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Impact AI Integration into Institutional Culture: Evidence from Uganda's Public and Private Sectors

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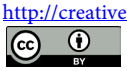

Abstract

The rapid integration of Artificial Intelligence (AI) into organizational frameworks is transforming the operational cultures of institutions worldwide. This study investigates the effect of AI adoption on the operational culture of selected private and public institutions in Uganda. Utilizing a mixed-methods research design, data was collected from 89 respondents through online surveys and structured questionnaires, analyzed using statistical techniques and thematic analysis. Findings revealed that a majority of respondents possess an intermediate level of familiarity with AI technologies, indicating a transitional phase towards comprehensive AI integration. AI adoption has been predominantly associated with enhanced operational efficiency, increased productivity, improved decision-making, faster service delivery, and better data management within these institutions. However, a subset of institutions reported negligible improvements, highlighting challenges such as inadequate training, technical issues, and resistance to change. The study underscores the necessity for tailored implementation strategies that address these challenges through targeted training programs, investment in robust technical infrastructure, and effective change management initiatives. By addressing these factors, Ugandan institutions can foster an adaptive and efficient operational culture, thereby maximizing the benefits of AI adoption and paving the way for sustainable innovation. This research provides valuable insights for policymakers, administrators, and stakeholders aiming to optimize AI integration within diverse organizational contexts in Uganda.

*The first two authors contributed equally in the citation.

Keywords

Artificial Intelligence (AI), Operational Culture, Uganda, Efficiency, Change Management

1. Introduction

The operational culture of private and public institutions has historically evolved through a complex interplay of cultural, social, and technological influences [1]. In recent years, the adoption of artificial intelligence (AI) has emerged as a significant driver of this evolution, enabling institutions to automate processes, enhance decision-making, improve service delivery, and streamline operations [2] [3]. However, while AI offers substantial opportunities for boosting efficiency, it also challenges traditional organizational structures and practices, particularly in how decisions are made, workflows are structured, and teams interact. Specifically, the influence of AI on traditional decision-making processes, workflow structures, and interpersonal dynamics within organizations has sparked ongoing debates within governments and United Nations agencies such as the World Health Organization [4], the International Telecommunication Union (ITU), and the World Intellectual Property Organization (WIPO). This is particularly pertinent in Uganda, where institutions are increasingly incorporating AI into their operations.

Africa's private and public institutions, including Uganda, are experiencing a rapidly evolving landscape of AI adoption, with applications spreading across key sectors such as healthcare, agriculture, finance, and education. These advancements highlight AI's potential to drive efficiency, innovation, and inclusivity [1] [5]. In Uganda, the adoption of AI technologies by different institutions varies significantly, reflecting disparities in technological capacity, resources, and readiness. This diversity creates a dynamic environment in which the impact of AI manifests differently across sectors, further demonstrating the importance of context-specific analysis [6]. The introduction of Generative AI technologies, such as ChatGPT, Google Bard, and Microsoft Bing in late 2022, has led to substantial changes in operational practices within many institutions. These tools have redefined traditional administration, service delivery, and decision-making methods, challenging their relevance and adaptability [7]. While some institutions, particularly universities and larger organizations, have actively embraced AI to improve efficiency and support decision-making, others face challenges in adoption due to limited resources and technological barriers [8]. This dichotomy highlights a growing digital divide within Uganda's institutional landscape.

This study investigates the impact of AI adoption on the operational culture of selected private and public institutions in Uganda. It focuses on how AI influences

decision-making, service delivery, and internal dynamics and seeks to understand both the benefits and challenges of AI-driven change. This context-specific analysis is essential for stakeholders aiming to implement AI technologies sustainably and inclusively.

The study is guided by the following research questions:

1) How has the adoption of AI technologies reshaped the operational culture in selected private and public institutions in Uganda?

2) What measurable shifts in institutional practices have occurred after AI-driven tools were introduced?

3) What fundamental challenges have affected the adoption of AI driven tools?

