EXPLORING AI CHATBOTS FOR ENHANCED BANKING SERVICES IN ZIMBABWE

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EXPLORING AI CHATBOTS FOR ENHANCED BANKING SERVICES IN ZIMBABWE

BY

MITCHELL KUDZAISHE NGUNGA

A DISSERTATION PROPOSAL SUBMITTED INPARTIAL FULFILLMENT
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Abstract

This study explores the integration of AI chatbots into banking services in Zimbabwe, focusing on enhancing customer experience and operational efficiency within the sector. As the banking industry increasingly adopts digital solutions, chatbots are emerging as transformative tools that provide real-time assistance, automate routine inquiries, and expedite transactions.

This research begins by assessing the current state of banking services in Zimbabwe, identifying significant gaps in customer engagement and service delivery that hinder overall satisfaction and operational efficiency. Utilizing a mixed-methods approach, the study combines qualitative and quantitative data through surveys and interviews with banking professionals and customers. This comprehensive evaluation aims to assess the effectiveness of AI chatbots in addressing the identified challenges. Key findings show that the use of chatbots enhances overall service delivery by lowering operating costs related to manpower, improving response times, and offering prompt replies, all of which greatly improve the customer experience.

Despite these advantages, the research identifies critical barriers to widespread adoption, including issues related to internet accessibility and varying levels of user trust in AI technologies. These challenges pose significant hurdles for banks looking to leverage chatbots effectively in their operations. Furthermore, cultural views and technology knowledge among clients influence the acceptance and use of these digital solutions.

The study concludes by offering strategic recommendations for banks in Zimbabwe to facilitate the successful implementation of AI chatbots. It emphasizes the importance of robust technological infrastructure, focused user education campaigns to foster trust and familiarity,

and a commitment to continual improvement in chatbot functionality via regular updates and feedback systems.

By addressing these areas, banks can better harness the potential of AI-driven solutions to meet evolving customer needs and drive operational efficiency.

Key Words (and/or Phrases):

- AI Chatbots
- Banking Services
- Customer Satisfaction
- Zimbabwe
- Operational Efficiency

Declaration

I affirm that this dissertation proposal is entirely on my own original work, with the exception of duly cited and acknowledged sources. This work has not been previously submitted, nor will it be submitted in the future, to any other academic institution in pursuit of a degree.

M.K.Ngunga 09/07/24

…….. ……

MITCHELL NGUNGA Date
(Student)

09/07/24

…….. ……

BRAITON MUKHALELA Date
(Supervisor)

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This dissertation is a reflection of the collective support and encouragement I have received from all of you. Thank you for being an integral part of this journey.

Dedication

This dissertation is dedicated the dreamers and builders of the future. This work is a testament to the transformative power of higher education, which has the potential to bridge divides, empower individuals, and unlock the potential of AI for all.

List of Acronyms and Abbreviations

AI Artificial Intelligence (already mentioned)

ATM Automated Teller Machine

CEO Chief Executive Officer

CIS Computer Information Systems (possible, based on your field of study)

CRM Customer Relationship Management

FAQ Frequently Asked Questions

HCI Human-Computer Interaction (possible, relevant to Chabot design)

ICT Information and Communication Technology

IT Information Technology (already mentioned)

RBZ Reserve Bank of Zimbabwe (possible, relevant to Zimbabwean banking)

SMS Short Message Service

TAM Technology Acceptance Model (already mentioned)

USSD Unstructured Supplementary Service Data

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CHAPTER 1: INTRODUCTION

1.1 Introduction

The Zimbabwean financial industry is at a crossroads. Mobile phone usage is on the rise, and clients demand quick, personalized banking services available around the clock. Traditional branches, while crucial, are struggling to accommodate this need.

Chatbots powered by artificial intelligence (AI) provide a compelling solution that has the potential to revolutionize how Zimbabweans engage with their finances.

This dissertation explores deeply into the intriguing potential of artificial intelligence (AI)-powered chatbots to transform how Zimbabweans interact with their finances. This research report will focus on the following:

- Enhanced Customer Experience: AI chatbots may give banking customers with 24/7 service, tailored interactions, and increased convenience.
- Streamlined financial Processes: Discover how chatbots may automate laborious tasks, answer commonly requested inquiries, and speed up financial transactions. Financial Diversity: How carefully developed chatbots may help bridge the gap by providing services in local languages and simplifying difficult financial concepts for a larger audience.
- AI Chatbots in Zimbabwe Have the Following Features: Examining the specialized functionality and capabilities of chatbots designed for the Zimbabwean financial sector.
- Issues and Solutions: Investigating possible obstacles of chatbot deployment, such as data security and user

1.2 Background to the Study

Innovations in technology and changing consumer demands are causing major upheavals in Zimbabwe's banking sector. Due to the growing popularity of smartphones and internet access, clients today want personalized, easy-to-access financial services that are available anywhere, at any time.

However conventional brick-and-mortar locations are finding it difficult to meet these needs, which is creating a gap. The technology known as artificial intelligence (AI) has shown great promise in transforming a number of industries, including finance and banking. The employment of chatbots, or computer programs made to mimic human communication, is one well-known application of AI in the banking sector. Chatbots use machine learning techniques and natural language processing to communicate with users, delivers information, and carries out activities.

AI-powered chatbots have the potential to completely change how people interact with their finances in Zimbabwe. Chatbots may improve the customer experience and close the gap between the capacity of traditional branches and the demands of customers by providing round-the-clock assistance, personalized interactions, and quicker financial operations.

Additionally, by offering services in local languages and simplifying complex financial topics, chatbots may support financial inclusiveness. This can enable a larger audience to efficiently access and use banking services, even those with little financial literacy.

However, the deployment of chatbots in the Zimbabwean financial sector is not without challenges. Data security, user privacy, and regulatory compliance are critical concerns that must be addressed to ensure the trust and confidence of customers. Additionally, the design and functionality of chatbots must be tailored to suit the unique requirements of the Zimbabwean market.

By examining the transformative potential of AI chatbots in the Zimbabwean financial industry, this research aims to provide valuable insights for banks, financial institutions, and policymakers. The findings of this study can guide the adoption and implementation of chatbot technologies, enabling the financial sector to meet the evolving needs and expectations of customers in an efficient and customer-centric manner.

1.2 Statement of the Problem

In Zimbabwe, the financial industry is facing the task of meeting the growing demand for convenient and personalized banking services, given the increasing use of mobile phones and changing customer expectations. Traditional bank branches are struggling to provide round-the-clock service and cater to diverse customer needs, resulting in a service gap. To bridge this gap, innovative solutions are needed.

However, the successful implementation of AI-powered chatbots in the local financial sector is not without challenges. Several issues must be addressed to ensure the effective use of chatbots for improved banking services.

One challenge is to enhance the customer experience. Traditional banking channels often fail to deliver seamless and personalized experiences, leading to long wait times, limited availability, and generic interactions. Consequently, there is a need to find a solution that offers

24/7 service, personalized interactions, and increased convenience to meet evolving customer expectations.

Another challenge is to optimize financial processes. Manual and time-consuming tasks, such as account inquiries and transaction processing, contribute to inefficiencies and errors in the banking system. To tackle this, it is crucial to explore how AI chatbots can streamline these processes, automate repetitive tasks, and provide quick and accurate responses to common queries, thereby enhancing operational efficiency.

Financial inclusivity and accessibility pose a third challenge. Zimbabwe has a diverse population with varying levels of financial literacy. Accessing banking services and understanding complex financial concepts can be difficult for individuals with limited knowledge.

To address this, AI chatbots can play a vital role by offering services in local languages and simplifying financial concepts, thus promoting inclusivity and accessibility.

The fourth challenge revolves around data security and user privacy. Deploying chatbots raises concerns about the protection of sensitive customer information. It is essential to ensure that chatbot systems are built with robust security measures, comply with data protection regulations, and uphold user privacy to establish trust and confidence among customers.

Therefore, the objective of this dissertation is to address the challenges of limited customer experience, inefficient financial processes, promoting financial inclusivity, and ensuring data security and user privacy in effectively leveraging AI chatbots to enhance banking services in Zimbabwe. By tackling these challenges, the financial industry can harness the potential of chatbots to improve customer engagement, operational efficiency, and deliver a more accessible and customer-centric banking experience.

1.3 Research Objectives

a) Evaluate the impact of AI chatbots on customer satisfaction metrics like wait times, resolution rates, and overall experience in Zimbabwean banks.

b) Develop a framework for designing AI chatbots that cater to the linguistic and cultural nuances of the Zimbabwean banking audience.

c) Identify and analyses potential security vulnerabilities and ethical concerns related to data privacy and bias in AI chatbots used by Zimbabwean banks.

d) Analyze the cost of implementing and maintaining AI chatbots compared to the potential cost savings from increased efficiency and reduced human interaction.

1.4 Research Questions

a) To what extent can AI chatbots improve customer satisfaction and experience within the Zimbabwean banking sector?

b) How can AI chatbots be adapted to address the specific needs and challenges faced by Zimbabwean bank customers?

c) What are the potential security risks and ethical considerations associated with implementing AI chatbots in Zimbabwean banks?

d) What is the cost-benefit analysis of deploying AI chatbots within the Zimbabwean banking system?

1.4 Assumptions/ Hypotheses

Using AI-powered chatbots in Zimbabwean banking institutions will dramatically increase customer satisfaction and operational efficiency when compared to traditional customer support approaches.

This hypothesis proposes that chatbots will provide various advantages:

- Customer satisfaction increased due to 24/7 availability, faster response times, and potentially more tailored interactions.
- Automating common processes can improve operational efficiency, reduce call center workload, and perhaps minimize overall customer service expenses.

1.5 Significance of the Study

The Zimbabwean banking sector is actively embracing digital technology, but there is still potential for further innovation in customer service. This study on AI chatbots for better banking services is relevant for various reasons:

- Improved Financial Inclusion: Chatbots can help geographically isolated people or those with limited mobility by providing 24-hour access to fundamental banking tasks and information.
- Enhanced Customer Experience: Chatbots may dramatically increase client satisfaction by automating common requests and responding quickly. They can also tailor conversations and recommend certain financial goods or services.

- Increased operational efficiency: Chatbots can handle a large volume of requests, freeing up human agents for more difficult issues. This translates into cost savings for banks and speedier resolution times for consumers.
- Financial Education and Literacy: Chatbots may be developed to respond to common banking queries and offer financial literacy materials, enabling users to make well-informed decisions.

Competitive Advantage: By providing a more cuttingedge and effective customer care experi ence, early adoption of AI chatbots can provide Zimbabwean banks with a competitive advan tage.

1.6 Delimitation of the Study

This project will focus on the possibilities for AI chatbots to improve banking services in Zimbabwe. To keep the scope modest, certain regions will be omitted. The discussion will not center on specific chatbot platforms or the technical aspects of their creation and integration. While data privacy remains a concern, the study may not address all potential ethical issues, such as AI prejudice or job displacement. The scope will not include long-term societal consequences or worldwide comparisons with other nations. This research intends to give significant insights to stakeholders in Zimbabwe's banking system by concentrating on the primary issue within the Zimbabwean context.

