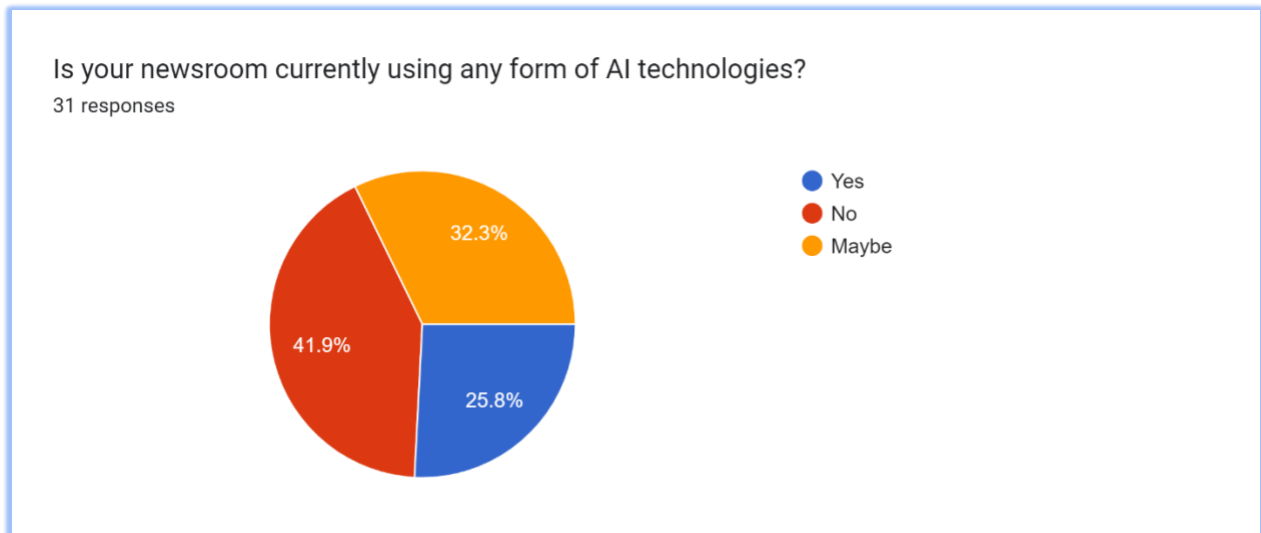


Figure 3: Level of AI Adoption

For those using AI, the majority said adoption of the technology was an individual initiative. They said their organizations have not helped push the integration of AI into the newsrooms' operations. Details are presented in Table 1 below.

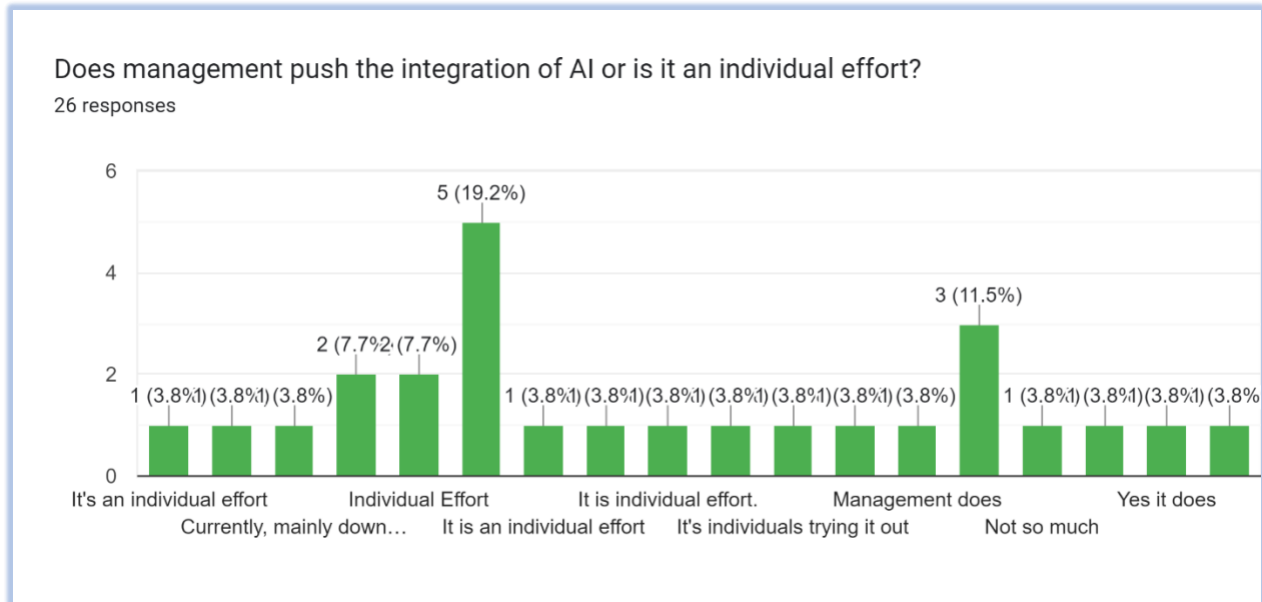


Table 1 Adoption is an individual effort.

One editor interviewed at The Observer agreed with the findings in Table 1 above.

In my experience talking to other editors in Uganda, I have found that most newsrooms don't have a formal policy or approach to using AI. Everyone is adopting AI at an individual level, leading to a fragmented approach to its utilization. In my view, it will take some time for all Ugandan newsrooms to adopt a standardized way of using AI technologies (OB -II).

More than half of the respondents, 53.8 per cent, stated that AI has not been adopted at all in their newsrooms. Approximately 30.8 per cent of the respondents indicated some level of AI integration when asked to rate the scale of AI adoption from one to five (five being fully integrated) as illustrated in Figure 4. In summary, neither of the newsrooms has come close to achieving full adoption of AI.

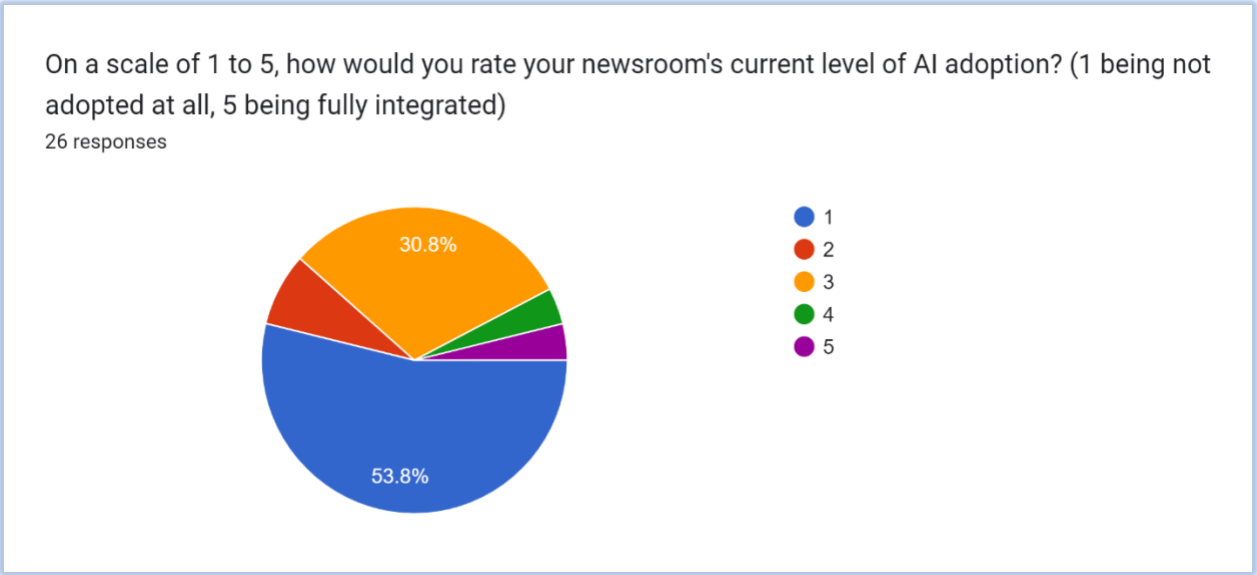


Figure 4: AI adoption on a scale of 1 to 5

In the study, about 71.4 per cent of respondents said their newsroom lagged far behind in AI adoption compared to global norms. A dismal 7.1 per cent of respondents said their newsrooms are ahead in terms of global norms when asked to compare their newsroom’s AI adoption to global norms as illustrated in Figure 5 below.

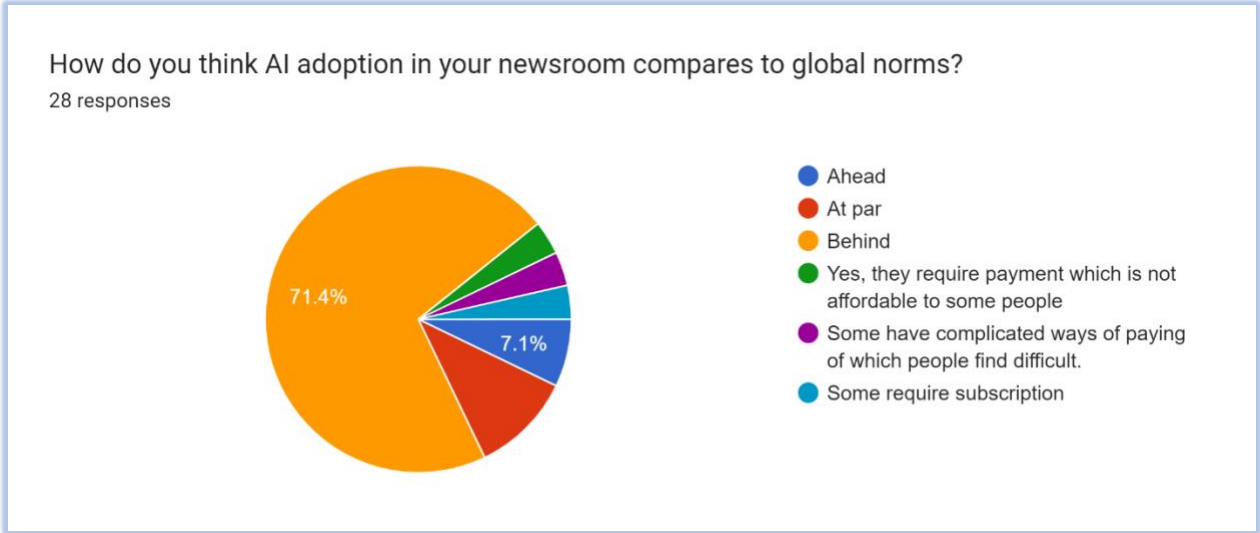


Figure 5: AI adoption Vs global norms

When asked to describe the overall readiness of their newsrooms for AI adoption? About 24 out of 33 respondents responded that the readiness for AI adoption varies among respondents. Seven respondents explicitly stated that the newsroom is not ready, citing limited knowledge about AI and a lack of attention to this technology. Six considered the newsroom fairly ready, suggesting that with more insights into AI's benefits and disadvantages, readiness could improve. Five respondents mentioned basic or okay readiness, without specifying further concerns. Another group described the newsroom's readiness as moderate, highlighting the limited knowledge about AI among many staff members as a potential barrier.

One respondent characterized the newsroom as "agile," indicating some flexibility and adaptability to new technologies. Some noted that the newsroom is making progress in AI adoption but faces challenges related to resource investment. Interestingly, one respondent provided a specific readiness percentage, stating that the newsroom is 70 per cent ready. Another expressed that the newsroom is quite ready for AI adoption, possibly reflecting a positive attitude toward AI. Finally, one respondent indicated technical readiness for AI adoption but a lack of necessary resources to fully implement it.

In an interview conducted for this research, an Editor at Daily Monitor offered insights into why his newsroom is not prepared for AI adoption.

Management is cautious about making significant changes that could disrupt their current operations. Second, there's a general fear of innovation. Management is concerned about the financial implications of adopting new technologies. They question whether these innovations will generate enough revenue to cover the costs and yield a return on investment. Given the current financial constraints, they tend to stick with what they know and are skeptical about venturing into unknown territory (DM II).

2.2.2 Trends and Drivers of AI Adoption

The second objective sought to analyse AI adoption trends and influencing factors (drivers and barriers) in the two newsrooms. The study found that more than 70 per cent of respondents in the two newsrooms use AI in at least one of the following areas: fact-checking (23.3 per cent), content generation (20 per cent), dictation or transcription (16.7 per cent) and 13.3 per cent use it for paraphrasing. The rest, 30 per cent, use it for editing, data analysis, automated posting of social media content and personalization as illustrated in Figure 6.

