

Factors Influencing the Adoption of AI Chatbots By Non-Governmental Organizations

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Abstract

This paper investigates the factors influencing the adoption of AI-chatbots by non-governmental organizations (NGOs) in developing countries, a context faced with escalating social and environmental challenges. As poverty deepens, climate-induced droughts persist, and regional conflicts escalate, the demand for effective NGO intervention increases. NGOs are critical in addressing social, environmental, and economic issues, often filling gaps where governmental support is lacking. Despite a global increase in innovative technologies, the uptake of AI-chatbots by NGOs is still in its infancy. Furthermore, there is limited literature providing a comprehensive factors for NGOs to adopt AI-chatbots. This qualitative study interviews 30 managers for in-depth insights. The study examines technological, organisational, and environmental aspects affecting AI-chatbot adoption using the TOE paradigm. Thematic analysis of the qualitative data identified key factors such as a lack of technical expertise, financial constraints, resistance to change, data privacy and security concerns and infrastructure limitations as the most dominant factors in adopting chatbots. The factors address a gap in the literature by providing insights into the adoption of technology in resource-constrained settings, offering operational, technical, and strategic guidance to NGO managers and policymakers.

Keywords

AI-Chatbots, Artificial Intelligence (AI), Non-Governmental Organizations (NGOs), Technology Adoption, Technology-Organization-Environment (TOE) Framework

1. Introduction

Over the past several years, there has been a significant change in how organisations integrate technology into their operations and interact with their stakeholders (Abdallah et al. 2023; Dwivedi et al. 2021; Pillai and Sivathanu 2020). Artificial Intelligence is a powerful tool that is transforming many industry sectors and revolutionising communication channels (Adam et al. 2020). Among the myriads of AI-driven innovations, chatbots have gained substantial recognition for their capacity to automate and enhance customer interactions, streamline operations, and provide a more personalized user experience (Han et al. 2021; Palanica et al. 2019; Sharma et al. 2024; Zhu et al. 2022).

The use of AI chatbots spans various domains and industries, reflecting their versatility, adaptability, and potential impact. AI chatbots have been acknowledged for their capacity to address the COVID-19 pandemic, specifically in the fields of public health, chronic disease management, and mental health. This indicates a positive outlook for the future of healthcare (Mahdavi et al. 2023). In the tourism and hospitality industries, AI chatbots are a relatively new technology, and their use and impact are areas of ongoing exploration (Bahreini et al. 2023; Benaddi et al. 2024; Chavan et al. 2024). In addition, AI chatbots are making substantial progress in the field of education, improving individualised learning experiences, offering immediate feedback, and assisting with administrative duties (Dube et al. 2024). Additionally, the innovative use of chatbots from an employee benefits perspective has been a significant focus, contributing to the advancement of AI literature (Balcioglu and Artar 2024). Organizations that fail to embrace emerging technologies such as AI chatbots risk falling behind their competitors and missing out on crucial opportunities for growth and adaptation (Heo and Lee 2018; Nadarzynski et al. 2019). For example, Blockbuster's

failure to embrace digital streaming and online rental platforms like Netflix resulted in significant setbacks, ultimately leading to bankruptcy (Cory 2021). Similarly, Kodak, formerly a prominent competitor in the photography sector, faced difficulties in adjusting to the digital age and eventually sought bankruptcy protection as a result of its unwillingness to adopt digital photography and online sharing platforms such as Instagram and Facebook.(Franco et al. 2021). These instances underscore the critical importance of proactive adaptation to technological advancements to maintain competitiveness and relevance in today's dynamic business landscape.

Zimbabwe, historically celebrated as one of southern Africa's most vibrant, productive, and resilient countries, has faced significant challenges over the past two decades due to a tumultuous series of political and economic crises. These crises have precipitated a widespread decline in the standard of living and a breakdown in essential public services such as health, education, and infrastructure (USAID 2024). With an estimated population of 15 million, of which approximately 9.5 million reside in rural areas, Zimbabwe grapples with pervasive poverty. Sixty-three percent of households endure life below the poverty line, with 16 percent categorized as living in extreme poverty (USAID 2024). Adverse government policies and erratic climate patterns have adversely impacted the agriculture sector, rendering it increasingly difficult for farmers to achieve sufficient yields and exacerbating the country's recurrent food insecurity (Kori et al. 2020). Given these difficulties, non-governmental organisations (NGOs) have been crucial in assisting the population of Zimbabwe by strengthening healthcare systems, improving food availability, building economic stability, and advocating for democratic governance (Mhlanga and Hassan 2022). These efforts underscore a commitment to assisting Zimbabweans in overcoming the multifaceted challenges confronting their nation.