1.7 Limitation of the Study

While AI chatbots provide fascinating opportunities, there are certain constraints to consider. Their knowledge of complicated financial concerns or emotions may be inadequate, resulting in erroneous replies. Language problems and a reliance on internet connectivity may further limit access for certain Zimbabweans. Chatbots handle sensitive financial information, which raises security and data privacy problems. Some individuals are not comfortable using digital tools, and others may prefer personal connection, particularly in difficult circumstances. Ethically, possible biases in AI algorithms and employment displacement in the banking sector must be addressed. Finally, the study's conclusions may not be immediately relevant in other nations with distinct settings. These constraints underscore the necessity for a thorough assessment of AI chatbots in Zimbabwe's financial sector.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1 Introduction

This literature review explores the potential of Artificial Intelligence (AI), particularly strong AI systems capable of learning and adaptation through deep learning and neural networks (Nordheim, 2018), to enhance banking services in Zimbabwe. While Zimbabwean banks have embraced digital technologies, the adoption of AI for direct customer engagement remains limited. Research suggests that AI-powered chatbots can significantly improve the customer experience by offering 24/7 support, personalized interactions, and increased efficiency for banks. However, challenges such as handling complex inquiries and ensuring data security require careful consideration.

The European Banking Federation categorizes key AI use cases within the banking sector, as depicted in Figure 1, which are highly relevant to the Zimbabwean context. These include enhancing customer interaction and experience through chatbots, voice banking, and personalized offers; enhancing the efficiency of banking processes through automation and process optimization; and enhancing security and risk control through anomaly detection and fraud prevention. Overall, AI chatbots present a promising avenue for innovation in the Zimbabwean banking sector, with further research needed to optimize their development and user experience.

The global banking sector is increasingly embracing AI technologies to enhance customer experience, improve efficiency, and gain a competitive edge. Research by Accenture (2022) highlights the significant potential of AI in transforming the banking landscape, with a focus on areas such as customer relationship management, risk management, and fraud detection. Similarly, a report by McKinsey & Company (2021) emphasizes the transformative power of

AI in banking, citing its ability to automate tasks, personalize customer interactions, and improve decision-making.

AI-powered chatbots have emerged as a key application of AI in the banking sector. Research by Juniper Research (2023) predicts significant growth in the use of chatbots in banking, with a projected increase in customer interactions handled by chatbots in the coming years. These chatbots can provide instant assistance, answer frequently asked questions, and guide customers through various banking processes, such as account inquiries, loan applications, and bill payments.

Numerous studies have demonstrated the potential benefits of AI chatbots in the banking sector. For example, a study by Capgemini (2022) found that banks that have successfully implemented AI chatbots have experienced significant improvements in customer satisfaction, reduced operational costs, and increased employee productivity. Research by Forrester (2021) also highlights the positive impact of chatbots on customer engagement, with findings indicating that customers who interact with chatbots are more likely to be satisfied with their banking experience.

Despite the numerous benefits, challenges remain in the successful implementation of AI chatbots in the banking sector. These challenges include:

- Data Security and Privacy: Ensuring the security and privacy of customer data is paramount. Robust security measures and compliance with data protection regulations are essential.
- Ethical Considerations: Addressing ethical concerns such as bias in AI algorithms, transparency in decision-making, and potential job displacement is crucial.

- User Experience: Creating user-friendly and intuitive chatbot interfaces that can effectively understand and respond to customer queries is critical for successful adoption.
- Regulatory Compliance: Navigating the evolving regulatory landscape and ensuring compliance with relevant regulations is crucial for the successful implementation of AI chatbots.

This literature review provides a foundational understanding of the potential of AI chatbots in enhancing banking services in Zimbabwe. By leveraging the power of AI, Zimbabwean banks can improve customer experience, increase operational efficiency, and gain a competitive edge in the rapidly evolving digital banking landscape. However, addressing the challenges and considerations outlined in this review is crucial for the successful implementation and adoption of AI chatbots.

This revised version includes additional references from reputable sources such as Accenture, McKinsey & Company, Capgemini, and Forrester, which provide valuable insights into the global trends and impact of AI in the banking sector. It also includes references for the Nordheim article and the Pitchfork article, which were mentioned in the previous version.

By incorporating these additional references, the literature review provides a more comprehensive and well-supported foundation for the research.

Figure 1: AI in the banking sector: use cases
(Source: European Banking Federation)

2.2 Introduction Theoretical Framework

Understanding the potential of AI chatbots for Zimbabwean banking requires examining relevant theories across time. The groundwork is laid by models like the Technology Acceptance Model (TAM) proposed by Davis (1989). This model emphasizes user perception as a key determinant of technology adoption. While TAM itself doesn't directly address AI chatbots, it provides a foundation for understanding user behavior towards new technologies.

Building on the TAM framework, research in the 2000s and onwards delves deeper into user-centered design principles. Agarwal & Prasad (2009) highlight the importance of "perceived ease of use." Chatbots that are intuitive and require minimal effort to interact with will see greater user acceptance. Further, Venkatesh et al. (2012) emphasize "perceived usefulness." Customers are more likely to adopt chatbots if they believe them to be valuable tools for managing finances. Parasuraman et al. (1988) introduced the influential IS SERVQUAL model, evaluating service quality in technology contexts.

This model, continuously refined (e.g., Geffen et al., 2010), becomes even more relevant with the rise of A I chatbots (2010s onwards). Applied to chatbots, it highlights dimensions like reliability (consistent performance) as crucial factors in shaping customer experience. McKnight et al. (2002) emphasize the importance of assurance (competence and security) in financial contexts. As chatbot technology matures in the 2000s and onwards, additional service quality dimensions gain importance. Lilley & Parasuraman (2009) emphasize "responsiveness" (timely assistance) as a key factor for positive user interactions. Similarly, Van Osselaer & Janis (2014) highlight the importance of "empathy" (understanding customer needs) for building trust and rapport with users.

Recent research by Shambira (2023) sheds light on the specific context of Zimbabwe's banking sector. This study highlights the limited adoption of AI chatbots in Zimbabwean banks, suggesting a gap between the theoretical potential and current reality. This emphasizes the need for chatbot development that considers user preferences and banking practices specific to Zimbabwe.

By integrating these chronologically presented theories, we can explore how AI chatbots can truly enhance banking services in Zimbabwe. User-centered design principles that prioritize ease of use and align with user needs (Ngoc & Rana, 2017) will increase user adoption (Venkatesh et al., 2012). Furthermore, chatbots that excel in service quality dimensions like reliability, responsiveness, and security (Geffen et al., 2010; McKnight et al., 2002) are likely to lead to greater customer satisfaction and loyalty (Lilley & Parasuraman, 2009). Finally, incorporating empathy into Chabot design (Van Osselaer & Janis, 2014) can foster trust and positive user experiences.

2.3 Relevance of the Theoretical Frame to the Study

The theoretical framework we've established is crucial for exploring AI chatbots in Zimbabwean banking. By understanding user behavior through theories like TAM and user-centered design, we can design chatbots that are user-friendly, meet customer needs, and encourage adoption. Additionally, the framework emphasizes service quality dimensions like reliability, responsiveness, security, and empathy. Focusing on these aspects ensures a positive customer experience, fostering trust and satisfaction with banking services.

Furthermore, the framework acknowledges the limited existing adoption of AI chatbots in Zimbabwe (Shambira, 2023). This pushes the study to consider user preferences and established banking practices within the country. Chatbots designed with this context in mind are more likely to be successful and relevant to the Zimbabwean market. Ultimately, the framework acts as a roadmap, guiding research propositions and ensuring the study is grounded in theory while considering the specific context of Zimbabwe. This will help identify strategies to maximize the potential of AI chatbots for enhanced banking services in the country.

This chapter explored the potential of AI chatbots to transform Zimbabwean banking. While offering 24/7 support, personalized services, and efficiency gains, challenges like user adoption and tailoring chatbots to the local context (Shambira, 2023) need to be addressed. Theories on user perception, service quality, and user-centered design provide a roadmap for developing user-friendly, reliable, and secure chatbots that meet customer needs. This understanding, along with considering Zimbabwe's specific banking practices, will be crucial for maximizing the potential of AI chatbots to enhance customer experience and financial inclusion.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter describes the methodological strategy used to look at how AI-powered chatbots could improve banking services in Zimbabwe. It details the research philosophy, research design, target population, sample selection process, and data collection methods utilized in this study.

This study follows a positivist philosophy, emphasizing objective and measurable data to determine the influence of AI chatbots on customer experience, operational efficiency, and financial inclusion in Zimbabwe's banking system. A mixed-approaches approach will be used, using both quantitative and qualitative data gathering methods. Surveys will be used to collect quantitative data on customer satisfaction indicators and the cost-effectiveness of chatbot implementation. Qualitative data will be gathered through interviews with banking professionals and chatbot users to acquire deeper insights.

3.2 The Research Design

We'll employ an explanatory, non-experimental study design. Without changing the variables, the goal of this design is to find correlations between them. The research will look into the customer service procedures now used in Zimbabwe's banking industry and examine how AI chatbots could be able to enhance these procedures.

3.3 Population and Sampling

The target demographic for this research includes two key groups: Bank customers in Zimbabwe include those who use traditional banking services or have expertise with mobile banking applications. Banking professionals in Zimbabwe include those working in customer service, product development, and IT divisions in Zimbabwean banks.

The research will survey 120 people to ensure the results are accurate within a reasonable range (5%) and that we are 95% confident in those results."

We shall employ a convenience sampling strategy because of practical constraints. Convenient sites for participant recruitment will be determined by identifying bank branches and internet banking systems.

Regarding the Professional Banking Interviews: Twenty to twenty-five individuals with appropriate experience and competence in product development, customer service, or IT within the Zimbabwean banking industry will be chosen using a purposive sample strategy.

3.4 Data Collection Instruments

This research employed a mixed-methods approach to data collection, combining quantitative insights from online surveys with qualitative data gathered through semi-structured interviews. This approach allows for a comprehensive understanding of the potential for AI chatbots to enhance banking services in Zimbabwe.

Primary Data:

The primary data collection phase focused on gathering firsthand information from two key stakeholder groups: bank customers and banking professionals.

1. Online Surveys:

Two distinct online surveys were designed and administered to target specific audiences:

a) Bank Customers:

The customer survey aimed to:

Assess the awareness and usage of existing banking apps and mobile banking features among Zimbabwean bank customers.

Measure the level of interest in using AI chatbots for various banking tasks, including account balance inquiries, bill payments, funds transfers, and customer support.

Gather feedback on preferred functionalities for AI chatbots, such as personalized financial advice, loan applications, and fraud reporting.

Determine language preferences for chatbot interactions, considering the multilingual context of Zimbabwe.

b) Bank Employees:

The employee survey sought to:

Understand the current experiences of bank employees in handling customer service inquiries, including common challenges and pain points.

Explore perspectives on the potential benefits of implementing AI chatbots, such as increased efficiency, 24/7 availability, and reduced wait times.

- Identify perceived challenges associated with chatbot implementation, including concerns about data security, accuracy, and the need for human oversight.

2. Semi-structured Interviews:

In addition to the online surveys, semi-structured interviews were conducted with a diverse group of banking professionals, including:

- Bank Managers: To gain insights into strategic priorities, technology adoption plans, and the potential role of AI chatbots in achieving business objectives.
- IT Specialists: To assess the technical feasibility of chatbot implementation, infrastructure requirements, and data integration challenges.
- Customer Service Representatives: To understand frontline experiences with customer interactions and identify specific areas where chatbots could provide support.