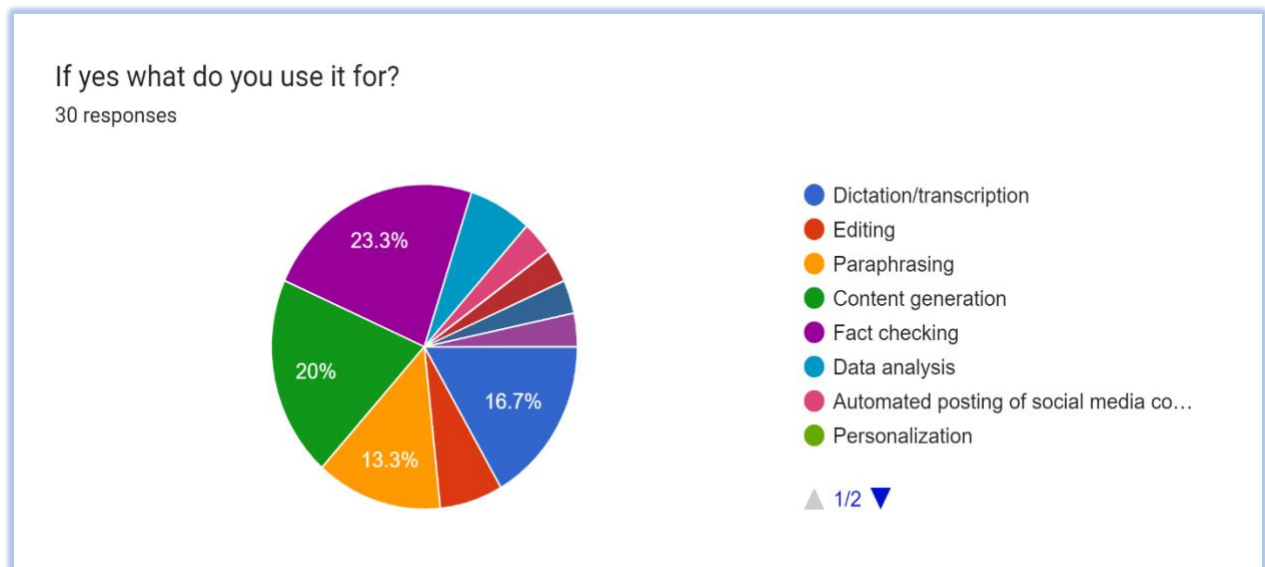


Figure 6: AI use trends

Many respondents, about 31.6 per cent, said they had experimented with AI for less than six months and 26.3 per cent said they had been using AI for about one year. About 21.1 per cent said they have used AI for about one to two years. There was a small percentage that wasn't sure if they had used AI. Most respondents (43.3 per cent) reported regular engagement with AI, 40 per cent interacted with AI occasionally, 13.3 per cent engaged weekly, and the remaining respondents were not sure.

Most respondents, 56.7 per cent, rated their interaction with AI as good. About 16.7 per cent said they interact fairly with AI, while 13.3 per cent described their interaction as excellent. Another 13.3 per cent rated their interaction as poor as shown in Figure 7.

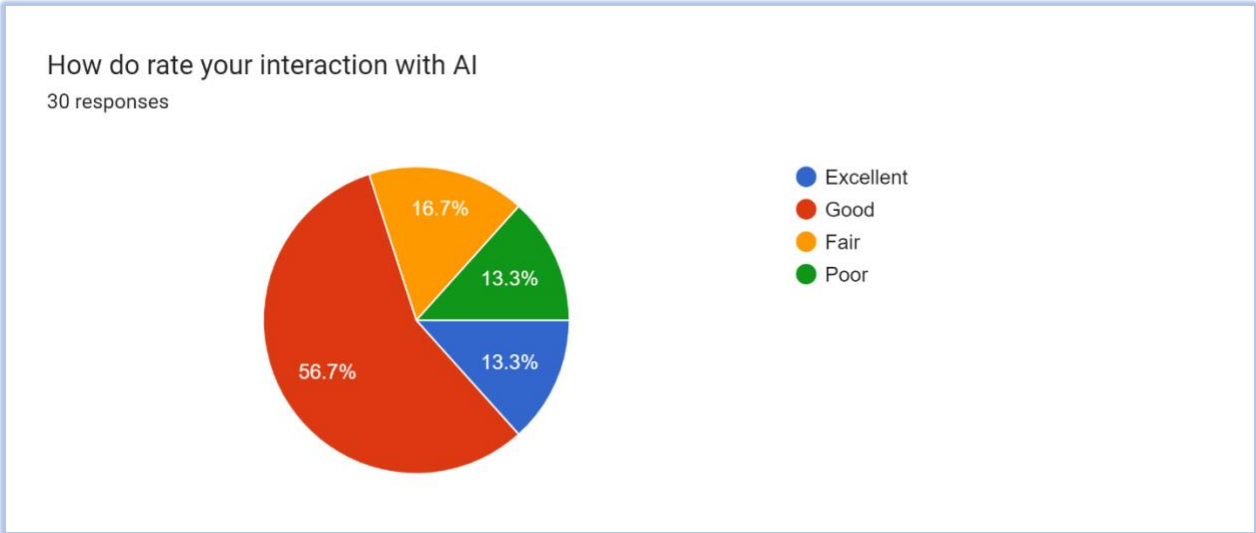


Figure 7: Rate of interaction with AI

Free AI tools

The absence of institutional support appears to have driven journalists in the two newsrooms towards experimenting with free versions of AI tools. These free tools have limited functionality compared to paid alternatives, which typically offer additional features like advanced analytics capabilities and custom integrations with existing systems. These additional features can significantly enhance workflow processes within an organization.

Only 10 per cent of respondents pay for premium versions, which are guaranteed to offer better quality work. About 86.7 per cent of respondents are experimenting with free versions as shown in Figure 8.

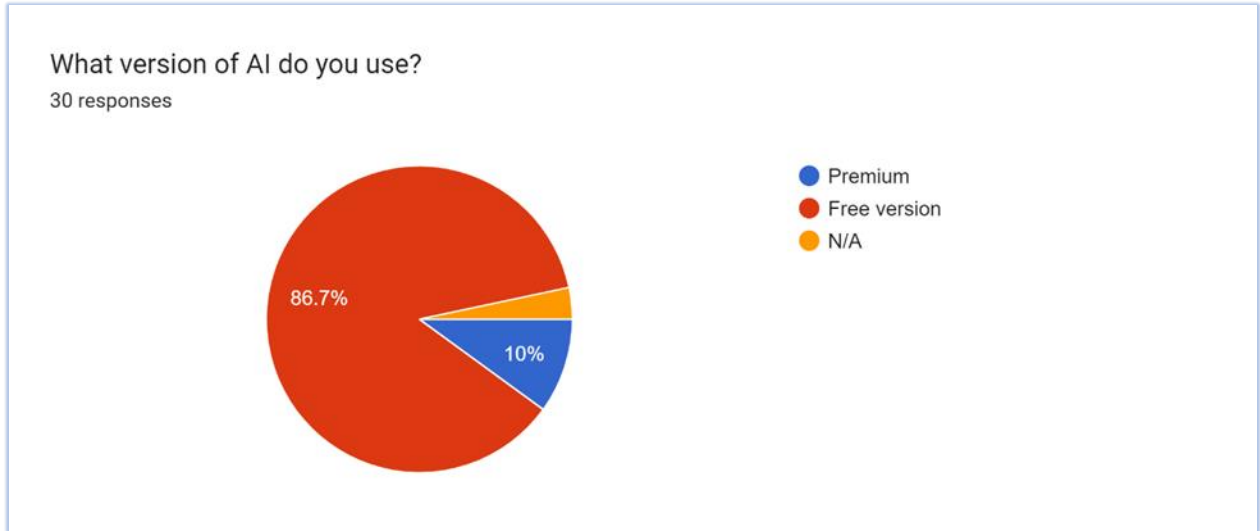


Figure 8: version of AI tools used.

When asked who pays for their AI, 11.1 per cent of respondents said their media house pays and the rest are on free subscriptions.

The majority of respondents considered increasing efficiency (42.1 per cent), ease of use (21.1 per cent), improved quality of work (10.5 per cent), innovation, and competitive advantage as the main drivers for integrating AI in their newsrooms, as Figure 9 below illustrates.

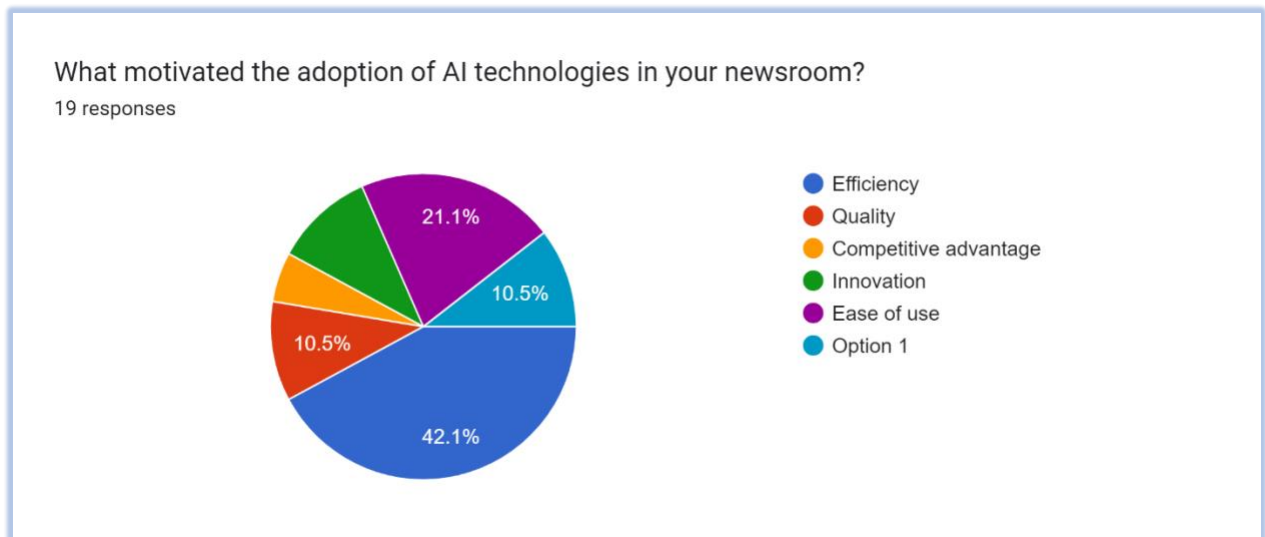


Figure 9: Drivers of AI adoption

Another driver of AI adoption was the perceived improvement in the quality of journalistic work. More than half of the respondents, 56.5 per cent, stated that using AI had moderately improved their journalistic work (no spelling errors, improved grammar, and faster generation of content among others). 17.4 per cent mentioned that the use of AI had significantly enhanced their journalistic work, while 21.7 per cent reported no change in the quality of their work as shown in Figure 10 below.

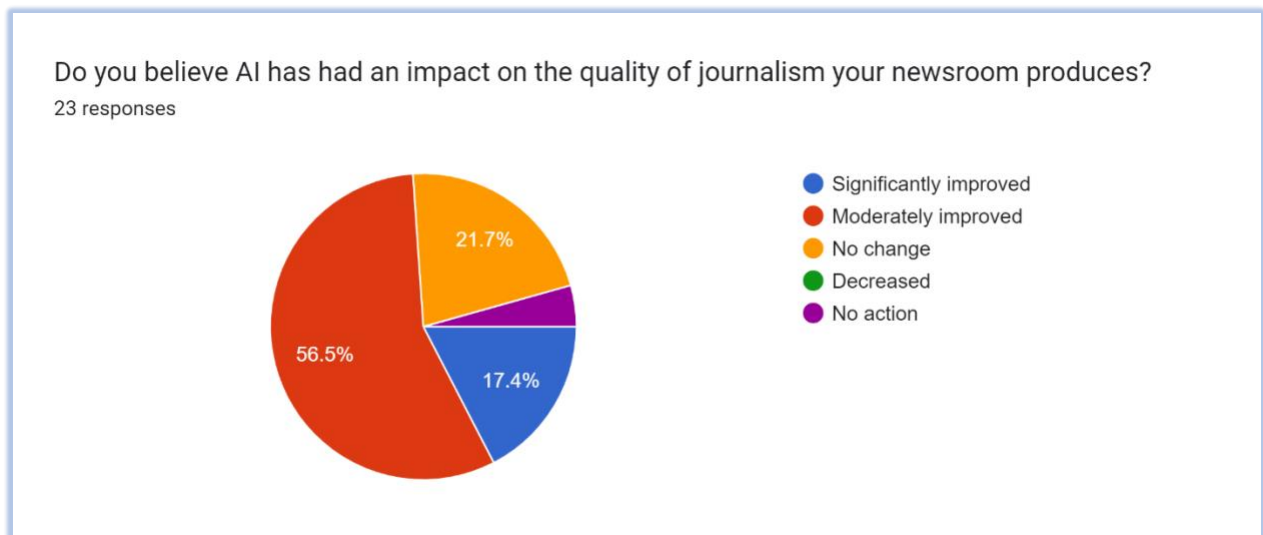


Figure 10: AI's impact on work quality

Challenges and barriers

When asked what support or resources would assist them or their organizations to successfully implement AI, respondents offered a range of insights. They identified resource constraints (money and AI talent) as a significant challenge, with many journalists constrained to use free versions of AI tools due to budgetary limitations. Additionally, there was a significant demand for all-round

training and access to the latest AI tools, efficient internet connectivity, and modern computing equipment. This emphasized the need for practical support to effectively operate these technological resources.