Given the growing interest in AI chatbots and their potential benefits for social good, alongside the rising importance of technological solutions in the non-profit sector, there is a compelling need to examine the viability of integrating AI chatbots into the operations of Zimbabwean Non-Governmental Organizations (NGOs). This study aims to explore the adoption of AI chatbots within Zimbabwe's NGO sector, with the goal of developing a comprehensive framework for their effective implementation. By examining the specific challenges and opportunities within Zimbabwe's socio-economic context, this research aims to offer valuable insights for NGOs looking to utilize technology to drive social impact and enhance organizational effectiveness.

1.1 Objectives

- Identify challenges faced by NGOs in adopting AI chatbots in their operations.
- Explore the potential opportunities for AI chatbot adoption in the NGO landscape.
- Investigate the factors influencing the adoption of AI chatbots in the NGO landscape.

2. Literature Review

This section consolidates the existing AI-focused literature. The existing research reviewed categorized into the following major themes: AI Opportunities, Challenges and Driving Factors.

Artificial Intelligence Opportunities

The application of AI chatbots spans a vast array of sectors and domains, each leveraging the unique capabilities and attributes of these conversational agents to enhance efficiency, improve user engagement, and provide personalized services (Dube et al. 2024). In the customer service industry, Artificial intelligence chatbots are transforming the way businesses engage with their clients by offering 24/7 support, handling inquiries, and resolving issues promptly without the need for human intervention (Chen et al. 2020; Pillai and Sivathanu 2020). Chatbots streamline operations, significantly enhance customer satisfaction by reducing wait times, and ensure instant assistance (Cheng and Jiang 2021). In healthcare, chatbots provide mental health support, facilitate appointment bookings, offer medication reminders, and disseminate personalized health advice, thereby augmenting patient care and accessibility to medical information (Mahdavi et al. 2023). Education sees chatbots acting as personal tutors, offering customized learning experiences, supporting language acquisition, and providing instant feedback to students, enriching the educational landscape with adaptive learning technologies (Dube et al. 2024; Jose and Jose 2024). Moreover, AI chatbots contribute to significant operational cost reductions by handling multiple inquiries simultaneously, which eliminates the need for extensive customer service personnel (Wang et al. 2023). They excel in accommodating sudden increases in queries without requiring extra resources, demonstrating their scalability during peak periods or unforeseen surges in engagement (Mageira et al. 2022). AI chatbots deliver consistent and precise answers to user inquiries, ensuring the reliability and accuracy of the information provided, thus upholding service quality (Wang et al. 2023). They also enhance user experiences by providing personalized interactions based on data analysis and previous engagements,

which boosts both user engagement and satisfaction (Dube et al. 2024). Chatbots efficiently collect and analyse data from their interactions, yielding significant insights into user behaviours, preferences, and feedback, which helps refine services and products (Dube et al. 2024). They can be programmed to comprehend and converse in various languages, broadening their accessibility and overcoming language obstacles (X. Wang et al. 2023).

Furthermore, chatbots automate routine and monotonous tasks, freeing up human agents to focus on more complex and valuable tasks (X. Wang et al. 2023). This automation streamlines customer service processes and improves operational efficiency. AI chatbots elevate the overall user experience by delivering prompt, accessible, and precise support, thereby increasing satisfaction and loyalty among users (Belanche et al. 2019). They enhance the accessibility of services for individuals with disabilities by providing alternative interaction methods that cater to specific requirements (Roy et al. 2022). Advances in AI and natural language processing (NLP) enable chatbots to handle a spectrum of inquiries, from straightforward FAQ responses to complex questions requiring an understanding of context and user intent (Sharma et al. 2024). In ecommerce, chatbots assist with product selection, provide recommendations based on user preferences or requirements, and process transactions, simplifying the shopping experience and boosting sales (Alagarsamy and Mehroliya 2023). In the workplace, AI chatbots transform HR practices by automating routine tasks such as scheduling interviews, answering employee inquiries, and onboarding new hires, allowing HR professionals to focus on more strategic tasks (Nawaz and Gomes 2019; Taule et al. 2022). Beyond these applications, chatbots also engage in personal entertainment, acting as interactive companions capable of complex conversations, playing games, and creating art or writing stories, showcasing the versatility and creative potential of AI technology (Dube et al. 2024). The broad application of AI chatbots underscores their transformative impact across industries, making them a cornerstone of digital strategy for businesses and organizations worldwide.