2. Methodology

This study employed a mixed-methods research design that combined quantitative and qualitative techniques to investigate the impact of AI adoption on the operational culture of selected Private and Public Institutions in Uganda. This method captures both statistical patterns and individual experiences, enabling a more nuanced understanding of the phenomenon.

Institutional staff were purposively reached out to through online data collection tools and provided their insights on the topic of study. With a total sample size of 89 respondents informed by education level and work experience, they shared their responses, which were stored in a centrally created repository.

Qualitative data collection techniques employed the use of structured questionnaires to collect data on the use of AI, its perceived benefits, and its effects on the culture of AI adoption.

In order to investigate the relationships between the adoption of AI and the operational culture of private and public institutions in Uganda, descriptive data analysis was performed using R programming. Relationship validation was informed by both chi-square tests and logistic regression for future prediction. To add depth to the quantitative findings, a thematic analysis of interview transcripts was conducted. This analysis identified recurring themes and patterns, enabling a comprehensive exploration of how AI adoption influences operational culture.

3. Findings & Discussion

3.1. Demographic Information

The survey attracted 89 participants, 34 female (38.2%) and 55 male (62.8%), particularly from education (28%), health care (39%), government (9%), and others (19%) industries.

3.1.1. Age Distribution of Participants

Figure 1 shows that the majority of participants fall within the 31 - 40 age group, accounting for the highest count, as represented by the green bar. This age group had approximately twice the number of participants compared to the 21 - 30 group, and significantly more than the 41 - 50 age group, shown in blue. The

age distribution shown in the chart suggests that the adoption and impact of AI on the operational culture in Ugandan private and public institutions may be most relevant to the 31 - 40 age group, who are the majority among the respondents. This age group likely represents mid-career professionals who are actively engaged in shaping and adapting to technological changes within their institutions. As such, they may have a strong influence on the adoption of AI technologies and could be more responsive to changes in operational culture driven by AI.

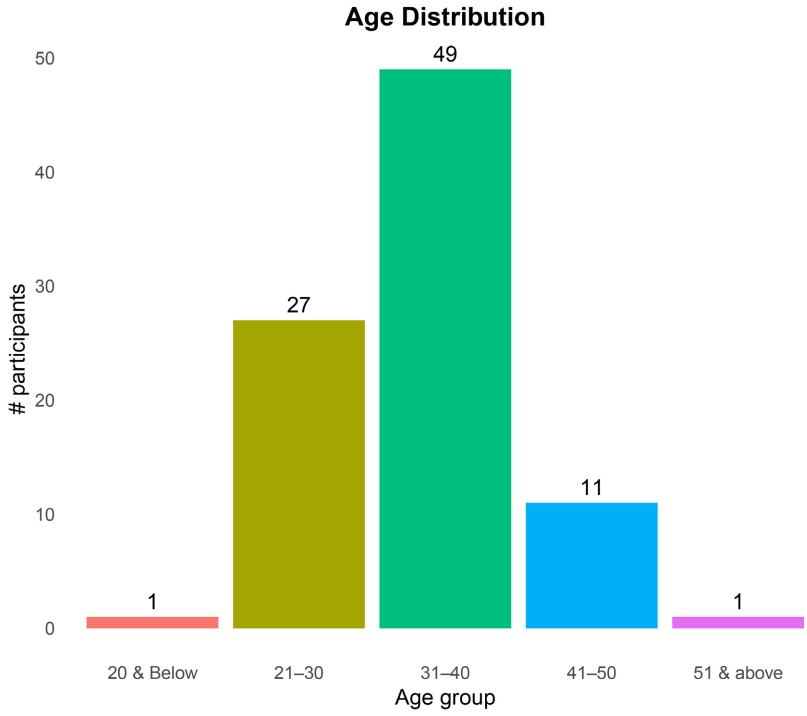

Figure 1. Age distribution of respondents.

In contrast, the 21 - 30 age group, while also significant, might include early-career professionals or new graduates who are more accustomed to technology but may have limited decision-making authority concerning the adoption of AI. The smaller representation of the 41 - 50 age group might reflect a cohort that, while experienced, may face more challenges in adapting to AI-driven changes or could be less involved in implementing AI-related initiatives within their organizations.