Furthermore, financial backing for AI applications emerged as a big concern among respondents, with demands for investments in digital technology and staff training. One respondent highlighted the limited adoption of AI in many African countries, drawing attention to the broader issue of the digital divide.

Specifically, targeted training in utilizing AI for tasks such as data aggregation and transcription was emphasized. Common requests included comprehensive technical and financial assistance, training on the merits and drawbacks of AI, as well as educating consumers about its implications.

Respondents acknowledged AI as a promising tool for improving productivity and content quality but emphasized the importance of considering sociological, ethical, and privacy-related issues while upholding journalistic standards. The potential of AI to save time, aid in research, enhance digital marketing, and drive innovation was duly mentioned, along with its role in elevating the quality of news publication.

Nonetheless, concerns were raised about the possibility of AI leading to job redundancies within the media sector. While some advocated for the swift integration of AI, asserting that it represents the future of the industry, others characterized the pace of AI adoption within Uganda's media landscape as sluggish, with limited discussion taking place in newsrooms.

2.2.3 Workflow Efficiency

The third research objective of this study was to assess the impact of AI on workflow efficiency within the two print newsrooms. To achieve this objective, the study initially sought to assess the journalists' understanding of workflow efficiency by eliciting their perspectives. The respondents understood workflow efficiency in the context of AI simplifying tasks, helping them meet deadlines, rapid transcription of content, and the realization of time-saving advantages.

When asked if the use of AI tools has improved their workflow efficiency, most respondents—44 per cent—reported a moderate improvement. Approximately 20 per cent observed no improvement, while 12 per cent indicated a significant enhancement in their workflow efficiency. Another 12 per cent also noted an improvement in their workflow as illustrated in Figure 11 below.

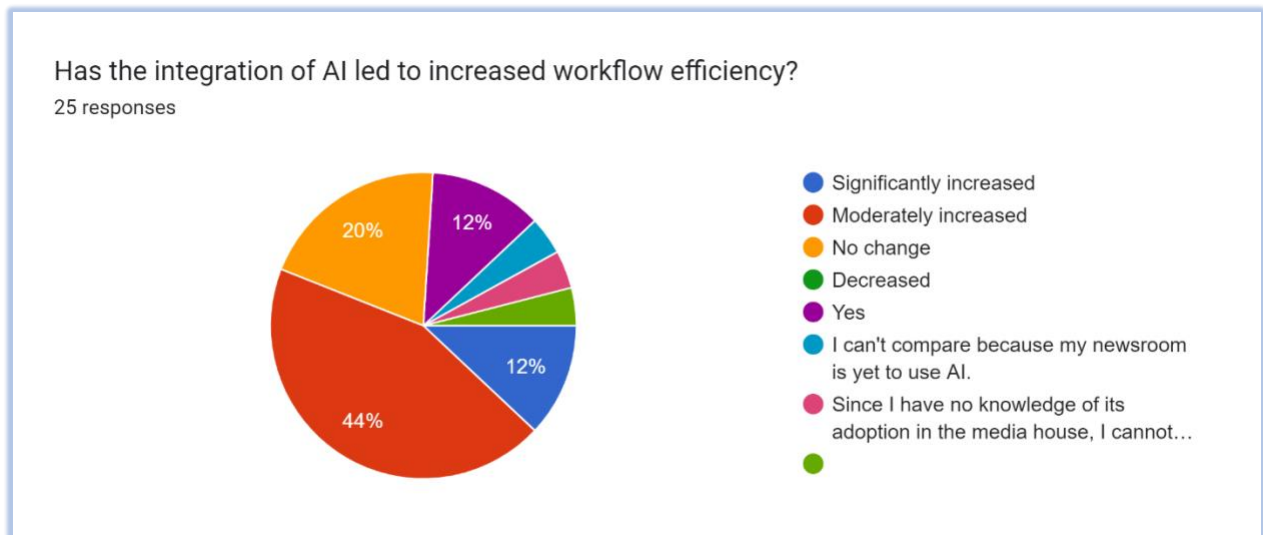


Figure 11: AI's impact on work efficiency

Interviewed for this research, a senior editor at The Observer agreed with the 20 per cent of survey respondents who observed no improvement in their journalistic workflow efficiency.

From my experience, AI has the potential to transform our newsroom. However, it hasn't done so yet because we haven't formally trained our team on how to effectively use it. Currently, everyone is using AI in their own way, resulting in a lack of cohesion and sometimes even errors in the content generated by AI. Ideally, AI should complement our existing efforts, but the team is divided. Some are hesitant to adopt AI, while others over-rely on it, expecting it to handle all aspects of their work. Without a unified approach to AI adoption, we're missing the middle ground on how best to use this technology. Therefore, until the newsroom makes a concerted effort to train all staff members on the appropriate use of AI, we won't fully realize the transformative benefits it can offer (OB II).

2.3 Summary

This chapter has provided findings on the level of AI adoption in The Observer and Daily Monitor newspapers in Uganda. It was evident that all surveyed journalists demonstrated a clear understanding of AI. However, the majority (41.9 per cent) revealed that their respective newsrooms currently do not use AI. For those who have embraced AI, its adoption primarily stems from individual initiatives, as organizational support is lacking. Consequently, both newsrooms have yet to achieve full-scale AI integration, with more than half of the respondents indicating no AI adoption at all.

In terms of trends and drivers of AI adoption, AI is used in various areas such as fact-checking, content generation, dictation/transcription, and paraphrasing. Most respondents have experimented with AI for less than two years, and regular engagement with AI tools is common. The interaction with AI received generally positive feedback from most respondents, despite the prevalent use of free versions of AI tools due to a lack of institutional support. Key drivers for AI integration include the desire to enhance efficiency, ease of use, improved work quality, innovation, and a competitive advantage. However, concerns about potential job redundancies have also been raised, although some see AI as essential for the industry's future growth.

Regarding workflow efficiency, approximately 44 per cent of respondents reported a moderate improvement due to the use of AI tools. AI simplified various tasks, such as editing, data analysis, and proofreading, resulting in near-flawless outcomes. Notably, rapid transcription of audio interviews and field notes emerged as a significant advantage of AI. Respondents acknowledged AI's role in content collection, writing, editing, and strategic decision-making through analytics. Nevertheless, challenges were identified, including the need for formal training and policy alignment to fully harness AI's benefits.

In addressing the challenges and barriers to AI adoption, resource limitations, particularly budget constraints, have had an impact on AI tool adoption. Respondents stressed the importance of comprehensive training, access to the latest AI tools, and efficient internet services. Financial support for AI applications emerged as a concern, with limited usage of paid tools. Ethical considerations, privacy concerns, and apprehensions about job displacement were also prominent issues. Notably, a digital divide in AI adoption between African countries and the rest of the world was observed. While some journalists advocated for rapid AI integration, others found the pace of adoption to be slow.

In conclusion, the findings underscore the potential of AI to improve efficiency and content quality in newsrooms. However, they also highlight the need to address challenges related to policy alignment, training, and organizational support to facilitate more widespread and effective AI integration in the industry.

CHAPTER THREE

CONCLUSIONS AND RECOMMENDATIONS

3.1 Introduction

This chapter presents an analysis of the key findings of the study. The chapter also makes conclusions and recommendations. The chapter also pinpoints areas for further research.

3.2 Conclusions

3.2.1 AI Adoption in Ugandan Newsrooms

The study's first objective sought to assess the level of AI adoption within The Observer and the Daily Monitor newsrooms. Additionally, the study explored AI literacy in the two newsrooms, because this plays a crucial role in influencing adoption. The study found that all respondents, representing 100 per cent, had a basic understanding of AI's purpose, which is to emulate human-like intelligence and decision-making in machines. However, the depth and breadth of this understanding varied among respondents, implying disparities in knowledge levels. This finding underscores the need for all-inclusive AI education and training programs to ensure a more finetuned understanding among journalists.

Despite the high AI literacy observed among journalists, the study found that the actual adoption of AI in the newsrooms surveyed was low, standing at a mere 25 per cent. While journalists at The Observer and the Daily Monitor demonstrated awareness of AI, its practical application in their work remained limited. This significant gap between awareness and application highlights the need for deliberate interventions to narrow this divide. Such interventions may include investments in

resources, advanced training programs, policy development, and adopting cultural shifts within the newsrooms to facilitate AI integration effectively.

Furthermore, the research findings suggest that many newsroom operations in both The Observer and the Daily Monitor continue to rely on traditional and labour-intensive methods, with journalists mainly responsible for these tasks. Neither newsroom has progressed to what Munoriyarwa et al. (2021) describe as "Holistic AI Appropriation," where AI largely takes over news production, or even the "Technological Appropriation" stage where institutionally embedded AI equipment is used for specific tasks while humans remain central to the process. This indicates that AI has not yet become an integral part of news production in these organizations.

The study also revealed that automated journalism through AI is far from becoming a reality in these newsrooms, with a significant 41.9 per cent of respondents indicating that AI is not currently being used in their respective newsrooms. This reluctance to adopt AI can be attributed to management's unwillingness to make major changes that could disrupt their current operations, as highlighted by an interviewed editor.

There's a general fear of innovation. Management is concerned about the financial implications of adopting new technologies. They question whether these innovations will generate enough revenue to cover the costs and yield a return on investment. Given the current financial constraints, they tend to stick with what they know and are skeptical about venturing into unknown territory (DM II).

These findings align with the challenges faced by smaller newsrooms in the Global South, as indicated by Mutsvairo et al. (2020) and referenced in Kioko et al. (2022). While media establishments in developed nations have successfully transitioned to either full or partial AI implementation, their counterparts in developing countries meet obstacles in AI integration. This

underscores the significance of managerial endorsement, as emphasized by Kioko et al. (2022), and highlights management's reluctance (especially where there are multiple competing priorities) to view AI as a sensible investment due to initial expenses associated with the infrastructure development, staff training, and fundamental changes in newsroom operations.

Moreover, the research also identified a notable communication gap within the newsrooms, as 32.3 per cent of respondents who responded "maybe" when asked whether their newsrooms are using AI, demonstrated uncertainty or lack of awareness about AI within their organizations. This finding underscores a disconnect between management and staff or simply a lack of official communication regarding AI initiatives.

The 25.8 per cent of respondents who confirmed that their newsrooms are using AI could be journalists experimenting with new AI technologies. Their newsrooms are probably benefiting from random improved efficiencies. However, the fact that only a quarter of respondents confirmed the use of AI in their newsrooms showed that such technology was far from being totally adopted.

The implications of these findings are many. For newsrooms not using AI, the data should motivate them to explore the potential benefits such as improved work efficiencies and drawbacks of integrating such technology which include concerns about data privacy and security and a lack of clear regulatory frameworks for AI adoption in journalism, creating uncertainty for news organizations. Tandoc (2021) argues that policymakers and media regulators are grappling with the need to develop guidelines and policies to govern the use of AI in journalism. News organizations must address these concerns to build public trust and confidence in AI-driven solutions. However, ignoring AI could mean the two newsrooms would fall behind in the competitive media landscape, where speed and accuracy are premium assets.

On one hand, the mixed responses regarding the adoption of AI in newsrooms in Uganda suggest a transitional phase within the industry. These findings seem to echo earlier research that highlighted concerns about smaller newsrooms in the Global South, including Uganda, lagging behind in embracing AI (Beckett & Yaseen, 2023). It is observed that the adoption of AI in newsrooms varies significantly based on size and location, with the Global North benefiting more due to its established infrastructure and resources. The Global South, which includes Uganda, faces distinctive challenges linked to the enduring legacies of colonialism (Beckett & Yaseen, 2023).

On the other hand, there is evidence to suggest that while the full integration of AI in newsrooms has been a gradual process in the Global South, there is a recent acceleration in its adoption, particularly in countries like Kenya. Newsrooms in Kenya are catching up by incorporating AI technology to varying extents to meet diverse needs, ranging from news gathering to packaging content in ways that appeal to users, and publishing it in formats that attract online audiences. This trend mirrors developments in newsrooms around the world (Thurman et al., 2019 as cited in Kioko et al.). Thus, there is optimism that AI adoption in Africa, despite initial challenges, is on an upward trajectory.

Another outcome of the study was with respect to the push behind the integration of artificial intelligence (AI) in The Observer and Daily Monitor newsrooms. Among the 26 out of the 33 respondents who answered whether the adoption of AI was driven by management initiatives or resulted from individual efforts, a huge majority said that the integration of AI within their respective newsrooms was primarily pushed by individual efforts of journalists. The finding suggests a lack of management support, which is very vital for a more structured, top-down approach to the adoption of AI across the newsrooms as Kioko et al., (2022) contend. The finding suggests that much of the current AI adoption is driven by individual journalists or small teams

who see the potential benefits. While this bottom-up approach can result in quick, random experimentation, it may lead to temporary solutions and potentially inconsistent outcomes. Individual-driven adoption means The Observer and Daily Monitor newsrooms lack a cohesive, newsroom-wide strategy for AI integration. Without central planning, there is a risk that these individual initiatives may not yield much in terms of improving the newsrooms' work efficiency or aligning with the newsrooms' overall objectives or ethical guidelines.