AI Chatbot Adoption Challenges

The adoption of AI chatbots, despite their numerous advantages, faces several challenges that need to be addressed to maximize their effectiveness. One of the primary challenges is data privacy and security. The collection and storage of large volumes of personal data by chatbots raise significant concerns about data breaches and misuse, necessitating robust data protection measures (Biswas 2020). Another challenge is the integration with existing systems. Many organizations find it difficult to seamlessly incorporate AI chatbots into their current IT infrastructure, leading to compatibility issues and additional costs (Zhang et al. 2023). Additionally, there is a concern about the lack of personalization and the potential for chatbots to misunderstand complex queries, which can lead to user frustration and reduced satisfaction (Alsharhan et al. 2024). Moreover, the high initial investment and ongoing maintenance costs can be prohibitive for small and medium-sized organisations, limiting their ability to adopt these technologies (Sharma et al. 2024). Ethical concerns also play a significant role, particularly in terms of algorithmic bias and ensuring fairness in AI-driven interactions (Velasco et al. 2023). Lastly, the need for continuous learning and updating of chatbots to keep pace with evolving user expectations and technological advancements presents an ongoing challenge for organizations (Dube et al. 2024)

Furthermore, knowledge-based creation and maintenance are critical, requiring careful content creation and regular updates to ensure relevance and accuracy. Agencies often face challenges with users asking the same questions in different ways, necessitating routine monitoring and updating of chatbot content (Chen et al. 2023). The lack of technical skills, staff time and financial resources within organizations to build and manage chatbots often requires partnerships with IT vendors or departments, while initial system crashes due to high user volumes highlight the need for robust technical infrastructure. Compliance with rules and regulations, particularly regarding information confidentiality and preventing the entry of personal identifiable information, remains a significant concern (Chen et al. 2023). Finally, managing user expectations and perceptions is critical, as some users expect specific, detailed responses rather than generic information. The COVID-19 pandemic has also influenced chatbot deployment by providing special funding and simplifying procurement processes (Chen et al. 2023). Addressing these multifaceted challenges is essential for the successful and widespread implementation of AI chatbots across various sectors.

Drivers of AI Chatbot Adoption

The adoption of AI chatbots is propelled by several key factors that contribute to their widespread implementation across various sectors. One significant driver is the need for enhanced customer service. Organizations are increasingly adopting AI chatbots to provide instant responses and 24/7 support, thereby improving customer satisfaction and reducing operational costs (Zhang et al. 2023). The ability of chatbots to handle multiple inquiries simultaneously without the need for human intervention enables businesses to streamline their operations and enhance efficiency. Another critical factor driving the adoption of AI chatbots is the potential for significant cost savings. By automating

routine and repetitive tasks, chatbots help organizations reduce the need for extensive customer service staff, leading to substantial labour cost reductions (Sharma et al. 2024). This cost-effectiveness is particularly appealing to small and medium-sized organisations that may have limited financial resources.

The integration of advanced natural language processing (NLP) and machine learning technologies in AI chatbots has also played a crucial role in their adoption. These technologies enable chatbots to understand and process complex queries, providing accurate and relevant responses, which enhances user engagement and satisfaction (Velasco et al. 2023). The continuous improvement of AI algorithms ensures that chatbots become more effective over time, further driving their adoption. Additionally, the increasing demand for personalized user experiences is a major driver of AI chatbot adoption. Chatbots can analyse user data and interactions to provide tailored recommendations and responses, thereby creating a more engaging and customized experience for users (Velasco et al. 2023). This personalization capability is particularly valuable in sectors such as e-commerce, healthcare, and education, where individualized attention is crucial. Furthermore, the COVID-19 pandemic has accelerated the adoption of AI chatbots. The need for remote and contactless customer service solutions during the pandemic highlighted the importance of digital transformation. Organizations quickly implemented AI chatbots to handle the surge in customer inquiries and provide uninterrupted support, showcasing the practical benefits of chatbots in crisis situations (Chen et al. 2023). Lastly, the strategic advantage of data collection and analysis offered by AI chatbots is a significant driver of their adoption. Chatbots can gather valuable insights into customer behaviours, preferences, and feedback through their interactions. This data can be used to refine services, improve products, and inform decision-making processes, providing organizations with a competitive edge (Biswas 2020).

3. Methods

A qualitative study was conducted to gain an in-depth understanding of the adoption of AI chatbots by NGOs in Zimbabwe.

A purposive sampling technique was used to select a cohort of 30 participants from 20 NGOs in Zimbabwe, ensuring a representative sample of different organizational sizes and operational contexts. Semi-structured interviews were conducted with these participants to gather detailed qualitative data on their experiences, challenges, and perceptions regarding AI chatbot adoption. Additionally, 8 focus groups with 12 participants each and 2 AI experts were organized to capture diverse perspectives and allow for in-depth discussions on the topic. The data collected from interviews and focus group were analysed thematically using qualitative data analysis software. This approach allowed for the identification of key themes and patterns that influence the adoption of AI chatbots in NGOs. The thematic analysis provided rich, detailed insights into the factors shaping the attitudes and decisions of NGOs regarding AI chatbot integration.

4. Data Collection

The data collection process involved two primary methods: interviews and focus group discussions. These methods were chosen to gather comprehensive qualitative data from various stakeholders within the NGO sector in Zimbabwe.