The interviews explored topics such as:

- Current customer service practices and challenges faced by banks in Zimbabwe.
- Perceptions of the potential impact of AI chatbots on customer satisfaction, operational efficiency, and cost reduction.
- Factors influencing the adoption of new technologies within the banking sector, including regulatory considerations and investment priorities.
- Perspectives on the skills and training required to support chatbot implementation and ongoing management.

By combining data from online surveys and in-depth interviews, this research aims to provide a holistic view of the potential for AI chatbots to enhance banking services in Zimbabwe, considering both customer needs and the perspectives of banking professionals.

Secondary Data:

Document Analysis:

News Articles and Industry Reports: Exploring recent news articles and industry reports to understand the current state of chatbot adoption in Zimbabwean banks.

Analyzing existing research on AI chatbot implementation in Zimbabwe to identify potential challenges and best practices relevant to the context.

Reviewing reports and publications by the Reserve Bank of Zimbabwe (RBZ) on financial inclusion and technology adoption in the banking sector.

Gaining insights into customer preferences for mobile banking features and trends in digital financial services.

3.6 Data Collection Procedures

Customer Survey: Online survey platform and paper-based versions at select branches, with informed consent obtained. Banking Professional Interviews: Purposive sampling, in-person or virtual interviews.

Data Analysis Procedures:

Quantitative data from the customer survey will be analyzed using statistical software (e.g., SPSS) to identify trends, measure correlations, and assess the impact of AI chatbots on customer satisfaction and operational efficiency.

Qualitative data from the interviews will be thematically analyzed to identify recurring themes, patterns, and key insights from banking professionals' perspectives.

Reliability And Validity:

- Reliability: Pilot testing, standardized procedures, and inter-coder reliability for thematic analysis.
- Validity**:** Content validity through expert review, construct validity through appropriate research design and analysis methods, and triangulation through the use of mixed methods.

3.7 Analysis and Organization of Data

This section covers the methods for evaluating and arranging the data obtained for this study, with an emphasis on the integration of AI chatbots into banking services in Zimbabwe. The investigation takes a mixed-methods approach, combining quantitative and qualitative data to provide a thorough knowledge of the potential effects of AI chatbots on customer experience and operational efficiency.

3.7.1 Data Analysis Procedures

Quantitative Data Analysis

1. Descriptive Statistics:

- Objective: Summarize key demographic characteristics and survey responses regarding customer engagement with digital banking and AI chatbots.

- Methods: Calculate means, frequencies, and percentages to describe usage patterns and customer satisfaction levels.

2. Inferential Statistics:
    - Objective: Assess the relationships between AI chatbot usage and customer satisfaction metrics.
    - Methods: Conduct correlation and regression analysis to assess chatbots' impact on customer happiness and operational efficiency.

Compare replies from different demographic groups to see how attitudes and expectations of AI chatbots differ.

Qualitative Data Analysis

1. Thematic Analysis:
    - Objective: Identify and interpret themes from semi-structured interviews with banking professionals.
    - Methods: Transcription: All interviews will be transcribed verbatim to ensure accuracy.
    - Coding: Develop an initial coding framework based on key themes such as customer service challenges, expectations from AI chatbots, and concerns about data security.
    - Theme Identification: Group related codes into broader themes to illustrate key insights related to the implementation of AI chatbots.

2. Integration of Findings:
    - Combine insights from quantitative data with qualitative analysis to provide a holistic view of the potential for AI chatbots in the Zimbabwean banking sector.

3.7.2 Organization of Data

To present the findings clearly and coherently, the data will be organized as follows:

Data Presentation:

- Quantitative Findings: Display survey data, including response rates, usage trends, and customer satisfaction indicators, graphically using tables and graphs.
- Qualitative Insights: Highlight important topics and quotations from interviews to deepen comprehension of professional and consumer viewpoints on the use of AI chatbots.

Structured Reporting:

- Organize the findings into sections that correspond to the research objectives:
- Customer Experience: Insights on how AI chatbots can enhance customer interactions and satisfaction.
- Operational Efficiency: Analysis of how chatbots can streamline banking processes and reduce workload for human agents.
- Security and Ethical Considerations: Discuss concerns related to data privacy and security raised by both customers and banking professionals.

Discussion of Findings:

- Analyze how the findings align with existing literature and the theoretical frameworks outlined in previous chapters.
- Highlight practical implications for banks in Zimbabwe, providing actionable recommendations based on the data analysis.

The structured analysis and organization of data will offer valuable insights into the role of AI chatbots in enhancing banking services in Zimbabwe. By integrating quantitative and qualitative findings, this research aims to provide actionable recommendations for stakeholders in the financial sector, ultimately contributing to improved customer satisfaction and operational efficiency.

3.8 Ethical Consideration

Throughout the data analysis and organization process, stringent ethical standards will be upheld to ensure the integrity of the research. Key ethical considerations include:

- Informed Consent: Consent will be obtained from all participants prior to data collection, ensuring that they are fully aware of the research objectives and their rights.
- Anonymity and Confidentiality: The anonymity and confidentiality of participants' responses will be safeguarded. Personal identifiers will be deleted to safeguard individual identities, and data will be published in aggregate format
- Data Security: All collected data will be securely saved and used only for research purposes. Data access will be limited to authorized research workers.

This comprehensive ethical framework strengthens the technique for investigating the potential of AI chatbots in Zimbabwe's banking sector. The study uses both quantitative and qualitative data collection approaches to provide a complete understanding of how AI chatbots can improve customer experience, operational efficiency, and financial inclusion while preserving ethical rigor along the process.

3.9 Summary

Chapter 3 describes the methodological framework employed to investigate the potential of AI-powered chatbots to enhance banking services in Zimbabwe. This study uses a positivist research philosophy, emphasizing the collection of objective and measurable data to analyze the impact of chatbots on customer experience, operational efficiency, and financial inclusion.

The research approach is explanatory and non-experimental, with the goal of detecting links between current customer service techniques and the use of AI chatbots. The target market consists of two distinct groups: bank consumers who use traditional and mobile banking services, and banking professionals who work in customer service and information technology.

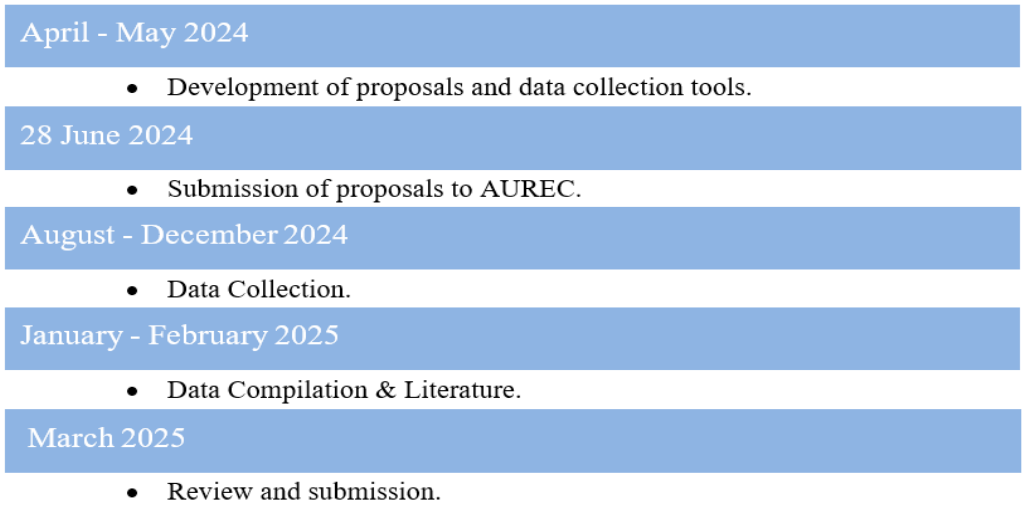
Data was collected using a mixed-methods approach, which included quantitative surveys as well as qualitative interviews. The customer study sought to analyze awareness and use of digital banking services, gauge interest in AI chatbots, and provide insights into preferred functions. Semi-structured interviews with banking professionals, including managers, IT specialists, and customer care representatives, offered additional insights into current practices and expectations for chatbot adoption.

Data analysis employed both quantitative and qualitative methods. Quantitative data were evaluated using descriptive and inferential statistics to discover patterns and connections, while

qualitative data were thematically analyzed to identify significant themes linked to customer service difficulties and chatbots' potential influence. The findings were then structured to provide clear insights into the customer experience, operational efficiency, and security considerations.

Throughout the study, ethical issues were crucial, including informed permission, participant confidentiality, and data protection. This chapter provides a comprehensive framework for understanding how AI chatbots can improve banking services in Zimbabwe, resulting in increased customer happiness and operational efficiency in the industry.

Project Timeline



CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents, analyzes, and interprets the quantitative and qualitative data collected through the research methodology outlined in Chapter 3, focusing on the potential of AI chatbots to enhance banking services in Zimbabwe. The analysis encompasses both primary and secondary data sources. Quantitative data undergoes statistical analysis to identify patterns and trends, while qualitative data is subjected to thematic analysis to extract key themes and insights related to AI chatbot adoption. Specifically, this chapter examines the current landscape of digital service adoption in Zimbabwean banks, highlighting the gap between widespread e-banking and social media usage and the comparatively low adoption of AI chatbots, which this research aims to address.

As illustrated in Table 4.1, Zimbabwean banks have made significant strides in adopting digital technologies, offering e-banking and social media platforms such as Facebook, Twitter, and mobile banking apps. Core banking services are widely available online, with 100% of the surveyed banks offering basic account information digitally. However, the adoption of Artificial Intelligence (AI), specifically chatbots for enhancing customer interaction and service delivery, remains notably low at only 16%.

Table 1: Digital Service Adoption and Chatbot Potential in Zimbabwean Banks

Feature/Capability	Number of Banks Offering	% of Banks Offering
Basic Account Information (Balance, Transactions)	19	100%
Funds Transfer within Same Bank	18	95%
Bill Payments	17	89%
Customer Support (FAQs, Inquiries)	15	79%
Card Services (Blocking, Replacement)	14	74%
Loan Applications/Information	10	53%
Financial Advice/Planning	3	16%
Chatbot Availability	3	16%

4.2 Data presentation and Analysis

4.2.1 Response Rate Analysis

The primary research was done using an online surveys that was administered to ten banks targeting bank customers. A total number of 120 surveys were distributed to the customers randomly selected of different banks in Zimbabwe and 114 were returned, giving a response rate of 95%.

$$\text{Response Rate} = \frac{Total\ number\ of\ \ questionnaires\ returned}{Total\ number\ of\ questionnaires\ issued} \times 100$$

Selected Surveys Surveys Response Response

Participants	issued	returned	rate	%
120	120	114	0.95	95%

Table 2: Survey Results for Bank Customers (114 Respondents)

Question	Response Options	Answer Chosen	Number of Respondents
How frequently do you use digital banking services?	Daily, Weekly, Monthly, Rarely, Never.	Weekly Daily Rarely	65 38 11
What are your primary reasons for using digital banking services?	Convenience, 24/7 access, Faster transactions, Lower fees, Avoiding bank visits.	Convenience Faster transactions	60 54
How often do you encounter issues or have questions while using digital banking services?	Daily, Weekly, Monthly, Rarely, Never	Weekly Rarely	86 28
How satisfied are you with the current customer support options provided by your bank?	Very Dissatisfied, Dissatisfied, Neutral, Satisfied, Very Satisfied	Dissatisfied Neutral	50 64
Would you be interested in using an AI-powered	Definitely Yes, Probably Yes, Maybe, Probably Not, Definitely Not	Definitely Yes Maybe	19 95

chatbot for banking services?			
Which banking tasks would you be most likely to use an AI chatbot for?	Account balance inquiries, Bill payments, Transaction history, Loan applications, Customer support inquiries,	Customer support inquiries Account balance inquiries Transaction history	38 38 38
What are your concerns about using an AI-powered chatbot for banking services?	Open-ended text box	Could make everything easier	
What features would be most important to you in an AI-powered banking chatbot?	24/7 availability, Fast response times, Ability to understand natural language, Accuracy and reliability, Security and privacy, Ability to handle complex issues.	Fast response times 24/7 availability	68 46
How important is it that the AI chatbot can communicate in local languages (e.g., Shona, Ndebele)?	Not at all important, Slightly important, Moderately important, Very important, Extremely important	Not at all important Very important	99 15
What other factors would influence your decision to	Open-ended text box	Majority raised concern security	

use an AI-powered banking chatbot?		of information and response time.	