This distribution suggests that the study might focus more on the perspectives of the mid-career demographic, particularly in understanding how they perceive and implement AI in ways that shape institutional culture.

3.1.2. Participants Distribution Per Institutional Category

Figure 2 indicates that the study revealed that participants from private institutions were 53, accounting for 60% of the sample. Participants from public institutions were 35, accounting for 39% of the sample, while there was only one partic-

ipant falling in an institution categorized as "Public, Private" (*i.e.*, a civil society organization with characteristics of both public and private entities).

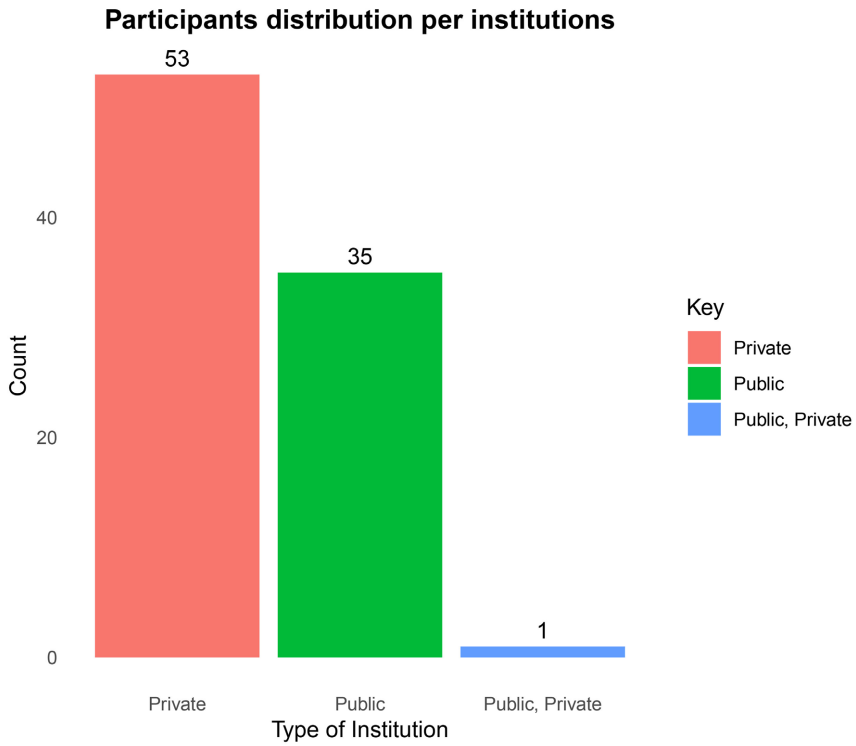

Figure 2. The distribution of participants from various types of sampled institutions.

This distribution suggests that private institutions are more actively engaged or accessible for studies on AI adoption in Uganda, potentially indicating a stronger interest or capacity to invest in technological innovations like AI. The limited representation of public institutions may reflect differences in resources, priorities, bureaucracy or structural readiness to adopt AI technologies compared to their private counterparts. The presence of a single mixed-type institution highlights the limited but potentially growing role of organizations with both public and private characteristics in adopting and operationalizing AI.

3.1.3. Familiarity with AI Technologies in Private and Public Institutions

The results showed respondents (staff of selected private and public institutions in Uganda) had limited knowledge on AI technologies. **Figure 3** shows the distribution of AI Familiarity levels, where the majority of respondents are in the Intermediate category (45), whereas 27 are at the Beginner level, and 17 are at an Advanced level.

This suggests that although AI technologies have advanced rapidly, only a small proportion of users possess sophisticated skills. The intermediate level of familiarity shows that many organizations are in the development phase, where employees and leaders are learning the skills necessary for an eventual fully-integrated AI Workflow.

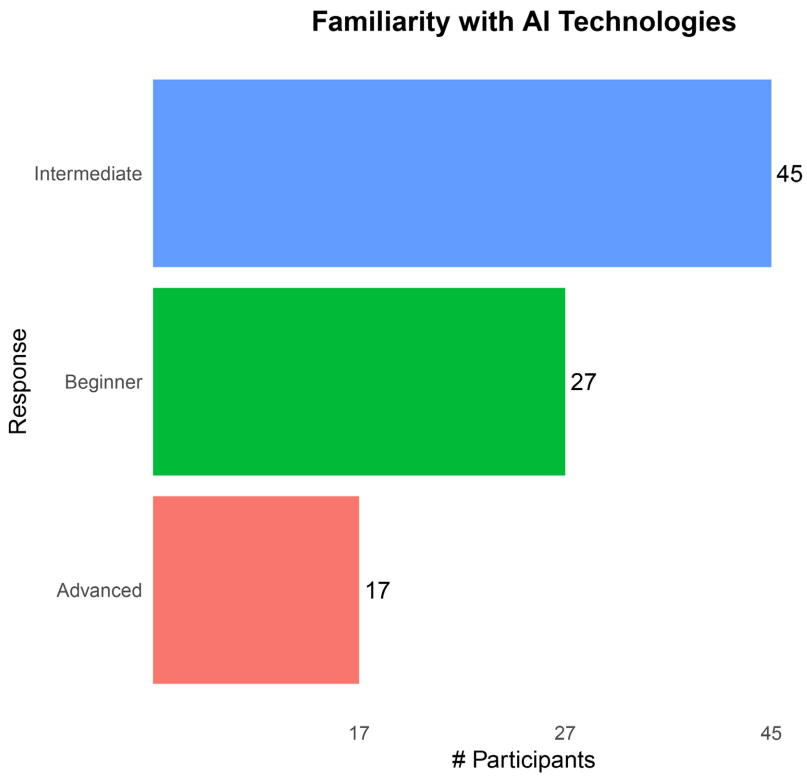

Figure 3. AI familiarity among employees in the selected public and private institutions in Uganda.

3.2. How the Adoption of AI Technologies Has Reshaped the Operational Culture in Selected Private and Public Institutions in Uganda

The distribution in Figure 4 below shows that the majority of respondents report that their operations have improved due to the adoption of AI, specifically:

Significantly Improved: More than 40% of respondents stated that AI has significantly improved operational efficiency. This reveals strong positive feelings about the effectiveness of AI in improving efficiency and increasing productivity.

Somewhat Improved: Another 40% reported that AI has somewhat improved their operations, indicating a moderate level of benefit perceived by the majority of respondents.

Minor groups (No Impact, Slightly Hindered, Significantly Hindered): A small minority noted no impact or hindrance to operations. This indicates that although the overall impact of AI is positive, some respondents found integration challenging or did not provide significant benefits.

Research findings indicated that AI is generally seen as a transformative tool within the operational structure of institutions in Uganda. This is in line with the global trend towards increasing the operational efficiency of AI. This positive reception may be a result of AI's role in automating routine tasks and improved data analysis and decision-making. Despite its potential, the data suggests that tailored implementation strategies are required for institutions to fully realize AI's benefits.

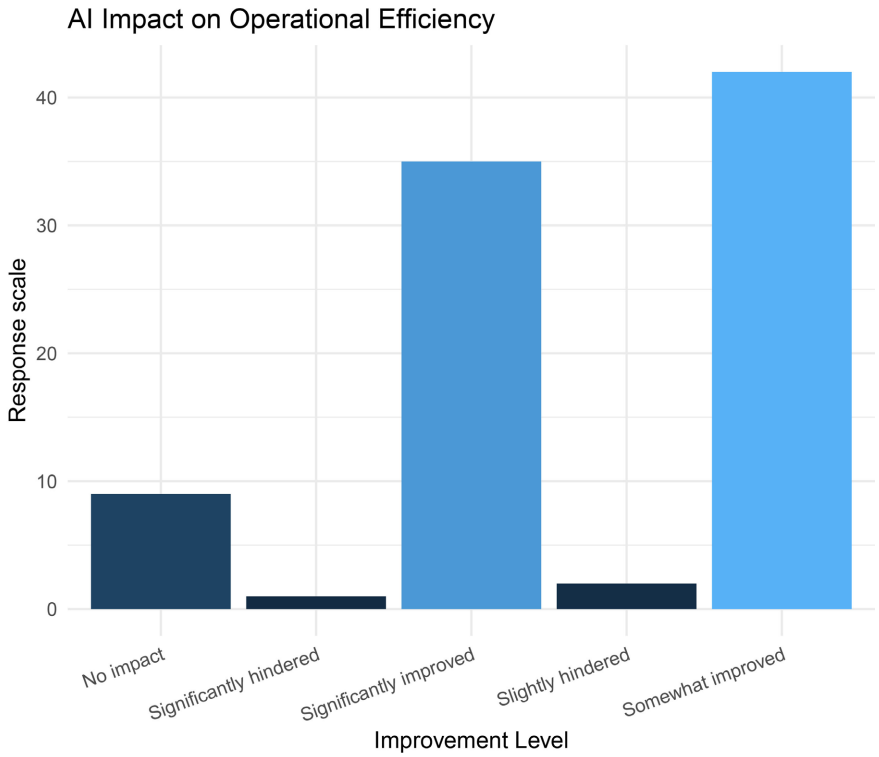

Figure 4. The perceived impact of AI on the efficiency of operations among respondents from selected private and public institutions in Uganda.

3.3. Shifts in Institutional Practices after AI Adoption

The findings from the data, as illustrated in Table 1 below, indicate various degrees of the impact of AI on productivity, decision-making, service delivery, and data management.

Table 1. AI impact on decision making in selected institutions.

Response	Participants
Moderately improved decision-making	40
Significantly improved decision-making	29
No impact	16
Moderately hindered decision-making	4

These results provided insight into how AI adoption affects the day-to-day operations and long-term strategies of these institutions.

3.3.1. Increased Productivity as a Main Result

The most commonly reported improvement after the adoption of AI is an increase in productivity. Many institutions report that AI automates repetitive tasks, reducing human error and optimizing workflow. This improvement is in line with AI's ability to improve processes, allowing employees to focus on more strategic, high-value work. For institutions in Uganda where resources may be limited, this

increase in productivity can help deliver more efficient services and respond more quickly to stakeholder needs.

3.3.2. Lack of Measurable Improvement in Some Cases

Interestingly, the second most common response was "No measurable improvement." This suggests that not all institutions experienced significant benefits from AI adoption. Possible reasons for this result include lack of adequate training, low levels of digital literacy among employees, and resistance to change within the institutional culture. In Uganda where digital transformation continues to grow, some institutions may not be ready to take full advantage of AI tools due to their infrastructure or cultural barriers.

3.3.3. Enhanced Decision-Making and Faster Service Delivery

The data also reveals improvements in decision-making and service delivery. AI's role in data analysis and predictive modeling is helping institutions make more informed and timely decisions. Faster service delivery indicates that AI has improved processes, making various institutions able to respond to service needs more quickly. In the context of Ugandan institutions, where service performance can have a significant impact on public perception and trust, these improvements are particularly useful.

3.3.4. Better Data Management

Several institutions report better data management as a result of their adoption of AI. AI tools help keep them organized, maintain security and analyze large amounts of data to reduce risk and improve compliance. For Ugandan institutions, where data security is extremely important, better data management can increase institutional flexibility and accountability.

3.3.5. Variability Across Institutions

Various types of improvements, ranging from productivity efficiency to decision-making, point out that the impact of AI adoption will vary according to the specific needs and context of each organization. For example, private institutions may prioritize service efficiency, while public institutions may focus on data security and compliance. This variation suggests that individual institutions' responses to AI depend on factors such as institutional goals, resources, and readiness.

These findings suggest that AI adoption has led to dramatic changes in operational practices across Ugandan institutions. The effects vary greatly, though. The most significant outcome is increased productivity. This is because automation improves the efficiency of work. This allows employees to focus on more complex responsibilities. However, some institutions reported no measurable improvement, indicating challenges in readiness, training, and adaptation to new technology.