Interviews

The research consisted of conducting semi-structured interviews with a total of 30 managers representing different non-governmental organisations (NGOs) that are active in Zimbabwe. The duration of each interview was roughly 45-60 minutes, allowing for thorough exploration of themes while adhering to a similar format. The semi-structured method provided adaptability, allowing interviewers to explore certain areas of interest. The interview questions encompassed several subjects, such as the present use of AI technology, perceived advantages and difficulties, preparedness of the organisation, and external influences. The purpose of these discussions was to reveal the technological, organisational, and environmental variables that impact the adoption of AI chatbots.

Focus Group Discussions

The focus group meetings had 8 groups, each consisting of 12 participants. The participants included managers, technical personnel, field workers, and AI Implementation Specialists. Each session had a duration of around 90 minutes and was led by a facilitator to ensure that all participants had the opportunity to express their viewpoints. The conversations revolved around the collective experiences, difficulties, and potential advantages of implementing AI chatbots. Participants were urged to seek collaborative resolutions and detect recurring patterns.

Ethical Considerations and Data Management:

All participants were provided with comprehensive information regarding the objective and procedures of the study, as well as their rights. Written informed consent was collected from each participant. In order to maintain privacy, any identifiable information was eliminated from the transcripts and questionnaire replies. The study obtained ethical approval from the appropriate institutional review board, guaranteeing adherence to ethical principles. Conversations from interviews and focus groups were transcribed verbatim to accurately portray the data. The purpose of these data gathering approaches was to obtain extensive qualitative data, which would offer a thorough comprehension of the elements that influence the adoption of AI chatbots by NGOs in Zimbabwe. The acquired knowledge guided the creation of a strong framework to assist NGOs in efficiently incorporating AI chatbots into their service delivery procedures.

5. Results and Discussion

Demographic Results

The interview participants exhibited an equitable distribution of genders. A total of 16 males (53.3%) and 14 females (46.7%) were interviewed. In the focus group, the two AI experts were both females. Among the 88 participants, 38 were male (44.7%) and 47 were female (55.3%). This gender representation aligns with the most NGO's commitment to gender equity, as highlighted by a quote from One Manager: *"We are unapologetically pro-women and girls in our programming, and this should also reflect in our staffing. Hence, we are deliberate and intentional in our hiring."* This emphasis on inclusivity is reflected not only in their programs but also in their staffing practices.

Educational Background of Participants

All respondents (100%) had at least a bachelor's degree or on attachment, highlighting most NGO's commitment to hiring highly qualified individuals. Specifically, 54.4% of the respondents held bachelor's degrees, 40.4% had master's degrees, and 5.2% had achieved doctorates. This high level of educational attainment aligns with the organization's hiring philosophy, as articulated by One Manager: *"We only hire the best."* This emphasis on academic qualifications ensures that the organization is staffed with knowledgeable and skilled professionals, reflecting their dedication to excellence.

Focus Group

Challenges Faced by NGOs in Adopting AI Chatbots

The focus group discussions highlighted several challenges faced by NGOs in adopting AI chatbots:

Lack of Technical Expertise: Many NGOs reported a significant gap in the technical knowledge required to implement and manage AI chatbots. This includes understanding AI technologies, integrating chatbots with existing systems, and maintaining them.

Financial Constraints: Budget limitations were a major concern for most NGOs. The high costs associated with AI technology acquisition, implementation, and maintenance were seen as prohibitive. As AI Expert 2 mentioned, *"The paid version of Copilot is likely to double our Microsoft licensing fees, something we need to plan for."*

Resistance to Change: There was noticeable resistance from staff who were apprehensive about the potential job displacement and the complexities associated with new technologies. One participant remarked, *"People are worried that their roles might become redundant with the new system."*

Data Privacy and Security: Data privacy and security were crucial, especially with the sensitive nature of data handled by NGOs. Concerns about data breaches and compliance with data protection regulations were prevalent. As one participant noted, *"We handle a lot of confidential information, and any breach could be disastrous for our operations."*

Infrastructure Limitations: Many NGOs, especially smaller or local ones, lacked the necessary IT infrastructure to support AI chatbot implementation. This includes reliable internet access, modern hardware, and software systems. One participant highlighted, *"Our current infrastructure is not equipped to handle the demands of advanced AI technologies, in the field we rarely have internet and we the power issues this compounded."*

Potential Opportunities for AI Chatbot Adoption

Improved Efficiency and Productivity: Staff may focus on more complicated and significant work by using AI chatbots for everyday tasks. As one participant noted, *"Chatbots can take over the repetitive tasks, freeing up our staff to*

engage in more meaningful interactions. I have seen this in both the banking and telecommunications sectors, where they provide personalized services from my bank and telecom service provider."