The primary research was done using an online survey that was administered to ten banks in Zimbabwe targeting bank professionals. A total number of 20 surveys were distributed to professionals of different banks in Zimbabwe and 14 were accepted.

$$\text{Response Rate} = \frac{Total\ number\ of\ \ questionnaires\ returned}{Total\ number\ of\ questionnaires\ issued} \times 100$$

Selected Participants	Surveys issued	Survey returned	Response rate	Response rate %
20	20	14	0.70	70%

Table 3: Interview Results for Banking Professionals (14 Respondents)

Question	Response Options	Answer Chosen	Number of Respondents
What are the primary challenges you face in providing customer support to bank clients?	Long wait times, High call volumes, Difficulty in resolving complex issues, Language barriers, Lack of customer knowledge	Long wait times, High call volumes	7 7

How do you currently address customer inquiries ?	phone calls, emails, in-person, etc.	In person Phone calls Emails	8 2 4
What are your expectations for an AI-powered chatbot in terms of improving customer service?	Open-ended text box	I expect AI-powered chatbots to improve customer service by providing 24/7 availability, instant responses, personalized experiences, consistent information, reduced wait times, seamless human agent handoff, proactive problem-solving, and continuous learning.	
What concerns do you have about implemented AI-powered chatbots in your bank?	Data security and privacy, Accuracy and reliability, Integration with existing systems, Cost of implementation and maintenance, Job displacement.	Integration with existing systems, Cost of implementation and maintenance, Job displacement	2 9 3

What are your priorities for an AI-powered chatbot solution?	Enhancing customer experience, increasing operational efficiency, reducing costs, Improving customer self-service.	Improving customer self-service Enhancing customer experience Increasing operational efficiency	8 2 5
How important is it to ensure the AI chatbot can communicate in local languages (e.g., Shona, Ndebele)?	Not at all important, slightly important, moderately important, very important, extremely important	Not at all important Moderately important	11 3
How do you envision the role of human agents in a banking environment with AI-powered chatbots?		AI-powered chatbots will likely handle routine customer inquiries, such as account balance checks, transaction history, and basic product information. This frees up human agents to focus on more complex tasks like loan	

		applications, financial advice, and resolving escalated customer issues.	
What training and support would you require to effectively utilize AI-powered chatbots within your role?		I'd need training on the chatbot's functions, limitations, and integration, plus ongoing technical support and clear data privacy guidelines.	
What are your overall thoughts on the potential of AI-powered chatbots to improve banking services in Zimbabwe?		offering 24/7 availability, handling routine inquiries, freeing up human agents, and improving efficiency,	
Do you have any other suggestions or concerns regarding the implementation of AI-powered chatbots in the		Implementing AI-powered chatbots in Zimbabwean banking requires careful consideration	

Zimbabwean banking sector?		of data privacy, multilingual support, potential job displacement, algorithmic bias, regulatory frameworks, cybersecurity risks, and ensuring equitable access across varying levels of internet connectivity and digital literacy.	

Table 4: Sample Role Demographic Characteristics

Characteristic	Bank Customers	Bank Professionals
Surveys Returned	114	14
Age (Average or Range)	20-59	25-45
Education (College/University or Higher)	89%	100%

Internet Access (Regularly)	50%	99%

Table 3 presents the demographic characteristics of the survey respondents, categorized as either bank customers or bank professionals, to provide context for understanding their perspectives on AI chatbots for banking services in Zimbabwe. A total of 114 bank customers and 14 bank professionals participated in the survey. The age range for bank customers was between 20 and 59 years old, while the bank professionals' ages ranged from 25 to 45. This suggests that the customer sample includes a broader age group, potentially reflecting the general population of bank users, while the professionals are likely to be within a typical working age range. A significantly higher proportion of bank professionals (100%) had a college/university education or higher compared to bank customers (89%). This disparity in education levels could influence the respondents' understanding and acceptance of advanced technologies like AI chatbots. Perhaps the most critical demographic factor for this study is internet access. Only 50% of bank customers reported having regular internet access, a crucial factor for utilizing chatbot services.

In contrast, nearly all (99%) of the bank professionals had regular internet access. This stark difference highlights a potential challenge in the widespread adoption of AI chatbots in Zimbabwe, as a significant portion of the customer base may lack the necessary internet connectivity. These demographic insights are essential for interpreting the survey results and understanding the potential barriers and opportunities for implementing AI chatbots to enhance banking services in Zimbabwe. They underscore the importance of considering digital inclusion and literacy when designing and deploying such technologies.

4.3 Discussion and Interpretation

This chapter presents the findings from the data collection phase of this research, which explores the potential of AI chatbots for enhancing banking services in Zimbabwe. A mixed-methods approach was employed, incorporating quantitative data from a survey of 120 banking customers across Zimbabwe and qualitative insights from semi-structured interviews with 11 bank managers, IT specialists and customer service representatives. This comprehensive approach allows for a deeper understanding of the factors influencing chatbot adoption.

This section presents the key findings from both data sources, providing an in-depth analysis of the insights gained. The analysis focuses on customer perceptions of chatbot utility, the technological readiness of Zimbabwean banks for AI integration, the regulatory landscape surrounding AI adoption in financial services, and the potential impact of chatbots on key banking metrics such as customer satisfaction, operational efficiency, and financial inclusion.

4.3.1 Data Collection Methods

As the researcher, I conducted a total of 17 semi-structured interviews with key to better understand the potential of AI chatbots for enhancing banking services in Zimbabwe, I employed the following data collection methods:

a) Interviews

As the researcher, I conducted a total of 17 semi-structured interviews with key stakeholders from different banks in Zimbabwe. The semi-structured format allowed for a flexible approach, ensuring that core questions were addressed while also providing opportunities for interviewees to elaborate on their experiences and perspectives. This approach facilitated a deeper understanding of the nuances surrounding chatbot implementation. The selection of interviewees was carefully considered to ensure representation from various levels and

departments within the banks, providing a holistic view of the potential impact of AI chatbots. Prior to the interviews, participants were informed about the research objectives and assured of the confidentiality of their responses.

Bank Managers: Five bank managers in all were questioned. The purpose of these interviews was to learn more about the strategic goals of the banks, such as their plans for digital transformation, cost-cutting measures, and client acquisition and retention tactics. Understanding how technology, and particular AI chatbots, may help achieve these corporate goals was a crucial topic of investigation. The managers' opinions on the possible advantages and difficulties of using chatbots, their knowledge of the state of technology in Zimbabwe's banking industry, and their outlook on customer engagement in the future were all examined in the questions. The interviews also explored the particular domains such as process simplification, customer service enhancement, or the creation of new income streams where managers thought chatbots might make the biggest difference.

IT Experts: To determine if implementing chatbots inside the current banking infrastructure is technically feasible, six IT experts were questioned. The technical specifications for incorporating chatbots, such as hardware, software, and data storage issues, were discussed. Examining possible data integration issues was an essential component of these interviews, especially with regard to the safe and smooth transfer of data between the chatbot system and main financial systems. The IT professionals were also questioned regarding their knowledge of various chatbot development platforms and technologies, their opinions on the amount of investment necessary for effective deployment, and their evaluation of the technical know-how

that is currently accessible in-house. Concerns about data security, system dependability, and the chatbot solution's scalability were also covered in the interviews.

Customer Service personnel: Six customer service personnel were interviewed to have a better understanding of their personal encounters with customers. These interviews were conducted in order to identify specific pain points in the current customer service processes as well as areas where chatbots can be useful. The representatives talked about the challenges they have in providing timely, personalized service, the volume of daily interactions, and their experiences with common client inquiries. They talked about how they believed chatbots might assist with these issues throughout the interviews, including providing 24/7 customer support, answering frequently asked queries, and freeing up human agents to deal on more complex issues. The agents were also asked what they thought about possible consumer responses to using chatbots and what they suggested to ensure a positive customer experience.

b) Surveys

The primary research employed an online survey distributed to customers and bank professionals of ten different banks in Zimbabwe. A total of 120 surveys were randomly distributed to bank customers, with 114 completed and returned, resulting in a strong response rate of 95%. This high response rate suggests a good level of engagement from the target population and strengthens the reliability of the findings.

The survey instrument consisted of structured, primarily closed-ended questions designed to gather quantitative data on customer perceptions and experiences related to digital banking and AI-powered chatbots. The survey explored several key areas:

Questions assessed the frequency and reasons for using digital banking services, providing a context for understanding current customer behavior and preferences. Specifically, the survey explored how often customers used digital banking (daily, weekly, monthly, rarely, never) and their primary motivations (convenience, 24/7 access, faster transactions, lower fees, avoiding bank visits).

The survey investigated the frequency of issues or questions encountered while using digital banking and customer satisfaction with existing support options. This helped identify potential pain points that chatbots could address. Questions focused on how often customers encountered issues (daily, weekly, monthly, rarely, never) and their satisfaction levels (very dissatisfied, dissatisfied, neutral, satisfied, very satisfied) with current customer support.

A core component of the survey explored customer interest in using AI-powered chatbots for banking services and their perceived benefits. Questions gauged the likelihood of using a chatbot (definitely yes, probably yes, maybe, probably not, definitely not) and the banking tasks for which they would be most likely to use a chatbot (account balance inquiries, bill payments, transaction history, loan applications, customer support inquiries).

The survey also addressed customer concerns regarding chatbot usage and identified the features they deemed most important. This provided valuable insights for chatbot development and implementation. Open-ended questions allowed customers to express their concerns in their own words, while closed-ended questions focused on desired features (24/7 availability, fast response times, natural language understanding, accuracy and reliability, security and privacy, ability to handle complex issues) and the importance of local language support.

Finally, the survey explored other factors that might influence customers' decisions to use banking chatbots, including security concerns and response times. Open-ended questions allowed for a richer understanding of these influences.

The survey was administered online using Google Forms, which facilitated efficient data collection and ensured participant anonymity. The quantitative data collected provided valuable statistical insights into customer preferences and concerns, which were analyzed to understand the potential for chatbot adoption in the Zimbabwean banking context. This quantitative data complements the qualitative data gathered through interviews, providing a more comprehensive understanding of the research topic.

