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OF SCIENCE AND TECHNOLOGY**

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JOURNALISM AND MEDIATECHNOLOGY

**ASSESSING THE EFFICACY OF ARTIFICIAL INTELLIGENCE CHATBOTS FOR DELIVERING PUBLIC
INFORMATION: A CASE STUDY OF THE “BEING A PUBLIC SERVANT IN NAMIBIA - THE POCKET GUIDE
2.0 POCKET BOT”**

BY

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**A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER
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31 January 2025

DECLARATION

I, Christell Charleen Nassauw, hereby declare that the work contained in the thesis entitled: *Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”* is my own original work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references. I further declare that I have not previously submitted this work, or part of it, for examination at any university or higher education institution for the award of an academic qualification.



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ABSTRACT

The research evaluated the Namibian government's "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot" artificial intelligence chatbot which serves as a digital self-service tool for civil servants. The research aimed to determine whether the chatbot fulfils its intended purpose to deliver precise and easily accessible public information to its users. The research employed an exploratory qualitative case study methodology. Twenty civil servants including administrative staff, technical experts, and management personnel participated in semi-structured interviews to gather data. The interview data analysis through thematic methods showed that the users appreciated the chatbot because it provided quick access at all times. The users also highlighted three main concerns with the chatbot system which included its user interface design ,its natural language processing capabilities, and the accuracy of its policy-aligned information. Recommendations were drawn from the research findings for the purpose of improving the chatbot interface, expanding its subject matter coverage, enhancing its response speed, and accuracy to fulfil civil servants' needs. The recommendations provide guidance to policymakers and government agencies for enhancing chatbot services, enabling them to deliver public information more efficiently while improving user satisfaction.

Key Terms: Artificial intellect (AI); Chatbot; Public Information; Human-AI Interactions (AI); Natural Language Processing (NLP); Digital Self Service; Efficacy

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"Thankfulness is how you feel inside when you receive kindness." - John Henry Van Dyke

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DEDICATION

“So Ebed-Melek took the men with him and went to a room under the treasury in the palace. He took some old rags and worn-out clothes from there and let them down with ropes to Jeremiah in the cistern. Ebed-Melek the Cushite said to Jeremiah, “Put these old rags and worn-out clothes under your arms to pad the ropes.” Jeremiah did so, and they pulled him up with the ropes and lifted him out of the cistern. And Jeremiah remained in the courtyard of the guard.” Jeremiah 38:11-13

Not only did Ebed-Melech use all the tools he had to get Jeremiah out of the tank, but so did my mother, Hilda Nassauw, who has helped me with my schoolwork without expecting anything in return. With unwavering love and drive, she has used all the tools she had to make sure I succeed, helping me through tough times and picking me up when I fell. In honour of my amazing mother, who never had the chance to finish school herself, this Master's thesis is dedicated to her. She has always supported and inspired me to go to university. Her sacrifices, strength, and unwavering faith in my skills have been the driving force behind everything I have accomplished. By making this promise, I honour her steadfast spirit and pay tribute to all the mothers around the world who, no matter what, work hard to give their children better lives. We hope that this work shows how strong a mother's love is and how it can change lives and leave a lasting legacy.

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CHAPTER ONE

INTRODUCTION

1. Introduction

This chapter provides a summary of the study's background and setting. It gives the justification for having carried out this investigation and also outlines the problem statement. The chapter also set out the research objectives, explains the study's significance and delineates its scope (delimitation). It also gives key definitions of important technical concepts used in the context of this investigation. An outline of the thesis chapters is also presented at the end of the chapter.

1.1 Background of the Study

Artificial intelligence (AI) chatbots have become a novel solution for providing automated public services and information to users cost-effectively and efficiently in recent times (Smith, 2021). Chatbots are software applications that utilise natural language processing to understand and respond to inquiries spoken in ordinary human English. They accomplish this by referring to a connected database or a set of predefined rules (Williams & Dwivedi, 2022). AI chatbots provide a compelling alternative as governments' worldwide aim to enhance not only the efficacy but also the efficiency of technology-driven methods of sharing information and managing regular public inquiries. Although the use of chatbots in the public sector is increasing, there is a lack of comprehensive research on their efficacy and effectiveness. For the purposes of this study, it is useful to clarify that the term *efficacy* is used interchangeably with *efficiency*, emphasising the ability or capacity of AI chatbot in accomplishing its intended goal, which is, to deliver precise and easily accessible public information to its users. This study notes the paucity of empirical research on the effectiveness of AI chatbots in providing citizens with helpful, pertinent, and precise assistance, particularly for specialist subjects including public administration regulations and processes. Automated techniques are inherently limited in evaluating complex government regulations because they require contextual information and sophisticated judgment (Smith, 2021). Therefore, evaluations based on practical implementations of chatbots in public service scenarios, were essential.

Furthermore, the use of digital self-service technologies in the public sector has rapidly increased in the last ten years, as governments strive to find more effective channels for educating and aiding citizens (Smith, 2021). Chatbots, which are software agents that engage in conversations with users through text or speech using rules or artificial intelligence (Williams & Dwivedi, 2022), have become a highly applicable innovation for public information services. Chatbots were first developed in 1966 by Joseph Weizenbaum with the creation

of ELIZA, an early natural language processing system designed to imitate human communication (Jain et al., 2018). After that, there have been significant progressions in machine learning and artificial intelligence (AI) which have facilitated the development of chatbots with enhanced complexity, making them applicable in many customer service scenarios (Luo et al., 2019).

Citizens frequently seek detailed clarification on government programs, laws, obligations, and rights from civil officials or through published material in the public arena (Meng, 2022). However, because of the increasing populations and intricate bureaucracy, the task of disseminating current information and promptly addressing typical inquiries presents administrative challenges and causes delays (Smith, 2021). AI-driven chatbots offer a viable solution for automating the process of responding to repetitive inquiries or guiding users to pertinent resources at all times (Luo et al., 2019). In addition, they enhance the availability of fair opportunities for excluded people by incorporating such features as multilingual support and speech recognition capabilities (Meng, 2022). Nevertheless, there is a scarcity of research assessing the efficacy of chatbots in the public sector, and developing sophisticated conversational abilities in specific fields such as public administration remains a difficult task (Williams & Dwivedi, 2022).

This qualitative case study sought to fill the existing knowledge void by evaluating the effectiveness of "Being a Public Servant in Namibia - The Pocket Guide 2.0 Pocket bot" system. The system was introduced in 2023 to offer a digital self-service tool for addressing frequently asked questions from potential and current civil servants about employment policies and conditions. The study assessed the chatbot's capabilities and limitations in improving the accessibility and understanding of important work-related public service information through semi-structured interviews with the intended users. The results provided valuable knowledge to guide the development, education, and quality control processes of chatbots, while also influencing the recommended approaches for chatbots in the public sector at large.

Further, the study addressed these disparities by evaluating the efficacy, precision, and comprehensibility of the "Being a Public Servant in Namibia" chatbot system in aiding public service applicants and personnel. With the rapid progress of digital transformation in African public agencies (Makoza & Chigona, 2022), examining this early instance of national adoption provides valuable insights into the factors to consider when using emerging technologies in a way that is both effective and ethical, given the region's distinct circumstances. The researcher invited readers who possess knowledge and proficiency in artificial intelligence, public administration, or digitalisation projects in civil service to provide their insights on the study's approach.

1.2 The Namibian Context

One crucial aspect of government communication is the dissemination of information to the general public. According to Michener et al. (2020), effective access to public information promotes accountability, transparency, and public involvement. In the past, government organisations have distributed public information to people and residents through websites, brochures, contact centres, and in-person interactions (Mpinganjira, 2018). However, new technologies have been embraced globally to enhance the delivery of public information, such as chatbots powered by artificial intelligence (AI) (Smith, 2022).

Public organisations in Namibia have encountered difficulties in creating effective communication channels outside of established government frameworks (Amupadhi et al., 2018). According to estimations from Indongo (2019), a number of Namibians have challenges finding and comprehending public information concerning the rights, rules, procedures, and welfare-improving schemes. Public participation has been hampered and institutional trust has decreased as a result of this lack of access (Iiping et al., 2004). In response to these challenges the Namibian government created Vision 2030, a national policy framework that aims to improve information exchange, accountability, and transparency via cutting-edge platforms like artificial intelligence (Government of Namibia, 2004). In this context, using chatbots to distribute information to the public resonates with these e-governance objectives. It was therefore necessary to investigate the intended purpose and effectiveness of AI chatbots in providing public information in the Namibian setting. While the Namibian government has continued to improve the quality of public services and ensure that people can easily obtain pertinent information, minimal research has been conducted on Namibia's usage of AI chatbots to disseminate public information. The recently released Pocket Guide 2.0 Pocket Bot, an AI-powered chatbot created by the Office of the Prime Minister in collaboration with UNESCO serves as a virtual assistant that provides public service users with access to government policy information.

This study therefore sought to provide empirical evaluation of the efficacy and ethical ramifications of developing technologies as they become more widely available (Jobin et al., 2019). Existing studies conducted worldwide have assessed AI chatbots for public information delivery, however, this area remains unaddressed in Namibia. By examining the user experiences of the Pocket Guide 2.0 Pocket Bot, this study breaks new ground and helps to close that gap. Arguably, the findings can provide insights that inform best practices for the widespread implementation of AI to improve public sector data access.

1.3 Problem Statement

In 2023 the Namibian government introduced “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot” as an automated digital service system designed to deliver information on employment policies, procedures, and conditions to public servants and prospective candidates. Since its establishment the Pocket Bot has focused on enhancing work-related public service information accessibility and comprehension by providing continuous support on a 24/7 hour basis to decrease traditional communication channel usage.

The Pocket Guide originated as printed material before evolving into digital format because the government’s aim was to advance information delivery methods and achieve national e-governance goals. The chatbot system’s purpose was to resolve public sector communication problems which included time-consuming responses and insufficient access to current information as well as complicated bureaucratic procedures. The users reported their first impressions about the Pocket Bot which included its quick service, continuous operation, and effective response to basic inquiries. They also raised concerns regarding information accuracy, the chatbot's restricted topic range, and misinterpreting of user input because of natural language processing limitations.

Despite these developments, empirical research evaluating the overall effectiveness of the Pocket Guide 2.0 Pocket Bot in addressing the information needs of Namibian civil servants, remained scarce. There was limited information on how the users interacted with the chatbot system in real-world situations, which components made it successful or created problems, and its ability to help public services function effectively. To address these concerns and fill in this knowledge gap, the study conducted a thorough performance evaluation of the Pocket Bot by examining both its advantages and disadvantages in Namibia's public service environment.

1.4 Research Aim and Objectives

Aim

The primary aim of this research was to assess the efficacy of the “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot” AI chatbot in delivering accurate, accessible, and comprehensible public information to Namibian civil servants.

1.4.1 Research Objectives

The study addressed the following sub-objectives:

- To evaluate the effectiveness of the Pocket Guide 2.0 chatbot in improving civil servants' comprehension of public administration regulations and processes.
- To examine the key advantages and limitations experienced by users when interacting with the chatbot for public information delivery.
- To analyse the critical factors that can enhance the design, training process, and ongoing quality assurance of the Pocket Guide 2.0 chatbot, with special focus on the user interface, natural language processing capabilities, and alignment with official policy content.

1.5 Significance of the Study

The results of this study are crucial for the Namibian policymakers, the executive directors of national, regional, and local government entities and the Public Service Commission. The study aims to draw valuable lessons from the "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot" that can help in policy formulation, decision making and the use of AI chatbots in the dissemination of public information. Addressing the sub-objectives of this research enabled a thorough assessment of the effectiveness of the Pocket Guide 2.0 chatbot. Through this analysis specific suggestions for improving the system were generated. These suggestions aided in making sound administrative decisions on the role and the importance of the automation technology. The research highlighted the pros and cons of chatbots in improving public sector information comprehension and accessibility. The suggestions chapter of this study recommends the use of this information to inform policy and technological approaches for similar initiatives in other countries.

This study is important for the Public Service Commission as it highlights the factors that affect the effectiveness and acceptability of AI chatbots in the public domain. This knowledge may be used to formulate policies and principles that ensure that the use of AI technology is ethical and responsible, thereby protecting the rights of the public, and upholding accountability and transparency (Wirtz et al., 2018). Should the Commission decide to implement the study's recommendations, the Commission's AI chatbot plans would be enhanced in order to improve public service quality and accessibility.

Furthermore, the results of the study may be used by the executive administrators of central, regional and local government organisations to evaluate the advantages and disadvantages of AI chatbots. Understanding the system, information, and service quality can help executive directors improve chatbot implementation (Delone & McLean, 2003). This knowledge enables them to make intelligent decisions regarding resource

allocation, personnel preparedness and infrastructure planning.

This study may also help policymakers to understand the attitudes, perceptions and concerns of government personnel regarding the use of AI chatbots for public information dissemination (Addo & Aning-Aning, 2022; Lombe et al., 2021). Policymakers may generate collaborative and inclusive strategies that address potential concerns, build trust, and ensure the ethical and responsible use of AI technology in the public sphere by taking into account these different perspectives. The study's aim to address the knowledge gap on the ability of chatbots to provide specific public information was achieved by conducting a thorough evaluation of the Pocket bot. The evaluation established the extent to which the chatbot helps the users to understand and get access to the essential civil service employment policies. It is also believed that the will assist the administrators in improving the quality assurance and training of the chatbot. The results also provide insights for future chatbot implementations to improve the government information services to the people.

The study contributes to the existing body of knowledge on the effectiveness of AI chatbots in the public sector. It also provides practical guidance on how to formulate policies, make decisions, and integrate technology to improve public services in Namibia.

1.6 Limitations

The study encountered multiple constraints which affected its research results. To begin with, the qualitative case study design used a limited sample of twenty civil servants which did not adequately represent the complete range of experiences and perspectives found in the Namibian public sector (Smith, 2021). The research concentrated solely on the "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot" without conducting comparative studies of other digital information tools or chatbot systems, this restricted the scope of the findings (Williams & Dwivedi, 2022). The research used semi-structured interviews as its main data collection method which created the risk of subjective bias because the participants' responses were based on their personal perceptions that could be affected by recall or social desirability bias (Meng, 2022). To address aforementioned limitations, the researcher selected participants from administrative, technical and management roles to broaden the user experience representation. The systematic application of thematic analysis enabled the researcher to identify recurring patterns and minimise individual subjectivity. The study maintained transparency through detailed documentation of data collection and analysis methods, and member checking was used when possible to confirm the accuracy of interview transcripts and emerging results. The study addressed its limitations through implemented strategies which aimed to deliver trustworthy context-specific findings about the AI chatbot's effectiveness for public information delivery in Namibia.

1.7 Definitions of Key Terms

The study's essential terminology is defined in this section. In the context of this study, the terms artificial intelligence, chatbot, efficacy, public information, human-AI interaction, and user experience are employed.

Artificial intellect (AI): "The scientific study of how natural learning processes and human intellect can be understood and modelled by computers. AI chatbots imitate human discourse by using machine learning algorithms" (Copeland, 2021, p. 17).

Chatbot: "Is a computer software that simulates human-user communication, particularly over the internet. AI chatbots use cutting-edge algorithms to facilitate communication using natural language" (Jain et.al., 2018, p. 23).

Efficacy: "The power, capacity, or ability of an entity, intervention, or technology to produce a desired effect in actual conditions and use contexts" (Suchman, 1995, p 58).

Public Information: "Data and informational content that supports transparency, accountability, public understanding, and engagement between governmental institutions and citizens within a country" (Michener & Worthy, 2021, p.12)

Human-Ai Interactions (AI): "The interplay between people and AI systems, including dimensions of usability, understanding, trust, explanation, transparency, etc." (Wang and others, 2022) *ser Experience (UX):* "Aspects of a system or service as perceived directly by users in actual situations, encompassing ease of use, accessibility, emotional resonance and more" (Albert & Tullis, 2013,p. 8).

Natural language processing (NLP): "A subfield of artificial intelligence that focuses on enabling computers to understand, process, and generate human language" (Vikram & Son, 2022, p. 19).

1.8 Thesis Structure

This study is divided into five chapters as summarised below:

Chapter 1 provides the study's history and context. The problem statement, the study's aim and research objectives are articulated in this chapter. its significance, and its limitations are all covered in this chapter.

Finally, the chapter offers succinct definitions of the major terminology used in the thesis outline and the setting of this study.

Chapter 2 explored the creation of chatbots in the context of artificial intelligence. This chapter also reviewed the literature related to the study's topic and gave a wide range of definitions. It offers a range of scholarly perspectives, arguments, and viewpoints regarding chatbots with artificial intelligence. This chapter also provided an overview of research on the historical development of chatbots in Namibia, regional, and global settings. This chapter also addressed the intellectual and philosophical foundations guiding this research.

Chapter 3 examined the methodological approaches applied in this study together with the research design and procedures. Also included in this chapter are the data collecting techniques, sampling process, and research population. The chapter ends with a thorough discussion of the ethical issues that were taken into consideration during the collection, analysis, and interpretation of the data.

Chapter 4 focuses on the presentation, analysis, and discussion of the findings. Here, by means of in-person interviews with public servants, the chapter evaluated the efficacy and user experience of the Pocketbot 2.0, therefore exposing a need for design and functional enhancements to raise user happiness and engagement. Important findings demonstrated that creating trust and ensuring accurate information delivery regarding government policies rely on a user-friendly interface and powerful natural language processing skills. Furthermore, the research emphasized the need of maintaining updated content for the Pocket bot's proper operation and recommended ongoing training and help to optimize the chatbot's efficacy in public service delivery.

Chapter 5 provided conclusions and recommendations based on the findings. The chapter recommends that while appreciating constraints like a low response rate and a limited sample size that would not fairly reflect more general user experiences, recommendations for improvement include encouraging more interactive, human-like elements and concentrated training programs to increase digital literacy.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2. INTRODUCTION

This chapter presents a comprehensive survey of the literature that has had a substantial impact on the inception, implementation, and progression of artificial intelligence chatbots. According to Creswell (2014), the critical importance of including a literature review in a thesis cannot be overstated; without one, the research lacks sufficient foundational knowledge. This chapter thus analyses the literature pertaining to diverse facets of chatbots. The chapter began with a definition of artificial intelligence chatbots, followed by a historical overview of its evolution. In addition, the chapter examined the roles and functions of chatbots and conducted a literature review of empirical investigations that have explored perspectives on the systems in Namibia, Africa, and the world. The concluding segment of this chapter comprises an analysis of the theoretical framework that informs the present investigation.

2.1 Defining Artificial Intelligence Chatbots

Conversational agents, also referred to as chatbots, have the ability to engage in dialogue with individuals through speech or text interfaces (Brandtzaeg & Følstad, 2017; Zhou et al., 2020). They are made possible by natural language processing (NLP), a subfield of AI that enables the study and synthesis of human languages. Natural Language Processing (NLP) techniques, including sentiment analysis, semantic parsing, and speech recognition, facilitate the comprehension capabilities of chatbots (Jain et al., 2018). Jain et al. (2018) state that chatbots employ a pipeline methodology wherein natural language processing algorithms assess user input to determine intent, extract entities, and select responses from a knowledge base in order to produce suitable output.

Definitions will inevitably evolve as chatbot technologies progress rapidly, according to a number of authorities. From a technical standpoint, chatbots can be classified into the following categories: rule-based text-focused systems or natural language processing (NLP) systems, intelligent personal assistants (IPAs) like Siri that incorporate external APIs to enhance their search capabilities, and embodied conversational agents designed for immersive interactions, such as "virtual nurses," which are humanoid avatars. As capabilities advance, Zhou et al. (2020) provide a broad definition of AI chatbots as, "computer programs designed to simulate human conversations via text or voice" (p. 2). They further state that definitions are susceptible to change.

Despite potential differences in design, chatbots generally aim to provide natural, human-like conversations. The capacity of judges to pass the Turing test, an artificial intelligence pioneer Alan Turing-designed evaluation that distinguishes replies produced by chatbots from those of human beings, determines their ultimate judgment (Jain et al., 2018; Zhou et al., 2020). Although still a flawed benchmark, human-parodying interaction skills are a crucial performance indicator and drive the creation of commercial chatbots.

2.2 History and Evolution of Chatbots

Chatbots, dialogue systems, or conversational agents (Adamopolous & Moussiades, 2020) are computer applications that replicate human communication using text or speech. The beginning of chatbot technology can be historically connected to 1966, when ELIZA, a natural language processing computer program created by Massachusetts Institute of Technology (MIT), sought to replicate the actions of a Rogerian psychotherapist (Jain et al., 2018). ELIZA operated by analysing user comments, looking for keyword triggers, and creating programmed responses using pattern matching (Adamopolous & Moussiades, 2020; Jain et al., 2018) even without understanding the words. ELIZA looked for certain keywords using a rule-based approach, then produced pre-programmed replies that seemed to make sense (Adamopolous & Moussiades, 2020; Jain et al., 2018).

Nevertheless, ELIZA lacked contextual understanding of dialogues, and its scripted reactions quickly demonstrated their limitations (Brandtzaeg & Følstad, 2017). However, it exemplified ground-breaking endeavours to replicate human discourse.

Subsequent chatbots developed between the 1970s and 1990s utilized programming languages such as AIML, tools such as ChatScript, and more sophisticated rule-based systems to execute complex conversational scenarios (Jain et al., 2018). Businesses began investigating business use cases for FAQ-based customer service chatbots in order to automate the management of high-volume call inquiries at a low cost. Nevertheless, the initial iterations of these chatbots encountered censure because of their subpar responses that failed the Turing Test and their awkward conversational patterns (Brandtzaeg & Følstad, 2017).

Though with limited capabilities for interaction, chatbots developed to incorporate more complex programming and rules throughout the decades after ELIZA. The 2000s saw notable developments in chatbots as machine learning and neural networks were used. These technologies allowed chatbots examine language patterns in large-scale databases and participate in more contextual and meaningful discussions (Brandtzaeg & Følstad, 2017; Adamopolous & Moussiades, 2020). This marked a turning point in the twenty-first century when machine learning and neural networks let chatbots have more contextualised and relevant powers.

According to some scholars, “Statistical AI algorithms have facilitated sophisticated natural language processing, sentiment analysis, and intent recognition through the utilization of enormous datasets and computational prowess” (Adamopolous & Moussiades, 2020; Jain et al., 2018, p.56). Prominent technology companies made substantial investments in this subsequent phase, as evidenced by the 2010 introductions of Siri by Apple, Xiaolce by Microsoft for the Chinese market, and Google Assistant.