Enhanced Communication with Beneficiaries: AI chatbots can provide 24/7 support and instant responses, improving the overall communication and service delivery to beneficiaries. An AI expert mentioned, *"With chatbots, we can ensure that beneficiaries receive timely information and support at any hour."*

Cost Savings in the Long Term: While the initial implementation may be costly, AI chatbots can reduce operational costs over time by automating repetitive tasks and reducing the need for extensive human resources. An expert explained, *"Although the upfront costs are high, the long-term savings on operational costs make it a worthwhile investment."*

Increased Reach and Engagement: AI chatbots can engage with a larger audience simultaneously, increasing the reach and impact of NGO programs and services. One participant noted, *"Chatbots enable us to interact with more people at once, significantly expanding our reach, provided that the users have access to devices and the internet."*

Data Collection and Analysis: AI chatbots can collect valuable data on beneficiary interactions, which can be used to improve services and make informed decisions. An AI expert highlighted, *"The data gathered by chatbots can provide insights into the needs and behaviours of our beneficiaries, helping us to tailor our programs more effectively."*

Factors Influencing the Adoption of AI Chatbots

Several factors influencing the adoption of AI chatbots in the NGO landscape were identified:

Leadership and Management Support: Effective AI chatbot adoption relies heavily on robust backing from leadership and management. This includes a commitment to providing the necessary resources and fostering a culture of innovation. One AI expert emphasized, *"We already have support of our leadership hence allocation of resources is in place. They are fully committed and enthusiastic about supporting and fostering its growth, thus we have received significant support from them."*

Donor Requirements and Support: External factors such as donor requirements and support play a significant role. Donors who prioritize technological advancements and provide funding for AI initiatives encourage NGOs to adopt AI chatbots. An AI expert noted, *"Donors gave NGOs a lot of money during the pandemic to adopt automated or technical solutions to serve more people. Thus, finance was fine."*

Organisational Readiness: The readiness of an organization, including its infrastructure, technical skills, and openness to change, significantly impacts the adoption process. An AI expert remarked, *"Technical Human resource is key as well as the infrastructure"*.

Partnerships and Collaborations: Collaborations with technology providers, other NGOs, and external experts can provide the necessary expertise, resources, and support for implementing AI chatbots. One AI expert mentioned, *"To make sure we are posing the topic correctly, we have teamed up with a third-party provider who provided the linguists and technological know-how."* Another said, *"It was essential to coordinate executive-level stakeholders' viewpoints on the chatbot across several agencies."*

Strategies for Improving AI Chatbot Adoption

The focus group discussions also provided insights into strategies that can facilitate the adoption of AI chatbots in NGOs:

Capacity Building and Training: Providing continuous training and development opportunities for staff to enhance their technical skills and familiarity with AI technologies. One AI expert suggested, *"Ongoing training is crucial. Our staff needs to be comfortable with the technology to use it effectively."*

Pilot Projects: Starting with pilot projects to test the feasibility and impact of AI chatbots before full-scale implementation. An AI expert recommended, *"We should start with a small pilot project to see how the chatbot performs and then scale up based on the results."*

External Support and Partnerships: Leveraging partnerships with technology providers and external experts to gain access to the necessary resources and expertise. One expert noted, "*Partnering with experienced vendors can provide the technical support we need to implement and maintain the chatbot.*"

Clear Communication and Change Management: Implementing comprehensive communication strategies and change management practices to address staff concerns and ensure a smooth transition. An AI expert emphasized, "*Clear communication is key. Staff need to understand the benefits of the chatbot and how it will impact their work.*"

Funding and Resource Allocation: Securing funding and allocating resources specifically for AI initiatives, possibly through donor support or reallocation of existing budgets. As one expert pointed out, "*We need to ensure we have dedicated funds for AI projects. This might mean reallocating budgets or seeking additional donor support.*"

Interviews

Current Use of AI Technologies

Understanding AI Chatbot Adoption

Non-Users: The majority of NGOs (18 out of 30) do not currently use any AI technologies. These organizations rely mainly on traditional methods and basic office software for their operations. Reasons cited include limited resources, lack of technical expertise, and financial constraints.

Partial Users: Some organizations have basic automation tools, but not advanced AI technologies like AI chatbots.

Advanced Users: A few organizations (3 out of 30) have implemented AI technologies extensively in other regions or are in advanced stages of adopting AI chatbots to enhance operational efficiency and service delivery.

Consideration of AI Chatbots

Positive Consideration: About half of the respondents (15 out of 30) have considered or are considering adopting AI chatbots. Motivations include improving service delivery, operational efficiency, and providing 24/7 support. Donor encouragement and discounted vendor offers also play significant roles.

Negative Consideration: The remainder has not considered AI chatbots due to lack of awareness, financial constraints, and technical knowledge.