Meaningful integration of artificial intelligence in newsrooms cannot happen without management's involvement. Management can help invest in cutting-edge AI technologies, training, skills and policy development, which journalists cannot afford. Past research has shown that investment in AI training and skill development is crucial for empowering journalists to use AI effectively in their work (Dörr & Safadi, 2021). Ethical AI frameworks are essential for building trust and maintaining credibility (Lambrecht & Tucker, 2019). Regulatory support provides a secure environment for responsible AI adoption (Tandoc, 2021).

Another essential focus of the research findings was on the time spent by respondents experimenting with AI technologies. The data showed intriguing patterns in terms of the duration of AI utilization among participants. Notably, approximately 31.6 per cent of respondents reported experimenting with AI for less than six months. In contrast, a significant segment, 26.3 per cent, had clocked a one year of experience with AI. Furthermore, about 21.1 per cent of participants had a more extended engagement, spanning from one to two years. Additionally, it is worth noting that a small percentage of respondents were uncertain about their AI usage, adding an intriguing aspect to the analysis. This temporal aspect of AI adoption among our respondents provides valuable

insights into the learning curve, familiarity, and potential impacts of AI within the newsroom context.

This data points to a relatively recent rise in the journalists' adoption or experimentation with AI technologies in The Observer and Daily Monitor newsrooms. With 31.6 per cent of respondents saying they have used AI for less than six months and another 26.3 per cent for about one year, that suggests the journalists are most likely in the early stages of AI adoption. These early adopters and experimenters are important because their experiences would inform the wider newsrooms' understanding of the practical benefits and challenges of AI in journalism. The 21.1 per cent who have been using AI for one to two years could be deemed early adopters who have moved past the experimentation stage. Those can offer deeper insights into the long-term impacts of adopting AI in newsrooms.

Overall, the data showed that many journalists in the two newsrooms are still in the early stages of understanding what AI can and cannot do for them. As more journalists deploy AI tools in the newsrooms and share experiences, The Observer and Daily Monitor might get a clearer picture of AI's role in the future of journalism.

The data also revealed a distinct division among survey participants in terms of AI integration. A substantial majority, comprising 53.8 per cent, said AI had not found any foothold within their newsrooms, signifying a significant gap between the potential and the present reality of AI adoption in journalistic settings. In contrast, approximately 30.8 per cent of respondents indicated some level of AI adoption, thereby highlighting the presence of early adopters within news organizations. This disparity in AI adoption rates lays the ground for a thorough scrutiny of the underlying factors, implications, and potential avenues for AI integration within the dynamic realm of journalism.

Asked to explain the disparity in AI adoption, some respondents said the adoption of AI in the newsrooms is not consistent and lacks institutional backing. Some respondents said that AI is not fully integrated and lacks official approval from management. They said that even when AI is used, its benefits are not appreciated by top managers. Other respondents said while some editors use AI to streamline their own tasks, they haven't encouraged wider adoption in the newsroom.

Some respondents mentioned they had heard about AI adoption at the group level, although no specific information had trickled down to their newsroom. A few respondents actively use AI, but the majority don't, often due to costs, lack of expertise, and unresolved ethical concerns about balancing human employment with automation.

The perceptions of the respondents seem to reflect a blend of skepticism and optimism among journalists. However, it is evident that there is a notable absence of formal institutional guidance, leadership, or support for the implementation of AI.

The perceptions of the survey respondents resonate with the findings of Munoriyarwa et al. (2021), Guanah et al. (2020), and Nwanyanwu and Nwanyanwu (2021), which indicate that hesitancy towards AI integration in newsrooms is partly due to skepticism from mid-level management, including editors and producers. These professionals often express concerns about AI potentially replacing experienced journalists, pointing to the ethical and operational challenges associated with automated news production. These apprehensions are reflective of sentiments observed in the South African and Nigerian contexts (Munoriyarwa et al., 2021; Guanah et al., 2020; Nwanyanwu & Nwanyanwu, 2021).

While concerns about job displacement are valid, Marconi (2020) argues that as much as AI can automate certain tasks in newsgathering, it will not replace the core values of journalism such as human creativity, enterprise, ideation, and empathy. Marconi (2020) emphasizes that the

transformation of newsrooms in the age of AI goes beyond technology, focusing on cultural and organic changes that help implement data-driven decisions, foster collaboration, and better understand audiences and new technologies.

The study also cast a significant spotlight on the preparedness of the individual newsrooms for AI implementation. When asked about their newsroom's readiness for AI adoption, about 24 out of the 33 survey respondents who answered expressed skepticism. One stated simply, "not ready." Another offered a slightly more optimistic view: "fairly ready." One respondent pointed to management: "Maybe it is ready, the management would know better," while another labelled their readiness as "basic."

A more emphatic viewpoint was given by a journalist who said, "Not ready at all. There is not much attention paid to this technology." Echoing this sentiment, another respondent quantified the readiness level as "0.1 per cent." One respondent believed that with a sufficient understanding of AI, including its uses, benefits, and drawbacks, "we can be ready." Others felt that the transition to AI was still in its early stages, with people accustomed to traditional methods. A few respondents viewed AI integration as active and making progress, albeit with the challenge of needing more financial investment. This, once again, suggests a prevailing sense of uncertainty, a lack of management-driven leadership and direction or cultural resistance toward AI adoption. Addressing these concerns and providing an all-inclusive AI education and training may be essential in overcoming this skepticism.

One editor at Daily Monitor said that management planned to adopt AI in a step-by-step manner, starting with the formulation of an AI policy.

We are in the process of developing an AI policy. The responsibility for drafting this policy has been entrusted to the head of editorial. The need for a policy is critical;

without it, there's a risk of disarray, as people may take various unguided actions, and you cannot fault them in the absence of clear guidelines (DM-II).

The responses from survey participants also underscored the necessity for clear management leadership and guidance in the process of AI adoption. It's crucial for the management teams at The Observer and Daily Monitor, which are a significant catalyst in the AI adoption process as opined by Kioko et al. (2022), to take an active role in guiding the integration process, ensuring that staff members are aligned in their understanding and commitment to AI technologies.

Compared to global AI adoption standards, the survey participants depicted a rather pessimistic image of their respective newsrooms. According to the study, approximately 71.4 per cent of respondents said that their newsrooms lag significantly behind in AI adoption compared to global norms, with only 7.1 per cent stating that their newsrooms are on par. This finding seems to align with the concerns raised in an earlier study, "New Powers, New Responsibilities: A Global Survey of Journalism and Artificial Intelligence" (AI, 2019), which highlighted the struggle of smaller newsrooms to keep pace with AI integration. This disparity, as noted by "New Powers, New Responsibilities" (AI, 2019), presents a particular challenge for small newsrooms and suggests the potential for growing inequality between small and large organizations.

That finding also raises concerns about the technology gap between The Observer and Daily Monitor newsrooms and their international peers. Such a significant percentage suggests endemic issues - possibly related to funding, leadership, or infrastructure - that are preventing these news organizations from keeping pace with global developments in AI.

This gap carries several significant implications. Primarily, it could potentially place these newsrooms at a competitive disadvantage when it comes to harnessing the opportunities offered by AI technologies. This is of paramount importance, as AI has progressively assumed an essential

role in various newsroom functions, including content creation, textual composition, editorial processes, distribution, and audience analytics. Newsrooms such as The Observer and Daily Monitor that are slow to adopt these tools risk falling behind not just in terms of technology but also in their ability to produce high-quality, timely and impactful journalism. Belair-Gagnon and Revers (2018), as cited by Kioko et al. (2022), posit that the survival of the news media in Kenya, and software engineers like in other countries will increasingly depend on how best the media houses can adapt to and integrate emerging technologies into the various facets of news production, including research, production, and dissemination. Other research underscores that traditional media organizations adept at incorporating AI-driven news production tools have discerned marked enhancements in the precision and objectivity of news articles (PedreroEsteban & Pérez-Escoda, 2021; Zayani, 2021). Media entities in the Global South are progressively aligning with this trajectory. There's a noted surge in the employment of AI in the domains of investigative and data journalism, leveraging tools encompassing machine learning, computer vision, speech recognition, and robotic technologies (Pedrero-Esteban & Pérez-Escoda, 2021; Zayani, 2021).

Second, the lack of AI adoption could signal wider organizational issues. If more than 70 per cent of respondents feel their newsrooms are lagging behind, there is likely a lack of organizational investment in that technology more generally, possibly stemming from budget constraints or a risk-averse culture as confirmed by a Daily Monitor editor. Or there are numerous pressing priorities, and AI might not be perceived as a prudent investment, especially considering the initial outlays related to infrastructure, staff training, and pivotal shifts in news operations (Munoriyarwa et al., 2021; Guanah et al., 2020; Nwanyanwu & Nwanyanwu, 2021).

Such an environment could deter talent – both young journalists who are comfortable with technology and more experienced staff who might see the lack of investment as a sign that the managers of the two media organizations are not forward-thinking.

On a positive note, the 7.1 per cent who believe their newsrooms are on par with global AI norms offer hope. Much as it is a small percentage, it demonstrates that keeping up with global AI adoption in journalism is achievable, even in an environment where the majority feels left behind.

When asked what support or resources would assist them or their organizations in successfully implementing AI, respondents provided diverse insights. Respondents consistently emphasized the critical importance of training and resources to successfully implement AI. This includes access to the latest AI tools, efficient equipment, internet connectivity, and training programs. Financial constraints were seen as a significant barrier, leading to a desire for financial support for AI applications. Specific AI tools for tasks like data aggregation and transcription were mentioned, underscoring the need for training in their use.

Some respondents pointed to concerns about the sociological, ethical, and privacy aspects of AI adoption in journalism. They stressed the need to uphold the core principles of journalism while integrating AI. Verification of AI-generated information before crafting news stories was highlighted as a crucial step to maintaining journalistic integrity.

The pace of AI integration in The Observer and Daily Monitor was described as sluggish, with limited discussion of AI in newsrooms. This suggested potential resistance or hesitance to embrace AI technologies. Concerns about potential job redundancies, especially in broadcasting, due to AI adoption were raised.

Some respondents proposed open access AI for media houses, recognizing the public service nature of news dissemination. This proposal could lead to collaborative efforts within the industry. There was a strong call for the media sector to rapidly integrate AI, with a belief that AI is the future of journalism.

While many respondents expressed a generally positive outlook on technological advancements in media, there were cautious voices, which expressed concerns about the ethical and legal aspects of AI adoption. These voices advocated careful consideration and the establishment of guidelines to prevent potential harm.

Respondents recognized the significance of staying abreast of global trends and shifts in consumer behaviour in the digital era. Despite the challenges and concerns expressed, the overriding sentiment among respondents was to embrace AI advancements in the media industry. They recognized the potential benefits of AI in enhancing productivity, content quality, and innovation.

In conclusion, the responses and implications collectively underscored the complex path to AI adoption in The Observer and Daily Monitor. Overcoming barriers related to training, resources, and financial constraints is crucial. Ethical considerations must be considered such as invasion of privacy and proliferation of fake news, and there is a need for a more rapid pace of AI integration within the industry.

3.2.2 AI Adoption Trends and Influencing Factors

The second objective was to analyse AI adoption trends and influencing factors (drivers and barriers).

The research showed that in the two newsrooms studied, the primary uses of AI were for fact-checking, content generation, dictation or transcription, and paraphrasing articles. Analysis of the

responses showed that the majority (40.14 per cent) of participants utilized AI for fact-checking and content generation. Additionally, 17.2 per cent of the respondents employed AI for dictation or transcription, while 13.8 per cent used AI tools for paraphrasing. Other noted uses of AI included automated posting of media content, data analysis, and content personalization. This distribution of AI applications provides insight into the varied roles AI plays in modern newsroom operations.

The dominant use cases suggest that if AI was strategically adopted at the organizational level, it had the potential to transform news gathering, production, and distribution operations in both The Observer and Daily Monitor newsrooms, although the extent of its impact would vary based on specific use cases. Fact-checking and content generation emerged as the most significant applications of AI, accounting for 40.14 per cent of its utilization in the newsrooms. These applications offer various advantages, including improving the accuracy of news articles and freeing up journalists' time for more in-depth reporting tasks, such as investigations and analysis. The research underscores that traditional media organizations adept at incorporating AI-driven news production tools have discerned marked enhancements in the precision and objectivity of news articles (PedreroEsteban & Pérez-Escoda, 2021; Zayani, 2021).

While AI applications in The Observer and Daily Monitor are primarily initiated by individual journalists rather than being led by the organization, they demonstrate a promising path towards the advanced AI use cases seen in major news organizations like The Washington Post and The New York Times. These international outlets use AI for tasks such as data analysis, content curation, and personalized news delivery, with The Washington Post also employing AI for the generation of automated news stories, in areas like sports and elections, thereby amplifying their coverage and operational efficiency (Grieco et al., 2022; Grimm, 2021).