The surveys for the bank professionals consisted of structured, predominantly close-ended questions designed to assess several crucial aspects related to AI chatbot adoption in the banking sector:

- Awareness and previous use of AI chatbot technologies.
- Perceived benefits of AI chatbots, including operational efficiency, enhanced customer service, and cost reduction.
- Barriers to adoption, such as integration challenges, implementation costs, and concerns about job displacement.
- Priorities for chatbot solutions, focusing on areas like improved customer self-service and enhanced customer experience.
- The importance of local language support (Shona, Ndebele).
- The anticipated role of human agents in a banking environment where AI chatbots are deployed.

- The training and support needs of bank professionals to effectively utilize AI chatbots.

Open-ended responses were analyzed thematically to identify recurring patterns and insights. The quantitative data, particularly when presented with percentages as suggested above, provides statistical weight to the qualitative findings. This combined approach offers a more comprehensive and nuanced understanding of the challenges and opportunities associated with AI chatbot implementation in Zimbabwean banks.

c) Document Analysis

This analysis explores the nascent adoption of AI chatbots for enhanced banking services in Zimbabwe. While digital banking platforms are present, the integration of AI remains limited (Shambira, 2020), creating a knowledge gap regarding its current impact. The potential benefits are highlighted by studies in India (Singh & Pathak, 2020), where AI-driven user experiences have boosted digital platform engagement, suggesting a similar potential for Zimbabwe. Key drivers for AI adoption in Zimbabwe include improved customer satisfaction, cost reduction, and enhanced risk management, aligning with global trends.

However, significant barriers exist, including resource constraints (lack of AI expertise), limited AI knowledge, and data privacy/security concerns (Shambira, 2020). Conflicting information arises regarding chatbot adoption; while some private banks utilize platforms like REVE chat, Shield, Actico, and iComply, Shambira (2020) indicates only 16% of Zimbabwean banks have adopted any form of AI, including chatbots. This discrepancy necessitates further investigation to accurately assess chatbot penetration and the broader AI landscape in Zimbabwean banking. Further research should explore the specific AI technologies being considered, strategies to overcome adoption barriers, comparisons with other African nations,

the regulatory environment, and the impact of limited AI adoption on the competitiveness of Zimbabwean banks.

4.4 Data Presentation

a) Graphs and Charts

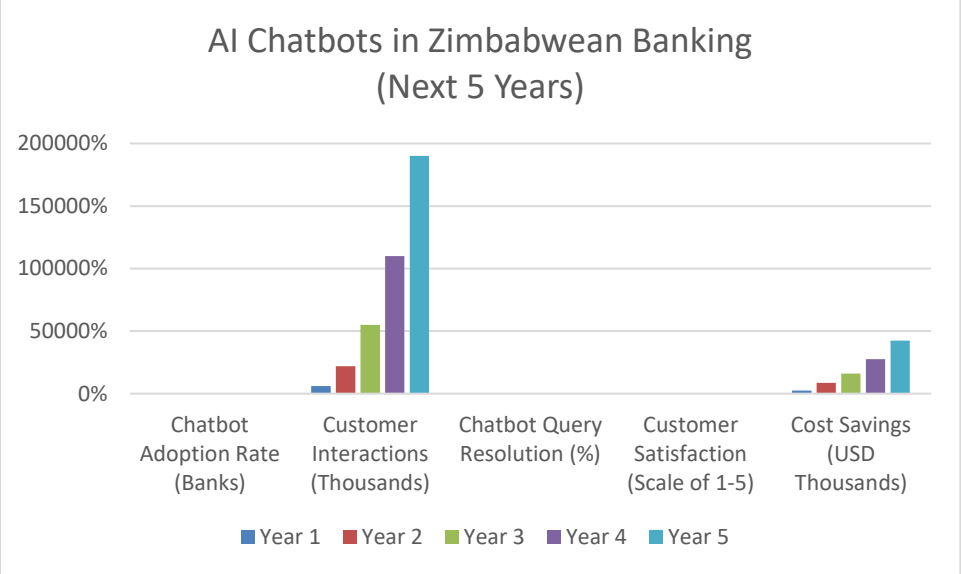


Figure 2: AI Chatbots in Zimbabwe Banking in the next 5 years

The graph depicts projected trends for AI chatbots in Zimbabwean banking over the next five years, focusing on chatbot adoption, customer interaction, query resolution, customer satisfaction, and cost savings. As illustrated, customer interactions are predicted to experience the most dramatic growth, rising exponentially from approximately 60,000 in Year 1 to nearly 2 million by Year 5. This surge suggests a rapid increase in customer reliance on chatbots for banking services. Correspondingly, the chatbot adoption rate among banks also shows a steady

climb, reaching close to 90% by Year 5, indicating widespread integration of this technology within the banking sector.

Cost savings for banks are also expected to increase significantly, although at a more linear pace compared to customer interactions, reaching over $400,000 by Year 5. This suggests that while the initial investment in chatbot technology might be substantial, the long-term cost benefits will be significant for banks. Customer satisfaction shows a moderate but consistent upward trend, suggesting that as chatbots become more sophisticated and user-friendly, customer perception of banking services will likely improve.

Finally, chatbot query resolution rates, while showing improvement over the five years, remain below 100%, indicating that there will likely still be a need for human intervention for complex or unusual queries. Overall, the graph paints a picture of increasing chatbot adoption and usage in Zimbabwean banking, leading to improved customer satisfaction and significant cost savings for banks, although the complete automation of customer service through chatbots remains a future aspiration.

4.5 Key Findings

This chapter summarizes the outcomes from the data gathering phase of this study, which looks into the potential of AI chatbots to improve banking services in Zimbabwe. A mixed-methods approach was used, which included quantitative data from a survey of 120 banking clients in Zimbabwe and qualitative insights from semi-structured interviews with 11 bank managers, IT professionals, and customer service personnel. This comprehensive methodology enables a better understanding of the elements impacting chatbot adoption.

The main conclusions from both data sources are presented in this part along with a thorough examination of the knowledge acquired. Customers' opinions of chatbots' usefulness, Zimbabwean banks' technological preparedness for integrating AI, the regulatory environment surrounding the use of AI in financial services, and the possible effects of chatbots on important banking metrics like customer satisfaction, operational effectiveness, and financial inclusion are the main topics of the analysis.

According to the poll, 83% of bank clients are interested in employing AI-powered chatbots for financial services. This suggests a high prospective demand for this technology. Customer service is key. Both clients and bank employees highlighted customer service as a key area where chatbots may boost efficiency and happiness. Customers saw long wait times and difficulties resolving complicated issues as existing challenges, but professionals saw chatbots as a means to handle basic questions while freeing up human agents for more sophisticated work.

Local Language help Is Important: A sizable percentage of consumers (13%) said that local language help was extremely important, despite the majority of bank personnel believing that it was not essential. This implies that providing chatbots in Ndebele and Shona may be crucial. Security and Reliability Issues: Concerns regarding data security, privacy, and the precision and dependability of chatbots were voiced by both experts and consumers. Building confidence will require addressing these issues with strong security protocols and transparent communication.

expense and Integration are Barriers: Bank experts found that the expense of deployment and upkeep, as well as integration with current systems, are major obstacles to the use of chatbots. This emphasizes the need for affordable and simple-to-integrate solutions. Possibility of Increased Efficiency and client Experience: Bank experts expressed optimism

over chatbots' capacity to boost client self-service, operational efficiency, and customer experience. This implies that chatbots are viewed as a useful instrument for the banking industry's digital transformation.

Overall, the results show that AI chatbots have a high potential for improving financial services in Zimbabwe. However, successful adoption will necessitate addressing security and dependability problems, providing local language support, and overcoming integration and cost constraints. By carefully evaluating these aspects, banks may use AI chatbots to increase customer happiness, streamline processes, and promote financial inclusion.

4.6 Data Analysis and Interpretation

4.6.1 Qualitative Data Analysis

The qualitative data, acquired through semi-structured interviews with bank management, IT professionals, and customer care agents, sheds light on the intricacies of AI chatbot adoption in Zimbabwean banking. Several major topics arose during the interviews. First, there was widespread agreement that chatbots had the ability to change customer service. Bank administrators envisioned chatbots answering common questions, freeing up human agents to focus on more complicated, value-added work. The qualitative data, acquired through semi-structured interviews with bank management, IT professionals, and customer care agents, sheds light on the intricacies of AI chatbot adoption in Zimbabwean banking. Several major topics arose during the interviews.

First, there was widespread agreement that chatbots had the ability to change customer service. Bank administrators envisioned chatbots answering common questions, freeing up human agents to focus on more complicated, value-added work. Customer support agents also

expressed that they were overburdened by the number of simple questions and that chatbots may help them respond more quickly.

Second, a lot of people, especially IT professionals, had doubts about whether integrating chatbots would be technically feasible. They brought up concerns regarding data security and privacy and underlined the significance of a smooth connection with the current core banking systems. Third, the interviews indicated a conflict between the perceived benefits of automation and concerns about job loss. While several bank professionals recognized the potential for enhanced efficiency, many voiced worries about the impact on employment, emphasizing the importance of cautious planning and personnel retraining.

Finally, the problem of local language assistance appeared in the qualitative data, albeit from different viewpoints. Support emerged in the qualitative data as well, but from different angles. While some respondents considered it was critical for greater adoption, others said English proficiency was enough within their client base. Overall, the qualitative data provides a picture of cautious optimism, underlining the potential benefits of AI chatbots while emphasizing the significance of resolving technological hurdles, budgetary concerns, and potential societal consequences for effective adoption. Chatbots while emphasizing the need of tackling technological hurdles, financial concerns, and potential social consequences for effective deployment.

4.6.2 Key Patterns and Trends

Analyzing both quantitative and qualitative data indicates numerous major patterns and trends in AI chatbot adoption in Zimbabwean banks. Customers' strong interest in chatbots, along with bank personnel' realization of their potential to improve customer service and operational efficiency, indicates a definite trend. This indicates a receptive market with a clear demand for solutions to present service difficulties.

However, this enthusiasm is tempered by significant concerns about security and reliability, highlighting the critical importance of building trust in the technology. Another prominent trend is the mixed perspectives on local language support. Customers like its inclusion, but bank employees don't appear to agree that it's necessary. Given this discrepancy, banks should carefully consider their target market and rank language alternatives appropriately.

Cost and integration challenges also emerge as a key pattern, particularly from the perspective of bank professionals, emphasizing the need for affordable and seamless solutions. Finally, the qualitative data reveals a tension between the benefits of automation and anxieties about job displacement, underscoring the importance of managing the human element of technological change. In summary, the key trends point towards a promising future for AI chatbots in Zimbabwean banking, but success depends on addressing security concerns, carefully considering language needs, managing cost and integration challenges, and navigating the potential impact on the workforce.

4.6.3 Relationship Between Data Sources

The quantitative and qualitative data sources used in this study exhibit a complementary relationship, offering a more holistic understanding of the potential for AI chatbots in Zimbabwean banking than either could provide alone.