Familiarity with AI Chatbots

Limited Familiarity: Most respondents (17 out of 30, 56.7%) have limited to no familiarity with AI chatbot technologies. They lack in-house IT specialists and rely on external resources for knowledge and training. One participant shared, "*As an individual, I have used it for my school, but our organization doesn't have the expertise to implement it.*"

Moderate Familiarity: A few organizations (8 out of 30, 26.7%) have some understanding due to initial vendor demonstrations or donor training. An interviewee mentioned, "*I have come across AI chatbots in the news and social media, and we've had some introductory sessions with vendors.*"

High Familiarity: A minority (5 out of 30, 16.7%) are very familiar, having used AI tools extensively in their operations and supported by regional or global ICT teams. *One respondent noted, "We have integrated AI chatbots into several aspects of our work, thanks to the support from our global ICT team."*

Challenges in Adopting AI Chatbots

Analysis of Challenges in Adopting AI Chatbots by NGOs Based on Interview Responses

The analysis below is based on the interview responses regarding the challenges NGOs face in adopting AI chatbots.

Initial Adoption Challenges

Lack of Technical Expertise: 18 out of 30 interviews (60%). A significant challenge is the absence of in-house technical expertise to implement and manage AI chatbots. This includes insufficient knowledge of AI technologies among staff. Manager 20 highlighted this issue, stating, "*We do not have a dedicated IT person; for IT issues, our tech-savvy HR person steps in, and for bigger things, we outsource.*" Similarly, Manager 2 added, "*We recently began a program of having an IT intern that report to the Admin Coordinator.*" Manager 4 also supported this when they explained a recent restructuring to combine IT and Admin, "*We now have an IT assistant who handles both admin and IT tasks and reports to Finance and Administration Manager.*"

Financial Constraints: 17 out of 30 interviews (56.7%). Many NGOs lack the financial resources required to invest in AI technology. High costs of AI implementation are a major barrier. One respondent noted, "*Our priority is beneficiaries and when we receive funds they are usually strictly budgeted for.*"

Insufficient IT Infrastructure: 15 out of 30 interviews (50%). Many NGOs face challenges due to inadequate IT infrastructure, which hinders the effective implementation of AI chatbots. An interviewee explained, "*Aside of email and Sage pastel for finance we have no other IT infrastructure.*"

Data Privacy and Security Concerns: 12 out of 30 interviews (40%). Ensuring data privacy and security is a significant challenge. NGOs are concerned about the protection of sensitive information. As Manager 26 highlighted, "*Our Data is our competitive advantage and we wouldn't want it out there, imagine beneficiary information falling in the wrong hands.*"

Integration with Existing Systems: 10 out of 30 interviews (33.3%). Integrating AI chatbots with existing systems is a technical challenge. This includes managing data flow and ensuring seamless operation. One participant remarked, "*Integrating the chatbot with our existing system has been more complex than we anticipated.*"

Training and Managing Staff: 9 out of 30 interviews (30%). NGOs need to train local staff to manage and maintain AI chatbots. This requires additional resources and time. A respondent mentioned, "*Does it require highly technical IT knowledge because we have a hard time navigating technology already.*"

Resistance to Change: 8 out of 30 interviews (26.7%). There is resistance from staff who are unfamiliar with AI technology or fear job displacement. Addressing this resistance requires comprehensive communication and training programs. One respondent mentioned, "*Are people's jobs safe and wont it affect how we are operating.*"

Technical Difficulties

Setup and Maintenance: 15 out of 30 interviews (50%). Setting up and maintaining the AI infrastructure is challenging due to a lack of technical know-how and IT support. One expert stated, "*The initial setup and ongoing maintenance of the AI systems are challenging because we lack the necessary technical expertise.*" Another participant highlighted, "*Without dedicated IT support, we face significant difficulties in maintaining our AI infrastructure, which impacts the overall effectiveness of any IT project we embark on.*"

Integration with Current Infrastructure: 14 out of 30 interviews (46.7%). Ensuring seamless integration with current infrastructure and managing data flow are significant technical difficulties. One respondent noted, "*Integrating AI chatbots with our existing systems has been complex and resource intensive.*" Another participant mentioned, "*The biggest challenge we face is ensuring that the chatbot works seamlessly with our current IT infrastructure and data management systems being able to reference already existing knowledge products.*"

Reliability and Accuracy: 12 out of 30 interviews (40%). Maintaining the reliability and accuracy of AI chatbots is a concern. This requires rigorous testing and continuous support. One participant shared, "*Ensuring the chatbot consistently provides accurate information is challenging and requires constant updates.*" Another noted, "*We've encountered issues with the chatbot generating inaccurate or 'hallucinated' responses, which undermines user trust and necessitates ongoing refinement and monitoring.*"

Funding and Resource Allocation

No Current Plans: 5 out of 30 interviews (16.7%). Some NGOs have no current plans to address funding for AI chatbot projects due to limited resources and other immediate priorities. One respondent mentioned, "*We don't have any current plans or budget allocated for AI chatbot projects.*"

Seeking Donor Support: 10 out of 30 interviews (33.3%). Many NGOs plan to seek support from donors and partners to fund AI chatbot projects. Collaboration with technology providers is also considered to mitigate financial constraints. Participant noted, "*We are looking for donor support to help fund our AI chatbot initiatives.*"