Dictation or transcription, employed by 17.2% of the respondents, stands out as another vital AI application. This technology enables faster transcription of interviews and dictation of stories, which speeds up the generation of stories that heavily rely on interviews or speeches. Furthermore, real-time transcription services enhance accessibility, catering to a wider audience, including individuals with hearing impairments. Through automating tasks like transcription and translation, AI allows journalists to dedicate more time to in-depth reporting (Marlow, 2022). Paraphrasing tools, used by 13.8 per cent of respondents, help journalists avoid plagiarism, and expedite and improve their writing process. AI's application extends to automated posting, data analysis, and content personalization, serving to optimize news gathering, enhance content distribution, and bolster audience engagement.

Another trend was that the majority of respondents, specifically 88.9 per cent, said they could not afford to pay for the AI tools they use. They rely on free subscriptions, with only 11.1 per cent using AI tools paid for by their media organizations. This finding further confirms the absence of institutional support that has compelled a larger number of journalists in the two newsrooms to explore free versions of AI tools. These free versions often offer limited functionality to journalists compared to paid tools, which frequently include additional features such as advanced analytics capabilities and custom integrations with existing systems. Newsrooms which have experienced substantial improvements in their news production operations and profitability have either developed their own applications or made considerable investments in premium AI technologies.

Bloomberg News, for instance, implemented an automated content program called Cyborg, which produced thousands of articles by transforming financial reports into news stories (Martin, 2023). Similarly, Forbes employed an AI tool named Bertie to provide reporters with initial drafts and templates for news articles (Martin, 2019). The Washington Post utilized a robot reporting program

called Heliograf, which generated approximately 850 articles in its first year (Martin, 2019). Heliograf detects finance and big data trends to assist reporters in their work, rather than replacing them (Martin, 2023).

The Observer and Daily Monitor journalists or newsrooms cannot get much value in terms of improved quality of content and other operational newsroom efficiencies by using free versions of AI tools. Free versions of AI tools such as Grammarly and Quillbolt, which are grammar checkers and paraphrasers, offer basic proofreading. The free version of the AI chatbot, ChatGPT can offer journalists research assistance, idea generation, writing assistance, editing and proofreading (basic grammar and spell-checking services) and data analysis (OpenAI, 2023). However, the frequency of access to its free services is limited to a few times a day and journalists must have the most up-to-date computers and software to access the free ChatGPT 3.5 version.

When asked how often they interact with AI, most respondents (43.3 per cent) reported regular engagement, 40 per cent interacted with AI occasionally, 13.3 per cent engaged weekly, and the remaining respondents were not sure. The data suggests that more journalists in the two newsrooms are experimenting with AI technology, more so using AI regularly for various tasks like fact-checking and content generation as mentioned before. However, the real impact of AI use in newsrooms on the quality of journalistic work and workflow efficiency cannot be easily determined because the use is sporadic and randomly tagged to individuals. One editor interviewed at Daily Monitor said.

One major reason for the underutilization of AI in newsrooms is a lack of awareness about the different forms and capabilities of AI technologies. Many reporters and editors are not familiar with the various AI tools available, including both free and premium options. Secondly, even among those who are aware of these tools, there's

a knowledge gap concerning their effective use. People have not been trained on how to integrate these technologies into their workflow, nor have they been shown how these tools can enhance their productivity. There's a lack of organized training sessions where team members can learn about what tools are available, assess their affordability, and decide on which ones to invest in (DM-I).

There is optimism, however, that increasing individual experimentation with AI may eventually prompt wholesome organizational adoption. The examination of research findings reveals notable insights into respondents' assessments of their interactions with AI systems. According to the data, most of the respondents, approximately 56.7 per cent, rated their interactions with AI as "good." A smaller but still significant proportion, 16.7 per cent, rated their interactions as being "fair." Furthermore, 13.3 per cent of the respondents provided particularly positive evaluations, describing their interactions as "excellent." And another 13.3 per cent of respondents rated their interactions with AI as "poor." These percentages shed light on the varied nature of individuals' experiences and perceptions when using AI technology.

The data suggests a positive view of AI interactions in the newsroom, with most respondents (56.7 per cent) rating their experiences as good. This could imply that the technology is perhaps meeting user expectations and performing its intended functions effectively, which bodes well for the integration of AI in newsroom operations. Additionally, the combined percentage of those who found the interaction either good or excellent is noteworthy, suggesting that AI is an asset in the journalistic environment.

Asked to explain what informed their rating of their interaction with AI as excellent, good, fair, and poor, the respondents provided a wide range of perspectives on the use of AI in their work. Some respondents appreciated AI for its efficiency, specifically highlighting its ability to quickly

edit and suggest headlines, and for being a time-saver. One respondent mentioned that AI has become a part of their daily routine, and it helps enhance features in different activities. Another respondent praised AI for providing accurate information compared to other search engines, and one found it to be a useful tool for cross-checking facts in stories. A few respondents pointed out that the effectiveness of AI depends on the user's input, such as clear articulation in voice typing. There were concerns about AI not always following instructions well and sometimes providing vague or disoriented replies. Trust issues were also mentioned, with one respondent explicitly stating they don't trust AI and rarely use it, while another mentioned that AI can't be completely trusted.

Some respondents pointed out that AI did not always provide exactly what was needed and had difficulties in recognizing Ugandan speakers' pronunciation during transcription. There was also a mention of occasional errors when using AI for transcription. One respondent cited concerns about AI's impact on creativity and cognitive skills. Some respondents said that AI might lead to less brain usage as it takes over tedious and repetitive tasks, potentially causing problems for future generations. A few respondents talked about their journey of understanding and learning to use AI. They said that with a basic understanding of AI, they can accomplish a lot, especially on personal projects. However, they also noted that there are limitations and a learning curve in giving proper instructions for better results. Some respondents expressed ambivalence about AI, with one stating they don't use it all the time, and another admitting they don't use it as much as they should. There was also a mention of being yet to start using AI in daily work, indicating a potential for increased adoption in the future.

The respondents' perceptions reveal a difficult and varied landscape of attitudes and experiences. While AI is appreciated for its efficiency and potential to improve journalistic work, there is also

caution and skepticism, particularly regarding its reliability, impact on skills, and the need for clear user guidance. This mixed response suggests both opportunities and challenges in the broader integration of AI into both newsrooms in Uganda.

3.2.3 Factors Driving AI Adoption

The research provided valuable insights into the primary drivers of AI adoption within The Observer and Daily Monitor, as well as the associated barriers. These key drivers of AI adoption include efficiency, quality enhancement, competitive advantage, innovation, and ease of use. The research also identified impediments to AI adoption, which include a lack of management support, cost considerations, the need for technical skills, the presence of unclear use cases, public perception, and the organizational structure.

Among the survey respondents representing these newsrooms, the majority, 42.1 per cent, indicated they use AI primarily for enhancing work efficiency. Additionally, 21.1 per cent of respondents affirmed that AI tools are easy to use or integrate into the work environment. Furthermore, 10.5 per cent acknowledged that AI enhances the quality of work produced within the newsrooms. It is noteworthy that some respondents also underscored the role of AI as a catalyst for fostering innovation and giving a competitive edge in the competitive landscape of journalism. These insights into the motivations and experiences of AI adoption within newsrooms shed light on both the potential advantages and challenges associated with the integration of AI in journalistic endeavours.

When asked to explain their responses in more detail, respondents shared various insights which were grouped into themes below:

Firstly, respondents appreciated AI's potential to improve data analysis and enhance the reliability of information. AI's ability to analyze data, make decisions, and adapt to new information without

human programming was seen as particularly valuable. Secondly, the efficiency of content creation through AI was emphasized. Respondents noted how AI simplifies the content generation process by quickly identifying and suggesting corrections for spelling errors and providing efficient paraphrasing capabilities. This, in turn, contributes to higher work quality. Thirdly, AI's role in facilitating quick access to specific information was mentioned. It streamlines the data collection process, saving time for journalists who can easily retrieve relevant information on various topics. Furthermore, the ease of use and accessibility of AI tools were stressed. Respondents said AI does not require extensive technical expertise, making it accessible to those with basic computer literacy.

The competitive nature of the media industry was acknowledged, with technological intelligence through AI seen as a critical factor for development and success. The practical advantages of AI in journalism workflows, such as time-saving and reduced paperwork, were widely recognized, contributing to increased efficiency. One respondent contextualized AI usage within the broader framework of the fourth industrial revolution, highlighting how digital consumption patterns are influencing product consumption in the industry. However, there were also expressions of uncertainty regarding AI's application and its specific benefits in some respondents' work. This suggests a pressing need for increased awareness and understanding of AI's potential and challenges. Additionally, considerations related to understanding audience interests to enhance product quality and achieve cost efficiency were mentioned as important factors in AI adoption. Lastly, AI's role in language services, particularly in facilitating text translation, was acknowledged as beneficial for interpreting content across languages.

In summary, these responses reflect a broad acknowledgement of the integral role of AI in enhancing efficiency, quality, and competitiveness in the media industry. They also indicate a

growing trend towards digital and AI literacy, suggesting an ongoing cultural shift in how technology is perceived and utilized by Ugandan print journalists.

3.2.4 Workflow Efficiency

The third objective was to assess the impact of AI adoption on workflow efficiency in the two newsrooms. The study suggests AI holds considerable promise for enhancing newsroom operations in Uganda.

The data showed a range of experiences and perceptions. A majority, 44 per cent of respondents, reported a moderate improvement in their workflow efficiency resulting from the use of AI tools. This finding suggests that AI adoption has yielded tangible, albeit moderate, benefits for a significant segment of participants. 20 per cent of respondents observed no discernible improvement in their workflow efficiency with AI integration. This viewpoint underscores the need to explore the factors contributing to this lack of perceived enhancement. On the other hand, 12 per cent of respondents reported a significant enhancement in their workflow efficiency, indicating that AI has delivered substantial positive outcomes for this subgroup. Similarly, another 12 per cent noted an improvement in their workflow, suggesting that AI's influence on workflow efficiency is not uniform but rather varies among respondents.

Notably, the respondents provided examples to substantiate their perceptions of AI's impact on workflow efficiency. These illustrative examples offer valuable insights into the practical implications and nuances of AI integration within newsroom environments, which we will now delve into in more detail. The survey responses showed several significant themes concerning the impact of AI on journalism practices. One prominent theme centred on the improvement of editing and data analysis, with respondents noting substantial improvements, and some even achieving near-flawless outcomes due to the integration of AI into their processes.

Transcription efficiency emerged as another key aspect, with AI's rapid transcription capabilities for audio interviews and field notes frequently commended. This highlighted its pivotal role in boosting journalistic productivity. A notable concern was the absence of AI in some newsrooms' editorial policies, impacting the ability to measure its impact accurately. This underscored the importance of aligning AI integration with broader editorial strategies. Furthermore, respondents shared feedback regarding the simplification of various tasks through AI, although the frequency of AI use varied among them. AI was recognized for its contribution to workflow efficiency, as it saved valuable time on tasks that would otherwise be more time-consuming.

AI's role in advancing media development was also recognized, signifying its broader impact on the industry. The streamlining of journalistic processes was attributed to AI, encompassing activities such as proofreading, editing, content collection, writing, and meeting tight deadlines. Another significant theme was AI's contribution to strategic decision-making, particularly concerning digital platforms. Respondents highlighted its role in providing valuable analytics for informed choices. AI's influence on content quality was evident, as it contributed to the creation of more refined stories that necessitated less post-writing editing, thanks to their higher initial quality. Nonetheless, some respondents expressed uncertainty regarding the outcomes of AI integration, and some cited a lack of concrete examples to illustrate its benefits. Furthermore, challenges related to tool selection were highlighted, especially in the context of finding the appropriate AI tool for specific tasks. Fact-checking was identified as a common challenge faced by journalists in this regard.