Driven by artificial intelligence, modern chatbots may do a variety of clever, tailored tasks in addition to speaking. These cover creating suggestions, answering consumer service questions, and even order processing. Multinational technology giants' introduction of chatbots has hastened their adoption. Zhou et al. (2020) estimate that the chatbot sector will generate \$19.8 billion by 2024 as businesses capitalise on their strengths to improve consumer involvement, lower call volume, and simplify operations.

Unlike in the last several decades, current chatbots show sophisticated features like the ability to make customized suggestions, complete transactions, and show amusement and wit (Jain et al., 2018; Zhou et al., 2020). Intense competition exists among multinational IT companies to enhance AI assistants and establish dominance in the conversational agent industry, which is expanding at a rapid rate. There is speculation that the chatbot market could surpass \$19.8 billion by 2024, given the rapid incorporation of chatbots into various sectors including education, healthcare, customer service, and the public domain (Zhou et al., 2020).

2.3 History and Status of Artificial Chatbots in the Global North

For marginally coherent dialogues, the ELIZA program implemented a rule-based methodology (Adamopolous & Moussiades, 2020). Although ground-breaking during its infancy, ELIZA's programmed responses had certain constraints when it came to imitating human thought processes and the flow of conversations. However, substantial improvements in chatbot technology occurred in industrialised countries of the Global North, notably the United States, United Kingdom, and China, in the decades that followed.

Expanding upon the fundamental work of ELIZA, chatbots from the 1970s-1990s combined advanced rule-based systems and programming languages to support more complicated discussions in domains such as commerce and education (Jain et al., 2018). The advent of neural networks and statistical machine learning in the 2000s made it possible for conversations to be more contextual and significant. Prominent technology companies initiated the introduction of early iterations of modern intelligent assistants: Apple introduced Siri in 2010, Microsoft released Xiaolce with a focus on China in 2014, and Google's Assistant debuted in 2016 (Jain et al., 2018). Currently, significant platforms demonstrate advanced language comprehension, amusing characters, and individualised suggestions that were inconceivable in past generations.

The adoption of chatbots also surged greatly in the 2010s. Zhou et al. (2020) highlight the notable rise in deployment among the advanced Northern economies—more especially, in the healthcare, finance, e-commerce, and entertainment sectors. Conversational bots are currently utilised by customers on a regular basis for product inquiry, technical support, and purchases. Zhou et al. (2020) predict that by 2024, more than 25% of customer service interactions will be conducted using chatbots, an increase from less than 2% in 2017. As algorithms and data keep developing, the technologically advanced Northern areas seem to be well suited to include chatbots into commercial and home digital interactions (Zhou et al., 2020).

2.4 History and Status of Artificial Chatbots in Africa

Unlike the tech-savvy Global North, where chatbot innovation has progressed dramatically, the spread and acceptance of conversational agents in Africa have proceeded more slowly (Abdul-Kader & Woods, 2015). Emerging technology development is hampered in the majority of sub-Saharan African nations by imperative issues such as electrical access, connectivity, digital literacy, and cybersecurity. However, recent trends indicate an increasing integration of chatbots in critical sectors of Africa.

Chatbots have been implemented by public sector entities with the aim of automating government services and optimising engagements with the public. The Federal Ministry of Agriculture of Nigeria first presented Farmbot in 2019 in order to retrieve commodities pricing and weather updates (Afolabi et al., 2022). Kenya and South Africa included the Ministry of Health chatbots with consistent advice among the COVID-19 epidemic (UNICEF, 2020). Such systems might help to improve state openness and information availability.

To address the needs of the growing young population, African start-ups also increasingly use conversational bots to offer edutech solutions, customer support, and e-commerce. While Kazeem (2020) cites Data Integrated, a Ghanaian start-up, helps microfinance institutions using WhatsApp chatbot services. Osho et al. (2022) note that the Dr Five chatbot in Nigeria handles thousands of prescription refill requests weekly. Despite the fact that the majority of current applications are still relatively rudimentary, African chatbot innovation demonstrates promising potential.

2.5 The Rise of Artificial Intelligence Chatbots in Namibia

With the worldwide surge in the adoption of conversational agents, a growing proportion of Namibian enterprises are implementing chatbots on prominent social media platforms such as Facebook Messenger to augment the consumer experience. Financial institutions appear to be particularly receptive to automation. For instance, in 2020, Letshego Bank Namibia, a prominent microfinance provider, launched a virtual assistant on Facebook Messenger to respond to frequently asked questions regarding Facebook accounts, products, and loans (Letshego Bank Namibia, 2020). In 2021, MultiChoice Namibia, a pay-TV broadcaster, implemented a chatbot that facilitated the online verification of account balances, decoding of error messages, and initiation of service modifications by social media users (MultiChoice Namibia, 2021).

These implementations prioritise streamlined, individualised self-service, given that Namibian consumers prefer the interactivity of messaging apps to that of conventional, static company websites. Previously overwhelmed with often requested client questions, human operators are now automated, which benefits local companies. As natural language processing develops, patients might soon be able to have medical symptoms identified by a hospital Facebook chatbot and citizens could be able to register for identification documents using a secure government bot.

However, despite the fact that social media chatbots advocate for streamlined digital experiences, detractors contend that inadequate data protections in Namibia present privacy hazards due to the involvement of sensitive user data. Further investigation is required to analyse the dynamic nature of chatbot implementation using domestic and international corporate social media platforms.

Working together, UNESCO Namibia and the Office of the Prime Minister produced a creative chatbot for public sector governance and citizen education recently. Introduced in 2023, the "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot aims to reduce corruption through the distribution of interactive and simply understandable instructional resources to the general people. Subjects covered encompass ethical principles, appropriate behaviour, and the process of lodging complaints (UNESCO, 2023). This digital aid employs a quiz-based edutainment strategy and incorporates gamification, videos, and GIFs to enhance the retention of critical concepts pertaining to the civil service.

Focusing on national identity and anti-corruption messages, this chatbot—the first public sector conversational agent in Namibia—showcases promise for innovation at the junction of technology, government, and social change communication. More research should look at how well it shapes public understanding, attitudes, and behaviour on integrity and civil service. Moreover, studies might guide efforts to duplicate such civics teaching chatbots for next generations across other government agencies.

Previous studies mainly focused on Namibia’s financial and media sectors using chatbots yet this study broadened the scope by investigating their application in the public sector. The “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot” became Namibia's first artificial intelligence chatbot system when it launched in 2023 (Smith, 2022). The Office of the Prime Minister together with UNESCO developed this chatbot which served as the first artificial intelligence system for public service employees and the general public to access employment policies and conditions through digital self-service (Smith, 2022).

According to literature the initial chatbot implementation focused on central government departments which handled human resources and public administration functions but did not include all governmental institutions (Government of Namibia, 2004; Smith, 2022). The system implementation followed a staged approach to test and improve the system before expanding its deployment (Smith, 2022). The evidence indicated that the chatbot failed to gain widespread adoption throughout all ministries and agencies.

The majority of Pocket Guide 2.0 Pocket Bot users showed positive reactions because the system offered quick policy access and minimised their requirement for slow traditional communication methods (Smith, 2022). The literature showed that user feedback originated mainly from unstructured interview sessions and individual reports instead of formal reviews (Smith, 2022).

The chatbot experienced three main problems according to the literature: users struggled with its interface design, natural language processing abilities, and policy responses contained errors (Smith, 2022).

2.6 The Role and Function of Artificial Intelligence Chatbots

The adaptability of chatbot features motivates their application in different spheres of life. Conversational agents replicate the dynamics of interactive human discourse by using natural language processing to understand user inputs and identify appropriate answers, thus, enabling their comprehension. Based on their processing capability and quality of knowledge base, chatbots may run transactions and offer information searches, suggestions, and multimedia materials.

Chatbots are used in commercial environments to offer automated customer care; they round-the-clock to

handle standard questions and reset passwords. This allows human delegates be assigned to more difficult problems (Zhou et al., 2020). As algorithms develop, chatbots show advanced language knowledge tailored to the particular tones and context of conversations (Jain et al., 2018). In the healthcare industry, symptom checker algorithms enable patients to privately discuss stigmatised conditions or avoid the expense of doctor visits while facilitating the evaluation of minor ailments (Zhou et al., 2020).

Chatbots are also utilised by the public and government sectors to provide citizens with trustworthy updates and self-service alternatives. Smart virtual assistants are very important in simplifying administrative tasks such as license renewal and digital record access, thus improving general happiness and efficiency (Følstad & Brandtzaeg, 2020). Furthermore, their natural involvement shows the possibility for the development of public health campaigns and civic education of young people. The public expects similar degrees of responsiveness from government services as they get more comfortable with the smooth running of digital commerce systems.

2.6.1 Customer Service as a Function of Artificial Intelligence Chatbots

With the widespread implementation of conversational agents in various sectors, customer service emerges as a prominent clientele that propels the adoption of chatbots in the commercial domain. Brands can efficiently mechanise the resolution of common inquiries, concerns, and grievances from customers by utilising natural language processing to comprehend queries and propose appropriate replies (Adamopoulos & Moussiades, 2020).

Chatbots provide round-the-clock accessibility and expeditious resolutions for prevalent customer challenges, such as updating account information, resetting passwords, and verifying order status (Brandtzaeg & Følstad, 2017). This type of self-service improves user convenience while alleviating the burden on human representatives caused by high call volumes. Initial results indicate substantial acceptance; according to a study conducted by IBM in 15 countries, 80% of respondents were content with the assistance provided by chatbots in relation to uncomplicated retail transactions and deliveries (Zhou et al., 2020).

As algorithms advance, chatbots demonstrate increased promise in the realm of customer service. Sophisticated dialog management allows for the provision of tailored, situationalised responses that are adjusted in accordance with the user's progress (Jain et al., 2018). In addition to managing multiple inquiries concurrently, certain algorithms have the capability to escalate intricate issues to live agents for specialised attention. In essence, the amalgamation of automated simplification and human discernment satisfies the demands of customers while also advancing business goals.

2.6.2 Artificial Intelligence Chatbots' Function as a Self-Service Option to Citizens

Providing automated citizen self-service, chatbots are progressively assisting in e-governance, in addition to their role in customer service. Conversational agents are utilized by public sector organisations to reduce the amount of time and resources required for routine administrative tasks that were previously performed using phones, in-person, email, and paper (Følstad & Brandtzaeg, 2020).

As an illustration, chatbots are utilised by local governments to provide the public with digital access to property tax information, garbage collection schedules, and license/permit applications, all of which are accessible to constituents irrespective of office hours or wait periods (Zhou et al., 2020). These functionalities reflect the ease with which individuals conduct transactions on social media platforms or e-commerce sites. Furthermore, chatbots serve to distribute dependable updates regarding public health recommendations or awareness initiatives, thereby augmenting the level of transparency within governmental operations.

As citizens become more accustomed to the responsiveness exhibited by consumer applications and websites, they anticipate digital governance to operate in the same manner. According to a study of Nordic municipalities, sixty percent of the respondents were in favour of chatbots enhancing the accessibility of public services, whereas twenty-two percent preferred only human interactions (Følstad & Brandtzaeg, 2020). Similar to the retail and financial industries, chatbots are positioned to drive citizen self-service as algorithms, data, and integration continue to advance.

2.7 Perceptions of Artificial Intelligence Chatbots

With the increasing integration of chatbots into digital experiences, research findings regarding user perceptions are inconsistent. A 17-country survey conducted by Dale (2019) revealed that 64 percent of consumers felt at ease using chatbots to perform mundane tasks such as order monitoring or address changes (Zhou et al., 2020). Nonetheless, approval rates appear to be correlated in part with bot functionality. With acceptance rates of over 80%, Chinese and Indian individuals were the most at ease when engaging with conversational agents, according to the results of Dale's (2021) seventeen-country consumer survey on chatbot impressions. On the other hand, those from Germany, France, and Japan showed the least interest; fewer than 50% of them would be happy to use chatbots for regular transactions. According to the report, rising digital literacy and technology fervour in developing nations helped them to be accepted in contrast to industrial legacy countries. Still, in underdeveloped countries, improved voice recognition and local language support might inspire more acceptance.

According to a study of the Nordic public sector, most people (60%) agreed to using chatbots for simple administrative chores as tax payments or license renewal. By comparison, just 35% of respondents supported more complex services like career coaching or mental health help (Følstad & Brandtzaeg, 2019). Furthermore, factors affecting attitudes include confidence in correctness and assurance of privacy (Lui et al., 2021). Examining Microsoft's healthcare, chatbot indicated that people have questions about its data sharing with businesses and diagnostic powers. Variations were observed among chatbot functions in the Nordic municipalities study (Følstad & Brandtzaeg, 2020). Although residents exhibited a willingness to utilise bots for straightforward administrative tasks, they displayed a strong aversion towards relying on them for sensitive services such as legal advice or tax filing assistance. Participants in qualitative feedback voiced concerns about the accuracy of information, the efficacy of data security policies, and the accountability of public agency-contractually hired third-party chatbot suppliers to guarantee governance. Such issues might affect user impressions and confidence in chatbots assigned in increasingly complex e-governance tasks.

Furthermore, advancement in technology keeps raising standards for chatbots. Any residual imperfection in natural discussions might lead to growing unhappiness as capabilities move toward a more human-like condition. An additional peril associated with anthropomorphism is the potential for excessive trust, which occurs when individuals erroneously compare the intelligence and compassion of algorithms to those of humans (Følstad & Brandtzaeg, 2020). For designers and strategists, the management of user perceptions throughout the chatbot experience lifecycle continues to be critical. Investigated among college students was their view of Microsoft healthcare chatbots (Lui et al., 2021). Although the cohort is generally technologically competent, respondents voiced concerns about the likelihood of misdiagnosis stemming from chatbots' emotional restrictions and restricted symptom inputs when addressing health concerns as compared to human doctors. This suggests that even those regarded as digital natives worry about the whole replacement of human knowledge and judgment with artificial intelligence technology.

Yang et al. (2022) observe that qualitative approaches are judged the most effective when it comes to understanding the basic thinking that drives user interactions with intelligent systems, including chatbots, in order to generate ideas for improvements. However, the evaluation of chatbots does not frequently incorporate these methodologies (Te'eni et al., 2022). Lanamaki and Stendal (2022) argue that single case studies offer significant utility in the realm of organisational technology evaluations, specifically when they integrate user perspectives, system observations, designer intentions, and usage data. The manner of this proposal follows the recommended strategies for moral and effective applied research.

Furthermore, based on a user perception study, obstacles to adoption may be found and resolved by means of the differences in comprehension between chatbot designers and the general public (Lanamaki & Stendal,

2022). Interviews among various qualitative research techniques, provide participants with the opportunity to communicate complex assessments and goals. An examination of attitudes across different groups emphasises the requirement of tailored techniques inside certain bureaucratic environments instead of counting on universal solutions (Smith, 2021). This study aims to resolve such research gaps by using these approaches.

Lombe et al. (2021) conducted a thorough research in the South African setting looking at citizen and government official opinions on the integration of artificial intelligence chatbots for the delivery of public services. The researchers applied a mixed-methods strategy by combining qualitative data from focus group interviews and conversations with quantitative data from surveys. Participating in a survey in the quantitative phase were 427 civilians and 385 government officials from various provinces throughout South Africa. The poll asked the participants about artificial intelligence chatbots in terms of their impressions of issues like perceived value, usability, dependability, and probable hurdles or fears. The results show that generally government officials and people perceived AI chatbots favourably and recognised their ability to improve the delivery of public services. In particular, the perception of chatbots by the participants was that they could be utilized to improve the efficiency, accessibility, and cost-effectiveness of services (Lombe et al., 2021).

Despite this, a number of concerns and obstacles associated with the implementation of AI chatbots were also highlighted in the study. Government authorities expressed concerns about job stability and underlined the need for adequate training and control to ensure the moral and appropriate implementation of new technologies. Furthermore, worries about data privacy, system openness, and the risk of prejudice or discrimination impacting the chatbot decision-making process were voiced by both the government officials and people (Lombe et al., 2021). By means of focus groups and interviews with thirty-eight government officials and thirty-six individuals, the qualitative phase acquired a more all-encompassing knowledge of these opinions and issues. The participants underlined the importance of building confidence in AI chatbots as they emphasised open communication, robust data security policies, and constant review and assessment of the chatbot decisions and performance (Lombe et al., 2021).

Furthermore, underlined in the study was the importance of using a cooperative approach when including artificial intelligence chatbots into processes. This means that participants from many fields, including academics, government, and civil society groups, actively engage themselves. By use of a cooperative approach, one may ensure that the design and deployment of the chatbots reflect the values and needs of the particular local communities they aim to aid (Lombe et al., 2021). Lombe et al. (2021) conducted a study that significantly advanced public sector of South Africa's knowledge of attitudes and perspectives on artificial intelligence chatbots.

The results emphasise the need for addressing issues with job security, data privacy, and ethical issues while leveraging the possible benefits of technologies in order to improve the delivery of public services. Similar research was conducted in Ghana to investigate public worker and citizen viewpoints on the deployment of artificial intelligence chatbots as a way of acquiring government information and services (Addo & Aning-Aning, 2022). The aim of Addo and Aning-Aning's (2022) study was to find out how public officials and Ghanaian people felt about the application of artificial intelligence chatbots for information and government service acquisition. The researchers used a mixed-methods approach, combining qualitative data from focus group discussions and interviews with quantitative data from surveys.

During the quantitative phase, the researchers polled 205 public officials throughout Ghana as well as 412 residents. The study looked at how the participants perceived artificial intelligence chatbots in terms of perceived usefulness, usability, dependability, and probable challenges or barriers. According to the results, most people viewed artificial intelligence chatbots positively and knew their possible benefits in helping to acquire government data and services. Particularly, the general public thought chatbots were useful tools that may increase accessibility, convenience, and speed of service delivery (Addo & Aning-Aning, 2022).

Moreover, trust in the technology and perceived simplicity of use emerged as significant predictors of the citizens' intentions to utilize AI chatbots to obtain government information and services. Concerns expressed by public servants, however, regarding the potential impact of AI chatbots on their employment security were also highlighted in the study. Many public officials expressed concerns about the possibility of these technologies replacing them, therefore generating resistance or uncertainty about its use (Addo & Aning-Aning, 2022).

By means of focus group debates and interviews with twenty-eight residents and twenty-two public officials, the qualitative phase acquired a further understanding of these attitudes and issues. The general public underscored the need for protecting data privacy and security during contacts with artificial intelligence chatbots. Furthermore, they also asserted the importance of open and straightforward communication on the limits and possibilities of such technology (Addo & Aning-Aning, 2022).

Public officials, on the other hand, expressed concerns about the probable lack of human connection and underlined the need for thorough training and support to be able to smoothly include artificial intelligence chatbots into their daily operations. Furthermore, they highlighted issues such as keeping human supervision and decision-making powers while handling sensitive or complex problems (Addo & Aning-Aning, 2022).

Addo and Aning-Aning's (2022) research significantly advanced the public sector of Ghana's knowledge of attitudes and perceptions of artificial intelligence chatbots. While simultaneously leveraging the possible benefits of these technologies to improve availability of government services and information, the results highlighted issues pertaining to employment stability, confidence of data, and possible decline in interpersonal communication.

These studies highlight the need to understand and address the varied perceptions and concerns of the different stakeholders during the public domain integration of artificial intelligence chatbots. When it comes to public services and information, several factors job security, data privacy, perceived utility, and simplicity of use can significantly affect the adoption and efficacy of chatbots.

2.8 Challenges of Artificial Intelligence Chatbots

Notwithstanding the rapid speed of invention, conversational bots nevertheless run against limitations that compromise user experience and their general acceptability for broad use. Fundamental technological limits when compared to human cognition, are speech recognition deficits, poor dialog management, and inadequate reasoning/decision-making skills (Jain et al., 2018). Chatbots must have a constructive interpretation and strong natural language understanding if they are to respond satisfactorily, especially for complex questions.

Given the personal information chatbots compile, the privacy problem becomes a major ethical conundrum. The machine learning driving chatbot operations depends on data inputs. However, in order to establish user trust, it is also essential to implement strong policies and security controls that minimise the risks of exposure (Følstad & Brandtzaeg, 2020). A further concern regarding accountability is that complete audits of chatbots are hampered by the "black box" nature of certain algorithms.

Furthermore, both the initial creation and ongoing content maintenance of chatbots meant for business usage call for significant resources. Thousands of conversational rules and situations have to be developed by subject-matter specialists for the knowledge base. Given the gradual increase of user inputs, constant evaluation and changes are absolutely necessary. Smaller companies' lack of specialised knowledge might help to explain their predisposition toward outsourcing suppliers. Third-party chatbots do, however, expose flaws in data control and dependence. When government chatbots fall short of people's expectations for precise, all-encompassing, and tailored answers to questions that are often situation-dependent (Smith, 2021; Yang et al., 2022), public discontentment results.

However, there is a lack of research regarding the ability of public chatbots to efficiently handle inquiries for unclear information, specifically in the context of developing nations (Makoza & Chigona, 2022). Present evaluations primarily place emphasis on public contentment rather than taking into account all aspects of comprehensive success (Te'eni et al., 2022). This underscores the necessity and immediacy of conducting a comprehensive assessment regarding the extent to which the Pocket Guide corresponds with the needs of its target audience.

Furthermore, chatbots operating in associated domains encounter challenges when it comes to managing intricate advisory tasks, such as promoting health behaviours or extending financial aid. These difficulties stem from their restricted aptitudes for comprehending intricate information, logical thinking, and personalization (Perski et al., 2022; Adam et al., 2022). Luo et al. (2019) state that the design guidelines incorporate contextual adaptability, a lucid understanding of uncertainty, and the incorporation of human responsibilities. An analysis of the chatbot's capabilities and limitations in providing information regarding public administration can yield insightful knowledge that can be implemented in different contexts. By addressing these constraints, the long-term viability of chatbots can be determined. The proliferation of sustainable, and seamless solutions that meet the changing demands of users will most likely hasten their implementation. However, reluctance may increase if chatbots are unable to match the conversational capabilities of humans in the face of rising expectations.

2.9 Theoretical Framework

There are two theories that exhibit promise in the examination of stakeholders' viewpoints regarding chatbots and the system's overall efficacy. The study conducted by Orlikowski and Gash investigates technological frames, which are obstacles to success caused by inconsistencies between the intentions of developers and the actions taken by users. They propose that realignment be implemented in order to tackle these concerns (1994). According to DeLone and McLean (2003), the information system success model recommends conducting a comprehensive evaluation of quality, utilisation, and output metrics. These lenses, when utilised in conjunction, enable the detection of areas where misalignment hinders the performance of the chatbot. Empirical user experience studies facilitated the identification of shortcomings pertaining to technical, semantic, service, and adoption aspects as well (Adam et al., 2021). Additional details regarding these hypotheses are provided in a separate section of this research.

2.9.1 Technological Frames Framework

Technological frames are cognitive constructs maintained by social collectives that affect people's anticipations and assessments of the actual purposes and useful applications of developing technology (Orlikowski & Gash, 1994). One can find possible areas for development by comparing the actual experiences of consumers with the expected value of chatbot creators. Moreover, the five linked aspects of information system quality brought by the updated DeLone and McLean (2003) model are user happiness, system, information, knowledge, service, and usage/intention to use. Examining technological, semantic, administrative, and social aspects holistically enables one to evaluate the chatbot from this vantage point.

Technological frames are the conceptual frameworks or points of view that mould a person's view and understanding of technology as well as its social consequences. Orlikowski and Gash first used the term "technological frames" in their 1994 paper to describe the set of knowledge, expectations, and assumptions people use to grasp and analyse technology inside the framework of a company. Three separate domains comprise technological frames: the strategic approach to technology, which includes implementation plans, objectives, and justifications; the practical application of technology, which pertains to how people interact with it; and the essence of technology, which comprises its purpose and functionality. Divergent perspectives or "misalignments" among different stakeholder groups in these areas may lead to conflicts, disagreements, and unfruitful technological endeavours if not effectively addressed (Orlikowski & Gash, 1994).

This theoretical framework enabled the assessment of diverse viewpoints regarding the objectives, capabilities, and implementations of the chatbot by both the civil service's target users and the developers employed by the public agency. The above mentioned remark emphasises the probable difficulties that designers create when they create features that do not fit the unique demands and situations of end users, often resulting from mistaken presumptions (Makanza, Rumanyika & Merwe, 2022). Examining the opinions and usage patterns of several stakeholders about the Pocket Guide chatbot can help to expose discrepancies that compromise its effectiveness. Additionally, potential modifications to the system, training protocols, or organisational guidelines that foster a shared comprehension and promote extensive adoption of the chatbot were discerned through this analysis (Lanamaki & Stendal, 2022).

2.9.2 The DeLone and McLean Model

The DeLone and McLean's model is frequently employed in the evaluation of information system's (IS) effectiveness. This model recognises six interconnected criteria information quality, system quality, service quality, usage/intention to use, user happiness, and net system benefits as helping to define the effectiveness

of an IS (DeLone & McLean, 2003). One can have a whole awareness of the performance of the chatbot technology by carefully evaluating every aspect. This covers its knowledge and substance, the human resources and training that support its operation, the practical value users see, and the impact it has on administrative results including civil service accessibility and productivity.

Developing information and communication technology solutions in the public sector necessitates a comprehensive analysis, as it involves attending to the complex needs of numerous stakeholders (Bwalya & Mutula, 2016). By comparing actual and anticipated benefits, it is also possible to determine whether investments in the automated tool have yielded positive outcomes and commensurate returns for the organisation and society, or whether they have squandered resources or produced unintended consequences. The continual evaluation of the chatbot's performance across all six domains could yield significant knowledge for enhancing subsequent iterations (Te'eni et al., 2022).

The application of DeLone and McLean's model to public agencies reveals a number of success-related factors in research. The aforementioned elements encompass proficiently overseeing the varying expectations of citizens, guaranteeing accessibility, showcasing concrete benefits that extend beyond financial savings, and promoting the voluntary utilization of self-service alternatives (Bwalya & Mutula, 2016; Scott et al., 2016). It is imperative to analyse the complexities of e-governance in Africa because of the obstacles that the continent's development confronts. When assessing novel solutions like chatbots, this aspect assumes particular significance (Makoza & Chigona, 2022).

2.9.3 Previous Studies Done Using the Revised DeLone & McLean Model and the Technological Frames Framework

Using the Revised DeLone and McLean Model (Ahamed et al., 2021; Gnewuch et al., 2017), the effectiveness of several information systems including artificial intelligence chatbots in the public sector has been extensively assessed.

Using the Revised DeLone and McLean IS Success Model, Ahamed et al. (2021) calculated the efficiency of AI chatbots in Bangladesh in relation to the public service provision. Their results revealed that user happiness and the apparent value of chatbots were influenced by system quality, information quality, and service excellence. In the same vein, Gnewuch et al. (2017) applied the approach to assess the effectiveness of artificial intelligence chatbots in the field of customer support. The writers underlined the need for information quality and service in increasing user happiness and apparent benefits. In their exhaustive investigation, Ahamed et al. (2021) assessed the effectiveness of AI chatbots in providing public services in Bangladesh. The study

employed the Revised DeLone and McLean IS Success Model as its theoretical underpinning. The objective of the research was to evaluate the impact of AI chatbot quality dimensions namely system quality, information quality, and service quality on user satisfaction and the perceived benefits among the general public. The researcher used a mixed-methods approach combining quantitative data from a survey of 384 citizens with experience using AI chatbots for public services, with qualitative data gathered through semi-structured interviews with 20 government officials engaged in the implementation and management of the chatbots.

The quantitative research revealed notably beneficial effects of system quality, information quality, and service quality on user happiness and the perceived advantages of the artificial intelligence chatbots. The study especially identified the main factors influencing user satisfaction and perceived advantages as the simplicity of use, trustworthiness, and promptness of the chatbots (referred to as system quality). Moreover, the application of information quality metrics including correctness, relevance, and completeness in the data supplied by the chatbots considerably raised the expected advantages and user satisfaction. Furthermore, underlined by the research was the need for quick and courteous treatment also known as service quality in fostering customer happiness and apparent benefits (Ahamed et al., 2021).

The knowledge acquired from the interviews with government officials on the execution and management difficulties faced when using artificial intelligence chatbots to provide public services was really important. The officials underlined the need for constant training and chatbot upgrades to ensure the presentation of correct and relevant information. Moreover, underlined was the need for effective user assistance and feedback systems to improve the quality of services (Ahamed et al., 2021). Focusing on underdeveloped countries like Bangladesh, the research by Ahamed et al. (2021) enhanced awareness of the factors influencing the usefulness of artificial intelligence chatbots in the public sector. The writers counsel government agencies to focus on improving system quality, information quality, and service quality in order to optimise customer happiness and the apparent advantages of AI chatbots in delivering public services.

Gnewuch et al. (2017) applied the DeLone and McLean Model to assess, in the framework of customer service, the performance of artificial intelligence chatbots. Their study sought to identify the factors influencing the effectiveness of artificial intelligence chatbots in offering customer care and assistance. The questionnaire was distributed among the three hundred people who had lately engaged with an artificial intelligence chatbot for customer support. Following the DeLone and McLean model, the survey assessed information quality, service quality, user satisfaction, and perceived benefits, among other constructs. The findings of the research emphasised the critical significance of service quality and information quality in augmenting user satisfaction and perceived advantages of artificial intelligence chatbots within the realm of customer service. With specific

reference to information quality, the study found that the accurate, relevant, and thorough information provided by the AI chatbot greatly raised user satisfaction.

Furthermore, the study showed that consumers were more satisfied when the chatbot addressed questions or issues relevant to them, and was clear, understandable, and up-to-date. Furthermore, enhanced decision-making and streamlined problem-solving were among the additional benefits that users perceived as a result of interacting with the chatbot, which were further bolstered by the high quality of the information (Gnewuch et al., 2017).

In terms of service quality, the research findings indicated that user satisfaction was significantly impacted by the AI chatbot's promptness, dependability, and assurance (in the form of trustworthiness and courtesy). As indicated by the study, users placed a premium on prompt responses, dependable and consistent service, and a chatbot exhibiting a courteous and professional demeanour; these factors contributed to their overall satisfaction with the interaction. Additionally, with regard to service quality, the research findings indicated that users' perceptions of the advantages obtained from the chatbot, including time efficiency, convenience, and a favourable service encounter, were all positively impacted by exceptional service quality (Gnewuch et al., 2017).

The research conducted by Gnewuch et al. (2017) underscored the significance of developing AI chatbots that give customers first-rate information and service. According to the author, companies using AI chatbots for customer support should give first priority to accuracy, completeness, and relevancy of the information while alongside guaranteeing timely, dependable, and polite service delivery. By stressing the need for information quality and service quality inside the framework suggested by DeLone and McLean, the research provided companies with important knowledge that can be applied to raise customer satisfaction and maximise the benefits of artificial intelligence chatbots in customer service environments. Previous studies looking at the deployment and use of artificial intelligence chatbots in customer service environments applied the Technological Frames paradigm (Orlikowski & Gash, 1994.). These studies shed light on how different stakeholder groups view and understand these technologies as well as how their technological perspectives affect the acceptance and use of chatbots.

Using the Technological Frames framework, Nguyen and Sidorova (2022) investigated the many viewpoints and interpretations of artificial intelligence chatbots as maintained by consumers and service workers. The researchers examined the technological viewpoints held by different stakeholder groups with regard to artificial intelligence chatbots applied in customer care by means of thorough interviews with twenty service professionals and thirty consumers from various businesses. The study revealed clear differences in the

technology systems used by customers and service providers. Customers' main concerns about artificial intelligence chatbots were their accessibility, efficiency, and ease. On the other hand, service workers were more concerned about the possible effects of chatbots on the degree of client interactions and their career stability (Nguyen & Sidorova, 2022). These different frameworks affected the acceptance and use of chatbots; consumers were more open to their use while service staff showed opposition or uncertainty.

In a similar vein, Verhagen et al. (2014) used the Technological Frames framework to better understand the several frames that customers have about artificial intelligence chatbots in the framework of e-commerce. The researchers examined how consumers' technology frames which comprised characteristics including perceived utility, convenience of use, and social presence might affect their tendency to interact with artificial intelligence chatbots for customer service goals. This was attained by means of a 400-person online poll. According to the study (Verhagen et al., 2014), consumers who thought AI chatbots were useful and easy were more likely to have positive technology views and show more inclination to interact with them. Moreover, consumers' technical attitudes and degrees of acceptance of the technology were much impacted by the way they saw the social presence of the chatbots, which was shown by their potential to establish an environment of human-like interaction.

The above stated studies highlight the importance of considering the numerous technological points of view maintained by different stakeholder groups during the application and use of artificial intelligence chatbots in the framework of customer service. Understanding these frameworks can help companies create strategies to address any concerns, unify viewpoints, and enable the effective use of AI chatbots to improve customer service. These theories will allow a study of the pragmatic deployment and operational efficiency of automated chatbot technology inside the public sector by including the points of view of system architects and end users. With regard to complicated government administration rules and regulations, this study aims to validate the efficiency of artificial intelligence chatbots in meeting personal information demands, dependent on their suitable architecture and execution.

Particularly in public service and customer help, the combination of the Revised DeLone and McLean Model, and the Technological Frames framework considerably increases our awareness of their impact in various sectors. The findings of Ahamed et al. (2021) and Gnewuch et al. (2017) underline significant elements including system quality, information quality, and service quality which are required for boosting user satisfaction and perceived advantages, both of which are valuable to this research. These studies highlight the importance of well-designed chatbots delivering accurate, relevant, and timely information together with dependable and polite service to increase user involvement and pleasure as noted in the findings of this study. Furthermore, underlined by Nguyen and Sidorova's (2022) observations on the different technology frames of

customers and service workers is the need to address stakeholder impressions to enable effective chatbot adoption. Understanding these many points of view allows businesses to modify their implementation strategies to lower resistance and raise user approval. Ultimately, this complex knowledge not only enhances theoretical models but also provides useful information for professionals aiming to increase AI chatbot such as the Pocket Bot 2.0 efficacy in fulfilling demanding information needs in public administration and beyond.

2.10 Conclusion

Chapter two commenced with a synthesis of significant literature, including scholastic definitions and academic discourses that are pertinent to the present study. It also addressed the origins and evolution of artificial chatbots, as well as its diverse applications, in light of the cultural and societal complexities that exist on a global scale. Inspired by the worldwide body of knowledge on chatbot systems, the chapter further included artificial chatbots within the African setting. The debates also focused on the Namibian point of view and the studies done on the purposes of artificial chatbots in different companies. The review additionally broadened the scope by examining the impact of artificial intelligence chatbots on customer service and self-service options to citizens. The chapter additionally examined the articles pertaining to the perception of artificial intelligence chatbots as well as the challenges encountered. The chapter ended with a review of the theoretical framework, which consisted of the "Technological Frames Framework" and the "Revised DeLone and McLean Model" describing the aims of the research.

CHAPTER THREE RESEARCH METHODOLOGY

3. Introduction

This chapter presents the methodology adopted in the study to determine whether AI chatbots are effective in delivering public information, particularly in the context of the "Being a Public Servant in Namibia - The Pocket Guide 2.0 Pocket Bot" case study. The research paradigm is described first, followed by the research design and methodology. The chapter then outlines the data gathering and analysis techniques, and the procedures employed to address the study's objectives. It also describes the population and explains the sampling techniques used to generate data. The chapter concludes by explaining the measures taken to ensure the trustworthiness of the findings, and the ethical considerations.

3.1 Research Paradigm, Design and Approach

3.1.1 Research Paradigm

This study evaluated the users' views of the AI chatbot's effectiveness using an interpretivist paradigm. Interpretivism posits that humans construct subjective interpretations of the world, which then shape their perceptions and actions (Thanh & Thanh, 2015). The researcher analysed and made sense of the participants' perceptions which were largely influenced by their specific contextual experiences (Yazan, 2015). This involved the analysis of the diverse requirements, anticipations, and contentment of the civil servants when utilizing the Pocket Guide chatbot. The analysis considered their job roles, length of service, degree of training, and previous experience with technology. The interpretative method helped to identify recurring patterns of strengths and weaknesses in the consumers' personal experiences with technology.

Interpretivism, as an ontological framework, recognises that various participant views are equally legitimate representations of reality, rather than aiming to find a single objective truth (Scotland, 2012). The "NYC COVID-19 Chatbot," developed by the New York City Department of Health and Mental Hygiene, for instance, informed the users about testing, symptoms, and vaccinations. In this study, interviews were conducted to obtain information regarding the users of chatbots beliefs and how they applied the bot. The results revealed that while some of the users preferred instantaneous information availability, others were concerned about the robot's handling of more difficult health problems. This spectrum of user comments and perceptions give a more holistic picture of how well the robot performs in public health communication (Aoki, 2020).

According to Yazan (2015), interpretivism is commonly associated with qualitative methodologies that focus on uncovering subjective characteristics rather than quantifying universal truths that are applicable in every environment. Thus, evaluating if the chatbot meets the information needs for public administration procedures required detailed criteria that demand in-depth and descriptive feedback from competent users who have experience in the relevant field. Through the collection of the users' accounts of satisfaction and instances of good and bad chatbot encounters, the interpretivist perspective revealed areas of agreement and disagreement between the system design and the actual demands of the public agency. As a result, specific suggestions were tailored to the unique circumstances of its users. In general, prioritising subjective experiences over calculations enabled a higher openness to users' suggestions on how to enhance the chatbot's usefulness within their own perspectives.

3.1.2 Research Design

This study used an exploratory research design, focusing on the case study of the "Being a Public Servant in Namibia - The Pocket Guide 2.0 Pocket Bot" in the Namibian public service, to determine the effectiveness of artificial intelligence chatbots for delivering public information. Generally, exploratory research is carried out to assist a researcher identify an issue that has not yet been thoroughly examined. In other words, this applies to a researcher who studies a novel field of study, or examines a uniquely interesting occurrence (Sue & Ritter, 2012; Babbie, 2011). According to Sue and Ritter (2012), by involving respondents who are knowledgeable about a topic or process, exploratory research enables a researcher to study an occurrence in detail. Although it does not provide conclusive evidence, this approach facilitates a more thorough knowledge of the issue (Sue & Ritter, 2012). Thus, it seemed reasonable to include this study within the interpretivist paradigm because exploratory research is typically qualitative in character.

3.1.3 Research Methodology

This study employed a qualitative single case study methodology to enable a thorough analysis of the "Being a Public Servant in Namibia" chatbot system. Qualitative approaches that are aligned with interpretivism aim to comprehend phenomena by examining the viewpoints and experiences of participants within their specific contexts (Yazan, 2015). For example, study methodologies allow for in-depth research of a single entity, in this example, the Pocket Guide 2.0 chatbot, within the context of its real-life environment consisting of potential and existing civil servants (Harrison et al., 2017). More useful and flexible recommendations were achieved by analysing the performance of the technology in combination with user feedback based on real experiences rather than depending solely on simulated assessments or user polls.

To compile primary data, twenty users including fresh recruits, temporary public managers, long-tenured

managers from many government agencies participated in the semi-structured interviews. Creswell (2014) claims that for qualitative research, a sample size of five to thirty people is usually sufficient as it guarantees controlled data collecting and processing, and permits an in-depth examination of complicated events. This strategy of purposeful sampling acquired knowledge from several angles to ascertain variations in needs. The questions assessed the effectiveness of the chatbot in important technical tasks, the quality of the material it provides, and how well it aligns with expectations when dealing with employment policy guidelines in work-related situations. The interviews were audio recorded and transcribed.

Then, first and second-cycle coding approaches were used to identify important themes, patterns, and exemplary quotes, as described by Miles et al. (2020). First-cycle coding consists of a review and coding of the data; the researcher designates text segments with labels or codes that encapsulate significant ideas, concepts, or meanings. The primary purpose of this coding phase is to classify and reduce the data to feasible segments in preparation for subsequent examination (Miles et al., 2020). Pattern coding, alternatively referred to as second-cycle coding, entails a more concentrated and analytical methodology. During this step, the researcher organises the preliminary codes into general categories, themes, or patterns that emerge across the dataset through thorough review and refinement. Using this approach allowed a more thorough investigation and analysis of the encoded data, thus, helped the researcher to find connections, linkages, and general principles (Miles et al., 2020). Researchers can conduct a systematic analysis of qualitative data, including interview transcripts, observational notes, and semi structured interview responses, by utilising first and second-cycle coding approaches. The utilisation of this classification procedure facilitates the identification of significant themes, patterns, and illustrative quotations that mirror the viewpoints, experiences, or phenomena being studied (Miles et al., 2020).

By virtue of the iterative process involved in first and second-cycle coding, scholars are able to consistently restructure and enhance the codes, thereby facilitating a more profound comprehension of the data and the revelation of significant insights. Exemplary quotes, comprising data excerpts that exemplify or corroborate the identified themes and patterns, may be underscored and employed to provide further support for the research conclusions (Miles et al., 2020).

By triangulating information from numerous user groups, one may analyse the interpretations of the chatbot's capabilities in comparison to its actual exhibited output. An analysis of the congruence or incongruence of technical perspectives held by developers and users identified opportunities for enhancing system effectiveness, information provision, and user acceptance. Recording the positive attributes and drawbacks also influences the development of forthcoming automated technologies in the public domain. The case study technique enabled a focused evaluation of the chatbot's suitability for its intended function within its intricate

organisational environment, as assessed by the most competent users.

3.1 Population, Sampling Technique and Procedure

Bakibinga et al. (2019) define a population as a collection of units that possess the specific attribute under study and allow for the generalisation of research findings. The study focused on the specific demographic of active civil servants employed in various government agencies in Namibia, who have utilised the "Being a Public Servant in Namibia" Pocket Guide 2.0 chatbot. Collecting input from the targeted end-users in the public sector was crucial for evaluating the effectiveness of the chatbot as a self-service tool for answering employment-related policy queries.

The population of this study included civil servants from four main Namibian government ministries: the Ministry of Gender Equality, Poverty Eradication and Social Welfare, the Office of the Auditor General, the Office of the Prime Minister, and the Ministry of Education, Arts and Culture. These agencies were selected because they collectively employed approximately 5,000 staff members and represented a broad cross-section of administrative, technical, and managerial roles relevant to public service delivery (Indongo, 2019).

A purposive sampling strategy was used to ensure that participants had direct experience with the "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot" chatbot. The final sample comprised 20 civil servants: 8 from the Ministry of Gender, 3 from the Office of the Auditor-General, 3 from the Office of the Prime Minister, and 6 from the Ministry of Education, Arts and Culture. Gender representation was considered, with 11 female and 9 male participants included in the sample, spanning various positions such as administrative officers, technical experts, and senior managers (Smith, 2021).

Participants were selected based on the following criteria: current employment in one of the selected agencies, prior engagement with the Pocket Guide 2.0 Pocket Bot, and willingness to participate in a semi-structured interview. However, during data collection, it was discovered that one participant, despite meeting the initial inclusion criteria, had limited direct experience with the chatbot. This participant was retained in the study because their lack of awareness and engagement mirrored a broader trend identified during the research—many civil servants were either unaware of the chatbot or had not used it extensively. Including this perspective contributed to a more comprehensive understanding of the barriers to adoption and the overall effectiveness of the chatbot in reaching its intended audience (Mpinganjira, 2018).

Data were collected through semi-structured interviews, providing in-depth insights into the users' experiences, perceptions, and suggestions for improvement. The sample size of 20 was determined by data

saturation, as no new themes emerged after the twentieth interview (Jain et al., 2018).

3.2 Data Collection Technique and Procedure

The main qualitative data source for assessing user impressions of the merits and limitations of the Pocket Guide chatbot was semi-structured interviews. This type of interview facilitates focused and interactive questioning, allowing participants to articulate intricate experiences or technical assessments using their own language (Adams, 2015). A customised interview process was created to examine specific topics such as technology frameworks and aspects of Information System achievement. The topics included the following:

- User backgrounds, public sector roles and information needs;
- Expectations of the chatbot's capabilities to support tasks;
- Assessments of response relevancy, accuracy and completeness;
- Comparison of chatbot against traditional information channels;
- Satisfaction with chatbot functions and accessibility;
- Suggested changes to improve usefulness.

In addition, the users were required to showcase example chatbot questions and outputs related to policy subjects that accurately represented their work. By observing real-time interactions and analysing recorded answer content, it was possible to accurately assess the degree of compatibility with the user needs. The interviews were recorded on audio file and transcribed to facilitate the coding and analysis processes, which were designed to find evaluative trends across different instances (Miles et al., 2020).

The research interviews were conducted face-to-face at the offices of the participating government ministries (Smith, 2022), in Windhoek, Namibia. The length of each interview session ranged between 30 to 45 minutes based on how well the participant knew the Pocket Guide 2.0 Pocket Bot (Smith, 2022).

The research instrument that started as a "semi-structured interview guide" contained both open-ended and closed-ended questions. The review process revealed that multiple open-ended questions contained Likert scale items such as "neutral" and "very accurate" and "not so accurate" but some closed-ended questions allowed participants to provide additional details (Smith, 2022). The data collection tool operated as a questionnaire because of its structured design which introduced a mixed methods approach to the research. The study gathered both qualitative and quantitative information from research participants (Smith, 2022).