Strategic Planning and Budget Allocation: 8 out of 30 interviews (26.7%). Some NGOs have allocated a portion of their budget to innovation and technology projects, including AI chatbots. They also seek grants and partnerships to

support these initiatives. One participant shared, *"We have allocated a portion of our budget for AI projects and are actively seeking grants to support these initiatives."*

Resistance from Staff and Stakeholders

Job Security Concerns: 14 out of 30 interviews (46.7%). Fear of job displacement is a common concern among staff. Addressing this requires demonstrating the benefits and providing reassurance. One respondent noted, *"Staff are worried about job security with the introduction of AI chatbots."*

Unfamiliarity with Technology: 10 out of 30 interviews (33.3%). Resistance due to unfamiliarity with AI technology is prevalent. Comprehensive training and communication programs are necessary to mitigate this. Participant mentioned, *"There is a significant learning curve, and many staff are resistant because they are not familiar with the technology."*

Concerns about Costs and Risks: 6 out of 30 interviews (20%). Stakeholders are concerned about the high costs and potential risks associated with AI implementation. Effective communication and demonstration of successful use cases can help alleviate these concerns. One participant remarked, *"The high costs and potential risks of AI implementation are major concerns for our stakeholders."*

Potential Benefits of AI Chatbots

Improved Efficiency in Service Delivery: 18 out of 30 interviews (60%). Many respondents expect AI chatbots to significantly improve efficiency in service delivery. This includes more skillfully responding to standard questions, freeing up employees to concentrate on more difficult assignments.

24/7 Availability: 14 out of 30 interviews (46.7%). Respondents anticipate AI chatbots to provide round-the-clock support, which is crucial for timely assistance to beneficiaries and stakeholders.

Reduced Response Times: 12 out of 30 interviews (40%). AI chatbots are expected to reduce response times, providing instant responses to common inquiries and improving overall service speed.

Enhanced Decision-Making: 11 out of 30 interviews (36.7%). Respondents believe that AI chatbots will enhance data collection, leading to better-informed decision-making processes within the organization.

Streamlining Customer Service Processes: 17 out of 30 interviews (56.7%). AI chatbots are expected to streamline customer service processes by automating routine tasks and providing timely and accurate information to stakeholders.

Reducing Workload on Staff: 15 out of 30 interviews (50%). AI chatbots will handle ordinary questions, freeing up staff to handle more difficult issues, according to respondents.

Providing Timely and Accurate Information: 14 out of 30 interviews (46.7%). AI chatbots are expected to provide timely and accurate information to stakeholders, which would enhance operational efficiency.

Automating Routine Tasks: 12 out of 30 interviews (40%). Automating routine tasks is seen as a significant benefit, leading to better resource management and improved service delivery.

Uncertain Due to Lack of Experience: 8 out of 30 interviews (26.7%). Some respondents are unsure of the benefits as they have not implemented AI chatbots yet. They believe AI chatbots could improve efficiency but lack the necessary infrastructure and expertise.

No Success Stories Due to Non-Adoption: 12 out of 30 interviews (40%). A significant number of respondents have not implemented AI chatbots and hence do not have success stories to share. However, they anticipate improvements based on industry benchmarks and experiences from similar organizations.

Anticipated Improvements Based on Other Regions: 9 out of 30 interviews (30%). Some respondents cite successful implementations of AI chatbots in other regions and anticipate similar benefits such as efficient handling of inquiries and support during emergencies.

Patient Engagement and Healthcare Delivery: 6 out of 30 interviews (20%). In the healthcare sector, AI chatbots have successfully managed patient appointments, provided health information during outbreaks, and supported telemedicine services, leading to higher patient satisfaction and efficient healthcare delivery.

Enhanced Customer Engagement: 3 out of 30 interviews (10%). Respondents anticipate enhanced customer engagement and better support during peak times or emergencies based on the vendor's case studies and industry benchmarks.

6. Discussion

The findings of this study provide valuable insights into the adoption of AI chatbots by NGOs in Zimbabwe, highlighting the key factors that influence this process. The thematic analysis revealed several critical themes, including perceived ease of use, perceived usefulness, organizational readiness, and external pressures. These factors collectively shape the attitudes and decisions of NGOs regarding the integration of AI chatbots into their operations. The study found that the perceived ease of use and usefulness of AI chatbots are pivotal in influencing adoption. NGOs that recognize the practical benefits of AI chatbots, such as improved efficiency and 24/7 service availability, are more likely to consider their implementation. Conversely, those who perceive AI technology as complex and challenging to integrate may be hesitant to adopt it. Organizational readiness emerged as a significant factor. NGOs with advanced IT infrastructures and a culture that supports technological innovation are better positioned to adopt AI chatbots. In contrast, organizations with limited technological resources and a lack of internal expertise face substantial barriers. External pressures, including donor expectations and competitive pressures, also play a crucial role. NGOs that receive strong encouragement and support from donors are more likely to explore and adopt AI chatbot technologies. Additionally, observing the successful implementation of AI chatbots by peer organizations can motivate NGOs to follow suit.

Limitations

Although this research offers interesting insights into the deployment of AI chatbots by NGOs, it is important to recognize and accept several limitations. The study's sample size may not be fully representative of all NGOs. Despite attempts to incorporate a wide array of organisations, the conclusions are derived from a restricted pool of participants, potentially failing to encompass the complete range of experiences and viewpoints. The research primarily focuses on NGOs operating within Zimbabwe. As a result, the findings may not be generalizable to NGOs in other regions with different socio-economic, technological, and regulatory environments. The specific challenges and opportunities identified in this study might differ significantly in other geographical contexts. The data collected through interviews and focus groups are self-reported by the participants. This raises the potential for bias, since respondents may offer answers that are socially desirable or may not precisely remember their experiences and perceptions. The study does not account for the wide variability in the technological capabilities and readiness of different NGOs. While some organizations may have advanced IT infrastructures, others may lack basic technological resources. This variability can significantly influence the adoption and effectiveness of AI chatbots, making it challenging to draw uniform conclusions. The field of AI and chatbot technology is rapidly evolving. The research findings are based on the current state of technology and its application within NGOs. As technology advances, some of the challenges and opportunities identified in this study may change, potentially limiting the long-term relevance of the findings. The research primarily focuses on the challenges, opportunities, and factors influencing AI chatbot adoption. It does not delve deeply into the specific technical details of AI chatbot implementation or the comparative analysis of different AI solutions available in the market. A more technical analysis could provide additional insights into the best practices for adopting AI chatbots.

Recommendation for future / further work

Considering the discoveries and constraints of this study, we provide numerous recommendations for future research and additional efforts to improve the comprehension and implementation of AI chatbots in non-governmental organisations (NGOs). Future study should strive to incorporate a broader and more varied selection of non-governmental organisations (NGOs) in order to encompass a wider spectrum of experiences and viewpoints. This will lead to a more thorough comprehension of the factors that influence the adoption of AI chatbots in different types of NGOs. Comparative studies involving NGOs from different regions and countries are recommended to understand how geographical context influences AI chatbot adoption. This would provide insights into how socio-economic, technological, and regulatory environments impact the adoption process, helping to identify region-specific challenges and opportunities and facilitating more tailored implementation strategies. Performing longitudinal studies to monitor the adoption and effects of AI chatbots over an extended period would yield significant knowledge on the enduring

advantages and difficulties associated with these technologies. Such research would shed light on the evolution of NGOs in their utilisation of AI chatbots and the long-term viability of the early benefits. Further investigation is warranted to explore the intricacies of AI chatbot deployment, analysing various AI solutions offered in the market, their distinct characteristics, and their compatibility with the requirements of non-governmental organisations (NGOs). Comparative analyses of various AI chatbot technologies could help identify best practices and guide NGOs in selecting the most appropriate solutions. Further studies should consider the wide variability in technological capabilities among NGOs, developing frameworks or toolkits that provide tailored guidance for NGOs at different levels of technological readiness. This would ensure that even organizations with limited resources can effectively adopt and benefit from AI chatbots. Future work should continue to explore the ethical implications of AI chatbot deployment in NGOs, developing comprehensive guidelines and frameworks to address data privacy, security, and ethical concerns. Research could also focus on stakeholder perceptions and the development of strategies to ensure ethical AI usage. Investigating the role of policy and regulatory frameworks in AI chatbot adoption is crucial, examining how existing regulations impact the deployment of AI technologies in NGOs and identifying areas where policy changes could facilitate smoother adoption. Engaging with policymakers to develop supportive regulatory environments would be beneficial. Encouraging collaboration and knowledge sharing among NGOs, technology providers, and academic institutions can significantly enhance the adoption process. Future work could explore the development of collaborative platforms where NGOs can share experiences, challenges, and best practices, facilitating access to technical expertise and resources.

7. Conclusion

This study has examined the implementation of AI chatbots in non-governmental organisations (NGOs), identifying significant obstacles, prospects, and factors that have an impact. Although AI chatbots provide prospective advantages such as increased productivity, greater communication, and cost reduction, the process of implementing them is hindered by barriers such as expensive installation costs, limited technical knowledge, and concerns around data protection. By addressing these challenges through targeted strategies like capacity building, pilot projects, and securing external support, NGOs can better navigate the complexities of AI chatbot adoption. The research highlights the importance of continuous training, clear communication, and robust ethical guidelines to ensure successful implementation and sustainable use of AI technologies. Future research should focus on expanding sample diversity, conducting longitudinal studies, and exploring technical and ethical aspects in greater depth to further support NGOs in leveraging AI chatbots for enhanced service delivery and operational efficiency.

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