In summary, as much as the findings and the respondents' perceptions collectively reflect a moderate improvement in individual workflow efficiency and a positive perspective on AI's practical advantages in various journalistic tasks, particularly in editing and transcription, they do

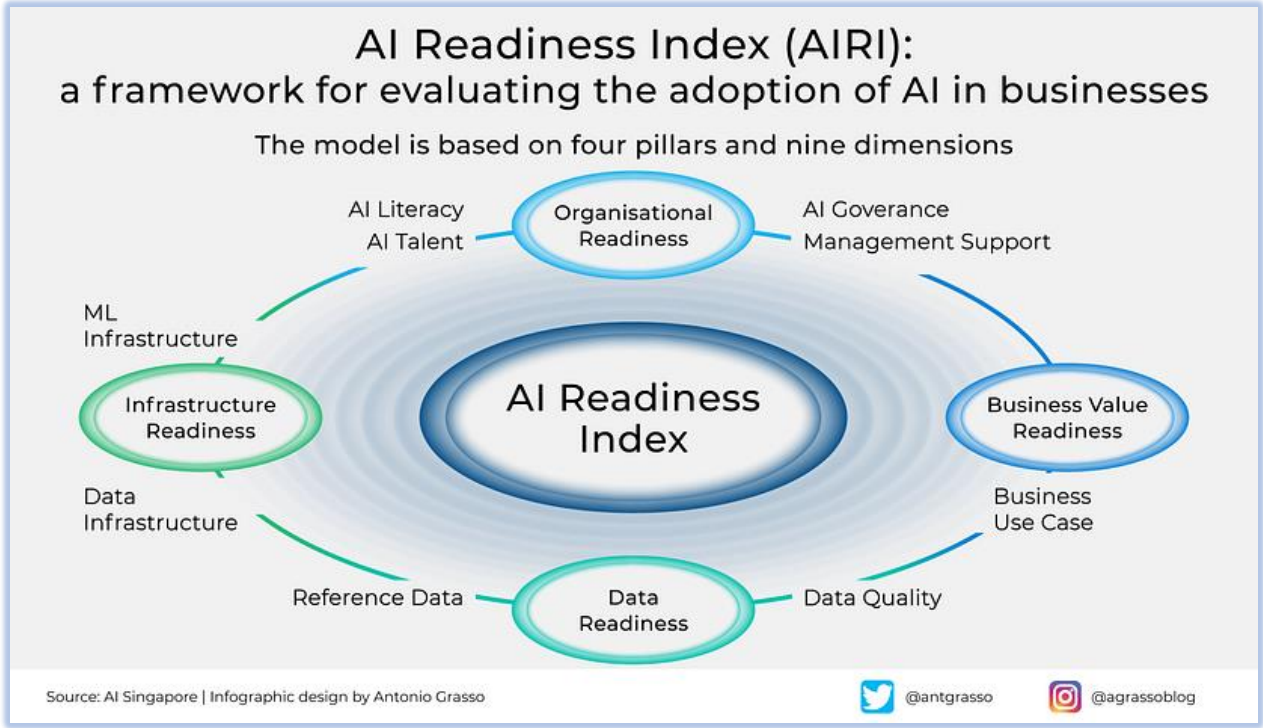
not particularly align with Kioko et al.'s (2022) assertion that the integration of Artificial Intelligence (AI) and other cutting-edge technologies has been proven to bolster profitability by enhancing the efficiency of the news production process. The study found no evidence to confirm that individual deployment of AI at both The Observer and Daily Monitor aligns with global studies that indicated that traditional media outlets, which have adeptly incorporated and utilized AI-driven news production techniques, have observed notable advancements in the precision and objectivity of news items (Pedrero-Esteban & Pérez-Escoda, 2021; Zayani, 2021).

3.3 Recommendations

This study has identified several factors that are impeding the integration of Artificial Intelligence (AI) within The Observer and Daily Monitor newsrooms. Despite a high basic understanding of AI's purpose and significant experimentation with AI tools by individual journalists, obstacles to AI adoption persist. These include management's reluctance to lead the integration process, concerns about the financial implications of AI integration, the absence of inclusive training, policy regulation, and investment in state-of-the-art AI tools. Additionally, the newsrooms are hindered by inefficient internet services, old computing equipment, and a lack of practical support to operate AI technologies effectively.

Financial backing for AI applications emerged as a key concern among respondents, who advocated for investment in digital technology and staff training. There was a specific call for targeted training in the use of AI for tasks such as data aggregation and transcription. General support needs, including both technical and financial assistance, training on the advantages and disadvantages of AI, and consumer sensitization, were also frequently mentioned. Addressing these challenges would enable the two newsrooms to fully leverage the benefits of AI and adapt successfully to the evolving media landscape.

A key recommendation is for the leadership of both newsrooms to proactively drive the AI integration process. The implementation of AI in these newsrooms should be guided by the AI Readiness Index (AIRI), a framework developed by AI Singapore (AISG). This framework, as outlined by Grasso (2022), evaluates an organization's preparedness for adopting AI across four pillars and nine dimensions.



The AIRI framework encompasses four key pillars and nine distinct dimensions, offering a structured approach to assess various aspects of AI readiness within an organization (Grasso, 2022).

The first pillar, Organizational Readiness, examines human resources and their understanding and attitudes towards AI. This includes AI Literacy, assessing employees' education and awareness of AI. AI Talent evaluates the presence of internal resources for AI model creation; AI Governance looks at strategic policies for AI development; and Management Support checks the allocation of

resources for AI initiatives. The second pillar, known as Business Value Readiness, involves the identification of practical AI applications and the assessment of their potential value. This pillar emphasizes the importance of planning for innovation and establishing specific use cases to improve the efficiency of AI adoption in organizations.

The third pillar, Data Readiness, places its focus on the quality and standardization of data. Within this pillar, there are two critical components to consider: Data Quality, which ensures the completeness and accuracy of data, and Reference Data, which verifies the presence of standardized and unambiguous data references (Grasso, 2022). The final pillar, Infrastructure Readiness, involves the evaluation of the IT infrastructure required to support AI models. It encompasses both Data Infrastructure, which includes servers, storage, and data governance, and Machine Learning Infrastructure, covering the necessary human resources, processes, and tools for the development and utilization of machine learning models (Grasso, 2022).

In summary, the AIRI framework offers a comprehensive and detailed guide to organizations aiming to assess and enhance their readiness for AI adoption. It addresses crucial aspects ranging from organizational culture and management support to technical infrastructure and data management.

PROJECT DOCUMENT

MAKING THE OBSERVER AN ARTIFICIAL INTELLIGENCE-ENABLED NEWSROOM

Outline

Transforming The Observer into an Artificial Intelligence-enabled newsroom entails a comprehensive journey. To embark on this transformation, it's essential to begin with a solid understanding of the background, encompassing the newspaper's origin, ownership, vision, and mission. This groundwork sets the stage for a clear assessment of the current situation within the newsroom, identifying its strengths and areas for improvement. Following this assessment, a needs analysis is crucial, in determining the specific requirements and objectives for integrating AI. The introduction and rollout of AI involve defining AI, elucidating its capabilities and challenges, and identifying the components relevant to The Observer.

We explore how AI will operate within the newsroom, fundamentally changing its dynamics. Delving into the sources and costs of AI tools, the project justifies this transformative endeavour. Subsequently, the process continues with the introduction and deployment of AI tools, culminating in an exploration of the anticipated impact on the newsroom, product quality, and overall company performance. This seamless transition into an AI-enabled newsroom promises to usher in a new era of journalism, enhancing efficiency and effectiveness in the pursuit of excellence.

Introduction

This document lays out an ambitious initiative to transform The Observer, a Kampala-based traditional news outlet, into a dynamic, artificial intelligence (AI)-enabled newsroom. The initiative is designed to revolutionize the way news is gathered, processed, distributed, and engaged with by The Observer audience, leveraging the cutting-edge capabilities of AI technology.

This transformative initiative is informed by comprehensive research findings that paint a mixed picture of AI adoption within The Observer and Daily Monitor newsrooms. The study reveals that while AI adoption stands at a modest 25 per cent in newsrooms, there is a central understanding of AI's purpose among journalists. However, the adoption of AI technologies remains limited, primarily driven by individual journalists rather than a unified organizational approach. This situation is contrasted with more advanced news organizations globally, where automated journalism powered by AI is more prevalent.

The research highlights the predominant use of AI in tasks such as fact-checking, content generation, and transcription, with a significant majority of journalists relying on free AI tool subscriptions due to financial constraints. Despite regular interaction with AI tools among the respondents, the impact on journalistic quality is varied, underlining the need for increased awareness, training, and institutional support for effective AI utilization in the news industry.

Building on these insights, this capstone project paper lays out a comprehensive plan to convert The Observer into an AI-driven newsroom. It assesses the current state of the newsroom's staff, processes, systems, and technologies, and envisions a digital future where AI tools play a pivotal role in revolutionizing content gathering, processing, distribution, and reader engagement. The paper delves into the potential sources and costs associated with the acquisition of Fourth Industrial Revolution technology tools, justifying the investment based on the anticipated reshaping of newsroom dynamics.

A detailed deployment plan for AI tools is outlined, encompassing an implementation strategy that considers the need for staff training and system integration. The project aims to bridge the gap identified in the research between AI awareness and its effective application, thereby enhancing the overall quality of journalism at The Observer. By projecting the potential impact of AI on the

newsroom, the product, and the company's overall performance, this paper not only addresses the current challenges but also sets a path for The Observer to become a leader in innovative journalism in Uganda and beyond.

But first, here is a look at The Observer.

The Observer website, www.observer.ug, was launched on March 23, 2003, as an offshoot of its print version, The Observer—a weekly newspaper published in Kampala. The Observer was co-founded by the maverick journalist John Kevin Aliro and nine colleagues—James Tumusiime, Ssemujju Nganda, Lindah Nabusaayi, Fideri Kirungi, Hassan Zziwa, Pius Katunzi, Carol Nakazibwe, Sarah Namulondo, and Abbey Mukibi.

Their mission is to uplift the standards of journalism in Uganda and the region by offering quality and credible content. Initially, the website was launched to inform the Ugandan diaspora, who did not have access to the physical newspaper circulating within the country's borders, about developments back home. However, the digital disruption of the print business, aggravated by the COVID-19 pandemic, has seen the e-paper become the main product, with the newsprint set to fold up in a few months.

The vision of The Observer's founders is to have the biggest digital footprint in Eastern and Central Africa by 2025. The website targets an audience of affluent, influential, and young readers (between 18 and 40 years) who consume content on mobile and social media platforms. The majority of its readers are male, at 58.52 per cent, with the majority being young adults aged between 25 and 34, according to statistics from Google Analytics.

Content—a mix of politics, business, entertainment, and sports—is updated on an hourly basis and shared on the website's social media accounts. The site's social media reach currently stands at

520,000 on X (formerly Twitter) and 330,000 on Facebook. Unique monthly visitors to the website, which runs on a freemium model, currently range between 240,000 and 290,000 (Similarweb, 2023).

Like other digital publishers in Uganda, the region, and the world, The Observer is struggling to monetize its online presence and following. It makes a combined US\$3,000 per month from display adverts, Google ad services, social media promos, and e-paper subscriptions. In the short term, the company plans to introduce a paywall and run a content subscription service, even as it ventures into native advertising. The publisher is also contemplating introducing memberships targeting its affluent readers while exploring business partnerships with leading digital newsrooms beyond Uganda.

The current state of the newsroom

The Observer is facing challenges in maintaining its relevance, adapting quickly to emerging media technologies, and developing innovative products to capitalize on the opportunities presented by its expanded online presence. Unfortunately, the publication has not allocated any financial resources towards the transformation of its digital journalism and the expansion of other information technology-based products. In contrast, its competitor, The New Vision, has invested significantly, with an investment exceeding \$4,000,000 to enhance its digital platforms and products, including websites, apps, e-papers, user experiences, ad agencies, contact centres, and augmented reality. This substantial investment was disclosed in a half-year performance report released on March 1, 2022.

The Observer's investment in new media technology per employee is almost non-existent, reflecting its overall low percentage of revenue dedicated to digital technology. This situation has led AI-savvy journalists to resort to using free subscription tools with limited functionality.

Furthermore, The Observer's journalists, who are expected to excel in storytelling across various formats, including text, audio, and video, lack essential tools provided by the organization, such as digital cameras, laptops, and voice recorders.

Currently, the online operation employs only four permanent staff members, including the website editor, while print reporters produce content, primarily in long-form text, for the website without adapting it for an online and mobile audience.

Although the website has growth potential, its design, appeal, and overall user experience remain rudimentary. It ranks sixth among 132 websites in Uganda on similarweb.com, a global web ranking service.

The newsroom's efforts to embrace digital innovation are hampered by a lack of crucial skills, financial resources, and effective leadership.

Needs Assessment

The Observer newsroom faces multiple deficiencies in its pursuit of becoming a world-class multimedia publisher in the East African region by 2025. These deficiencies span both the staff and technology aspects, affecting various stages of the journalistic process, including content discovery, content generation, content processing, content distribution, and audience engagement.

The Observer lags behind its Ugandan competitors in discovering and breaking news, which has led to a focus on long in-depth and analytical articles rather than fresh information. To gain a

competitive edge, the publisher needs technology and tools that can uncover breaking and trending content, allowing its editorial team sufficient time to process and package it effectively.

As a small operation, The Observer lacks sufficient reporters to cover all topics, and many are still assigned mundane and repetitive tasks that could be streamlined with technology. Currently, reporters spend hours transcribing and translating audio recordings into text and English, respectively, before writing their articles. The newsroom lacks technology that could automate time-consuming tasks like transcription, text-to-speech conversion, and data-driven reporting, such as match, weather, and stock market reports. While a few journalists use AI for tasks like fact-checking, content generation, and transcription, the majority rely on free AI tool subscriptions, which have limited functionality, due to financial constraints.

Editors also face challenges with manual and analogue fact-checking, particularly for breaking news stories on social media. The lack of technological tools for content verification has led to wasted resources chasing fake stories. Additionally, content packaging takes longer due to manual processes, including headline writing, editing, and closed captioning. This inefficiency affects the timely distribution of content.