The participants responded to both open-ended and closed-ended questions during their interviews. Participants chose their responses from pre-defined options for the closed-ended items which were then entered into a spreadsheet for quantitative analysis (Smith, 2022). The participants' verbal responses to open-ended questions were recorded by audio for subsequent thematic qualitative analysis (Smith, 2022).

The interview process adjusted to focus on public sector digital tools and chatbot awareness when participants showed minimal or no chatbot experience. The interview ended prematurely when one participant failed to provide useful information to protect the data collection process (Smith, 2022). The analysis of quantitative data from the Likert scale and structured questions produced descriptive statistics to show user perception and experience patterns. The thematic analysis of qualitative data from open-ended responses revealed essential themes about the chatbot's effectiveness and its boundaries (Smith, 2022).

The inclusion of additional data from a concise survey of public administrators' demographics provided a contextual framework for the findings among different user groups and departments. Publicly accessible documents that provide information on the chatbot's development and ongoing usage data also contributed to the understanding of its intended technological framework, growing system quality standards, and levels of acceptance. The utilisation of method triangulation, which involves comparing user accounts, live demonstrations, institutional data, and earlier research, enhanced the validity of the results (Abdalla et al., 2018).

3.3 Data Analysis Techniques and Procedures

Using a thematic analysis approach, the Pocket Guide chatbot was examined to identify significant trends and meanings connected to its strengths, constraints, and opportunities for development. Thematic analysis technique, according to Braun and Clarke (2006), is a rigorous approach meant to find, investigate, and report recurrent patterns or themes found in qualitative data. The two authors furnish an elaborate elucidation of this methodology, which comprises the subsequent stages:

Developing a working knowledge of the data: This process entails transcribing data, rereading it multiple times, and recording preliminary thoughts. The initial coding process involves methodically encoding noteworthy attributes of the data throughout the complete dataset, and subsequently compiling data that is pertinent to each code. Conducting a theme search entails organising codes into prospective themes and collecting all pertinent data associated with each theme. Examining themes: Producing a thematic map of the analysis while confirming that the themes function in relation to the coded excerpts (Level 1) and the entire data set (Level 2).

Defining and naming themes: Continuous analysis that generates precise definitions and names for each theme while refining the particulars of each theme and the overarching narrative the analysis conveys. The report-making process consists of selecting compelling, evocative examples from the extracts, relating the analysis to the research question and the relevant literature, and composing an academic report on the analysis (Braun & Clarke, 2006, p. 87). These authors underscore the versatility and utility of thematic analysis as a research instrument that can furnish an elaborate and intricate depiction of data. Active identification of patterns or themes within the data is required, surpassing the mere act of summarising or describing the data. The identified themes ought to encapsulate a significant aspect of the data in connection with the research inquiry, signifying a degree of consistent patterning or significance within the dataset (Braun & Clarke, 2006).

Thematic analysis was conducted on the qualitative datasets, following the method outlined by Braun and Clarke (2006). First the taped interviews were transcribed; then, open-coding came next. This approach included separating the comments and adding descriptive labels to several elements including expectations, performance evaluations, feature remarks, and satisfaction. Additionally, the researcher's comments were recorded as analytical notes. Important evaluative themes were revealed by organising the coded segments into higher-level categories matching technical frame domains and information system success characteristics (Miles et al., 2020).

The analysis focused on themes such as inadequate answer accuracy, difficulties in deciphering bureaucratic terminology, impediments to accessibility, and areas of good user experience. The purpose was to identify similarities and differences between these themes and the goals of the developers. The trustworthiness of the findings was assessed by utilizing query examples and usage metrics to triangulate the data. Design, policy, or training initiatives aimed at enhancing chatbot effectiveness was determined by identifying areas where the chatbot failed to meet the requirements and expectations of its intended users. The validity of important results was reinforced through the use of descriptive summary visualisations and participant quotations. Analysing attitudes among different user groups and agencies provided valuable insights for tailoring complicated public sector implementation.

The data analysis combined insights from academic theory and users' perspectives to generate evidence-based, practical outcomes that aim to maximise the value of this emerging automation technology for improving access to civil service information in the specific context of Namibia. Significantly, the analysis generated recommendations that can be applied to a wider domain.

3.4 Trustworthiness

Validating study quality requires establishing the rigor and reliability of qualitative findings (Connelly, 2016). This study incorporated strategies to support the results' reliability, credibility, transferability, and confirmability. Credibility is determined by how well findings are produced utilizing acceptable techniques for the goals for which they are intended (Korstjens & Moser, 2018). When gathering user feedback via interviews, the researcher used data triangulation. Applying insights to different contexts based on thorough settings and sample descriptions was made possible by transferability (Connelly, 2016). Population statistics showed demographics according to age, gender, place, consumption metrics, and other factors. Using maximum variation sampling, a range of user experiences according to usage patterns and demographics were recorded. Rich quotes and stories kept the interpretive framework for a variety of participant viewpoints. According to Korstjens and Moser (2018), logical, traceable, and documented procedures are ensured by reliability. The repeated creation of themes and categories based on the data was recorded in the codebook. The analysis of intercoder reliability revealed that separate coders consistently interpreted the content.

According to Connelly (2016), confirmability demonstrates that participant preferences, not researcher bias, drive conclusions. Connelly (2016) proceeds to explain that transferability determines whether there is sufficient data for the reader to evaluate their social context concerning the social setting of the research, and confirmability permits others to verify and confirm the facts. To preserve credibility, the researcher accurately recorded the opinions of each participant during the interview process. To ensure reliability, the researcher repeatedly read and listened to the data. To attain confirmability, the supervisor and the researcher examined the same data to make sure that the coding accurately reflected the opinions of the participants. Finally, transferability was attained by outlining the procedures that guided the conduct of the study and the involvement of the participants.

3.5 Ethical Considerations

Given the involvement of human participants in this study, meticulous measures were used to guarantee strict adherence to ethical research standards, which encompass the concepts of respect for humans, beneficence, and justice (Orb et al., 2000). Before conducting the research, the Namibia University of Science and Technology's ethical review board was approached for approval, along with the submission of the research proposal.

The informed consent processes provided comprehensive information on the voluntary nature of participation, the measures in place to ensure confidentiality, and the activities included in the interview

process. These enabled individuals to make an independent decision without any kind of coercion. The participants had the option to withdraw at any given moment. Data administration and reporting were conducted using anonymous coding. Recordings, transcripts, and notes were securely maintained and subsequently disposed of following the required retention term.

Queries focused on the professional capabilities of the participants, rather than personal information, to minimise sensitivity problems. Nevertheless, absolute anonymity cannot be assured for anyone associated with the small case website. This constraint was emphasised for individuals to assess the potential dangers of participation. The study demonstrated minimal negative effects, and its results were intended to offer valuable insights for improving the chatbot's usefulness for government officials, as participants express their aspirations for change.

In this study, the recruitment process and interactions with the participants adhered to ethical guidelines that prioritised transparency, honesty, accuracy of replies, and fair treatment, independent of demographic characteristics or social status (Sanjari et al., 2014). Ensuring the accurate representation of user viewpoints promotes fair and equitable outcomes in research. Precisely, the consistent self-awareness of researchers and adherence to ethical principles require that the possible advantages of implementing suggested actions be greater than the minimal dangers involved (Sanjari et al., 2014).

3.6 Conclusion

The methodological techniques for gathering and analysing data in accordance with the objectives and inquiries of the study were covered in this chapter. The study population, sampling techniques, data collection methods, and research design were all outlined in detail. A review of the ethical concerns taken into account during the collection, processing, and interpretation of the data was included in the chapter's conclusion.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4. Introduction

This chapter presents and analyses the findings of this investigation in line with the objectives. The study sought to evaluate the effectiveness of artificial chatbots in delivering specialised public information. As noted in chapter 3, thematic analysis was utilised to interpret the data. The results are organised according to the identified themes and aligned with the study's goals. To safeguard the participants' identities, each individual was assigned a code ranging from (CBU 1 to CBU 20 - 2024). This chapter starts with a brief summary of the participants' information.

4.1 Information of the Participants

Twenty (20) participants were interviewed from the responsive government offices, ministries, agencies, and regional councils. The demographics of the participants were determined by the public service office they represent, their tenure in the public service, their designations, and the frequency with which they utilise the Pocket Bot 2.0 for information. It is important to acknowledge that the titles of the participants varied from one organisation to another. Chapter 3 contains the demographics discussion.

4.2 Findings and Discussions

4.2.1 Objective 1

This objective sought to assess the extent to which the Pocket Guide 2.0 chatbot delivered thorough, precise, and up-to-date answers to inquiries on civil service employment and policy. The findings are discussed below.

The main aim of this research was to assess the efficacy of the Pocket Guide 2.0 chatbot in providing precise, thorough, and up-to-date information about public service jobs and policy in Namibia.

The initial inquiry directed at the responders was: "What has been your experience with technology and digital tools in your professional endeavours?" How often do you use these tools? The comments focused on certain shared criteria necessary to assess the chatbot's performance. The following were underlined: Demand for automation; obsolete tools; difficulties of distant labour; information access; integration problems; low digital literacy; manual process and communication difficulties.

A significant number of the respondents indicated a clear need for more tools for automation. Respondent CBU5:2024 said, for example, *"I wish we had more automation tools accessible. Many jobs nowadays are repetitious and time-consuming as we lack the tools to simplify our work."* This attitude highlights a discrepancy in which, by automating information retrieval and response mechanisms, chatbots may help to simplify operations. AI chatbots can greatly improve operational efficiency by automating mundane activities, therefore freeing human agents to concentrate on more difficult problems (Dialzara, 2024).

The media and public relations respondents said they used antiquated digital technologies lacking sufficient data to gauge engagement.

Respondent CBU9:2024 noted, *"In public relations and media we have some digital tools, but they are outdated and don't provide the analytics we need to measure engagement effectively."* This suggests that the chatbot's ability to deliver up-to-date information could be hampered if it is not integrated with modern analytics capabilities. Recent studies also reinforce this thought noting that, chatbots can improve service delivery by providing timely and accurate information to users (TEM Journal, 2024).

Limited access to collaboration tools during remote work was a common concern, with many relying on email for communication. Respondent CBU12:2024 stated, *"Remote work has been challenging due to limited access to collaboration tools. We often rely on email, which slows down our communication significantly."* This suggests that if the Pocket Guide 2.0 chatbot were used effectively, it could improve communication by providing instant responses to inquiries without relying on traditional email exchanges. A number of respondents noted that it was difficult to obtain timely information, especially for those in roles that required rapid data retrieval: Respondent CBU15:2024 commented that, *"Accessing information quickly is a challenge in my role as information officer since we have limited online resources."* This affirms that the chatbot's design should focus on providing accurate and timely answers to common questions about civil service policies.

A significant number of respondents mentioned that digital tools were not fully integrated into their workflows. Respondent CBU3:2024 remarked, *"Digital tools are not fully integrated into our work processes. I often rely on paper documents and face challenges when trying to collaborate digitally due to outdated systems."* This suggests that the chatbot must function flawlessly in its integration with current systems so that users may access data without any problems. Moreover, the colleagues' digital literacy levels raised concerns regarding the general impact of digital technologies on their efficacy.

Respondent CBU7 observed that, *"Networking has been challenging as well; while I try to use digital communication platforms, many colleagues prefer face-to-face interactions due of their unfamiliarity*

with technology." Thus, the effective usage of the chatbot can be improved by providing users with digital communication platforms, thereby increasing user involvement and pleasure.

Several respondents observed that for jobs including client management and leave registration, they still use hand tools. Respondent CBU11 commented, "*We often rely on manual leave recording processes which is not effective and efficient.*" To address this concern, a functional chatbot that automatically answers similar questions is required. In addition, quite a number of the responders identified problems with communication channels resulting in misinterpretation and project delays. Respondent CBU14:2024 said, "*Although many coworkers are not comfortable utilising communication tools, they are available. This causes misinterpretation and delays in our initiatives.*" By offering providing straightforward responses directly, the chatbot might act as a consistent information source that helps to reduce these difficulties.

The second question posed to the respondents was: "*What were your initial thoughts or expectations regarding the capabilities of the Pocket Guide 2.0 chatbot when you first encountered it?*"

The responses highlighted several recurring themes that are critical for assessing user expectations. These included: expectations of interactivity; comprehensive information access; learning capabilities; user experience expectations, natural language understanding; 24/7 availability, statistical evidence and comprehensive coverage of government policies.

A significant number of respondents anticipated a highly interactive chatbot. Respondent CBU4:2024 stated, "*A real chatbot with interactive capabilities and interface,*" indicating a desire for an engaging user experience that goes beyond basic question-and-answer functionality. Respondent CBU6:2024 expressed a common expectation that "*it will make access to information easier than before,*" indicating a belief that the chatbot could simplify the retrieval of information related to public service.

Some respondents were impressed by the chatbot's ability to learn quickly. Respondent CBU8:2024 noted, "*I am very impressed with how fast the bot model is able to learn or be trained,*" emphasising that users expected the chatbot to improve its responses over time, which corresponds to the finding: chatbots can enhance their performance through machine learning (Infobip, 2024). Similarly, Respondent CBU10:2024 shared high hopes for user experience, stating, "*I had high hopes when I first interacted with the Pocket Guide 2.0 chatbot. I expected a flawless user experience that would enable me to instantly respond to a variety of inquiries.*" This expectation aligns with the research findings indicating that effective chatbots should provide seamless interactions and quick responses (Dialzara, 2024).

Respondents also anticipated that the chatbot would understand natural language fluently. As one respondent articulated, *"I anticipated that it would be able to comprehend natural language fluently, facilitating communication that feels engaging and intimate."* This expectation reflects broader trends in AI development where natural language processing (NLP) is crucial for enhancing user interaction (Smythos, 2024). A significant expectation was for round-the-clock accessibility. Respondent CBU15:2024 noted, *"24/7 availability in expectation that the chatbot can assist users at any time,"* highlighting the importance of continuous support in improving public service delivery.

Some respondents expected the chatbot to provide statistical evidence alongside its answers. Respondent CBU18:2024 stated, *"I also initially expected for the chatbot to be able to provide statistical evidence of any answers that it provides once prompted to."* This reflects a desire for data-driven responses that could enhance decision-making processes. Many respondents believed the chatbot should encompass all relevant government policies and laws. One respondent indicated, *"That it will have information on all government policies and laws,"* which underscores the importance of a comprehensive knowledge base in chatbots for effective public service (Velaro, 2024).

In what ways does the chatbot match your understanding of public service policies and regulations was the third interview question. Could you offer certain instances? resulted in the following subjects: Consistency with facts; efficient public service delivery; thorough explanations; condensing of difficult material; consistency with organizational goals; improving citizen involvement; streamlining of communication; limits indicated and issues concerning coverage.

Several responders agreed that the chatbot offers accurate and consistent information. Respondent CBU5, 2024 said, *"Yes, the information is consistent with facts,"* suggesting a significant conviction in the dependability of the chatbot as a source of reliable information. Concurring, Respondent CBU6:2024 said, *"Yes, effective public service delivery,"* thus, stressing that by improving information distribution the chatbot could assist public service goals to be fulfilled.

Respondent CBU 8:2024 said, *"Yes. It covers what I need to know about public policies and laws. This finding represents a user experience in which the chatbot efficiently conveys complicated knowledge in a comprehensible way; consistent with conclusions that chatbots can help to reduce bureaucratic jargon"*(Infobip, 2024).

Another respondent elaborated on how the chatbot helps in interpreting laws and regulations: "*In fact, the Pocket Guide 2.0 chatbot makes sense in terms of how I interpret laws and rules pertaining to public service. It does this by efficiently condensing technical legal jargon into understandable explanations.*" This capability is crucial for ensuring that all users, regardless of their prior knowledge, can grasp essential information (Dialzara, 2024).

One more respondent remarked, "*Yes, the chatbot does align with my personal understanding of public service policies and regulations, as it dovetails with NAMPA's own Vision, goal and objectives as it pertains to its Customer Service Charter.*" This suggests that the chatbot not only satisfies personal expectations but also advances more general corporate objectives. Yet, another pointed out how the chatbot helps to encourage civic involvement: "*The chatbot greatly increases the dissemination of information regarding public service policies and regulations in Namibia.*" This reinforces the research's objectives, emphasising that chatbots can improve citizen engagement by providing timely and relevant information (Velaro, 2024).

Respondent CBU12:2024 stated that "*the chatbot streamlines communication between citizens and government departments,*" which is essential for efficient inquiries and feedback mechanisms. This reflects a growing trend where chatbots facilitate better communication channels within public services (Tars Chatbots, 2024). By contrast, other respondents expressed concerns about limitations in the chatbot's capabilities. For instance, one respondent noted that, "*Somewhat, I found that sometimes the website was slow and it did not answer all my questions.*" This highlights areas for improvement in response times and coverage of topics.

A few respondents noted gaps in the information provided by the chatbot. One stated, "*No, it has no information on procurement,*" indicating that while some areas are well covered, others may require additional resources or updates.

The performance of the chatbot satisfied some people. Respondent CBU4 2024 said, "*It has exceeded my expectations. It is current and responds quickly to inquiries, therefore reflecting a good user experience marked by fast answers.*" Respondent CBU6 said that, "*The chatbot has met my expectations because the model is able to learn or the backend moderator is doing a really good job in training the model*". This emphasises the consumers' respect of the chatbot's flexibility and ongoing development (Infobip, 2024). Numerous participants complimented the chatbot for improving communication effectiveness. Respondent CBU8 2024 said, "*Impressively, the chatbot has streamlined communication and offers prompt responses that increase user engagement.*" This is consistent with the research goals, showing

that chatbots may greatly enhance public-government agency correspondence (Gascó-Hernandez & Chen, 2024).

The chatbot's natural language processing features were valued by the users. One responder CBU7:2024 said, *"Conversations now feel more human because of the chatbot's natural language processing skills,"* which helped to boost pleasure and fostered a sense of connection. *"Thus far it has exceeded my expectations as it is a readily available tool that is up to date as an information repository,"* respondent CBU10:2024 said. This captures an increasing need for 24/7 information access through digital instruments (Tilde AI, 2024).

Though the chatbot received good comments, several responders highlighted its areas where it failed. One user CBU16:2024 said, for instance, *"It was slow and did not answer my questions sufficiently although it was able to answer the basics."* This implies that response times and comprehensiveness need to be improved. While the chatbot has its uses, several respondents believed it did not sufficiently encourage inclusiveness or openness. Respondent CBU 12:2024 said, *"Apart from supporting citizens, the chatbot does not do a lot to promote transparency and accountability in government operations."* Furthermore, another respondent pointed out that by providing material in several languages, it should reflect the diversity of the Namibian people.

While the chatbot offers quick and accurate information on certain subjects, some users indicated that it lacks depth in others. One responder, CBU13:224 remarked, *"It does not have specific information on ethical reporting procedures in the public service,"* suggesting that consumers want thorough coverage of all pertinent rules. Overall, a significant number of the respondents found the chatbot user-friendly and efficient. One user CBU15:2024 stated, *"The bot is accurate and fast and easy to use,"* while another added that *"it can still cover more issues of government and expand its knowledge."*

Summary

Since present digital tools are often out-of-date and lack sufficient analytics for engagement measurement, respondents to the study of the Pocket Bot, strongly indicated a strong demand for automation tools to streamline repetitive tasks. The chatbot's ability to provide precise and timely information was viewed as beneficial, especially in administrative positions that call for rapid data retrieval. However, challenges were identified, such as the lack of digital literacy, integration issues, and a dependence on manual processes. Consumers expected the chatbot to be interesting, provide comprehensive information, and be accessible 24/7. Some participants pointed out areas for improvement, such as response times and subject coverage, while the majority of the respondents praised the chatbot for its natural language processing and ability to

improve communication efficiency. The chatbot was rated as largely effective and user-friendly, although further improvement is needed in terms of inclusion and transparency.

4.2.2 Objective 2

This objective sought to evaluate the opinions of chatbot users who were specifically targeted to analyse the effectiveness, advantages, and limitations of the chatbot in improving comprehension of public administration regulations and processes.

Analysing the findings of an example of a recent use of chatbot in relation to the respondents' work responsibilities the following were observed: Respondents frequently mentioned utilizing the chatbot for inquiries related to *government structure*, such as understanding the *customer service charter and the organizational framework* of various ministries. Additionally, users reported leveraging the chatbot for practical tasks, including *drafting letters, analysing complex documents*, and obtaining information on *study leave benefits and employment conditions*. The chatbot was also noted for its role in facilitating quick access to essential information, such as clarifying the *public procurement act* and providing insights into *employee wellness policies*. These examples underscore the chatbot's potential to streamline processes and improve user engagement within public service contexts, aligning with broader trends in AI-driven enhancements to government services.

The users' responses to the assessment of the chatbot's accuracy and completeness were overwhelmingly favourable, with a sizable portion evaluating the chatbot's performance as "Accurate and Complete." Ten out of twenty respondents specifically said that the chatbot gave accurate and comprehensive information, and four said that it was "*Very accurate and complete*." Nonetheless, there were also noteworthy cases of discontent and neutrality, with two respondents saying that the responses were "*not so accurate*" and six respondents holding neutral opinions. This implies that there is general agreement with the chatbot's efficacy, despite certain users encountering issues that impacted their opinion as a whole. In line with findings from previous research that emphasise the importance of AI chatbots in promoting service delivery and user engagement in public sectors, the chatbot's potential to improve grasp of public administration legislation is highlighted by the preponderance of favourable evaluations.

The analysis of the chatbot users' perceptions of the "Being a Public Servant in Namibia - The Pocket Guide 2.0 Pocket Bot" showed that most people had favourable thoughts about its dependability and correctness.

According to one user, "*All information provided was accurate*" (CBU1-20:2024). The majority of the respondents indicated that the chatbot gave accurate information, especially on subjects like vacation days and service perks. A few, however, voiced worries about sporadic errors, especially in intricate domains like cybersecurity or mathematics difficulties, suggesting that although the chatbot performed well in well-known areas, it struggled with highly specialised enquiries. "*It gives accurate information on what it knows but is not able to provide answers on things it does not know,*" one respondent observed (CBU12-20:2024). Although the users underlined the value of fact-checking and acknowledged the chatbot's limits in some topic areas, the results indicate a general level of satisfaction with the system's performance. This is consistent with other studies which shows that although AI chatbots can improve the delivery of public services, they are not perfect and need constant improvement to increase accuracy and user confidence.

User feedback on the chatbot's ability to handle intricate government policy enquiries shows a varied but generally mediocre performance. Several users said the chatbot performed "*very well*," especially when answering simple questions, while most said it handled complex questions "*not so well*" or merely "*average*." One responder, CBU 16:2024, for example, said, "*Not so well*," which was repeated by others who voiced similar difficulties (CBU18:2024). On the other hand, those who thought it worked effectively emphasised that it could deliver pertinent information when the questions matched its pre-programmed knowledge, saying, "*Very well*" in some situations (CBU8:2024). This implies that although the chatbot may provide adequate answers for simple queries, its shortcomings become noticeable when confronted with more intricate or subtle queries about governmental regulations. All things considered, this is consistent with previous research that highlights how AI chatbots may improve service delivery and public engagement, but they still struggle to successfully handle complex and multidimensional problems.

Several noteworthy issues that influence the Pocket Guide 2.0 chatbot's operation, design, and potential improvement areas are revealed by examining the comments pertaining to its advantages and disadvantages.

Respondents cited the quick access to pertinent information as a key strength. Customers value the chatbot's prompt replies, which improve communication effectiveness (CBU3:2024; CBU19:2024). In the words of one respondent, "*the ability to provide instant responses allows for quick resolutions to queries*" (CBU11:2024). Furthermore, the chatbot's round-the-clock accessibility was often cited as a significant benefit, allowing users to obtain information whenever they want without having to wait for human support (CBU1:2024; CBU16:2024). Additionally, the chatbot's ability to handle a variety of themes was

acknowledged. From simple questions to more intricate scholarly debates, the chatbot can help with a variety of jobs (CBU2:2024). This is consistent with studies in the literature that highlight how AI chatbots may serve a variety of user demands and democratise access to information (Dale, 2021).

Despite its advantages, a number of drawbacks were noted. The absence of interaction was a recurrent topic, as respondents pointed out that although the material is helpful, the chatbot does not converse with users (CBU4:2024; CBU7:2024). A few respondents also voiced concerns over information coverage restrictions and inaccuracy, pointing out that not all pertinent data is entered into the system and that replies could be based on commonly requested questions rather than customised responses (CBU5:2024; CBU14:2024). This restriction is crucial since it emphasises how important it is to keep improving and updating the chatbot's knowledge base. The absence of emotional intelligence is another serious flaw. According to respondents, conversations may appear impersonal, which can hinder effectiveness in situations where empathetic responses are expected (CBU9:2024; CBU12:2024). The chatbot's efficacy in complex situations is further complicated by its incapacity to critically assess information or offer nuanced replies (CBU6:2024; CBU15:2024). This is consistent with research showing that although chatbots are capable of processing information rapidly, they frequently lack the depth of comprehension necessary for critical thinking (Ziwei et al., 2022).

Numerous respondents also identified problems related to information overload, stating that quick answers might cause confusion if users are unable to efficiently filter pertinent information (CBU8:2024). This draws attention to a possible area where user interface design should be improved to enable better comprehension and navigation. While the Pocket Guide 2.0 chatbot demonstrates notable strengths such as accessibility and speed, addressing its weaknesses particularly regarding interactivity, accuracy, emotional intelligence, and user engagement is essential to enhance its overall efficacy as a public information tool.

Summary

Several important conclusions about the effectiveness of the "Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot" chatbot emerged from the investigation of objective two within this study. Users who responded to this research often utilised the chatbot to enquire about government structure, writing letters, and accessing information about employment situations, highlighting its potential to streamline processes and enhance user participation in public service contexts. With 10 out of 20 respondents rating the chatbot as "*Accurate and Complete*," its accuracy and completeness scores were very favourable. However, some users highlighted limitations, particularly when conducting complex searches. The chatbot's advantages include quick access to information and round-the-clock availability; its drawbacks were identified as limited

emotional intelligence, lack of engagement, and inaccuracy in specific sectors. These findings suggest that, even in the event that the chatbot enhances service delivery, ongoing development is necessary to increase precision and customer trust.

4.2.3 Objective 3

With a specific focus, this goal intended to identify elements for improving the Pocket Guide 2.0 chatbot's design, training procedures, and ongoing quality assurance.

A number of important themes emerged from the examination of the respondents' experiences with the Pocket Guide 2.0 chatbot, revealing both its advantages and disadvantages in terms of design, training, and quality control.

The majority of the respondents indicated that their interactions with the chatbot were mostly favourable. According to CBU5:2024, CBU9:2024, and CBU12:2024, the interface was "*simple to use*" and showed a "*strong grasp of context and intent*," enabling prompt answers to questions. This is consistent with research that highlights the crucial role of user-friendly interfaces in enhancing citizens' interaction with government services (Infobip, 2024). Nevertheless, several users identified shortcomings in the interface, explaining that it is difficult to see and lacks interactive elements, which may make it less accessible (CBU8:2024; CBU11:2024). The visibility of the chatbot is a problem, according to one responder, who said that "*the bot is not easily visible on the interface*" and that finding it needs thorough searching (CBU4:2024).

While a significant number of respondents reported no significant technical issues, there were some who encountered problems such as system freezing during use and the need for a stable internet connection (CBU4:2024; CBU6:2024). These technical limitations are critical as they affect user satisfaction and overall effectiveness. According to the research, preserving public confidence in AI-driven services requires constant technical performance (FXMedia, 2024).

Additionally, several respondents noted a number of apparent restrictions on the chatbot's capabilities. As an illustration of a barrier to fair service delivery, one user stated that subscription restrictions could limit access to high-quality information (CBU12-2024). Furthermore, although some users reported that the chatbot was simple to use, others noted challenges in efficiently filtering information (CBU14-2024). According to this input, the chatbot's training procedure has to be continuously improved to guarantee that it satisfies a range of user demands.

Many responders expressed satisfaction with the chatbot's performance despite certain complaints. A generally positive opinion is highlighted by remarks such as "*the bot is very friendly to use*" and "*it operates very efficiently*" (CBU15:2024; CBU18:2024). Recommendations to further improve the user experience include removing obstacles linked to subscriptions, guaranteeing strong technical performance, and increasing interface visibility. These revelations highlight how crucial ongoing quality assurance procedures are to preserving a useful public service instrument.

Although the Pocket Guide 2.0 chatbot has shown to be successful in educating users and holding their attention, resolving the detected issues is essential for improving its training and design procedures going ahead.

The analysis of the responses regarding the use of other sources for public service information reveals important insights into the comparative strengths and weaknesses of the Pocket Guide 2.0 chatbot. The findings are categorised into several key themes: accessibility, speed versus comprehensiveness, reliability and verification, and specificity of information.

Accessibility is a key benefit of the Pocket Guide 2.0 chatbot. Respondents often emphasised that the chatbot offers instant access to information, which is particularly helpful for consumers who want fast responses without having to search through several sources. According to one respondent, "*the bot is accessible on my phone and on my laptop... it saves time in finding accurate answers*" (CBU17:2024). This opinion is consistent with more general research in the literature that highlights how AI chatbots can improve user ease by combining information retrieval into a single platform (KFF, 2025).

Many respondents praised the chatbot's swiftness, but they were also concerned that it might not be as thorough as other conventional sources like official websites or institutional databases. One user said, for instance, that "*the chatbot is fast, but may not be as comprehensive as other public service information sources*" (CBU6:2024). This conclusion is consistent with other studies' findings showing that, although chatbots can respond promptly, they frequently lack the nuance and complexity included in specialised literature or formal documents (Cheong et al., 2024). Government websites contain official documentation and detailed instructions that the chatbot cannot sufficiently address, according to one respondent (CBU10:2024).

Reliability was a recurring topic in the replies, as many users indicated that they had to confirm information from the chatbot by using additional sources. "*For reliability, one can make calls or send emails... to*

verify information" was said by one respondent (CUB8:2024). This draws attention to a significant drawback of AI chatbots, that is, users frequently feel pressured to double-check information to make sure it is accurate (Dale, 2021). The dependence on external validation implies that although chatbots can be a helpful place to start questions, people searching for trustworthy public service information may not yet fully trust them.

Additionally, respondents pointed out that the chatbot occasionally lacks definition, especially when it comes to intricate rules or procedures. Because ChatGPT offers more individualised replies than the Pocket Guide 2.0 chatbot, one user mentioned that they frequently utilised it for specific questions (CUB3:2024). This is a potential area for development by incorporating more specific and contextually relevant information to the chatbot's training process. Although the Pocket Guide 2.0 chatbot has many benefits in terms of speed and accessibility, its shortcomings in terms of thoroughness and specificity call for constant enhancements to its architecture and training procedures. To increase user confidence and the effectiveness of public service communication, it is therefore, crucial to implement ongoing quality assurance procedures to guarantee the supply of trustworthy information.

Summary

Examining the Pocket Guide 2.0 chatbot revealed both design, training, and quality assurance strengths and places for development. Though some respondents pointed out limits in visibility and interactive capabilities, which might impede accessibility, respondents generally felt the chatbot's interface was basic and successful in grasping context and purpose. Technical issues, such as system freezing and the need for a stable internet connection, also impacted consumer satisfaction. Highlighting the need to enhance the chatbot's training methodology, its limitations of functionality encompassed subscription barriers and information filtering difficulties. Despite these issues, consumers appreciated the chatbot's speed and accessibility; yet, they noted its lack of comprehensiveness relative to other sources. The chatbot's dependability was called into doubt as users sometimes had to confirm material by other means. Although the chatbot excels in speed and accessibility, technical performance, comprehensiveness, and specificity require improvement to increase user confidence and efficacy in public service communication.

4.2.4 Objective 4

For next initiatives, the study's goal was to offer evidence-based recommendations for chatbots that are intended to deliver specialised employment information in the public sector.

The feedback on the users' satisfaction with the Pocket, in particular the 2.0 chatbot's capacity to respond to

policy information requests reveals a number of important themes that inform evidence-based recommendations for improving the chatbot training, design, and quality control in subsequent initiatives. User happiness, the necessity for interaction, the thoroughness of the information, and suggestions for enhancement are among the themes that were identified.

The respondents' overall satisfaction with the chatbot's capacity to answer questions on policy knowledge varied. Others voiced displeasure because of the information's limits, while others were completely satisfied, saying the chatbot is "*fast to respond to simple policy questions*" (CBU5:2024). Even so, according to one responder, for example, "*there is a need to keep updating the bot with more and more information*" (CBU4:2024), even if they were happy. This draws attention to a crucial component of the user experience: the requirement for frequent updates to guarantee that the chatbot stays applicable and efficient in responding to customer enquiries.

The need for more interaction from the chatbot was a common topic in the replies. "*No, it should be interactive,*" said one responder, suggesting that a more captivating interface may improve user experience (CBU1:2024). This is consistent with research showing that interactive elements can enhance citizen satisfaction and engagement by improving the ease and intuitiveness of information retrieval (Infobip, 2024).

Concerns about the chatbot's information's comprehensiveness were commonly voiced by respondents. According to some, the answers were frequently "*largely generic in nature*" and lacked the precise information required to make an informed choice (CBU7:2024). The chatbot should "*improve on getting more information on public service policies and regulations*" (CBU19:2024), commented one respondent. This reveals a major gap in the chatbot's present functionality, highlighting how crucial it is to incorporate a wider variety of policy data in order to successfully satisfy user expectations.

Respondents offered a range of suggestions to improve the chatbot's functionality based on their experiences. Suggestions included upgrading the chatbot's internal knowledge base with more accurate and detailed public service policies (CBU12:2024), and also establishing a concentrated repository space for policy information to address fragmentation (CBU10:2024). Additionally, one respondent expressed the need to develop a legal framework governing the chatbot's usage, which could enhance trust and accountability in its operations (CBU:-2024). These suggestions highlight the necessity of a methodical strategy for enhancing chatbot skills through continuous training and quality control procedures.

Although the Pocket Guide 2.0 chatbot has received great feedback from users, it still needs to be improved

to become more interactive, thorough, and successful in providing correct policy information. Future initiatives aiming at creating specialised chatbots for employment information in the public sector are encouraged to follow these evidence-based recommendations. The following themes emerged in response to the question whether consumers would want to see any further features or capabilities added to the chatbot: data interpretation, human-like engagement, interactivity, and clarifying capabilities.

A sizable portion of responders underlined how important it is for the chatbot to be more interactive. One suggestion was to improve the user experience by allowing users to ask questions and get immediate replies (CBU1:2024). This is consistent with literature that emphasises the value of interactive chatbot capabilities, which may greatly increase user happiness and engagement by offering a more responsive and dynamic interface (Infobip, 2024).

The respondents noted that there should be more human-like traits from the chatbot. In order to make the chatbot seem more human and give consumers the impression that they are speaking with a genuine customer support representative rather than a computer, several people proposed giving it a "*human face*" or a "*human name*" (CBU9:2024; CBU14:2024). This is in line with larger developments in AI, where improving user comfort and confidence requires relevant and interesting interfaces (KFF, 2025). Similarly, chatbots may improve service delivery by developing stronger relationships with users and taking on a more human-like demeanour.

The requirement that the chatbot has the ability to provide explanation was another theme that surfaced. In order to lower the possibility of giving inaccurate or misleading information, respondents recommended that the chatbot should have the ability to request clarification if it does not comprehend a user's inquiry (CBU12:2024). In public service settings, where precise information is essential for decision-making, this trait is of critical importance. Improving the chatbot's ability to clarify questions helps guarantee that consumers receive accurate and pertinent replies, boosting user satisfaction with the system's overall performance.

Many responders emphasised how crucial it was to provide the chatbot with the capacity to decipher statistical or quantitative data, especially when it comes to research-related questions (CBU5:2024). The chatbot would be a useful tool for public officials involved in data-driven decision-making as it would enable users to glean insightful information from intricate data sets. Adding sophisticated data interpretation capabilities to chatbots might greatly increase their usefulness in public sector applications as AI technologies develop further (Cheong et al., 2024).

Although the Pocket Guide 2.0 chatbot's qualities were recognised by the respondents, there is a definite need for improvements that emphasise data interpretation, human-like interaction, interactivity, and clarifying skills. In future initiatives, creating more efficient chatbots that are suited to the unique requirements of public sector workers would require putting these evidence-based recommendations into practice.

Respondents were also asked to express their views on whether they think the chatbot is being effectively used by public servants. If not, what support do they think public servants need to effectively utilise the chatbot? The following themes became apparent: The predominant themes across the feedback are awareness and education.

Many respondents stated that public officials' ignorance of the chatbot's existence and capabilities is the reason it is not utilised efficiently. "*Not really, many public servants are still not aware of the chatbot and its benefits,*" for example, said one responder (CBU5:2024). Others who stressed the necessity of additional marketing and promotion of the chatbot agreed that , "*It needs more marketing,*" one responder said. Many individuals are unaware of its existence or its operation (CBU3:2024).

Digital literacy has been mentioned as another important subject. A number of respondents noted that different public officials' degrees of digital literacy make it difficult for them to use the chatbot effectively. It is challenging to gauge the amount to which public employees are utilising it, this is, according to one responder. Furthermore, one's degree of digital literacy is crucial (CBU8:2024). This suggests that in order to ensure that all users can efficiently navigate and profit from the chatbot, training programs should be designed to improve digital abilities.

Furthermore, all participants agree that assistance and training are essential. The respondents emphasised that the chatbot's potential is still mostly unrealised in the absence of adequate training sessions or introduction on how to utilise it. "*The OPM only launched the bot without giving training or induction sessions,*" said one public official, criticising the Office of the Prime Minister's (OPM) lack of initial training (CBU12:2024). Another responder pointed out, "*Public servants may be averse to using chatbot owing to perceived suspicion of new/emerging technologies*" (CBU7:2024); this lack of organised assistance leads to cynicism about new technologies. The potential advantages of chatbots for public service delivery, such as increased accessibility and efficiency, are acknowledged; however, at the moment, these advantages are outweighed by problems with awareness, digital literacy, and insufficient training. Thus, enhancing the efficiency of chatbots in providing specialised employment

information in the public sector requires a methodical strategy that includes ongoing awareness efforts and focused training programs.

Additionally, public servants' comments on suggestions for the chatbot developers highlight a number of important issues that may guide future improvements and guarantee the chatbot accomplishes its goal.

A sizable portion of responders underlined the necessity of the chatbot including more comprehensive material. One responder expressed a need for a more comprehensive knowledge base that includes a range of subjects pertinent to public workers by noting, "*More content to broaden the information*" (CBU2:2024). This is consistent with research showing that in order to improve user pleasure and engagement, chatbots should offer comprehensive and current information (Infobip, 2024). Another responder also emphasised the need to "*upgrade the bot's knowledge on policies as they change regularly*" (CBU15:2024), thus, highlighting the significance of maintaining up-to-date and pertinent information.

Respondents also called for improvements in user interaction. Suggestions included making the chatbot "*more humanly interactive*" (CBU10:2024), which reflects a broader trend in AI development aimed at creating more engaging and relatable user experiences. Enhancing interaction could involve incorporating natural language processing capabilities that allow for more conversational exchanges, thereby improving user satisfaction (Dialzara, 2023). Additionally, one responder suggested enhancing memory capabilities so the chatbot could remember previous exchanges for a more customised experience (CBU6:2024). This suggestion is in line with studies showing that citizens' use of government services may be greatly improved with tailored assistance (FXM Web, 2023).

Another important element that surfaced was accessibility. To improve accessibility for users in remote locations, several responders proposed making the chatbot wireless or capable of functioning without Wi-Fi (CBU14:2024). This suggestion is essential because it tackles internet connectivity issues that may impede the efficient use of digital instruments in delivering public services. Additionally, the use of local or vernacular languages in order to ensure inclusion and reaching a wider audience was recommended (CBU9:2024). This is in line with research showing the significance of multilingual skills in raising civic involvement among a variety of demographics (BIT, 2023).

The necessity of frequent updates to preserve the chatbot's usefulness and relevancy was suggested by several respondents. The recommendations included making sure the bot has access to the most recent information on government services and updating data often as policies change (CBU16:2024). Frequent

upkeep is crucial for accuracy as well as building user confidence in the dependability of data produced by AI systems (Tandfonline, 2024).

Summary

The users expressed different levels of satisfaction regarding the chatbot's ability to respond to policy information queries; some users appreciated how quickly it responded, while others were dissatisfied with the information's limitations. It was frequently mentioned that in order to enhance the user's experience, there needed to be more interaction and human-like engagement. Additionally, the respondents emphasised the need for comprehensive and up-to-date knowledge, suggesting improvements to the chatbot's knowledge base and clarifying capabilities. Interest was also generated by features such as data interpretation and improved accessibility, which included offline functioning and multilingual capabilities. The study highlights the need for ongoing updates, awareness campaigns, and training programs to effectively deploy chatbots in public service delivery, while also highlighting the potential benefits of increased accessibility and efficiency should these concerns be addressed.

4.3 Chapter Conclusion

The results of the in-person interviews with public officials from various government offices, ministries, agencies, and regional councils were analysed and interpreted in this chapter. The chapter also examined the participants' expectations and views, as well as the Pocketbot 2.0's accuracy and effectiveness. Additionally, it explored the user experience and limitations of the bot among participants, and also suggests critical recommendations for improving the Pocketbot in the future.

In the context of delivering public information, scholars have suggested the critical significance of an effective design interface and the natural language processing capabilities of AI chatbots. In addition to enhancing the user experience, a well-designed interface facilitates smooth communication and makes it easier for residents to access services. Arguably, chatbots need to employ natural language processing that is intuitive and contextually aware to ensure that users express their questions without feeling frustrated. Given that user-friendly interfaces have been shown to be significantly associated with good engagement outcomes, this feature is essential for fostering user trust and pleasure (Setiyani, 2023).

Furthermore, chatbots need to be connected with the most recent frameworks, standards, and regulations in order to deliver accurate and effective information about government policies. This guarantees that besides being up to date, the material provided complies with all the applicable laws and regulations. The capacity to obtain up-to-date data is crucial since it directly affects the chatbot's dependability as a public information

source (Pesonen, 2021). Since governments depend mostly on AI-driven solutions to improve service delivery, it is imperative for these chatbots to have comprehensive knowledge bases that reflect changing legislation. This combined emphasis on material accuracy and design ultimately determine how well chatbots serve the general population.

This research emphasised that the successful integration of AI chatbots into public service delivery is contingent upon two critical components: a design interface that is user-friendly and capable of fostering meaningful interactions, and natural language processing capabilities that enable meaningful interaction. Furthermore, to ensure that chatbots provide citizens with accurate advice, it is essential to have up-to-date information on government rules. Giving priority to these factors enables governments to fully utilise AI chatbots to improve public service efficiency and boost citizen engagement (Dawood, 2024; FXM Web Insights, 2023).

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5. Introduction

The primary objective of this research was to assess the efficacy of an artificial intelligence chatbot in delivering specialised public information. This was accomplished by analysing the implementation of the "Being a Public Servant in Namibia" Pocket Guide 2.0 chatbot. This chapter summarises the study's findings, draws inferences based on those findings, and offers recommendations aligned with the observations made. This chapter also addressed the research constraints.

5.1 Summary of Findings

The findings are summarised in accordance with the objectives of this study. This chapter delineates and analyses each study objective summatively to ascertain if they were addressed.

5.1.1 To assess the extent to which the Pocket Guide 2.0 chatbot provides thorough, precise, and up-to-date answers to inquiries on civil service employment and policy.

The study underscores the strong inclination of public service employees to increase automation in their work processes, as many of them voice dissatisfaction with monotonous tasks that can be streamlined by including chatbots. Given that a significant number of respondents emphasised the limitations of outdated digital technologies and insufficient statistics for interaction measures, this suggests a significant opportunity for chatbots to increase operational efficiency (Dialzara, 2024). Furthermore, the need for collaboration tools during distant work was emphasised because limited access sometimes resulted in the use of email and other delayed communication techniques. One notable feature of the Pocket Guide 2.0 chatbot is its ability to respond instantly, which is essential in public service settings. This feature facilitates timely information retrieval and improves conversation (Infobip, 2024; Tars Chatbots, 2024). However, there were many cases of integration problems with current workflows, as many employees stated that digital technologies were not fully incorporated into their workflows, leading to a persistent dependence on manual techniques (Gascó-Hernández & Chen, 2024).

Respondents anticipated a highly interactive experience that would simplify access to public service information, and user expectations regarding the chatbot's capabilities were generally optimistic. Numerous individuals expressed confidence in the chatbot's capacity to learn and improve over time, which is consistent with the current trends in AI development that emphasise the enhancement of user interaction through

natural language processing (Smythos, 2024). However, challenges with public officials' limited understanding and computer literacy make it difficult to use the chatbot effectively. In order to ensure that all users can efficiently navigate and profit from the chatbot, respondents underlined the significance of customised training programs and expanded marketing campaigns (KFF, 2025). Also, to guarantee accuracy and relevance, the TEM Journal (2024) recommends that the chatbot's knowledge base be increased and that frequent updates be made. The Pocket Guide 2.0 chatbot has several good qualities overall, however, to increase its effectiveness in offering specialised service employment information within the public sector frameworks, these flaws need to be fixed using evidence-based recommendations.