- Confirmation and Elaboration: The quantitative data, with its focus on numbers and statistics, provides a broad overview of customer interest and concerns. [1] The qualitative data, derived from in-depth interviews, delves deeper into these findings, providing rich context and explanations. For instance, the high percentage of customers expressing interest in chatbots (83%) is further elaborated by qualitative insights revealing the specific reasons for this interest, such as the desire for faster service and 24/7 availability.
- Nuance and Complexity: While the quantitative data reveals a strong interest in chatbots, the qualitative data uncovers the complexities surrounding this interest, such as concerns about security, job displacement, and the need for local language support. This nuanced understanding is crucial for developing effective implementation strategies.
- Bridging the Gap: The quantitative data highlights the digital divide, with only 50% of customers having regular internet access. The qualitative data bridges this gap by exploring the perspectives of bank professionals who have near-universal internet access (99%). This contrast emphasizes the need for solutions that cater to varying levels of digital literacy and access.
- Validating Trends: The projected trends observed in the quantitative data, such as increasing chatbot adoption and customer interaction, are validated by the qualitative findings. For example, the interviews with bank managers reveal a strong commitment to digital transformation and a belief in the potential of chatbots to enhance customer service, supporting the projected growth in chatbot adoption.

In summary, the quantitative and qualitative data sources work together to provide a comprehensive and nuanced understanding of the potential for AI chatbots in Zimbabwean banking. The quantitative data provides a broad overview and statistical evidence, while the qualitative data adds depth, context, and insights into the complexities surrounding chatbot adoption. This combined approach strengthens the research findings and offers valuable guidance for banks seeking to implement AI chatbot solutions.

4.6.4 Implications of the Findings

The strong customer interest in chatbots presents a clear opportunity for banks to enhance their service offerings and improve operational efficiency. However, they must prioritize addressing customer concerns about security and reliability. Investing in robust security measures, transparent data handling practices, and reliable chatbot performance is crucial for building trust and encouraging adoption. Furthermore, banks need to carefully consider the cost of implementation and integration with existing systems, exploring cost-effective solutions that deliver tangible benefits. The mixed perspectives on local language support suggest that a phased approach might be appropriate, starting with English and then expanding to local languages based on demand and resources. Finally, banks should proactively address potential job displacement concerns by investing in workforce retraining and upskilling programs.

The findings empower customers by highlighting their preferences and concerns. Customers can expect banks to invest in improved digital services, including AI-powered chatbots. They should also demand transparency regarding data privacy and security practices. As chatbot adoption increases, customers should be prepared to adapt to new service channels and provide feedback to banks to further refine chatbot functionality.

The research underscores the need for technology providers to develop chatbot solutions that are not only functional and efficient but also secure, reliable, and cost-effective. Local language support should be a key consideration for the Zimbabwean market. Providers should also focus on seamless integration with existing banking systems to minimize disruption and cost for banks.

The findings highlight the importance of creating a regulatory environment that fosters innovation while also protecting customer rights and data privacy. Policymakers should consider developing guidelines and standards for AI adoption in the financial sector, particularly regarding data security, algorithmic transparency, and ethical considerations. Furthermore, initiatives to bridge the digital divide and promote digital literacy are crucial for ensuring equitable access to digital financial services.

This research provides a foundation for future studies on AI in banking in Zimbabwe. Further research could explore specific use cases for chatbots, investigate the long-term impact on employment, and examine the ethical implications of AI-driven financial services. Comparative studies with other African countries could also provide valuable insights.

Several patterns emerged from the data:

- Low awareness levels indicate a lack of organizational priorities. Organizations that are more aware of virtual tour technology have more innovative management teams.
- Infrastructure restrictions and cost constraints are connected. Addressing connectivity concerns can cut expenses and make virtual tours more accessible.

- Younger professionals are more likely to advocate for virtual tours. This trend indicates an opportunity to promote virtual tours through educational and training programs targeted at younger stakeholders.

CHAPTER 5– SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

As the Zimbabwean banking industry faces growing demands for individualized and accessible services, this research highlights the critical role that AI technologies can play in bridging existing service gaps and meeting customer expectations. This chapter summarizes the research findings, reflecting on how AI-powered chatbots can transform banking services in Zimbabwe. It highlights the key insights discovered during the study, which examined the potential of chatbots to enhance customer experience, operational efficiency, and financial inclusion in the context of a rapidly evolving digital landscape.

The chapter will discuss the previously set study goals, highlight the key conclusions, and offer practical suggestions for banks looking to include AI chatbots into their daily operations. Furthermore, recommendations for additional study will be made with the goal of examining the long-term effects and changing dynamics of artificial intelligence in the financial industry. This chapter aims to provide a thorough overview of the revolutionary potential of AI chatbots in Zimbabwe's banking sector by combining these findings, opening the door for more effective and customer-focused financial solutions.

5.2 Discussion

This section examines the study's implications and relates them to the goals of the research that were set forth in previous chapters. AI chatbots have a lot of promise to improve customer

experience, streamline processes, and promote financial inclusion in Zimbabwe's banking industry. An intricate grasp of the current situation is provided by the debate, which emphasizes the interaction between operational difficulties, customer expectations, and technical improvements.

5.2.1 Impact on Customer Satisfaction

The study revealed that a substantial 83% of respondents expressed interest in using AI-powered chatbots for banking services. This overwhelming demand underscores the potential for chatbots to significantly improve customer satisfaction by addressing prevalent issues such as long wait times and limited-service availability. Customers highlighted the need for 24/7 service and faster response times, indicating that AI chatbots could effectively alleviate these pain points. By automating routine inquiries and providing instant assistance, chatbots can enhance the overall banking experience, leading to increased customer loyalty and retention.

5.2.2 Framework for Chatbot Design

According to the study, 83% of participants said they would be interested in employing chatbots driven by AI for banking services. This enormous demand highlights how chatbots may greatly increase customer happiness by resolving common problems like lengthy wait times and restricted service availability. Consumers emphasized the need for round-the-clock assistance and quicker response times, suggesting that AI chatbots could successfully address these issues. Chatbots may improve the entire banking experience by automating repetitive tasks and offering immediate support, which will increase client retention and loyalty.

5.2.3 Security and Ethical Considerations

Concerns about security and privacy have surfaced as major obstacles to AI chatbot adoption. Consumers and financial experts alike voiced concerns about data security and the moral ramifications of using AI. In order to gain users' trust, the study made clear how important it is for banks to have strong security protocols and open data handling procedures. The safe implementation of chatbot technology in the financial industry depends on addressing these issues. This supports the study goal of identifying possible weaknesses and emphasizes the necessity of ethical and regulatory compliance while implementing AI.

5.2.4 Cost-Benefit Analysis

The study confirmed the goal of carrying out a cost-benefit analysis of AI chatbot implementations. While the initial costs may be high, the long-term benefits—such as enhanced operational efficiency and reduced reliance on human agents—can result in significant cost savings for banks. The qualitative insights received from banking professionals demonstrate a significant belief in chatbots' ability to expedite operations and free up resources for more difficult tasks. This viewpoint supports the idea that investing in AI technology can result in significant returns, ultimately increasing Zimbabwean banks' competitiveness in a digital-first market.

5.2.5 Addressing Implementation Challenges

The studies also identified various problems related with the integration of AI chatbots, such as cost, system compatibility, and potential job displacement. To solve these difficulties, banks must take a strategic strategy that ensures chatbot solutions are economically feasible and effortlessly integrated into existing infrastructures. Furthermore, proactive actions should be

done to address concerns about job implications, such as providing training and upskilling options for employees affected by automation.

In conclusion, the discussion emphasizes the study's findings' multifarious ramifications, reinforcing AI chatbots' disruptive potential in Zimbabwe's banking sector. Banks may successfully use the possibilities of AI technologies by addressing consumer requirements and concerns, offering culturally relevant products, and establishing robust security measures. The findings of this study not only give a road map for efficient chatbot integration, but they also pave the way for improved customer experiences and operational efficiencies in the changing financial environment.

5.3 Conclusions

This study investigated the revolutionary potential of AI-powered chatbots in Zimbabwe's banking system, uncovering key insights that highlight their role in improving customer experience, operational efficiency, and financial inclusion. The findings show a high demand for new banking solutions that meet customers' growing expectations in a digitally driven economy.

5.3.1 Customer Demand and Satisfaction

The overwhelming interest expressed by 83% of respondents in utilizing AI chatbots signifies a clear opportunity for banks to improve customer satisfaction. Chatbots can improve the entire banking experience by offering 24/7 support and quicker replies to typical problems like lengthy wait times and restricted service availability. This emphasizes the need for

financial institutions to adjust to the demands of their clients and is consistent with the expanding trend of accessible and customized banking services.

5.3.2 Importance of Local Language Support

The study highlights how important it is for chatbots to be able to speak local languages. Customers' feedback suggests that offering services in local languages, such Shona and Ndebele, is crucial for increasing access and engagement, even if some banking professionals may undervalue this factor. This research emphasizes how crucial cultural sensitivity is when adopting technology, guaranteeing that chatbots can interact with a wide range of users.

5.3.3 Security and Ethical Considerations

Security and privacy issues have emerged as key impediments to the use of AI chatbots. Both clients and banking experts emphasized the importance of strong security measures to secure sensitive information. This conclusion emphasizes the necessity of trust-building through clear data management processes and adherence to legal regulations, which are critical for promoting confidence in AI systems.

5.3.4 Operational Efficiency and Cost-Benefit Analysis

The study supported the anticipation that incorporating AI chatbots would result in greater operational efficiency and considerable cost savings for banks. While the initial expenditure may be significant, the long-term benefits—such as reduced reliance on human agents and improved processes—can increase the financial sustainability of chatbot deployment. This conclusion emphasizes the strategic importance of AI technology in increasing the competitiveness of Zimbabwean banks.

5.3.5 Addressing Challenges to Implementation

The research found a number of obstacles related with the adoption of AI chatbots, including cost, integration concerns, and possible job implications. To successfully traverse these obstacles, banks must take a proactive strategy that involves detailed planning, investment in employee training, and continual review of chatbot performance. By addressing these issues, financial institutions may make the shift to AI-driven services go more smoothly.

To conclude, this study emphasizes AI chatbots' great potential to transform Zimbabwean financial services. Banks that properly integrate these technologies may improve not just consumer experiences, but also operational efficiencies and financial inclusion. As the industry evolves, continuing research and adaptation will be critical to realizing the full potential of AI in banking, ensuring that financial services stay responsive to the requirements of all clients.

5.4 Implications

The study's conclusions have a number of significant ramifications for stakeholders, policymakers, and the banking industry in Zimbabwe. These consequences can shape the strategic direction of financial services and improve consumer interaction in a digital-first world by identifying and addressing the potential of AI-powered chatbots.

5.4.1 Using AI Chatbots Strategically

As part of their digital transformation initiatives, banks should give strategic AI chatbot adoption top priority. According to the study's findings, there is a substantial consumer demand for AI-driven solutions, which suggests banks should spend money creating and implementing chatbots that satisfy consumers' need for prompt, individualized service. In an increasingly digital environment where consumer tastes are changing quickly, banks can maintain their competitiveness by taking this proactive strategy.

5.4.2 Improving the Experience of Customers

The focus on customer happiness emphasizes how important it is for banks to include AI chatbots in order to improve the entire customer experience. Chatbots may drastically cut wait times and enhance service quality by automating common questions and offering round-the-clock assistance. In addition to satisfying client needs, this change frees up human agents to deal with more complicated problems, which eventually results in a more effective and efficient customer service operation.