The Observer also blindly pushes out content without considering its audience's preferences, devices, and timing, resulting in underperforming stories. The newsroom lacks real-time traffic measurement tools, preventing editors from capitalizing on successful content. Furthermore, the publisher lacks insights into its audience's demographic and psychographic composition, hindering content personalization and engagement efforts. Responding to customer feedback on platforms like Facebook, X (formerly Twitter), and article comment sections has been challenging due to resource constraints.

To address these issues, The Observer needs technology and tools to improve communication with clients, provide speedy responses to inquiries, suggestions, and complaints, and enhance user experience. Additionally, training its editorial staff in new media technologies, including artificial intelligence, is crucial for surviving in the digital future. Effectively deployed AI can help address the human, journalistic, and technological challenges facing The Observer website and newsroom. To begin, let's explore the introduction and workings of AI.

Introduction and rollout of AI at The Observer

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems (Burns, Ed, 2021). It is the ability of machines to do things that people would say require intelligence. In simple terms, AI is a machine, device, robot or tool that is powered by software programmed to display the characteristic reasoning and thinking patterns of humans. To date, these machines have achieved specific purposes by reacting to specific actions according to how they have been programmed— that is, the data sets that they have used as learning material (Mahajan, 2022)

In general, AI systems work by ingesting large amounts of labelled training data, analyzing the data for correlations and patterns, and using these patterns to make predictions about future states.

In this way, a chatbot, for instance, fed with examples of text chats can learn to produce lifelike exchanges with people, or an image recognition tool so that it can learn to identify and describe objects in images by reviewing millions of examples. AI requires a foundation of specialized hardware and software for writing and training machine-learning algorithms. No single programming language is synonymous with AI, but a few— including Python, R and Java— are popular.

AI programming revolves around three core cognitive skills: learning, reasoning, and self-correction. Learning processes in AI are centred on acquiring data and crafting algorithms that translate this data into actionable information, offering step-by-step instructions for specific tasks. Reasoning processes entail the selection of the appropriate algorithm to achieve desired outcomes. Self-correction processes are integral, and designed to continually refine algorithms to ensure maximum accuracy. Noteworthy applications of AI encompass expert systems, natural language processing, speech recognition, and machine vision, demonstrating the breadth of its impact across various domains.

The deployment of Artificial Intelligence (AI) in newsrooms is gaining prominence worldwide, with the technology being used to enhance the processes of newsgathering, packaging, and distribution (Kioko, 2022).

Newsrooms worldwide have increasingly embraced AI as an indispensable ally in the field of journalism. AI is playing a pivotal role in aiding journalists and editors in the generation of fresh content and its efficient dissemination. Beyond the confines of newsrooms, AI is contributing to the expansion of digital advertising and subscription services within the industry. This growing adoption of AI is accompanied by a surge in experimentation among news publishers, with primary areas of interest revolving around content discovery, processing, and packaging, as well as the delivery of more personalized and captivating content. Additionally, AI is actively employed in enhancing audience engagement and improving the overall user experience. Furthermore, news organizations are leveraging AI to streamline operations and reduce costs through intelligent automation, ultimately fostering efficiency. Finally, AI is being harnessed to explore innovative avenues for generating new revenue streams within the journalism landscape.

AI tools and models applicable to The Observer

The needs assessment conducted reveals the potential for AI tools to catalyze a transformation in The Observer's journalistic and newsroom workflows. Spanning across various facets of the news production process, from content discovery to processing, packaging, delivery, and audience engagement, the integration of a diverse range of AI tools and models holds the promise of significantly enhancing speed, precision, operational efficiency, and cost-effectiveness within the resource-constrained newsroom. To empower The Observer's reporters to effectively navigate the rapidly evolving digital information landscape, the newsroom's imperative is to leverage AI-enabled tools for the dissemination of news alerts, with Dataminr Pulse standing out as a noteworthy example. Developed by New York-based Dataminr Company, this tool is employed by numerous organizations, including media houses, for real-time event monitoring and crisis response. Dataminr Pulse offers valuable functionalities such as playbooks, messaging tools, and post-event documentation to facilitate efficient crisis management. Notably, Dataminr conducts social listening, continuously monitoring for breaking news and information across platforms like X (formerly Twitter), and subsequently sends automated alerts to subscribers via email, enabling timely actions. Additionally, it is worth mentioning that other AI tools, such as Google Alerts/Page Updates and Meltwater (a product of Ghana B.V and Meltwater Us Holdings Inc.), serve a similar purpose in delivering real-time news updates and monitoring relevant online content. The integration of these AI-driven tools is poised to elevate The Observer's capabilities in staying abreast of current events and delivering news to its audience with unprecedented agility and accuracy.

Upon receiving such alerts, The Observer can harness AI tools to authenticate and process stories. To ensure the credibility of photos shared on X (Twitter) and viral videos on YouTube, reporters

can utilize Google Image Reverse Search and YouTube Data Viewer by Amnesty International, respectively. These two tools comb through online databases and employ pixel analysis to identify images and videos associated with previous events, to debunk misinformation.

Once verified, reporters can further leverage AI-powered content processing tools to transcribe interviews and convert audio/video content into text. This toolkit includes Otter.ai for audio transcription and Descript for video transcription.

While many online news stories still adhere to a traditional print newspaper format, the preferences of The Observer's digital audience lean towards social media updates, email bulletins, or voice briefings via smart speakers. To bridge this gap, The Observer can harness AI's language model. This involves inputting a block of text and transforming it into abstract summaries tailored for various platforms and devices.

For example, the model can generate a concise social media headline, a brief email update, and bullet points for a voice briefing. This technology also offers the potential for automating image galleries, reducing the time-consuming process of manually selecting images. Extractive summarization proves valuable in this context, as the language model scans text to extract key points. These extracted entities serve as keywords, which are then employed in conjunction with artificial intelligence to search the image repository for the most relevant visual matches based on the given text.

AI technology can significantly enhance the process of labelling photos, videos, and graphics. For instance, in 2017, the Associated Press successfully integrated computer vision AI to annotate nearly 4,000 daily photos for its editors. This initiative aimed to augment image metadata by identifying elements like individuals, emotions, actions, and colours, consequently enhancing search precision and streamlining automated content publication (Myles, 2019). Implementing an

off-the-shelf solution for such a project could be advantageous for The Observer, mitigating the risk of errors, grievances, and potential legal repercussions.

Given The Observer's lean newsroom, AI tools like Copymatic.ai and Grammarly offer the potential to automate the creation of data-intensive stories. These tools excel in producing content rich in factual information, such as financial news updates and sports coverage, while also detecting trends and anomalies that may signal noteworthy stories. Leveraging these tools would allow journalists to concentrate on more intricate or significant narratives, areas where human journalists excel, requiring creativity, intuition, and critical thinking.

AI plugins can further simplify the process of translating articles into multiple languages, streamlining operations for a predominantly English-serving publication like The Observer.

Headlines are pivotal for online content performance, as most readers engage only after encountering a compelling title. Content producers at The Observer can benefit from employing tools like Chartbeat, which enables real-time headline testing. Developed by Chartbeat Company, a New York-based technology firm providing data and analytics to global publishers, this tool not only evaluates headline strength but also offers suggestions for improvement. Post-publication, Chartbeat enables editors to monitor real-time content performance, providing valuable insights such as readership numbers, retention, recirculation, story spikes, and flagging. These metrics inform content managers on where to focus their efforts, optimizing resource allocation. Additional AI tools like Google Analytics, Content Insights, and Google Data Studio can offer real-time or delayed analytics.

Analyzing big data metrics from these tools can uncover the digital personas of readers, including demographics and psychographics, facilitating targeted content delivery instead of blind publishing. Effective content targeting plays a pivotal role in boosting readership and engagement.

Simultaneously, The Observer can enhance content performance by investing in AI content personalization tools such as Google Optimize, Yieldify, Sleeknote, or Personyze. These platforms can be configured to identify topics of prior interest to readers, thus enriching the overall user experience.

On the editorial front, factors like editorial value, publication date, and editorial tags should be considered. The focus should not solely be on past reader views but on using patterns to suggest topics that may pique reader interest, marking algorithms as the future of content curation.

Tailoring content to align with user interests has the potential to significantly enhance user engagement, reduce bounce rates, and boost conversion rates.

Ultimately, to enhance customer experience, The Observer should maintain continuous engagement with its audience. Given its lean team, investing in AI tools for user engagement, including a chatbot, could be transformative. This bot, akin to an office assistant, could be programmed to provide automated responses to data-driven queries and inquiries, such as content suggestions. Similar algorithms could be employed for moderating reader comments on the website and streamlining community interaction and management.

ChatGPT, a variant of the GPT (Generative Pre-trained Transformer) model developed by OpenAI, presents a novel opportunity to revolutionize newsroom processes, enhancing efficiency and innovation in several key areas. ChatGPT's capacity to generate coherent and contextually relevant text proves invaluable in the initial stages of news article creation, particularly when time constraints are a factor (OpenAI, 2023). Journalists can employ ChatGPT to draft preliminary reports or articles, subsequently refining and fact-checking them. This not only saves time but also empowers journalists to focus more on in-depth reporting and investigative journalism (OpenAI, 2023). Additionally in an era that places increasing importance on personalized content, ChatGPT

can analyze reader preferences and recommend tailored content. By comprehending user engagement patterns, it aids in curating news stories likely to resonate with specific audience segments, thereby enhancing reader engagement and satisfaction (OpenAI, 2023). ChatGPT can also automate routine journalistic tasks, such as creating news briefs or updating reports with new data (OpenAI, 2023). This automation liberates journalists from repetitive duties, affording them more time for intricate storytelling and investigative work. Integration of ChatGPT into digital news platforms enables interactive experiences, including real-time Q&A sessions for readers to receive instant responses to their queries about news stories (OpenAI, 2023). This interactivity significantly improves reader engagement and enhances the overall user experience.

For newsrooms seeking a broader global audience, ChatGPT can aid in translating content into various languages, breaking down language barriers and expanding audience reach (OpenAI, 2023). While ChatGPT offers numerous advantages, newsrooms must address challenges such as ensuring the accuracy of AI-generated content and tackling ethical concerns related to AI's use in journalism. Maintaining editorial oversight and implementing rigorous fact-checking protocols are crucial to ensuring the reliability of AI-assisted content (OpenAI, 2023).

In conclusion, ChatGPT presents a promising tool for newsrooms, offering efficiency, personalization, and interactivity. However, its successful integration necessitates a careful balance between harnessing AI capabilities and upholding journalistic integrity and ethical standards.

Sources and cost of AI tools

The Observer, like many newsrooms in the Global South, lacks the internal technological capacity to develop custom AI solutions. Consequently, it must explore options such as outsourcing, subscribing to, or purchasing off-the-shelf solutions available in the market.

As outlined in earlier discussions, the newsroom requires various AI solutions, encompassing natural language processors, content recommendation engines, and machine learning tools for comment moderation. Given its status as a newcomer with limited AI technical expertise among staff and consumers, The Observer would prioritize user-friendly tools in its selection process.

Table: AI Tools and Sources

	Tool	Function	Supplier	Cost/ User (s) /Year
1.	Dataminr	News Alerts	Dataminr, USA	
2.	Google Alerts	Alert service / Page Updates	Google	Free
3.	Meltwater	Alert service	Meltwater Ghana B.V., Meltwater Us Holdings Inc.	Variable
4.	Otter.ai	Audio transcription	Otter.ai Inc, USA	Basic: Free Pro: \$9 Enterprise: \$240
5.	Descript	Audio / video transcription / editing	Descript, USA	Basic: Free Creator: \$12 Pro: \$24
6.	Google ImageReverse	Image verification	Google	Free
7.	YouTube Data Viewer	Video verification	Amnesty International and	Free
8.	Copymatic	Copy and content generator	Copymatic.ai	Enterprise: \$588

9.	Chartbeat	Real-time content performance monitoring	Chartbeat	Enterprise: \$7,000
10.	Google Analytics	Data analytics	Google	Basic: Free Premium: \$150,000
11.	Content Insights	Data analytics	SmartOcto, Serbia	Variable
12	Socialpilot	Social Media Management / Marketing	SaaS, USA	Professional: \$25.50 Small Team: \$42.50
13.	Google Optimize	Content Personalization	Google	Basic: Free Premium:
14.	Yieldify	Content Personalization	Yieldify Inc.	Variable.

Justification for AI adoption by The Observer

Current journalism trends and the future of newsroom technologies support The Observer's move towards adopting AI, as the Ugandan publisher strives to become a world-class multimedia news outlet. AI's increasing prominence in newsrooms worldwide (De Sibandze, 2019) demonstrates that early adopters are gaining a competitive edge in journalism, content marketing, user experience, and customer engagement.

In the Global North, traditional media houses like The New York Times and The Guardian, which have embraced AI, have undergone significant reorganization and modifications. These changes have not only helped them survive the digital disruption but have also enabled them to return to profitability.

At The New York Times, the transformation of newsroom processes, field operations, newsgathering, packaging, dissemination, and customer engagement has facilitated the publisher's expansion into new territories. For the fourth quarter of 2021, for example, the company reported an adjusted operating profit of \$109.3 million, a 12 per cent increase from a year earlier, and revenue of \$594.2 million, a 16.7 per cent rise. Subscription revenues, driven by AI technologies, rose about 11 per cent, to \$351.2 million. For the year, revenue grew 16.3 per cent, to \$2.1 billion — making 2021 *The Times's* first \$2 billion year since 2012 (New York Times, 2022). According to Zayani, 2021, traditional media houses that have integrated and used AI-based news production solutions reported improvements in producing accurate and objective news items.

The Observer has investigative and data journalists and to compete favourably, they must use AI technologies like bots and drones with facial recognition to collect data and evidence from safe distances.

AI is instrumental in driving management, efficient interrogation, and integration of data-driven analyses and visual storytelling in newsrooms (Mutsvairo et al., 2020). Therefore, with data visualization and presentation, *The Observer* could develop single graphic templates that automatically replicate, revise and repost visual content based on prevailing news ecosystems.

The Observer should consider adopting AI, as traditional approaches to journalism are becoming not only ineffective but also cost-prohibitive. Reflecting on past journalistic practices, significant resources were once allocated to cover major events. For example, during the period of the Late Pope John Paul II's deteriorating health between 2003 and 2004, major international media outlets like The Guardian rented premises within Vatican City for over seven months to promptly report on the Pope's passing (The Guardian, 2003).

Although The Guardian and its counterparts achieved their objective on April 2, 2005, the financial cost of this coverage was substantial. Today, the UK-based publisher has turned to AI tools to monitor health statuses and other significant developments more economically and effectively in the lives of prominent figures globally. Similarly, *The Observer* can use flagging alerts and robotic journalists (bots) to scan social media and other news platforms to map potential breaking news (Carlson, 2015; Schapals & Porlezza, 2020).

The cost of developing or buying, implementing, and managing AI for a small newsroom like *The Observer* is very high but research and trends show it pays off in the long term. While the initial investment is high, there are opportunities for AI adoption on budget through the use of free tools and models as listed elsewhere in this essay (*refer to the section on sources and cost of AI*).

AI has been billed as one of the technologies that will see news publishers survive digital disruption. It therefore means *The Observer* and other publishers facing financial constraints and a shrinking market need to adopt the technology as a possible lifesaver. AI has its own pitfalls that managers at *The Observer* should mitigate against, including ethical concerns that have been raised by researchers. AI tools, for instance, can make mistakes that originate from biased data used to train their algorithms since the outcome of the AI models is only as good as the input data,

(Marconi, 2020). The reproduction of these biases in the news content may carry potential financial, legal, and social liabilities.

Introduction plan and deployment of AI tools

The integration of AI into The Observer's newsroom should be a phased approach designed to address various needs and opportunities. In Phase One (Months 1-2), a comprehensive needs assessment should be conducted to identify specific areas where AI can be most beneficial, including streamlining journalistic processes and staff training in new media technologies.

An AI cross-functional team should be formed, the team should include AI specialists, data scientists, software developers, journalists, editors, managerial, advertising and sales staff. This team should be persuaded to support and drive the AI deployment, avoiding a top-down dictatorial style.

Moving to Phase 2 (Months 3-6), AI-powered tools for content generation and editing will be implemented, with journalists and editors receiving training to use these tools effectively. A workflow for collaborative content creation involving AI and human journalists will be established. To identify relevant AI tools, case studies and competitor analysis (New Vision and Daily Monitor) will be conducted. Industry conferences and events will provide insights, while technological feasibility and compatibility will be evaluated.

Phase 3 (Months 7-10) focuses on audience engagement and personalization, deploying AI-driven tools to enhance reader interactions and deliver tailored content. Continuous monitoring and analysis of user engagement metrics will fine-tune AI algorithms.

In Phase 4 (Months 11-12), ethical guidelines for AI in journalism will be developed and implemented, with regular quality assurance checks to ensure content accuracy and ethical standards. Feedback from staff will be encouraged to address concerns.

The budget proposal should cover AI software, staff training, and necessary hardware upgrades, with potential funding sources identified. The benefits of AI integration include faster content production, improved data-driven journalism, enhanced reader experience, increased advertising revenue, and competitiveness in the evolving media landscape.

The cost of AI tools and solutions can vary depending on the specific functionalities and providers. Many newsrooms in the Global South, may need to outsource or purchase off-the-shelf AI solutions due to limited internal technological capacity. It is essential to consider user-friendly tools suitable for beginners with low AI technical expertise. Subscription costs for AI tools can vary, and careful evaluation should be conducted to determine the most cost-effective options for The Observer. Risks, such as job displacement and ethical concerns, will be proactively addressed through training and guidelines.

Pilot testing and proof of concept will allow for practical assessment, followed by a cost-benefit analysis to determine the return of investment, ROI. Implementation will be accompanied by continuous monitoring, data analysis, and the development of actionable recommendations. It is crucial for managers at The Observer to initially integrate AI within a single section, desk, or unit. This gradual approach allows for careful observation and adjustment before implementing AI across the entire newsroom and organization.

The company must also prepare its staff for this new environment by providing training in AI and its applications. The human resources department should play a key role in redefining and realigning roles and positions to align with the company's new objectives.

After AI has been implemented, management must actively monitor progress, particularly focusing on identifying and addressing any weaknesses. Tracking employee behaviour, including sentiments, reactions, and proficiency in using AI systems, is essential to measure the success or challenges of the project.

In conclusion, The Observer's AI integration strategy positions the newspaper for success in the digital age while upholding its commitment to high-quality journalism.

Expected impact on newsroom.

The conversion of The Observer into an AI-enabled newsroom promises to significantly transform its processes, staff, products (www.theobserver.co.ug), and ultimately, the entire company. On the journalistic front, AI will elevate the publisher's content quality, efficiency, and output. Utilizing AI tools from content discovery to generation, processing, packaging, and delivery will not only ensure factual and in-depth content but also its optimal presentation in terms of format, device compatibility, location, and timing (Diakopoulos, 2019).

AI's role in information verification will bolster The Observer's credibility, minimizing litigation costs and enhancing reader trust. This technology positions The Observer as a central news source for smaller outlets, mirroring the RADAR (Reporters and Data and Robots) project. RADAR, employing a team of data reporters and editors, produces thousands of local stories monthly across

the UK, utilizing open government datasets and automation to adapt content for local relevance (Diakopoulos, 2019).

The Observer can leverage this model to increase revenue from smaller outlets, expand its audience, and optimize costs by sourcing data from free government databases like the Uganda Bureau of Statistics. Additionally, AI will enable The Observer to become a data hub, offering structured statistics to various entities, including government agencies, investors, and NGOs.

Internally, AI will improve data management, a crucial but challenging aspect of journalism. AI tools can organize and manage data on sales, business performance, and newsroom sources. With a subscriber database, AI can generate insights into clients' content preferences, enhancing content delivery strategies.

In 2020, the BBC launched an AI-powered synthetic voice developed with Microsoft, using deep neural networks for natural-sounding speech (BBC, 2020). This innovation can open new markets for The Observer, catering to audiences who prefer audio content, including those with reading challenges.

From a financial perspective, The Observer, currently facing survival challenges, could significantly reduce and optimize expenditures through AI. Implementing a virtual, remote, and distributed newsroom can reduce costs related to rental space and transport. This approach enables the recruitment of top global talent, following the model established by companies like Google.

In conclusion, the integration of AI into The Observer's operations offers a plethora of benefits, including improved journalistic standards, expanded revenue streams, enhanced data management,

and cost optimization, positioning the news outlet for success in the digital age (Diakopoulos, 2019; BBC, 2020).

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APPENDICES

Appendix A: Questionnaire Guide for Journalists

1. Age (18-24, 25-30, 31-36, 37 and above)
2. Gender (Male, Female, other)
3. Media House (The Observer, Daily Monitor)
4. Size of newsroom (-5-10, 11-20, 21-30, 30 and above)
- 5. Part 1: Demographics**
6. What is your role in the newsroom? (Editor, Reporter, Data Analyst, Other)
7. How many years have you been working in the print journalism industry?
- 8. Part 2: Current Level of AI Adoption**
9. Is your newsroom currently using any form of AI technologies? (Yes/No)
10. If yes, for how long have you been using AI technologies? (Less than 6 months, 6-12 months, 1-2 years, more than 2 years)
11. Which areas of your newsroom have seen AI integration? (Content Generation, Data Analysis, Fact-Checking, Personalization, Other)
12. What version of Ai do you use? (Premium, Free version)
13. Who pays for the ai? (My Media house, I am on a free subscription, I am on a shared version with a friend, I pay for myself)
- 14. Part 3: Adoption Trends and Influencing Factors**
15. What motivated the adoption of AI technologies in your newsroom? (Choose multiple if applicable: Efficiency, Quality, Competitive Advantage, Innovation, Other)
16. What barriers have you encountered in adopting AI technologies? (Cost, Technical Expertise, Ethical Concerns, Lack of Understanding, Other)
17. How do you think AI adoption in your newsroom compares to global norms? (Ahead, At par, Behind)
- 18. Part 4: Impact of AI on Workflow Efficiency**
19. Has the integration of AI led to increased workflow efficiency? (Significantly Increased, Moderately Increased, No Change, Decreased)
20. What specific tasks have seen the most improvement due to AI? (Data gathering, Content creation, Editing, Distribution)

21. Part 5: Impact on Journalistic Quality

22. Do you believe AI has had an impact on the quality of journalism your newsroom produces? (Significantly Improved, Moderately Improved, No Change, Decreased)

23. How has AI impacted the depth and breadth of topics covered?

24. Part 6: Ethical Considerations

25. Are there ethical guidelines in place for the use of AI in your newsroom? (Yes/No)

26. Have you encountered any ethical dilemmas since the adoption of AI? (Yes/No)

27. If yes, can you describe the nature of ethical dilemmas? (Bias, Transparency, Accountability, Other)

Appendix B: Interview Guide for Editors

Objective I: Assess the Current Level of AI Adoption in Print Journalism in Uganda

1. Can you describe the current state of AI technology integration in your newsroom?
2. What specific AI technologies or tools are currently in use?
3. How would you describe the overall readiness of your newsroom for AI adoption?

Objective II: Analyze Adoption Trends and Influencing Factors

4. What were the driving factors behind the decision to adopt AI technologies in your newsroom?
5. Have you faced any barriers or challenges in adopting AI technologies? If so, what were they?
6. How would you compare the pace and nature of AI adoption in your newsroom with the industry at large, both within Uganda and globally?

Objective III: Workflow Efficiency

7. Has the integration of AI technologies had any impact on the efficiency of news production workflows?
8. Can you provide some specific examples of how AI has streamlined processes or tasks in the newsroom?

Journalistic Quality

9. How has the use of AI technologies affected the quality of the journalism your newsroom produces?
10. Are there specific areas, like investigative journalism or data reporting, where you think AI has had a particularly strong impact?

Ethical Considerations

11. Are there ethical guidelines or policies in place for the use of AI technologies in your newsroom?
12. Can you describe any ethical dilemmas or challenges you've encountered related to the use of AI?

General Questions

13. What future developments do you foresee in the use of AI technologies in print journalism in Uganda?
14. How can newsrooms, educational institutions, and regulators collaborate to address the challenges and opportunities presented by AI?
15. Do you have any other comments or insights you'd like to share about the role of AI in print journalism?



THE AGA KHAN UNIVERSITY
Graduate School of Media and Communications

REF: AKU-GSMC/ERC/2023/EMMLI 0023

Date: November 13, 2023.

Dear Robert Mukasa (Student No. 580166)

**RE: EXAMINING THE ROLE OF ARTIFICIAL INTELLIGENCE (AI)
IN TRANSFORMING PRINT JOURNALISM IN UGANDA**

This is to inform you that Aga Khan University – Graduate School of Media and Communications Ethics Review Committee has reviewed and approved your above research proposal. Your approval period is November 13, 2023, to November 12, 2024, and your application's approval number is AKU-GSMC/ERC/2023/EMMLI 0023.

This approval is subject to compliance with the following, under the supervision of your two supervisors:

1. Only the approved documents including the informed consent form and the data collection instruments will be used.
2. Any changes, made on the approved documents that may increase the risks or affect the welfare or safety of the participants or compromise the integrity of the study must be reported to GSMC within the shortest time possible. The amended documents will be taken through a fresh review and the due process of approval.

3. In the event that the research cannot be completed within the one-year approved period, the researcher will request for renewal of approval 30 days prior to the end of the approved period.
4. The researcher will be required to submit a comprehensive progress report when applying for renewal of approval.
5. Submission of an executive summary report to the GSMC's Ethics Review Committee within 90 days of completion of the study.
6. Produce all the data collected using the approved tools as and when required by the Ethics Review Committee within the 90 days of completion of your study. Prior to commencing your study, you will be required to obtain a research permit and other relevant documents from the appropriate regulatory body in your country.

Please feel free to contact me should you require any further information.

Yours sincerely,



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