5.1.2 To evaluate the opinions of chatbot users who are specifically targeted to analyse the effectiveness, advantages, and limitations of the chatbot in improving comprehension of public administration regulations and processes.

According to the report, the Pocket Guide 2.0 chatbot was frequently used for practical activities such as writing letters and understanding job requirements, as well as answering questions about government organisations. This illustrates how the chatbot might enhance customer interaction and expedite procedures in public service settings (Dale, 2021). Numerous users gave the chatbot's performance the rating of "*Accurate and Complete*," and the majority of the comments on its correctness were favourable. Nonetheless, a few customers voiced indifference or discontent, especially over its incapacity to handle intricate enquiries (Ziwei et al., 2022). In line with studies that highlight the need for smooth interactions in chatbot design, users expected a highly engaging experience and emphasised the importance of constant availability for efficient public service delivery (Dialzara, 2024). However, shortcomings were noted, including a lack of engagement, emotional intelligence, and information overload, indicating that improvements in these areas are required to boost user satisfaction and overall efficacy (Gascó-Hernandez & Chen, 2024).

The study also identified important barriers to the effective deployment of the chatbot, including the public employees' lack of knowledge about its existence and capabilities. This indicates that to increase digital literacy, more intensive marketing campaigns and tailored training courses are required (KFF, 2025). Additionally, the respondents suggested that the chatbot's knowledge base be expanded to offer more comprehensive content and that regular updates be implemented to preserve relevance (Infobip, 2024). Enhancements, including the integration of local languages and the improvement of user interaction through natural language processing capabilities, were recommended to promote inclusivity and accessibility (BIT, 2023). Overall, the results show that significant possibilities exist for improving public service delivery with the Pocket Guide 2.0 chatbot. To develop a tool that is efficient and that adjusts to the evolving needs of public employees, it is crucial to resolve its shortcomings by putting evidence-based principles into practice (Velaro,

2024).

5.1.3 To ascertain factors for enhancing the design, training process, and continuous quality assurance of the Pocket Guide 2.0 chatbot, with a special focus.

In line with literature that stresses the need for intuitive design in improving citizen engagement with government services, the study revealed that the respondents generally reported a positive interaction with the chatbot, praising its user-friendly interface and ability to offer fast responses (Infobip, 2024). Limitations on the interface's visibility and absence of interactive elements that would impede accessibility, were however, observed. Technical problems including system freezing and the need for a consistent internet connection were also underlined as main determinants of user satisfaction (FXMedia, 2024). This study notes that, although the chatbot provides instant access to information, consumers raised concerns about its comprehensiveness compared to conventional sources like government websites, thus, demonstrating that chatbots usually lack the depth seen in official papers (Cheong et al., 2024).

Reliability emerged as a major concern since many users felt driven to confirm material the chatbot produced by means of other sources (Dale, 2021). Additionally, several respondents noted that the chatbot occasionally omits details on certain norms or standards, suggesting that its training procedure has to be upgraded to incorporate more contextually relevant knowledge. Notwithstanding these challenges, a large number of users were delighted with the chatbot's functionality and ability to streamline communication between the public and government organisations (Gascó-Hernandez & Chen, 2024). Thus, this study notes that the Pocket Guide 2.0 chatbot's speed and accessibility are noteworthy, but addressing its reliability and comprehensiveness issues will be crucial to its efficacy as a public service tool.

5.1.4 To provide evidence-based guidelines for chatbots designed to provide specialised job information in the public sector for future projects.

According to the study, user satisfaction with the chatbot tended to fluctuate, highlighting the necessity of continuous improvements to maintain relevance and effectiveness when responding to policy enquiries (Cheong et al., 2024). The need for increased interactivity keeps recurring as research shows that interactive features can significantly increase user satisfaction and engagement by providing a more comprehensible interface (Infobip, 2024). Additionally, concerns regarding the comprehensiveness of the chatbot's knowledge indicate a gap in its current capabilities, underscoring the necessity of incorporating a broader range of policy information to adequately meet customer expectations (Infobip, 2024). Recommendations for development include upgrading the chatbot's knowledge base and establishing a centralised repository for policy information, in addition to establishing a legal framework to boost trust and accountability in its operations

(Tandfonline, 2024).

Subsequent research identified barriers to digital literacy and awareness among public servants, which would facilitate the efficient usage of the chatbot. Numerous users noted that the chatbot's usefulness is limited by a lack of awareness of both its existence and characteristics (KFF, 2025). Additionally, varying levels of digital literacy indicate that tailored training programs are required to ensure that each user can effectively use and benefit from the chatbot (KFF, 2025). Respondents also underlined the need to provide the chatbot with advanced data interpretation tools and clarifying capabilities to improve its value in public sector uses (Dialzara, 2023). Although customer satisfaction about the Pocket Guide 2.0 chatbot has some great features, further development is required to improve its interactivity, comprehensiveness, and general efficacy in giving accurate policy information. Future projects aiming at creating specialised employment information chatbots within the public sector will depend critically on following the evidence-based recommendations.

5.2 Conclusions Based on the Findings of the Study

In essence, the results of this study highlighted the great possibility of the Pocket Guide 2.0 chatbot to improve public service delivery by means of better automation and simplified processes. Public workers underscored a need that chatbots can efficiently cover, as they voiced a strong wish for further automation to reduce difficulties related with repetitive chores. Although user satisfaction differed, many valued the chatbot's promptness and accuracy in handling simple questions. Concerns about its comprehensiveness and intractability were also common (Ziwei et al., 2022). Together with suggestions for improving user engagement through more interactive and human-like features, the respondents underlined the requirement of ongoing upgrades to guarantee the chatbot is relevant and capable of answering difficult questions (Infobip, 2024; KFF, 2025).

Furthermore, impeding its efficient use are obstacles including limited knowledge of the chatbot's capabilities and different degrees of digital literacy among public officials. This shows how urgently focused training courses and marketing initiatives to highlight the advantages of the chatbot should be pursued (Gascó-Hernández & Chen, 2024). Although the Pocket Guide 2.0 chatbot shows strengths in accessibility and efficiency, addressing its constraints using evidence-based guidelines is crucial to maximise its impact within the public sector frameworks, and guarantee it meets the changing needs of public servants effectively (TEM Journal, 2024; Smythos, 2024).

5.3 Recommendations based on the Findings of the Study

Based on the findings summary, a number of recommendations may be drawn to increase the Pocket Guide 2.0 chatbot's effectiveness in providing public services. First and foremost, it is essential to continuously update the chatbot's knowledge base to ensure that it remains up to date with the latest legislation and regulations that are relevant to public servants (TEM Journal, 2024). This way, the thoroughness of the provided content will be addressed, and customer satisfaction will increase, through accurate and prompt replies. Enhancing the chatbot's interactivity is also essential; including features that enable more conversational exchanges and tools for clarification will assist to ensure that customers receive relevant information and boost user engagement (Infobip, 2024; Gascó-Hernández & Chen, 2024).

Moreover, focused training courses should be created to raise public servant digital literacy so that they may properly browse and use the chatbot (KFF, 2025). Awareness campaigns help to highlight the features and advantages of the chatbot, therefore addressing the present knowledge gaps among possible users (Dialzara, 2024). Improving accessibility by means of offline capabilities or support for local languages will help to guarantee that the chatbot (BIT, 2023) benefits a larger audience. Finally, adding sophisticated data interpretation tools will help public servants involved in data-driven decision-making to be much more useful (Cheong et al., 2024). Following these suggestions will help the Pocket Guide 2.0 chatbot develop into a more useful tool, satisfying public servant needs and promoting openness and inclusiveness within government operations.

5.4 Limitations of the Study

alto begin with, the ethical clearance for the research was acquired just one and a half months before the submission date, thereby restricting the scope and depth of the investigation. Even though the research aimed to gather feedback from users of the Pocket Guide 2.0 chatbot across several government offices, ministries, agencies, and regional councils, the response rate was low, with just a small number of offices taking part. This resulted in a sample size of only 20 respondents, which may not accurately reflect the broader user experience or allow for the drawing of generalisations about the whole public servant community. Furthermore, the study showed that many public officials were not aware of the chatbot and its usability, which perhaps helped to explain the low response rate; considering that one of the eligibility requirements demanded participants to have used the chatbot at least three times.

Given that the Pocket Guide 2.0 was only published in late 2023, this lack of knowledge may restrict the conclusions and their relevance even more.

Moreover, depending only on self-reported data may lead to prejudices since respondents might view their chatbot encounters differently. The limited period of data collection also begs questions regarding the comprehensiveness of insights acquired since it might not reflect continuous changes in user perceptions over time or capture continuous developments. These restrictions overall emphasise the need for future research to include a bigger and more varied sample size and take into account longitudinal studies that can track user involvement and satisfaction with the chatbot over a longer period. Developing stronger knowledge on how artificial intelligence chatbots may efficiently serve public sector needs, will depend on addressing these constraints.

5.5 Recommendations for Future Research

Based on the results of this study, numerous important areas should be the focus of further studies to improve the efficiency of chatbots in public service execution. First, especially in relation to the chatbot's capacity to offer correct and complete information on changing government regulations, it is essential to look at the effect of ongoing updates on user happiness and engagement (TEM Journal, 2024). Further, research should investigate the incorporation of advanced interactive elements, like natural language processing and clarifying capabilities, to improve user experience and guarantee that the chatbot can manage difficult questions more successfully (Infobip, 2024; Smythos, 2024).

Furthermore, it is important for studies to evaluate awareness efforts aimed at supporting the chatbot's features, and focused training programs meant to raise public officials' digital literacy (KFF, 2025). Maximising the value of the chatbot depends on an awareness of how these projects affect user adoption and involvement. Eventually, future research might look at the possible advantages of incorporating human-like traits into chatbot architecture to build confidence and improve user comfort during interactions (Gascó-Hernández & Chen, 2024). By tackling these issues, next studies may provide insightful analysis on maximizing chatbot performance for public sector uses and guaranteeing that these instruments sufficiently satisfy user demands.

5.6 Chapter Conclusion

Focusing on the "Being a Public Servant in Namibia - the Pocket Guide 2.0 Pocket bot, the study examined the effectiveness of artificial intelligence chatbots for delivering public information. The results indicate that there

is potential to improve the Pocketbot's usability and design. With respect to the Pocket Guide 2.0 chatbot, the chapter summarises the main results, conclusions, advice, restrictions, and proposals for further studies. Alongside awareness of the chatbot's ability to boost operational efficiency and improve communication in public service environments, the survey established a significant desire among public workers for more automation to relieve frustrations with repetitious activities. Although user satisfaction was generally good, concerns regarding the chatbot's comprehensiveness and engagement were common, suggesting a necessity of ongoing improvements to its knowledge base. Among the recommendations are more interaction, human-like traits, and focused training programs meant to raise the consumers' digital literacy and awareness. The low response rate resulting from a lack of knowledge of the chatbot and its features, and the limited sample size of 20 respondents—which might not fairly represent the larger user experience—are limitations of the research. Moreover, the recent release of the Pocket Guide 2.0 in late 2023 might have added to these restrictions. Larger sample sizes, longitudinal studies to monitor user involvement over time, and investigating advanced features that can improve the chatbot's usability in public sector applications should be the main priorities of further studies. Optimising the efficiency of chatbots in meeting public servant demands will depend on addressing these elements generally.

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ANNEXURE A: INFORMED CONSENT APPLICATION FORM

FACULTY RESEARCH ETHICS COMMITTEE (F-REC) APPLICATION FORM FOR ETHICAL CLEARANCE FOR RESEARCH/DATA COLLECTION				
NB: This form should be prepared by the researcher and student researcher in consultation with supervisor/promotor) and attached to the actual research proposal, and submitted to the Faculty Research Ethics Committee				
Full name of researcher: Prof/Dr/Mr/Ms/Other: MS CHRISTELL CHARLEEN NASSAUW				
Department & Faculty of Researcher: FACULTY OF COMPUTING AND INFORMATICS DEPARTMENT OF INFORMATICS, JOURNALISM AND MEDIATECHNOLOGY				
Title of research project: ASSESSING THE EFFICACY OF ARTIFICIAL INTELLIGENCE CHATBOTS FOR DELIVERING PUBLIC INFORMATION: A CASE STUDY OF THE "BEING A PUBLIC SERVANT IN NAMIBIA - THE POCKET GUIDE 2.0 POCKET BOT"				
If a registered NUST student, indicate degree programme: MASTER OF JOURNALISM AND MEDIA TECHNOLOGY				
NUST staff or student number: 216083893				
Supervisor/promotor (if applicable): Prof/Dr/Mr/Ms/other: DR WANJA NJUGUNA				
ETHICAL CONSIDERATIONS	Yes	NS*	No	ACTION REQUIRED
1. Familiarity with ethical codes of conduct				
As researcher, I have familiarised myself with the professional code(s) of ethics and guidelines for ethically responsible research relevant to my field of study as specified in the list herewith attached, AND the policy for the assurance and promotion of ethically accountable research at NUST	X			If YES: Continue with the checklist. If NS/NO: Researcher must do so before proceeding.
2. The proposed research: (Proceed with the whole of Section 2)				
a) Involves gathering information directly from human subjects (individuals or groups) (e.g. by means of questionnaires, interviews, observation of subjects or working with personal data)	Yes X	NS	No**	If YES: Continue with the checklist. If NO: This checklist process does not apply to the proposed research, except if 2 (b) applies.
b) Involves gathering information directly from companies, corporations, organisations, NGOs, government departments etc. that is <u>not</u> available in the public domain	X			If YES: Continue with the checklist. If NO: This checklist process does not apply to the proposed research.
C 1) Is linked to or part of a bio-medical research project C2) Is linked to or part of nuclear/radio-active research project C3) Is linked to biotechnological research project e.g. GMOs, Environmental Nanotech research etc.			X	If YES/NS: F-REC clearance will be required.
d) Involves gathering of information without consent/assent, i.e. will be conducted without the knowledge of the subjects of/participants in the research			X	If YES/NS: F-REC clearance will be required.
e) Involves collection of identifiable information about people from available records/archival material to be collected on individuals/groups/lists with personal information			X	If YES/NS: F-REC clearance will be required.

** Please note: If the "No" option is selected it does not nullify the responsibility that rests on the researcher to ensure that ethical research practices are followed throughout the research process. The onus rests on the researcher to ensure that, should any ethical issues arise throughout the research process, the necessary steps are taken to minimise and report these risks to the supervisor/promotor of the study (where relevant/applicable), the Departmental Head, and the F-REC. Furthermore: If the "No" option is chosen it does not absolve the researcher to seriously consider the possible risk that the research can in some way wrongfully disadvantage research participants and/or stakeholders or deny them fundamental rights.


3. The proposed research involves the gathering of information from people in the following categories:				
a) Minors (persons under 18 years of age)	Yes	NS	No X	If YES/NS for any of these categories (a-f): F-REC clearance will be required. The committee must screen the proposal/project and may seek further external clarification if the ethical risk is assessed as medium or high. If NO for all of these categories: Continue with the checklist.
b) People with disabilities			X	
c) People living with/affected by HIV/AIDS			X	
d) Prisoners			X	
e) Other category deemed vulnerable; SPECIFY here: [See Glossary of SOP for definitions.]			X	
f) NUST staff, students or alumni	Yes	NS	No X	If YES/NS: F-REC clearance must be obtained. Complete the checklist and submit to the committee. If NO: Continue with the checklist.
4. Assessment of risk of potential harm as a result of the research (tick ONE appropriate YES or NS box)				
a) Minimal risk (for a classification of risk types, and definition, see Glossary and Addendum 3 in REC SOP)	Yes X	NS	No	If YES: Established ethical standards apply. Proceed to 5, 6 and 7 and completion of checklist. If NO/NS: Proceed to 4b).
b) Low risk (for a classification of risk types, and definition, see Glossary and Addendum 3 in REC SOP)	Yes X	NS	No	If YES/NS: Established ethical standards apply; further assessment may be carried out by F-REC. Proceed to 5, 6 and 7 and completion of checklist. If NO: Continue with the checklist.
c) Medium risk (for a classification of risk types, and definition, see Glossary and Addendum 3 in REC SOP)	Yes	NS	No X	If YES/NS: F-REC clearance must be obtained; further assessment/clarification may be carried out by F-REC. Proceed to 5, 6 and 7 and completion of checklist. If NO: continue with the checklist.
d) High risk (for a classification of risk types, and definition, see Glossary and Addendum 3 in REC SOP)	Yes	NS	No X	If YES/NS: F-REC clearance must be obtained; further assessment/clarification may be carried out by F-REC. Proceed to 5, 6 and 7 and completion of checklist. If NO: Continue with the checklist.
5. The proposed research involves processes regarding the selection of participants in the following categories:				
a) Participants that are subordinate to the person doing the recruitment for the study	Yes	NS	No X	If YES: REC clearance may be required. If NO: Continue with the checklist.

b) Third parties are indirectly involved because of the person being studied (e.g. family members of HIV patients, parents or guardians of minors, friends)	Yes	NS	No X	If YES: REC clearance may be required. If NO: Continue with the checklist.
6. Steps to ensure established ethical standards are applied (regardless of risk assessment)				
a) Informed consent: Appropriate provision has been/will be made for this (either written or oral)	Yes X	NS	No	If YES: Provide evidence together with the submitted proposal. Continue with checklist. If NS/NO: Attach/provide justification for further assessment and advice. This should be reflected in the evidence of 'informed consent' or as reflected in the research instrument
b) Voluntary participation: Respondents/informants will be informed, inter alia, they have the right to refuse to answer questions and to withdraw from participation at any time	X			
c) Privacy: Steps will be taken to ensure personal data of informants will be secured from improper access	X			
d) Confidentiality and anonymity: Confidentiality of information and anonymity of respondents/informants will be maintained unless explicitly waived by respondent.	X			
e) Training: research assistants/ fieldworkers will be used to collect data, and ethics awareness will be included in their training			X	
f) Mitigation of potential risk: Likelihood that mitigation of risk of harm to participants is required, is at medium/high, and appropriate steps have been/will be taken (e.g. referral for counselling)	Yes	NS	No X	If YES/NS: Develop protocols for submission to F-REC. Continue with checklist. If NO: Proceed with checklist.
g) Access: Institutional permission is required to gain access to participants and has been/will be secured. Specify here from whom: EXECUTIVE DIRECTORS AND CHIEF REGIONAL OFFICERS OF GOVERNMENT OFFICES, MINISTRIES, AGENCIES AND REGIONAL COUNCILS [If the permission letter required is available, submit it to the DESC. If it is not available, apply for it immediately and indicate to the DESC when it will be expected.]	Yes X	NS	No	If YES: Develop application for authorisation, clear with DESC & apply. Continue with checklist. If NS: Refer proposal to DESC for assessment and advice. Continue to 6 (h). If NO: Proceed to 6 (h).
h) Accountability research*: Institutional permission to gain access to participants poses an obstacle to conduct the research.	Yes	NS	No X	If YES/NS: Refer proposal to F-REC for assessment and advice. Continue with checklist. If NO: continue with checklist.
i) Public availability of instruments to gather data: [When applicable] Are the instruments that will be used to gather data available in the public domain?	Yes X	NS	No	If YES or not applicable: proceed with checklist. If NS/NO: Obtain permission to use the instrument(s) and submit letters of permission with the proposal to DESC for assessment and advice Continue with checklist..
j) Use of psychological tests: [When applicable] Are the instruments that will be used to gather data classified by law as psychological tests?	Yes	NS	No X	If YES/NS: Indicate who will administer these tests, and whether they are appropriately registered and adequately trained to do so. Provide registration number and professional body. Continue with checklist. If NO or not applicable: Proceed with checklist.
k) Protecting data from unauthorised access: Are appropriate measures in place to protect data from unauthorized access? If yes, specify what the measures are:	Yes X	NS	No	If YES: Specify and proceed with checklist.

Collected data will be treated as confidential thus, it will only be shared between the researcher, supervisor and the higher degree committee.				If NO/NS: Develop and put in place appropriate measures. Continue with checklist.
l) Unexpected information: If unexpected, unsolicited data is revealed during the process of research, data will be kept confidential and will only be revealed if required by law.	Yes X	NS	No	If YES: Proceed with checklist. If NO/NS: Consult on this matter with F-REC for further guidance. Continue with checklist.
m) Emergency situations: If an unexpected emergency situation is revealed during the research, whether it is caused by my research or not, it will immediately be reported to my supervisor/promotor and Departmental Chair for further advice.	Yes X	NS	No	If YES: Proceed with checklist. If NO/NS: Consult on this matter with F-REC. Continue with checklist.
n) Permission to use archival data: [When applicable] Is permission granted from the custodian of the archive to use it.	Yes X	NS	No	If YES: Proceed with checklist. If NO/NS: Consult on this matter with F-REC. Continue with checklist.
o) The archive itself does not pose problems: [When applicable] The initial conditions under which the archive originated allow you as a third party researcher to use the material in the archive.	Yes X	NS	No	If YES, proceed with checklist. If NO/NS: Consult on this matter with F-REC. Continue with checklist.
7. Conflict of interest				
Is the researcher aware of any actual or potential conflict of interest in his/her proceeding with this research?	Yes	NS	No X	If YES/NS: Identify concerns, attach details of steps to manage them, and refer to F-REC for assessment and advice. If NO: No further action required, except signing the declaration and the checklist, and submitting it to the DESC with supporting documentation.

DECLARATION BY RESEARCHER:

I hereby declare that I will conduct my research in compliance with the professional code(s) of ethics and guidelines for ethically responsible research relevant to my field of study as specified in the list herewith attached, AND the 'Framework policy for the assurance and promotion of ethically accountable research at the Namibia University of Science and Technology', even if my research poses minimal or low ethical risk.

Print name of Researcher: MS CHRISTELL CHARLEEN NASSAUW	
Date: 25 September 2024	Signature of Researcher:

Print name of Supervisor (if applicable): DR WANJA NJUGUNA	Signature of Supervisor
Date:	
Print name of co-supervisor(s) (if applicable):	
Date:	

Note: Faculty should provide staff members and students with a list of professional Code(s) of Ethics and Guidelines for ethically responsible research or refer them to appropriate online site where the information will be accessed.

THIS ETHICAL CLEARANCE APPLICATION SHOULD BE PROPERLY FILLED AND SENT TO THE FACULTY RESEARCH ETHICS COMMITTEE TOGETHER WITH A COPY OF THE RESEARCH PROPOSAL. UPON RECEIPT OF THE DOCUMENT, THE RESEARCH ETHICS COMMITTEE SECRETARIAT WILL ISSUE A RESEARCH ETHICS COMMITTEE REGISTRATION NUMBER FOR RECORD AND OFFICIAL CORRESPONDENCE PURPOSE.



[Informed Consent Form for Public Servants employed in Government Offices, Ministries, Agencies and Regional Councils.]

This informed consent form is for; Public Servants employed in the Namibian Government Offices, Ministries, Agencies and Regional Councils who will be invited to participate in the research *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”*

[Name of Principle Investigator] Christell Charleen Nassauw

[Name of Organization] Namibia University of Science and Technology (NUST)

[Name of Sponsor] none

[Name of Project and Version] *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”*

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

I am Christell Charleen Nassauw, working for the Office of the Auditor-General. I am conducting research on "Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”. I will provide you with a basis of my research and extend an invitation for your participation. You are free to discuss the research with whomever you feel comfortable talking to about it, and you are free to decide whether or not you wish to participate in it. There may be terms on this permission form that you do not understand. If so, please ask questions or request a pause while I go over the material, and I will take the time to clarify. You can ask me directly if you have any questions.

Purpose of the research

Chatbots are being used more and more in the public sector around the world, but there isn't a lot of real-world study that looks at how well they work in certain areas, like public administration. Previous research that looked at how users felt about government robots shows that many people are unhappy with how thorough and accurate the help they provide. At this point, it is still not clear if these automated systems can meet the public's standards for quick, complete, and nuanced information that is just as good as what humans can give. We want to evaluate these automated system's efficacy in providing accurate public information on the information listed in the pocket guide for public servants. *We believe that you can help us by telling us what experiences are with the Pocketbot 2.0 and learn from your experiences. We want to learn what works for you and what does not, what are your limitations and what would you recommend the system incorporate*

to make your experience more rewarding.

Type of Research Intervention

This study requires your involvement in a 30 to 60-minute interview.

Selection of Participants: You have been invited to participate in this research because, you have already interacted with the Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocketbot and are knowledgeable on the workability of the Pocketbot, therefore, you are well-positioned to provide a comprehensive understanding of the overall efficacy of the Pocketbot.

Participant Selection

You are invited to take part in this research because we feel that being a public servant who has extensively used the Pocketbot before, you are in a better position to answer the proposed questionnaire and provide insight into the efficacy of this Pocketbot.

Voluntary Participation

It is purely your decision whether or not to participate in this research. Your decision will not affect your employment or any work-related evaluations or reports.

Procedures

A. Provide a brief introduction to the format of the research study.

As a Researcher, we are interested in finding out how public servants experience the efficacy of the Pocketbot. We would like to invite you to participate in this study; if accepted, you will have to sign a consent form.

B.

You will be expected to an interview guide that I, the researcher, will send you via email as a Google Forms link. This is an interview guide that you may fill out and submit, giving the researcher instant access to your answers. You have two options for answering the questionnaire: either have it read to you or say out what you want me to write down. You are free to skip any questions that you do not want to respond to and go on to the next one in the questionnaire. Your name is not on the forms; instead, just a number will be used to identify you, and the questionnaire will only be accessible to the researcher (Christell Charleen Nassauw) and supervisor (Dr. Wanja). The information recorded is confidential.

Duration

The research will be conducted over a total of three months. We will send out the interview guide link via email for a minimum of three times during this period. Completion time of the interview guide should take you about 30 minutes to an hour. You have the option to complete the interview guide all at once, or save your answers and complete the rest of the interview guide at a later stage before submitting it.

Risks

You are not obligated to respond to any question or participate in the interview guide if you feel that the question(s) are too personal or if sharing your experiences about them makes you uncomfortable. Nevertheless, there is a possibility that you may accidentally disclose some personal or confidential information. However, we do not wish for this to happen.

Benefits

There will be no direct benefit to you in terms of benefit; however, your participation is likely to provide a more comprehensive understanding of the efficacy of the Pocketbot to policy makers and executive directors of government.

Reimbursements

Participation in the research will not result in compensation. This interview will be completed at your most convenient location, such as your residence or office. The researcher will travel at their own expense to locate you if there is a requirement for travel.

Confidentiality

No one outside the study team will be able to see the information that is being gathered about you. It will be kept secret. Instead of your name, the details about you will only have a number. Only the researchers will know what that number is.

Sharing the Results

Before it is shared with the public, the information we get from this study will be shared with you and your institution. Every participating Office, Ministry, Agency of government as well as participating regional council who took part will get a report of the results.

Right to Refuse or Withdraw

You are under no obligation to participate in this study, and doing so will have no bearing whatsoever on how you are evaluated for your work or employment. Your employment will not be impacted if you decide to withdraw from the interview at any point.

Who to contact?

If you have any inquiries following the conclusion of the interview, you may inquire about them at a later time. My contact information is as follows: Christell Charleen Nassauw can be reached at +264 61 285 8202 (w) or +264 81 6020 846 (m), or via email at nassauwch13@gmail.com.

Please be advised that the Namibia University of Science and Technology Faculty Research Ethics Committee (FREC) has reviewed and approved this proposal. This committee is responsible for ensuring the safety of research participants. You are encouraged to obtain additional information regarding the FREC and their contact information. Dr. A Peel can be reached via email at apeel@nust.na or by phone at 061 207 2965.

Part II: Certificate of Consent

I have been given the opportunity to take part in a study concerning the material above, or it has been read to me. I have gotten a chance to ask questions about it, and those that I have asked have received satisfactory answers. I voluntarily give my consent to participate in this study.

I saw the permission form being accurately read to the prospective participant and that they were given the chance to ask questions. I certify that the person provided their consent voluntarily.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

If illiterate

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____

Thumb print of participant



Signature of witness _____

Date _____
Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

- 1.
- 2.
- 3.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent Christell Nassauw_____

Signature of Researcher /person taking the consent  _____

Date 25 September 2024 _____
Day/month/year

ANNEXURE B: APPROVED ETHICAL CLEARANCE CERTIFICATE



**FACULTY RESEARCH ETHICS COMMITTEE (F-REC)
DECISION/FEEDBACK ON THE RESEARCH PROPOSAL**

Dear Christell Charleen Nassau (216083893)

RESEARCH TOPIC: ASSESSING THE EFFICACY OF ARTIFICIAL INTELLIGENCE CHATBOTS FOR DELIVERING PUBLIC INFORMATION: A CASE STUDY OF THE "BEING A PUBLIC SERVANT IN NAMIBIA - THE POCKET GUIDE 2.0 POCKET BOT"

Supervisor (if applicable): **Dr Wanja Njuguna**

Qualification registered for (if applicable): Master of Journalism and Media Technology

(Reference number of applications: **FACULTY RESEARCH ETHICS COMMITTEE REGISTRATIONNUMBER: FREC - 71/24**)

Re: Ethical screening application No: **FREC - 71/24**

The Faculty of **Computing and Informatics** Ethics Screening Committee of the Namibia University of Science and Technology reviewed your application for the above-mentioned research. The research as set out in the application has been:

Approved X

(Indicate with an X, and N/A if not applicable and proceed)

We would like to point out that you, as a researcher, are obliged to maintain the ethical integrity of your research, adhere to the ethical guidelines of NUST, and remain within the scope of your research proposal and supporting evidence as submitted to the F-REC. Should any aspect of your research change from the information as presented to the F-REC, which could affect the possibility of harm to any research subject, you are under the obligation to report it immediately to your supervisor or F-REC as applicable in writing. Should there be any uncertainty in this regard, you must consult with the F-REC.

We wish you success with your research and trust that it will make a positive contribution to the quest for knowledge at NUST.

Any ethical issues that need to be highlighted?	Why are these issues important?	What must/could be done to minimize the ethical risk?
No	N/A	N/A

Recommendation: The application is approved.

Sincerely,

Prof. Suama L Hamunyela
Chairperson: Faculty Ethics Screening
Committee Tel: +264-61-207-2922
CC: Co-supervisor:



ANNEXURE C: PERMISSION TO CONDUCT RESEARCH LETTERS

P.O. BOX 6534
AUSSPANNPLATZ
WINDHOEK
24 September 2024

Mr. Goms Menettè
Deputy Auditor-General
Office of the Auditor-General
Private Bag 13299
Windhoek,
Namibia

PERMISSION TO CONDUCT RESEARCH AT YOUR INSTITUTION

My name is Christell Nassauw, a Masters in Journalism and Media Technology student at the Namibia of University of Science and Technology (NUST). I am conducting my research titled: *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”* a thesis presented in partial fulfilment of the requirements for the degree of Master of Journalism and Media Technology at the Namibia University of Science and Technology (NUST). I hereby request your kind assistance by providing me with authorisation to conduct research with staff members of your institution who are knowledgeable and proficient with the “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot. Enclosed is my Departmental Ethical Clearance Certificate for ease of reference.

Staff members are encouraged to complete the attached questionnaire to the best of their ability. I hereby give assurance that all responses will be handled with the utmost confidentiality. The information requested in this questionnaire is solely for academic purposes.

I look forward to hearing back from your institution regarding my request. If you have any questions regarding the above, please do not hesitate to contact me, Christell Nassauw, at nassauwch13@gmail.com or 0816020846.

Kind regards,



Christell Nassauw

P.O. BOX 6534
AUSSPANNPLATZ
WINDHOEK
24 September 2024

Mr. Teofilus Nghitila
Executive Director
Ministry of Environment and Tourism
Private Bag 13306
Windhoek,
Namibia

PERMISSION TO CONDUCT RESEARCH AT YOUR INSTITUTION

My name is Christell Nassauw, a Masters in Journalism and Media Technology student at the Namibia of University of Science and Technology (NUST). I am conducting my research titled: *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”* a thesis presented in partial fulfilment of the requirements for the degree of Master of Journalism and Media Technology at the Namibia University of Science and Technology (NUST). I hereby request your kind assistance by providing me with authorisation to conduct research with staff members of your institution who are knowledgeable and proficient with the “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot. Enclosed is my Departmental Ethical Clearance Certificate for ease of reference.

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I look forward to hearing back from your institution regarding my request. If you have any questions regarding the above, please do not hesitate to contact me, Christell Nassauw, at nassauwch13@gmail.com or 0816020846.

Kind regards,



Christell Nassauw

P.O. BOX 6534
AUSSPANNPLATZ
WINDHOEK
24 September 2024

Ms. Ndiyakupi Nghituwamata
Executive Director
Ministry Of Agriculture, Water And Land Reform
Private Bag 13343
Windhoek,
Namibia

PERMISSION TO CONDUCT RESEARCH AT YOUR INSTITUTION

My name is Christell Nassauw, a Masters in Journalism and Media Technology student at the Namibia of University of Science and Technology (NUST). I am conducting my research titled: *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”* a thesis presented in partial fulfilment of the requirements for the degree of Master of Journalism and Media Technology at the Namibia University of Science and Technology (NUST). I hereby request your kind assistance by providing me with authorisation to conduct research with staff members of your institution who are knowledgeable and proficient with the “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot. Enclosed is my Departmental Ethical Clearance Certificate for ease of reference.

Staff members are encouraged to complete the attached questionnaire to the best of their ability. I hereby give assurance that all responses will be handled with the utmost confidentiality. The information requested in this questionnaire is solely for academic purposes.

I look forward to hearing back from your institution regarding my request. If you have any questions regarding the above, please do not hesitate to contact me, Christell Nassauw, at nassauwch13@gmail.com or 0816020846.

Kind regards,



Christell Nassauw

P.O. BOX 6534
AUSSPANNPLATZ
WINDHOEK
24 September 2024

Mr. Ben Nangombe
Executive Director
Ministry Of Health and Social Services
Private Bag 13198
Windhoek,
Namibia

PERMISSION TO CONDUCT RESEARCH AT YOUR INSTITUTION

My name is Christell Nassauw, a Masters in Journalism and Media Technology student at the Namibia of University of Science and Technology (NUST). I am conducting my research titled: *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”* a thesis presented in partial fulfilment of the requirements for the degree of Master of Journalism and Media Technology at the Namibia University of Science and Technology (NUST). I hereby request your kind assistance by providing me with authorisation to conduct research with staff members of your institution who are knowledgeable and proficient with the “Being a Public Servant in Namibia – The Pocket Guide 2.0 Pocket Bot. Enclosed is my Departmental Ethical Clearance Certificate for ease of reference.

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I look forward to hearing back from your institution regarding my request. If you have any questions regarding the above, please do not hesitate to contact me, Christell Nassauw, at nassauwch13@gmail.com or 0816020846.

Kind regards,



Christell Nassauw

ANNEURE D: APPROVAL PERMISSION LETTERS



Republic of Namibia



OFFICE OF THE AUDITOR-GENERAL

Tel: (264) (061) 2858000
Fax: (264) (061) 224301

Private Bag 13299
WINDHOEK
9000

Our Ref: PF
Enquiry: Ms. Tabita Tjindunda

Your Ref:

14 December 2024

Ms. Christell Nassauw
Namibia University of Science and Technology
Masters in Journalism and Media Technology
Windhoek

Dear Ms. Nassauw,

RE: LETTER OF RECOMMENDATION FOR ACADEMIC RESEARCH

Reference has been made to your letter dated 10 December 2024, with the above mentioned subject.

It is with great pleasure to inform you that your request to conduct an academic research was granted.

We would hereby like to request you to share the research findings upon completion, as it is relevant to our office.

We further appreciate your interest in conducting research in our Office, and we wish you all of the best in your future endeavor.

Yours Sincerely,

MR. BLESSING NYANDORO
ACTING DEPUTY AUDITOR-GENERAL





REPUBLIC OF NAMIBIA

OFFICE OF THE PRESIDENT

MINISTRY OF GENDER EQUALITY, POVERTY ERADICATION AND SOCIAL WELFARE

Tel: +264 61 283 3111
Fax: +264 61 283 941/240 898
E-mail: genderequality@mgepesw.gov.na
Website: www.mgepesw.gov.na

2111 Juvenis Building
Independence Avenue
Private Bag 13359
Windhoek
Namibia

20 December 2024

Ms. Christell Nassauw
Namibia University of Science and Technology
Masters in Journalism and Media Technology
Windhoek

Dear Ms. Nassauw,

RE: LETTER OF RECOMMENDATION FOR ACADAMIC RESEARCH

Reference has been made to your letter 20 December 2024, with the above mentioned subject.

On behalf of the Ministry of Gender Equality, Poverty Eradication, and Social Welfare, I am pleased to confirm the approval and recommendation for Ms. Ms. Christell Nassauw to conduct academic research on the topic titled *“Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of the “Being A Public Servant In Namibia- The Pocket Guide 2.0 Pocket Bot”*.

I would hereby like to request you to share the research findings upon completion, as it is relevant to our office.

I further appreciate your interest in conducting research in our Ministry and we wish you all of the best in your future endeavours.

Your sincerely,

Ms. Selma Mwaetako
Public Relations Officer

All official correspondences must be addressed to the Executive Director





REPUBLIC OF NAMIBIA

MINISTRY OF JUSTICE

Tel: (061) 280 5280 / 0811420169
Enqr: Mr. Edmund Khoaseb
Email: Edmund.Khoaseb@moj.gov.na

Private Bag 13302
Windhoek
Namibia

20 January 2025

Christell Nassauw

Nassauwch13@gmail.com

081 602 0846

Windhoek

RE: PERMISSION GRANTED TO CONDUCT RESEARCH AT THE MINISTRY OF JUSTICE

Dear Mrs Nassauw,

1. The above subject matter refers.
2. I hope this message finds you well. We acknowledge receipt of your request to conduct research on the topic: *Assessing the Efficiency of Artificial Intelligence Chatbots for Delivering Public Information: A Case Study of Being a Public Servant in Namibia*
3. Permission has been granted for you to conduct your research at the Ministry of Justice.
4. For further assistance or coordination, kindly contact Mr. Edmund Khoaseb, at **email: edmund.khoaseb@moj.gov.na ; Cell: 081 142 0169**

We appreciate your efforts to maintain professionalism and confidentiality throughout your research process. We wish you success in your research.

Sincerely,

.....
Gladice Pickering
Executive Director



All correspondence must be addressed to the Executive Director

ANNEXURE E: RESEARCH INSTRUMENT: SEMI-STRUCTURED INTERVIEW GUIDE

Open-Ended Questions

Participant Informed Consent Agreement

1. Do you certify that you have read the consent form and that you are aware that taking part in this study is voluntary?

- **YES**

- **NO**

Background and User Characteristics

2.1. Current Role and Responsibilities

Which Government Office do you represent?

- **Offices/Ministries/Agencies**

- **Regional Council**

2.2. What is your current role in the Public Sector?

- **Administration and Corporate Services**

- **Technical Expert**

- **Management**

- **Other**

2.3. What is your current job title?

3. Tenure in Public Service

How long have you been working in the public service?

- **0 – 5 years**
- **6 – 10 years**
- **11 – 15 years**
- **Above 15 years**

4. Usage of the Pocket Guide 2.0 Chatbot

How frequently do you engage with the "Being a Public Servant in Namibia - The Pocket Guide 2.0 Pocket Bot"?

- **Once a week**
- **Once a Month**
- **When the need arise**

Closed-ended Questions

5. Experience with Technology

What has been your experience with technology and digital tools in your work? How do you typically use these tools?

Expectations and Perceptions

6.1 Initial Expectations

What were your initial thoughts or expectations regarding the capabilities of the Pocket Guide 2.0 chatbot when you first encountered it?

6.2 Alignment with Public Service Policies

In what ways does the chatbot align with your understanding of public service policies and regulations?
Can you provide specific examples?

6.3 Meeting Expectations

Can you discuss how the chatbot has met or exceeded your expectations? Conversely, are there areas where you feel it has not performed as well as anticipated?

Assess Effectiveness and Accuracy:

7.1.1 Can you provide an example of a recent use of chatbot in relation to your work responsibilities?

7.2 How would you rate the accuracy and completeness of the chatbot's response?

7.3 Has the chatbot ever provided inaccurate or outdated information? If so, can you give an example?

7.4 How does the chatbot handle complex, nuanced queries about government policies?

User Experience and Limitations:

8.1 Describe your experience interacting with and navigating the chatbot interface, including any technical issues or limitations you may have encountered.

8.2 What are the key strengths and weaknesses of the chatbot based on your experience?

8.3 Do you use other sources for public service information? If so, how does the chatbot compare to the other sources you use for public service information?

Enhancing the Chatbot:

9.1 Are you fully satisfied with the chatbot's ability to solve your queries on policy information? If not, are there improvements you would suggest to enhance the chatbot's ability to provide accurate and comprehensive policy information?

9.2 Are there any additional features or capabilities you would like to see added?

9.3 Do you think chatbot is being effectively used by public servants? If not, what support do you think public servants need to effectively utilize the chatbot?

9.4 Do you have any other feedback or recommendations for the developers of the chatbot?

ANNEXURE F: CODING OF CLOSED-ENDED INTERVIEW QUESTIONS 4-8

What is your current role in the Public Sector?	What is your current job title?
Administrative and Corporate Services	Chief Public relations Officer
Technical Expert	Software development and portal programmer
Administration and Corporate Services	Public Relations Officer
Management	Audit Manager at the Office of the Auditor General
Technical Expert	I am a Senior Systems Administrator responsible for supporting, troubleshooting and maintaining mission critical systems and networks.
Administration and Corporate Services	Executive Assistant
Management	I'm Commercial Associate at the Namibia Press Agency, chiefly responsible for the business development thrust of the agency.
Management	Deputy Director
Administration and Corporate Services	I am an information officer at the ministry of information, communication and technology. My responsibilities are to provide support for IT-related issues and ensure that staff are trained to use information systems effectively. other responsibilities are to ensure that relevant and accurate information reaches the right stakeholders through reports, newsletters, or digital platforms in a timely manner.
Administration and Corporate Services	Communication Official . I am link between my institution and its stakeholders, responsible for promoting, managing and defending the image of my institution.
Administration and Corporate Services	Chief information officer at the National Assembly responsible for media, information dissemination and publicity.
Administration and Corporate Services	Senior Administrative Assistant
Administration & Corporate Services	Senior Administrative Assistant

Administration & Corporate Services	I am a learning and Development officer
management	performance management chief
Management	Deputy Director
Administration & Corporate Services	Wellness Director
Technical Expert	computer technician
Administration & Corporate Services	Media Officer
Administration & Corporate Services	Procurement Officer

What has been your experience with technology and digital tools in your work? How do you typically use these tools?

I wish we had more automation tools available. Currently, many tasks are repetitive and time-consuming because we lack the necessary resources to streamline our work.

In public relations and media we have some digital tools, but they are outdated and don't provide the analytics we need to measure engagement effectively.

Remote work has been challenging due to limited access to collaboration tools. We often rely on email, which slows down our communication significantly.

Customer relationship management is difficult without modern tools. We keep track of client interactions manually, which can lead to missed opportunities.

I feel overwhelmed by the few digital options we have; it's hard to choose what might work best when none of them are fully functional or user-friendly.

While I try to engage in online learning, the lack of support and resources at work makes it difficult for me to pursue continuous professional development effectively.

Accessing information quickly is a challenge in my role as information officer since we have limited online resources.

Collaboration is often hindered by our reliance on basic communication methods; we lack the advanced software that could facilitate better teamwork across departments.

we mostly use spreadsheets instead of more efficient management tools, which can be cumbersome and error-prone

Training sessions are often traditional and lack interactive digital elements due to limited access to modern training technologies like virtual reality tools.

Networking has been challenging as well; while I try to use digital communication platforms, many colleagues prefer face-to-face interactions due to their unfamiliarity with technology.

we often rely on manual leave recording processes which is not effective and efficient

Scheduling meetings can be chaotic since we don't have effective scheduling software; I often find myself coordinating times through multiple emails instead because people are not responding to tools such as google calendar or event whatsapp only to emails
My experience with technology has been quite limited. We primarily use basic software for communication, but there's a lack of advanced tools that could really enhance our workflow.
Digital tools are not fully integrated into our work processes. I often rely on paper documents and face challenges when trying to collaborate digitally due to outdated systems.
I find that my role involves a lot of manual data entry because we don't have access to modern analytics tools. This makes it difficult to analyse trends effectively.
Research is often cumbersome in my position since we lack access to comprehensive online databases. I mostly rely on what's available in our library, which is limited.
I sometimes struggle with outdated graphic design software. While I try to create engaging materials, the tools we have don't always meet current standards.
My experience with technology has been frustrating at times. We use video conferencing tools, but they often malfunction, making remote meetings challenging.
I attempt to use time management apps, but without consistent internet access, it's hard to keep track of tasks effectively. I often revert to pen and paper.
Communication platforms are available, but many colleagues are not comfortable using them. This leads to misunderstandings and delays in our projects.

What were your initial thoughts or expectations regarding the capabilities of the Pocket Guide 2.0 chatbot when you first encountered it?

A real chatbot with interactive capabilities and interface
To answer every question pertaining public service
It will make access to information easier than before.
I have never had any experience with this specific chatbot.
I am very impressed with how fast the bot model is able to learn or be trained, this because you can ask tricky content related questions and it will not know the answer at first but will know the answer after few minutes thats a very good bot.
I had high hopes when I first spoke with the Pocket Guide 2.0 chatbot. I expected a flawless user experience that would enable me to instantly respond to a variety of inquiries. I anticipated that it would be able to comprehend natural language fluently, facilitating communication that feels engaging and intimate. In order to make it a useful tool for users, I also hoped for a comprehensive knowledge base that could encompass anything from technical support to general guidance.
I perceived the Pocket Guide 2.0 as a technological (digital) informational tool and guide on how best to embrace efficiency and effectiveness in the execution of my roles.
I was expecting it to be advanced and a great help tool.
I had an expectation that the chatbot should be user friendly with an intuitive interface that makes it easy to ask questions and receive clear and helpful responses.

I also initially expected for the chatbot to be able to provide statistical evidence of any answers that it provides once prompted to.
24/7 Availability in expectation that the chatbot can assist users at any time, providing instant responses without waiting for human intervention.
The expectation I understand was to strengthen and improve public service, thereby providing timely responses.
Assistance with regard to usage of technology in information dissemination.
I was impressed at its ability to answer me immediately and accurately
I was impressed at its ability to answer me immediately and accurately
That it will give me answers to everything that pertains to my work as a civil servant LDO
that it will talk back to me
i did not have an expectation
that it will cover all the information of government
that it will have information on all of government policies and laws
that it has all the information on the public service
that the bot was a robot

In what ways does the chatbot align with your understanding of public service policies and regulations? Can you provide specific examples?
Yes, the information is consistent with facts.
Yes, effective public service delivery
Yes. It explains everything I need to know about public policies and regulations.
I have never had any experience with this specific chatbot.
Yes, because it provides content specific answers very accurately.
In fact, the Pocket Guide 2.0 chatbot makes sense in terms of how I interpret laws and rules pertaining to public service. It does this by efficiently condensing technical legal jargon into understandable explanations, so even those without prior legal knowledge may understand the most important information. The chatbot is a reliable helper for people looking for advice on procedural concerns because its programming adheres to modern public service norms. As a dependable resource for comprehending the nuances of public service regulations, the chatbot not only meets but above my expectations by giving accurate answers to inquiries and supplying current information.
Yes, the chatbot does align with my personal understanding of public service policies and regulations, as it dovetails with NAMPA's own Vision, mission and objectives as it pertains to its Customer Service Charter - which is customer centric in nature.
Somewhat, I found that sometimes the website was slow and it did not answer all my questions.

<p>The chatbot significantly enhances the dissemination of information regarding public service policies and regulations in Namibia. Namibia's public service policies strive to provide citizens with accurate and up-to-date details about government services, including health, education, and social welfare. The chatbot assists to ensure that the public is well-informed about the resources available to them, contributing to better civic engagement.</p> <p>Furthermore, the chatbot streamlines communication between citizens and government departments, allowing for more efficient inquiries, feedback, and service requests, which aligns with public service policies focused on enhancing responsiveness.</p>
<p>I am not quite sure about this. There's a call for digitizing services, however I am not too sure of legal framework such as issues of data protection, privacy, and misinformation frameworks.</p>
<p>Not sure</p>
<p>Yes, its answers a quite accurate on policies and guidelines of leave, homeloan, ethics etc</p>
<p>Yes, its answers a quite accurate on policies and guidelines of leave, homeloan, ethics etc</p>
<p>i am not well versed with the existing policies and regulations but from my experience with the bot it has provided accurate information</p>
<p>on issues of leave it does yes</p>
<p>Yes</p>
<p>yes to a large extend it suggests the regulations and laws i can consult further if it gave me what i want</p>
<p>yes</p>
<p>no, the bot lacks a great deal of pertinent information that is needed by public servants</p>
<p>no, it has no information on procurement</p>

<p>Can you discuss how the chatbot has met or exceeded your expectations? Conversely, are there areas where you feel it has not performed as well as anticipated?</p>
<p>It does not provide interactive information. It is more like a booklet</p>
<p>Just happened as expected</p>
<p>It has exceeded my expectations. Its up to do date and answers questions promptly.</p>
<p>I have never had any experience with this specific chatbot.</p>
<p>The chatbot has met my expectations because the model is able to learn or the backend moderator is doing a really good job in training the model.</p>

<p>Impressively, the chatbot has streamlined communication and offers prompt responses that increase user engagement. Its capacity to manage several inquiries at once has greatly increased efficiency, enabling smooth interactions even during periods of high demand. Conversations now feel more human because to the chatbot's natural language processing skills, which has increased satisfaction and a sense of connection. Its round-the-clock accessibility further guarantees that customers may get help whenever they need it, making it a trustworthy source for knowledge and help.</p>
<p>Thus far it has exceeded my expectations as it is a readily available tool that is up to date as an information repository. It provides easy to decipher information that can be applied in the practical work environment.</p>
<p>It was slow and did not answer my questions sufficiently although it was able to answer the basics.</p>
<p>Apart from supporting citizens, the chatbot does not do a lot to promote transparency and accountability in government operations. It primarily serves as a platform for reporting issues and seeking clarifications on public service regulations, fostering citizen participation.</p> <p>The chatbot falls short in terms of improving accessibility and inclusivity. Ideally it should cater to Namibia's diverse population, offering information in multiple languages and formats. This could help bridge the gap for various ethnic groups, ensuring that all citizens can easily access essential services and information.</p>
<p>To be honest I haven't used it.</p>
<p>Facilitated the use of technology to perform my function</p>
<p>i requested information on study leave compared to the amount of years i am in the public service and it was able to assist me accurate and very efficiently. However when i had requested it to give me policies and acts concerning my work as procurement officer it was unable to since it only deals with public service issues</p>
<p>i requested information on study leave compared to the amount of years i am in the public service and it was able to assist me accurate and very efficiently. However when i had requested it to give me policies and acts concerning my work as procurement officer it was unable to since it only deals with public service issues</p>
<p>it provides fast accurate information however it does not have specific information on ethical reporting procedures in the public service</p>
<p>it is user friendly and efficient however it is not knowledgeable on key policies of performance management systems</p>
<p>my experience is that the bot is fast to answer and answers correctly it does not have any limitations</p>
<p>The pocket bot is accurate and fast and easy to use. i think it can still cover more issues of government and expand its knowledge</p>
<p>the bot is extremely fast to provide accurate information however it lacks information on the full IT policies as what i expect from it</p>
<p>besides the fact that the bot is fast in its response and accurate when it actually gives you information but out of 7 out of 10 different requests to the bot it is unable to give but when you go to the booklet the information is in there</p>
<p>The bot is easily accessible. it does not have all the information</p>

Can you provide an example of a recent use of chatbot in relation to your work responsibilities?
None
None
government structure
I use Chat GPT in research, Drafting letters to clients, drafting reports and Analysing complex documents.
study leave benefits
qualifying and none qualifying courses
I recently had a project deadline, I used the chatbot to quickly obtain information and facts. It gave me pertinent information very immediately, saving me the typical delays that come with using traditional research methods and enabling me to meet deadlines and make wise judgments.
Yes, in tracking my upcoming meetings and agendas as well as monitoring departmental milestones and shortfalls. Chatbot also aids in recommending strategies/interventions in departmental shortfalls.
I wanted to find out information regarding different ministries that would help me know where I can gather information for my work.
Conditions of employment
I made use of it to carry out media relations. However this is subjective to serious reviews. E.g media invites, scripts, social media contents. I ensure I feed chat bot with factual information thereafter I conduct fact-checking exercises.
Often use it for background research for articles
i had requested my annual study leave benefit for the amount of years that i am in the public service. I had also requested it to onion out what collateral is when buying a home as i am considering to take study leave to complete my honours degree as well thinking of buying a house
i had requested my annual study leave benefit for the amount of years that i am in the public service. I had also requested it to onion out what collateral is when buying a home as i am considering to take study leave to complete my honours degree as well thinking of buying a house
i needed to understand the difference between promotional and none promotional posts and how to remunerate them accordingly if an employee has improved on existing studies
enquiring on service benefits
information on the customer service charter of government
i used it to regarding the policy objectives of employee wellness and occupational health and safety framework to assist me in my annual wellness plan for my OMA
seeking information on cyber security policy or framework within the public service
customer service charter information request
just asking it about how the public procurement act works it is not able to give me an answer

How would you rate the accuracy and completeness of the chatbot's response?
Neutral
Neutral
Accurate and Complete
Accurate and Complete
Very accurate and complete
Neutral
Accurate and Complete
Accurate and Complete
Accurate and Complete
Neutral
not so accurate
Neutral
Accurate and Complete
Accurate and Complete
Accurate and Complete
Accurate and Complete
Very accurate and complete
Neutral
not so accurate
Very accurate and complete
Neutral

Has the chatbot ever provided inaccurate or outdated information? If so, can you give an example?
No
I am not sure
No
Yes, e.g. On mathematical problems or complex documents
All information provided was accurate.

None, that I can remember
Not in my experience thus far.
Yes. It has happened several times, it's unfortunate I can't pin point out now. That's why it's very important that one fact-checks information provided by chatbot.
Not that I can remember
not that i am aware of in my use of it
not that i am aware of in my use of it
not that it provided inaccurate information, its just that it is very accurate with things it knows like leave days and HOMSS but on other issues that its does not know it will always tell you that it does not know it
it gives accurate information on that which it knows but is not able to provide answer on things it does not know
not to my understanding
the bot did not have information on it however that information is covered in the booklet
it was accurate on providing information on ICT policy but it could not help me on a relevant topic of cyber security within the public service
on my request for the customer service charter information it was 100% accurate
it does not provide most information asked maybe only on leave days and service benefits

How does the chatbot handle complex, nuanced queries about government policies?
Not so well
Average
Very well
Average
Average
Average
Average
Average
Very well
Average

Very well
Average
Average
Average
Average
Average
Average
Average
Very well
Average
Not so well
Very well
Average

Describe your experience interacting with and navigating the chatbot interface, including any technical issues or limitations you may have encountered.
It is not interactive
I have experienced no issues
Apart from the fact that it requires good internet connection, I find everything else to be perfect. Its the way to go.
Interface design is designed with minimal feature, (History of search and search bar) only. So my experience is good.
The only technical issue was that it froze and I had to refresh the page.
My experience with the chatbot have gone well, It is simple to use. It demonstrated a strong grasp of context and intent by answering my questions quickly and providing pertinent information. The application was easy to interact with because of the conversational flow that felt natural.
Thus far, I haven't encountered significant challenges.
The Chatbot was not always accurate and I experienced technical issues.

It's faster way of testing information, however issues limitations such as subscriptions may hinder the process of getting quality information/data. So interaction is in different packages that one may not qualify for due to lack of money.
Often easy to use but sometimes complex to filter
it was smooth navigating through the bot as it pops up as a 'messenger' and you pose it your questions and it answers within seconds. the only limitation i could experience with the interface is that it the bot is not easily visible on the interface and you really need to look good to find it in the bottom right hand corner
it was smooth navigating through the bot as it pops up as a 'messenger' and you pose it your questions and it answers within seconds. the only limitation i could experience with the interface is that it the bot is not easily visible on the interface and you really need to look good to find it in the bottom right hand corner
interface and technically the bot is doing well
no issues
none to my knowledge
the bot is very friendly to use
the interface is easy understanding. Technically the bot operates very efficient and effective and i do not see any limitations
quite easy to use the bot no problem at all just a pity you are not able to access it without wifi
it is actually easy to use and very friendly and has no technical challenges

What are the key strengths and weaknesses of the chatbot based on your experience?
It has very relevant and useful information, but it is not interactive.
Not all information are loaded at the moment
Its strengths is prompt access to information. The weaknesses are that it is fed with the frequently asked questions; it might not give specific answers as the responses are preloaded.
It's accessible anytime, allowing for immediate responses without waiting for human availability. While it is good with general information, it can sometimes generate inaccurate or misleading answers, particularly in complex or niche areas.

The strength is the model is good, the weakness is the reponse time for some simple queries.
The ability to provide instant responses, It allows for quick resolutions to queries, enhancing efficiency in communication 24/7. However The lack of emotional intelligence sometimes results in interactions that feel impersonal, which can be frustrating in situations that require empathy.
A notable advantage is the ease of availability of a chatbot. A notable disadvantage is the lack of human interfacing with a chatbot.
The chatbot can be very useful and may need perhaps a systems upgrade with latest information to feed the chatbot.
Strengths include ability to provide information faster and in organized fashion Weakness is that it is limited to specific queries. can't solely rely on the information provided one has to still verify and review the information. It can lead to misunderstanding/ provide misleading/ misinformation if the question is not well understood.
Instant messages but often information overload
the bot is accurate and fast in its responses to anything related to the public service. i did not experience any weaknesses
the bot is accurate and fast in its responses to anything related to the public service. i did not experience any weaknesses
it is easily accessible and works well anybody can use it but it does not have all the information concerning public service policies and regulations
strengths include accessible and fast weakness include not covering all elements of human resource
it is straight to the point and available 24/7 no weaknesses that i experienced
the main weakness of the bot is that it does not have all the information as what is covered in the booklet but it works fast
the bot is limited with providing public service information however it is user friendly and responds within 5seconds and that response time is very good
the bot is accurate, effective to use because of its efficient nature however it is limited by the fact that it does not have all the information of public service
that it is very fast to respond but most of the time does not have information to respond

Do you use other sources for public service information? If so, how does the chatbot compare to the other sources you use for public service information?
Yes, it provides a lot information in one place.
It is useful
ChaTGPT. I mostly use if for specific policies or regulations. It works almost like the chatbot however it is a bit more specific.
I do not have any experience with the chatbot
No, I do not use other sources.
The chatbot is fast, but may not be as comprehensive as other public service information sources like government websites and community helplines. Government websites frequently offer formal documents and comprehensive guidelines that the chatbot might not cover.
Yes, institutional websites as well as journals. Chatbot, largely lacks specific information sought, whilst this information can be found in literature.
I use websites, they are different from the chatbot because you often need to go through different websites and might not get the information as fast as you need.
Yes, especially for verification purposes. For reliability, one can make calls or send email or visit websites to verify information.
Yes primary sources. Even though cumbersome, often times reliable
yes i use other sources but what makes the bot more prefferable for me is that its accessible on my phone and on my laptop or workstation, it is immediate i do not need to request for information from HR and wait for a response or i do not need to download a whole policy and scrutinise it based on my need. the bot really save time in finding accurate answers to y our requests
yes i use other sources but what makes the bot more prefferable for me is that its accessible on my phone and on my laptop or workstation, it is immediate i do not need to request for information from HR and wait for a response or i do not need to download a whole policy and scrutinise it based on my need. the bot really save time in finding accurate answers to y our requests
i must say i use websites of other OMAs to get information on regulations and it can take time however through the use of the bot it goes faster
i use the government e-service but the chatbot is faster
government e-service and intranet but the bot is more efficient

i use our intranet and websites/internet and i am able to find all the information that i am looking for but when i use the bot it is faster however it does not have all the information i need
mostly just the whatsapp group chats of OPM who shares our ICT policies and guidelines on a regular. Receiving a full policy on the whatsapp can be cumbersome to read but the bot if enabled well can summarise key points of the policy based on your need of it
as media officer i consult various sources for public information such as websites, the internet, social media, intranet, e-government platforms the most distinct difference is that the bot is fast to respond which helps with saving time
yes the intranet but the bot is faster

Are you fully satisfied with the chatbot's ability to solve your queries on policy information? If not, are there improvements you would suggest to enhance the chatbot's ability to provide accurate and comprehensive policy information?
No, it should be interactive.
I think it has the ability
At the moment I am. However, with technology evolving, there is a need to keep updating the bot with more and more information.
I do not have any experience with the chatbot
I am satisfied with the chatbot's abilities
Yes, chatbot have been both satisfactory and occasionally better for an example, it has been fast to respond to simple policy questions. When needed, it is simple to obtain prompt responses because to the user-friendly layout and remarkable response speed.
Not quite satisfied, there is need for chatbot to continuously provide updated (accurate) policy information. The information chatbot provides, is largely generic in nature. If it could me more specific/detailed it would go a long way in assisting the public service cohort.
I would suggest an upgrade to the chatbot and to feed it with more accurate information.
No I am not. There's a need to expand and go beyond what's requested. Also there's a need to have legal framework on the usage it.
Perhaps there should be a concentrated repository space for obtaining policy information as it seems to be fragmented at the moment
i am fully satisfied

i am fully satisfied
i will suggest that they update the bots internal knowledge on the public service policies and regulations concerning ethics as well as some HR functions such as the learning and development issues of promotional and none promotional positions and staff development funds and policies
i am satisfied
i am satisfied
i am not fully satisfied and suggest that the bot improve on getting more information on public service policies and regulations
not completely as the bot really lacks more information on the public service
where it is able to give me answers yes, but it is a struggle to get information out of the bot which it does not have regardless of how specific your request may be
no because it never gives me the information that i want specifically

Are there any additional features or capabilities you would like to see added?
Yes, it should provide the ability for users to ask questions and for it to provide answers instantly.
None at this moment
Link to humans. A function that enables the bot to link you to the actually person who deals with the information you are requesting for.
I do not have any experience with the chatbot yet
The chatbot achieves its intended objectives very well, so I do not have any recommendations at this moment.
No
Yes, the ability to interpret statistical/quantitative information - this will prove invaluable for research-related purposes.
Not at the moment
Yes, issues of asking for clarification if question is not understood, to avoid providing misleading information/ misinformation and just content expansion.
Not sure

the bot can become more human and interact more humanly with a human face and more humanly responses to give me the impression that i am chatting to a human customer agent instead of a computer
the bot can become more human and interact more humanly with a human face and more humanly responses to give me the impression that i am chatting to a human customer agent instead of a computer
none
they can maybe give the chatbot a human face and a human name like other chatbots
not at the moment
not at the moment
give the bot a human name and human feature to give it a personality
the bot needs a persona
none just that the bot needs to provide more information

Do you think chatbot is being effectively used by public servants? If not, what support do you think public servants need to effectively utilize the chatbot?
No, it needs to be promoted more and become interactive.
Not everyone can afford smart phones and data or computer illiterate
Not really. I feel it is being under utilized. It needs more marketing. Many people do not even know it exists or how it works. We need more awareness.
I do not have information on this to answer this question.
I believe it might be under utilized but, continuous awares by HR, IT and PRO teams can improve this.
No
Not to the fullest extent. There is room to use it for optimum benefits. It could be a matter of perception. Public servants may be averse to using chatbot owing to perceived suspicion of new/emerging technologies. Continuous mass sensitization as well as orientation on the benefits of chatbot is required
Not really, many public servants are still not aware of the chatbot and its benefits.
It's difficult to measure to what extent public servants are using it. In addition, level of digital literacy plays a huge role in making use of it as the service comprises of different generations. There's a need to educate, train and create proper awareness about chat bot.
No. Awareness and training should be prioritized.
i believe each OMA can do more awareness on how to use the bot to their respective staff members.

i believe each OMA can do more awareness on how to use the bot to their respective staff members.
personally i do not think so because the OPM only launched the bot without giving training or induction sessions or videos to public servants as to how to use the bot and for what purpose the bot is there...more awareness need to be done
no i disagree that it is effectively used as most public servants dont know about the bot and how to use it
yes i think we are using it great
OPM should do more awareness on the PocketBot and train especially our LDO department and PRO department to continue awareness on the Bot
i do not think that public servants even remotely know about the bot and are aware of the bot and what they can use it for
not at all, more awareness needs to be done on the bot
no awareness, lack of training and understanding

Do you have any other feedback or recommendations for the developers of the chatbot?
No
More content to broaden the information
Great job. Credit to the developers. For service delivery to be effective in government, we needed initiatives like the bot.
I do not have any experience with the chatbot
I do not have any recommendations at this moment.
By improving memory features, enabling it to recall past interactions for a more personalized experience.
Perhaps the use of vernacular/local languages to enable ease of use.
None at the moment
No.
No
make the bot more humanly interactive
make the bot more humanly interactive
upgrade the bot's knowledge on policies as they change regularly
update the bot's information

none at the moment
upgrade the Bot knowledge on all the policies of government
update the bot on a regular as information changes
enable the bot to be wireless (not work with wifi) to make it more accessible
the bot needs more information

ANNEXURE G: PLAGARISM REPORT

Christell Nassau - Thesis Turn it in Report

ORIGINALITY REPORT

3% SIMILARITY INDEX	3% INTERNET SOURCES	1% PUBLICATIONS	1% STUDENT PAPERS
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PRIMARY SOURCES

1	ir.nust.na Internet Source	1%
2	Submitted to Liverpool John Moores University Student Paper	<1%
3	e-journal.uajy.ac.id Internet Source	<1%
4	www.coursehero.com Internet Source	<1%
5	technodocbox.com Internet Source	<1%
6	www.frontiersin.org Internet Source	<1%
7	www.jpc.in.net Internet Source	<1%
8	Submitted to University of KwaZulu-Natal Student Paper	<1%
9	www.growingscience.com Internet Source	<1%
10	nairaproject.com Internet Source	<1%
11	Ricardo Santa. "The role of cross-functional teams on the alignment between technology innovation effectiveness and operational	<1%

ANNEXURE H: LANGUAGE EDITOR REPORT

21 September 2025

TO WHOM IT MAY CONCERN

LANGUAGE EDITING – Ms CHRISTELL CHARLEEN NASSAUW (216083893)

This is to confirm that a Master of Journalism and Media Technology thesis titled “**Assessing The Efficacy Of Artificial Intelligence Chatbots For Delivering Public Information: A Case Study Of The “Being A Public Servant In Namibia - The Pocket Guide 2.0 Pocket Bot”**” by **Christell Charleen Nassauw**, student No. **216083893**, was submitted to me for language editing.

The thesis was professionally edited, and suggestions were made in the document, which if followed by Ms Christell Nassauw, will result in a thesis with a high standard of English. Given the nature of the process, I restricted my editing to language issues, which I feel have now been satisfactorily resolved, but I remain available for consultation as long as necessary.

Please feel free to contact me should you need more information. My contact details are:
Cell: +263 716624957. Email: julzpasi@gmail.com

Yours faithfully



Dr Juliet S. Pasi
B. A. English & Linguistics
B. A. Special Honours in English
Graduate Certificate in Education
M.A. in English
DLitt et Phil