AI has improved decision-making and service delivery that enables faster, data-driven responses. This can increase public confidence in the effectiveness of institutions. Improved data management emerged as another benefit. With AI tools

that support better data organization and security, which is important for compliance and data protection in Uganda.

The dynamics of these reforms suggest that the effectiveness of AI depends to a large extent on context, which indicates that each institution has specific needs, goals, and resources. Therefore, for the adoption of AI to be fully successful, a customized approach that addresses technological and cultural factors is essential.

3.4. Fundamental Challenges Have Affected the Adoption of AI-Driven Tools

Table 2. Challenges summary.

Response	Participants
Lack of Training	26
Lack of Training, Resistance to Change, Techinical Issues	12
Resistance to Change	12
Lack of Training, Technical Issues	10
Technical Issues	9
Resistance to Change, Techincal Issues	5

Data analysis highlighted several key challenges that public and private institutions in Uganda face during the implementation of AI-powered tools (Table 2). The most prominent challenge, as shown in Table 2, is lack of training among employees. This indicates a widespread capacity gap, where staff do not have the necessary knowledge to use AI technology effectively.

After this, technical problems arose as a major obstacle. These challenges can include integration issues, software or hardware incompatibility, and inadequate infrastructure. The third most common problem is resistance to change. This indicates hesitation among officials and organizational leaders over layoffs, uncertainty about the reliability of the AI or discomfort with changes to traditional workflows.

Additional challenges include ignorance about AI systems, quality assurance issues, and over-reliance on AI tools is rarely discussed but still emphasize important issues where institutions need improvement. These challenges reflect gaps in operational preparedness and knowledge about the limitations and benefits of AI.

These findings suggest that successful implementation of AI requires targeted intervention in training, investment in strong technical infrastructure, and strategic migration management initiatives to overcome resistance and build confidence in AI-based solutions.

4. Relationship between Types of Institutions and AI Adoption

To examine the relationship between categorical variables, we used the Pearson's

Chi-squared test as it is appropriate for analyzing associations between variables of this nature. The findings are as follows:

H0: There is no association between the type of institution and AI adoption.

AI adoption is independent of the institution type.

H1: There is an association between the type of institution and AI adoption.

AI adoption is dependent on the institution type.

We observed a chi-squared value as extreme as 7.207 and a p-value (0.3021 > 0.05). Therefore, we failed to reject the null hypothesis and concluded that there was an association between the type of institution and AI adoption technologies of the organization operations.

The study further revealed that there was a statistically significant association between education level and familiarity with AI Technologies amongst the respondents. This was backed by the p-value (0.6082 > 0.5), prompting the researchers to fail to reject the null hypothesis.

5. Conclusions

This study provided empirical insights into the impact of Artificial Intelligence (AI) adoption within selected public and private institutions in Uganda. The findings indicate that AI integration has, in general, enhanced operational efficiency and contributed to a gradual transformation of institutional cultures. Specifically, AI has enabled increased automation and supported data-driven decision-making, resulting in more agile and responsive operations.

However, the study also highlights considerable variation in the effectiveness of AI across institutions. While some organizations have reported measurable improvements in productivity and service delivery, others have experienced minimal benefits. These disparities underscore the critical need for context-specific AI implementation strategies that consider institutional readiness, sector-specific needs, and organizational maturity.

Importantly, the data point to significant shifts in operational culture attributable to AI adoption. Institutions that effectively aligned AI initiatives with their strategic goals reported greater success. Conversely, those lacking foundational support mechanisms—such as training, technical infrastructure, and change management processes—saw limited impact. This reinforces the importance of preparatory investments that address both human and technological dimensions of digital transformation.

Key challenges identified include:

- Inadequate staff training and technical expertise
- Infrastructure limitations
- Resistance to organizational change

Addressing these barriers requires a coordinated response from policymakers, donors, and institutional leaders. Targeted investments in workforce capacity building, digital infrastructure, and structured change management will be essential to unlock the full potential of AI technologies. By doing so, institutions can

foster a culture of continuous innovation and resilience, positioning themselves to benefit from emerging technologies in a sustainable and inclusive manner.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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