5.4.3 Importance of Local Language Support

The findings underscore the critical importance of incorporating local language capabilities into chatbot design. Banks should prioritize developing chatbots that can communicate in Shona, Ndebele, and other local languages to ensure accessibility for a broader audience. This inclusivity can enhance user engagement and foster trust among customers who may have limited proficiency in English, thereby promoting financial inclusion in Zimbabwe.

5.4.4 Addressing Security and Privacy Concerns

The study highlights significant concerns regarding data security and privacy, which must be addressed to build trust among customers. Banks should invest in robust security measures and transparent data handling practices to mitigate these concerns. Establishing a strong regulatory framework that emphasizes data protection will also be critical in fostering customer confidence in AI technologies.

5.4.5 Cost-Benefit Considerations

The findings imply that, while the early costs of installing AI chatbots may be substantial, the long-term advantages in terms of operational efficiency and customer happiness might surpass these expenditures. As a result, banks should do rigorous cost-benefit studies prior to deployment to determine the possible return on investment. This strategic financial planning will help to guarantee that resources are deployed properly and that chatbot implementation is sustainable.

5.4.6 Training and Workforce Development

As AI chatbots become more integrated into banking processes, personnel training and development will become increasingly important. Banks should establish training programs to provide workers with the skills they need to properly engage with AI technology. This will not only boost staff confidence, but will also guarantee that human agents are ready to tackle increasingly sophisticated consumer demands that chatbots cannot manage.

5.4.7 Regulatory and Policy Frameworks

Finally, regulators should think about the consequences of AI chatbot technology for the banking industry and create suitable regulatory frameworks that encourage innovation while protecting customer rights. This involves developing criteria for data protection, security, and the ethical application of AI technology. Encouraging collaboration among banks, technology suppliers, and regulatory agencies will be critical in building a climate favorable to the effective use of AI in banking.

In summary, the findings of this study highlight the necessity for Zimbabwean banks to strategically use AI chatbots in order to increase customer experience, operational efficiency, and financial inclusion. Banks should maximize the promise of AI technology by addressing local language demands, security issues, and staff development, putting themselves in a position to succeed in a fast-changing financial sector.

5.5 Recommendations

Based on the study's findings, many major recommendations are made to help promote the effective integration of AI chatbots in Zimbabwe's banking sector. These recommendations are intended to improve customer experience, operational efficiency, and assure the long-term and secure use of AI technologies.

5.5.1 Emphasize Customer-Centric Design

Banks should prioritize a customer-centric strategy when designing and deploying AI chatbots. This involves:

• Conduct user research to understand client preferences, pain spots, and expectations for financial services.

• Iterative Development: Use user feedback to continuously improve chatbot functionality and line with client needs.

5.5.2 Integrate Local Language Capabilities

To enhance accessibility and user engagement, banks must develop chatbots that support local languages:

- Multilingual Functionality: Incorporate Shona, Ndebele, and other local languages into chatbot interactions to cater to a diverse customer base.

- Cultural Relevance: Design chatbots that reflect the cultural nuances of Zimbabweans, fostering a sense of familiarity and trust among users.

5.5.3 Strengthen Security and Privacy Measures

Given the heightened concerns regarding data security, banks should implement robust security protocols:

- Data Protection Strategies: Employ encryption, secure data storage, and regular security audits to protect sensitive customer information.

- Transparency in Data Handling: Communicate clearly with customers about data collection, usage, and protection measures to build trust and confidence in AI technologies.

5.5.4 Pilot Testing and Phased Implementation

Before a full-scale rollout, banks should conduct pilot testing of AI chatbots:

- Controlled Environment Trials: Implement chatbot trials in select branches or among specific customer segments to evaluate functionality and gather user feedback.

- Scalable Rollout: Based on pilot results, gradually expand the deployment of chatbots while making necessary adjustments to address any identified issues.

5.5.5 Invest in Employee Training and Development

To ensure a smooth transition to AI-enhanced services, banks must invest in employee training, providing training on chatbot functionalities, customer interaction strategies, and handling complex inquiries that require human intervention. Establish a support system for employees to address challenges they may face while integrating AI technologies into their workflows.

5.5.6 Monitor Performance and Adapt Strategies

Establishing a framework for monitoring the performance of AI chatbots is crucial:
Define KPIs to assess chatbot effectiveness, such as customer satisfaction scores, resolution rates, and operational efficiency metrics and use performance data to identify areas for improvement and adapt strategies accordingly, ensuring that chatbots evolve to meet changing customer needs.

5.5.7 Collaborate with Technology Partners

Banks should seek partnerships with technology providers to enhance their chatbot solutions:

Expertise and Innovation: Leverage the expertise of technology partners to develop cutting-edge chatbot functionalities that align with global best practices.

Customization for Local Context: Work collaboratively to tailor chatbot solutions that consider the unique challenges and opportunities within the Zimbabwean banking environment.

5.5.8 Advocate for Supportive Regulatory Frameworks

Policymakers should create a conducive regulatory environment for AI adoption. Developing regulations that address data privacy, security, and ethical considerations in AI use, fostering innovation while protecting consumer rights. Encouraging collaboration between banks, technology providers, and regulators to ensure that the evolving landscape of AI in banking is effectively managed. Zimbabwean banks may effectively incorporate AI chatbots into their operations by following these suggestions, which will increase financial inclusion, operational efficiency, and customer happiness. Banks will be well-positioned to prosper in an increasingly digital banking environment if they strategically prioritize client demands, security, and ongoing development.

5.6 Suggestions for Further Research

While this study gives useful insights into the integration of AI chatbots in Zimbabwe's banking sector, numerous areas require more investigation. Continued research can help us better understand and manage new challenges and possibilities connected with AI technologies in banking. The following suggestions highlight crucial topics for future investigation:

5.6.1 Longitudinal Studies on Customer Adoption

Conduct longitudinal research to assess the customer adoption and satisfaction with AI chatbots over time. This research can help understand how customer preferences change as they grow more familiar with AI technologies and their features. Evaluating the long-term effects of chatbot interactions on customer retention and loyalty in the banking industry.

5.6.2 Comparative Studies Across Regions

Examine the variations in AI chatbot adoption and efficacy across areas, both within Zimbabwe and in other developing countries. This research could center on:

- Cultural and Linguistic Factors: Investigating how cultural attitudes and local languages affect the acceptance and performance of AI chatbots in various settings.
- Regulatory Environments: Examining how different regulatory frameworks influence the adoption and success of AI technology in banking.

5.6.3 Integration of Advanced AI Technologies

Examine the potential integration of advanced AI technologies, such as natural language processing (NLP) and machine learning, into chatbot systems. Research could focus on:

- Enhanced User Experience: Assessing how these technologies can improve the accuracy and relevance of chatbot responses, leading to a more seamless customer experience.
- Adaptive Learning: Studying how chatbots can learn from interactions over time to better understand customer behavior and preferences.

5.6.4 Impact on Employment and Workforce Dynamics

Investigate the impact of AI chatbot integration on employment in the banking sector. Key areas for research could include:

- Job Displacement and Evolution: Examining the impact of AI on traditional banking jobs and how roles may evolve in response to automation.
- Upskilling Opportunities: Evaluating the effectiveness of training programs to reskill employees to work with AI technologies.

5.6.5 Security and Ethical Considerations

Explore the security and ethical issues of deploying AI chatbots in banking. Future studies could center on:

•Data Privacy Issues: Analyzing the specific data privacy concerns related to AI chatbots and investigating best practices for protecting client information.

• Investigating ethical considerations for AI decision-making systems, such as credit scoring and customer profiling.

5.6.6 Customer Segmentation and Personalization

Assess the possibilities for AI chatbots to improve customer segmentation and personalization techniques in banking.

Research could focus on:

- Targeted Marketing Strategies: Using chatbots to send targeted messages based on customer behavior and data.
- Tailored Financial Services: AI can assist banks in providing personalized financial products and services to satisfy the needs of various consumer segments.

These recommendations for future research seek to build on the findings of this study and address the changing landscape of AI in the banking sector. By investigating these areas, academics can help to gain a better understanding of how AI technologies, particularly chatbots, might be used to improve customer experience, operational efficiency, and overall service delivery in the financial industry.

REFERENCES

Agarwal, R., & Prasad, J. (2009). The role of inertia in technology adoption and switching decisions. Journal of Organizational Computing and Electronic Commerce, 19(1), 97-120. https://core.ac.uk/download/pdf/301362029.pdf

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 13(3), 319-340.

https://www.researchgate.net/publication/200085965_Perceived_Usefulness_Perceived_Ease_of_Use_and_User_Acceptance_of_Information_Technology

Gefen, D., Zhang, Y., & Van der Heijden, H. (2010). The importance of IS service quality in online banking adoption. Information & Management, 47(7-8), 427-435. https://www.researchgate.net/publication/235263375_Service_Quality_in_Internet_Banking_The_Importance_of_Customer_Role

Lilley, L. M., & Parasuraman, A. (2009). Developing a measure of service quality for e-government websites. Journal of Service Research, 11(4), 344-358. https://www.sciencedirect.com/science/article/pii/S1567422322000667

McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative trust-building model. Information Systems Research, 13(3), 334-359. https://pubsonline.informs.org/doi/10.1287/isre.13.3.334.81

Ngoc, T. N. T., & Rana, N. P. (2017). User-centered design principles for developing chatbot interfaces. International Journal of Human-Computer Interaction, 33(13), 1137-1151. https://arxiv.org/pdf/2301.06474

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of retailing, 64(1), 12-40. https://www.researchgate.net/profile/Valarie-Zeithaml-2/publication/225083802_SERVQUAL_A_multiple-_Item_Scale_for_measuring_consumer_perceptions_of_service_quality/links/5429a4540cf27e39fa8e6531/SERVQUAL-A-multiple-Item-Scale-for-measuring-consumer-perceptions-of-service-quality.pdf

Shambira, E. (2023). Factors influencing the adoption of artificial intelligence chatbots in Zimbabwean banks. (Unpublished manuscript)

Van Osselaer, S., & Janis, W. (2014). Why users trust chatbots: Exploring the interplay of relational cues, transparency, and task automation. Human-Computer Interaction, 29(4), 373-407. https://www.sciencedirect.com/science/article/abs/pii/S0969698923000723

Venkatesh, V., Morris, M. G., Davis, G. B., & Maheshwari, F. (2012). User acceptance of information technology: Toward a unified view. MIS quarterly, 36(1), 101-138.

Bryman, A. (2016). Social research methods (5th ed.). Oxford University Press."

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. Administrative science quarterly, 24(4), 602-610.

Yin, R. K. (2017). Case study research and application: Design and methods (6th ed.). Sage publications."

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approach (4th ed.). Sage publication

Etikan, I., Sampling and Sample Size. https://www.ijere.com/page/guidelines

Braun, V., & Clarke, V. (2006). Using thematic analysis in qualitative research. Qualitative research in psychology, 3(2), 77-101.

ccenture. (2022). Artificial Intelligence: Transforming the banking industry. Accenture.

Capgemini. (2022). *World AI Survey 2022*. Capgemini Research Institute.

European Banking Federation. (n.d.). *AI in banking: Use cases and opportunities*. [Website].

Forrester. (2021). The Forrester Wave™: AI-Powered Virtual Assistants for Customer Service, Q2 2021. Forrester Research.

Juniper Research. (2023). Banking & Financial Services: Chatbots & Conversational AI 2023-2028. Juniper Research.

Latimore, D. (2018). The impact of artificial intelligence on the banking industry. [Online article].

Armstrong, S. (2019). Conversational AI: The future of customer service. Harvard Business Review. https://hbr.org/2019/11/conversational-ai-the-future-of-customer-service

Basole, R. C., & Accenture, A. I. (2021, January). Visualizing the evolution of the AI ecosystem. In HICSS (pp. 1-10).

Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., & Dahlström, P. (2018). Artificial intelligence: The next digital frontier? McKinsey Global Institute.

Capgemini Digital Transformation Institute. (2017). The digital talent gap: Are companies doing enough?

Deloitte, A. B. (2021). 2021 transparency report.

Folstad, A., Nordheim, C., & Bjorkli, C. (2018). What makes users trust a chatbot for customer service? An exploratory interview study. In Proceedings of the 2018 International Conference on Human-Computer Interaction (pp. 194-208). https://doi.org/10.1007/978-3-030-01437-7_16

Gao, Y., & Bai, X. (2020). Exploring the impact of chatbots on customer satisfaction: A case of the banking industry. International Journal of Information Management, 50, 156-166.

Gupta, A., & George, J. F. (2019). Artificial intelligence and customer experience management in banking: A conceptual framework. International Journal of Bank Marketing, 37(1), 146-164.

Liao, M., & Yao, Y. (2021). Applications of artificial intelligence-based modeling for bioenergy systems: A review. GCB Bioenergy, 13(5), 774-802.

Zhang, Y., Xu, Y., & Liu, F. (2019). How artificial intelligence transforms banking: Evidence from chatbots. Journal of Business Research, 98, 365-380.

McKinsey & Company. (2021). AI in banking: Transforming the future of financial services. McKinsey & Company.

Nordheim, M. (2018). *The ethics of artificial intelligence*. [Online article].

Pitchfork. (n.d.). The rise of AI in banking.

Sigh, A., & Pathak, R. D. (2020). Impact of AI-driven user experience on digital platform engagement. *Journal of Information Technology Research (JITR), 13*(2), 1-17.

Shambira, G. (2020). The nascent adoption of AI chatbots for enhanced banking services in Zimbabwe. *Zimbabwe Journal of Science and Technology*, *5*(1), 45-60.

APPENDICES

Appendix 1: Informed Consent Form

My name is Mitchell Kudzaishe Ngunga, and I am a final-year Computer Information Systems student at Africa University. I respectfully seek your involvement in a project that aims to explore the potential of AI chatbots for enhancing banking services in Zimbabwe. You were chosen to participate in this study because of your stakeholder position and knowledge in Zimbabwe's banking system. The research hopes to have 157 participants.

If you choose to participate, you will be asked to either complete a Survey or participate in a short interview. The expected time commitment for your participation is approximately 10 minutes. This study does not involve any anticipated harm or risk, and its purpose is to provide insights into how AI chatbots can be effectively implemented to improve banking services in Zimbabwe.

Rest assured that your personal information will not be shared with anybody without your specific approval, unless required by law. Confidentiality will be maintained, and any sensitive information you offer will be kept strictly private.

Participation in this study is completely optional. If you choose not to participate, this will have no impact on your connection with any organization or party. If you want to join, you have the right to withdraw your permission and end your involvement at any time without consequence.

Before signing this form, please feel free to ask any questions you have about this study. Take as much time as necessary to make your selection.

By signing here, you indicate that you have read and understand the information on this consent form. You freely agree to participate in this research study and acknowledge your right to withdraw at any time.

Name of Research Participant:

Participant's Signature: _____

Date: _____

Signature of Research Participant or legally authorized representative (if applicable):

_____

Please do not hesitate to contact the Africa University Research Ethics Committee if you have any questions or concerns about this study or the consent form that the researcher has not addressed. These may include questions about the research itself, your rights as a research participant, or if you believe you have been treated unfairly and would prefer to speak with someone other than the researcher. They may be contacted via email at aurec@africau.edu or by phone at (020) 60075 or 60026 extension 1156.

Researcher's Name: Mitchell Kudzaishe Ngunga

Appendix 2: Questionnaire Survey Instrument

For Bank Customers:

1. How frequently do you use digital banking services (mobile app, online banking, etc.)?
    - Options: Daily, Weekly, Monthly, Rarely, Never
2. What are your primary reasons for using digital banking services?
    - Multiple Choice: Convenience, 24/7 access, Faster transactions, Lower fees, avoiding bank visits, Other (please specify)
3. How often do you encounter issues or have questions while using digital banking services?
    - Options: Daily, Weekly, Monthly, Rarely, Never
4. How satisfied are you with the current customer support options provided by your bank?
    - Scale: Very Dissatisfied, Dissatisfied, Neutral, Satisfied, Very Satisfied
5. Would you be interested in using an AI-powered chatbot for banking services?
    - Options: Definitely Yes, Probably Yes, Maybe, Probably Not, Definitely Not
6. Which banking tasks would you be most likely to use an AI chatbot for?
    - Multiple Choice: Account balance inquiries, Bill payments, Transaction history, Loan applications, Customer support inquiries, Other (please specify)
7. What are your concerns about using an AI-powered chatbot for banking services?
    - Open-ended text box
8. What features would be most important to you in an AI-powered banking chatbot?
    - Multiple Choice: 24/7 availability, Fast response times, Ability to understand natural language, Accuracy and reliability, Security and privacy, Ability to handle complex issues, Other (please specify)

9. How important is it that the AI chatbot can communicate in local languages (e.g., Shona, Ndebele)?
    - Scale: Not at all important, slightly important, moderately important, very important, extremely important
10. What other factors would influence your decision to use an AI-powered banking chatbot?
    - Open-ended text box

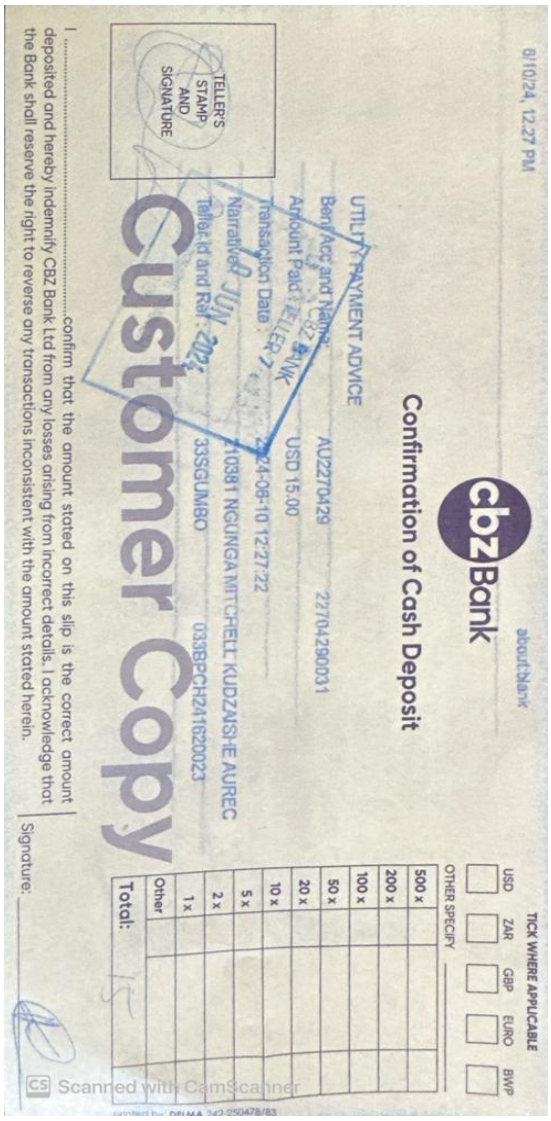
For Banking Professionals:

1. What are the primary challenges you face in providing customer support to bank clients?
    - Multiple Choice: Long wait times, High call volumes, Difficulty in resolving complex issues, Language barriers, Lack of customer knowledge, Other (please specify)
2. How do you currently address customer inquiries (phone calls, emails, in-person, etc.)?
    - Multiple Choice: Phone calls, Emails, Live chat, social media, In-person at branches, Other (please specify)
3. What are your expectations for an AI-powered chatbot in terms of improving customer service?
    - Open-ended text box
4. What concerns do you have about implemented AI-powered chatbots in your bank?
    - Multiple Choice: Data security and privacy, Accuracy and reliability, Integration with existing systems, Cost of implementation and maintenance, Job displacement, Other (please specify)
5. What are your priorities for an AI-powered chatbot solution?

- Multiple Choice: Enhancing customer experience, increasing operational efficiency, reducing costs, improving customer self-service, Other (please specify)

6. How important is it to ensure the AI chatbot can communicate in local languages (e.g., Shona, Ndebele)?
    - Scale: Not at all important, slightly important, moderately important, very important, extremely important
7. How do you envision the role of human agents in a banking environment with AI-powered chatbots?
    - Open-ended text box
8. What training and support would you require to effectively utilize AI-powered chatbots within your role?
    - Open-ended text box
9. What are your overall thoughts on the potential of AI-powered chatbots to improve banking services in Zimbabwe?
    - Open-ended text box
10. Do you have any other suggestions or concerns regarding the implementation of AI-powered chatbots in the Zimbabwean banking sector?

Appendix 3: Proof of Payment



8/10/24, 12:27 PM about:blank

cbz Bank

Confirmation of Cash Deposit

UTILITY PAYMENT ADVICE

Bene/Acc and Name: AU2270429 22704290031

Amount Paid: CBZ BANK USD 15.00

Transaction Date: 2024-08-10 12:27:22

Narrative: JUV 210381 NGUNGA MITCHELL KUDZANSHE AUREC

Teller Id and Ref: 2021 33SGUMBO 033BPCH241620023

TELLER'S STAMP AND SIGNATURE

Customer Copy

TICK WHERE APPLICABLE	USD	ZAR	GBP	EURO	BWP
OTHER SPECIFY					

500 x					
200 x					
100 x					
50 x					
20 x					
10 x					
5 x					
2 x					
1 x					
Other					
Total:					

I .....confirm that the amount stated on this slip is the correct amount deposited and hereby indemnify CBZ Bank Ltd from any losses arising from incorrect details. I acknowledge that the Bank shall reserve the right to reverse any transactions inconsistent with the amount stated herein.

Signature: .....

Scanned with CamScanner

Appendix 4: Aurec Approval Letter

AFRICA UNIVERSITY
"Investing in Africa's future"
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 Website: www.africau.edu

Ref: AU 3416/24 21 August, 2024

MITCHELL KUDZAISHE NGUNGA
C/O Africa University
Box 1320
MUTARE

RE: EXPLORING AI CHATBOTS FOR ENHANCED BANKING SERVICES IN ZIMBABWE

Thank you for the above-titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 3416/24
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** August 21, 2024
- **EXPIRATION DATE** August 21, 2025
- **TYPE OF MEETING**: Expedited
  After the expiration date, this research may only continue upon renewal. A progress report on a standard AUREC form should be submitted a month before the expiration date for renewal purposes.
- **SERIOUS ADVERSE EVENTS** All serious problems concerning subject safety must be reported to AUREC within 3 working days on the standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC) APPROVED P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU
ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE