TRANSITIONING FROM ANALOG TO DIGITAL: A CASE STUDY OF ENTIRE OFFICE SYSTEMS' ADAPTATION TO ADVANCES IN TELECOMMUNICATION TECHNOLOGIES

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TRANSITIONING FROM ANALOG TO DIGITAL: A CASE STUDY OF ENTIRE OFFICE SYSTEMS' ADAPTATION TO ADVANCES IN TELECOMMUNICATION TECHNOLOGIES

BY

TANAKA GODZI

A DISSERTATION/THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE HONOURS IN COMPUTER SCIENCE IN THE COLLEGE OF ENGINEERING AND APPLLIED SCIENCES

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Abstract

Technology is rapidly evolving, with new solutions constantly emerging to meet the evolving needs of businesses and consumers. This is particularly evident in the telecommunications sector, where organizations must adapt to remain competitive. This research paper examines how Entire Office Systems (EOS), a Zimbabwean Small and Medium Enterprise (SME) telecommunications company initially focused on analogue systems, successfully transitioned to digital and IP-based technologies. The research aims to explore the factors that drove this transition, the benefits it yielded, and the challenges encountered, with the goal of understanding how organizations can navigate the complex migration from legacy infrastructure to modern solutions. Through a mixed-methods approach combining literature review and empirical analysis, including interviews with EOS technicians and managers, the study identifies key factors that enabled successful adaptation. Findings reveal that EOS adopted technologies such as Voice over Internet Protocol (VoIP), Cloud Private Automatic Branch Exchange (PABX), and Unified Communications platforms, driven by client demands and industry trends. Hybrid systems, blending analogue and digital infrastructure, emerged as the dominant preference among clients, reflecting a gradual transition strategy. Benefits included improved client satisfaction, cost efficiency, and access to advanced features like remote management. Challenges centred on integrating legacy systems and upskilling employees, which were addressed through targeted training and collaborative partnerships. The study concludes that successful digital transitions depend on strategic alignment with client-specific needs, phased implementation, and continuous innovation. It underscores the enduring relevance of modernized PABX systems and provides insights into how other SMEs can leverage adaptability to thrive amid technological disruption. By shedding light on the relationship between organizational adaptability and market demands, this research offers practical strategies for businesses navigating similar transformations.

Key Words: Telecommunications, SMEs (Small and Medium Enterprises), Analogue, Digital, IP-Based Solutions

Declaration Page

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

Tanaka Godzi

_____   ___26 March 2025_____

Student's Full Name   Student's Signature (Date)

Dr. Tendai Zengeni

_____   ___24 March 2025_____

Main Supervisor's Full Name   Main Supervisor's Signature (Date)

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Acknowledgments

List of Acronyms and Abbreviations

EOS   Entire Office Systems

PABX   Private Automatic Branch Exchange

IP   Internet Protocol

VOIP   Voice Over Internet Protocol

IT   Information Technology

UC   Unified Communications

TAM   Technology Acceptance Model

RBV   Resource-Based View

SME   Small and Medium Enterprise

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CHAPTER 1 INTRODUCTION

1.1 Introduction

The field of telecommunications plays a key role in allowing for efficient operations and seamless communication in businesses, in today's world. As organizations strive to compete and stay ahead, in this dynamic landscape, it becomes essential to explore how they adapt to these new emerging technologies, and use innovative solutions, to deliver against the ever-increasing demands of the industry.

This study, aims to provide valuable insights into their strategies, challenges, and successes. In this study, the researcher, aims to explore how Entire Office Systems is making use of the technologies available to it, to keep up with the needs and demands of their customers in a world, that is ever changing and developing technologically.

1.2 Background to the Study

1.2.1 Background to PABX technology

The foundation of the PABX systems lies in the invention of the telephone, which laid the groundwork for these early communication devices. The early telephones, relied on analogue signals transmitted over copper wires. The limitations of these single phone lines in business environments became apparent later on as companies grew in size and in the number of employees they had. For example, in a shared office with only one phone line, every incoming and outgoing call would occupy that one line, preventing other employees from making or receiving calls. Furthermore, there was no way for the other employees to communicate internally without using outgoing phone lines.

To address these limitations Analogue PABX systems were developed in the early 20th century. PABX systems essentially act as small internal telephone network within a business and it also connects multiple phone lines to a central switching system, allowing for features that greatly improved communication efficiency. Some of these features included internal extensions where employees could now dial colleagues directly within the office using designated extension numbers hence, eliminating the need to use an outside line for internal communications. Another features was Call Forwarding where calls could now be forwarded or redirected to other extensions within the PABX system without the need of an operator.

While Analogue PABX systems represented a significant leap forward in business communication, they had limitations compared to new modern digital communication solutions. Some of these limitations were the systems offered a restricted feature set compared to those of new digital systems, they lacked features like call conferencing and instant messaging. Another limitation was the PABX systems relied on dedicated hardware that could be complex to maintain and lacked the scalability of modern solutions meaning adding new features or users often required additional hardware installations.

1.2.2 Background to Entire Office Systems (EOS)

Entire Office Systems (EOS) began their journey as a supplier and installer of analogue Phone Automatic Branch Exchange (PABX) systems. At one time the PABX systems were the primary communication solution for many business needs and EOS emerged in the telecommunications industry catering to this specific need. Traditionally, EOS supplied and installed analogue PABX systems, however overtime the systems have

become outdated and are in the process of being replaced by newer digital and Internet Protocol (IP) based solutions. These newer solutions have features like instant messaging, Voice Over Internet Protocol (VOIP) and video or conference calls.

As a supplier of analogue PABX systems EOS has had to adapt to the newer technologies being released and the evolving needs of their clients. This research proposal aims to investigate how EOS successfully adapts to this ever changing telecommunications field, allowing them to remain competitive against other competing hardware and software solutions

1.2 Statement of The Problem

The telecommunications industry has undergone an essential transformation and over time there have been many new solutions to the communication requirements of businesses, from small-scale, to the large-scale businesses. This research aims to identify how Entire Office systems and PABX technology has had to adapt their telecommunications solutions to their competition and the requirements of their varying clients. Therefore, this research aims to identify how EOS have benefited and the challenges they have faced with the adoption of new technologies.

1.3 Research Objectives

1. Identify how Entire Office Systems has adapted the services they offer to remain competitive in the sector.

2. Examine the benefits and challenges that came with the transition from analogue to newer digital systems.

3. To explore how EOS customizes and tailors their telecommunications solutions to meet the specific needs and challenges of the different industries and clients they cater to.

4. To analyse the utilization and impact of newer technology in EOS's telecommunication services.

5. Determine the rate of new technology adaptation by industries and clients by analysing the data of EOS clients and their preferred telecommunications solutions

1.4 Research Questions

1. What are the emerging technologies that EOS has successfully adopted and added to their IT and telecommunications solutions since their adaption from analogue systems?

2. How extensively has EOS integrated these new emerging technologies into their regular business operations and offerings?

3. What are the main benefits that EOS and their clients have experienced from their transition to the new digital and IP-based PBX systems?

4. What challenges did EOS encounter during the transition, and how did they address and overcome them?

5. What are the key factors that drive EOS's customization of IT and telecommunications solutions for different industries and clients?

1.4 Assumptions/Hypotheses

Hypothesis 1: Entire Office Systems (EOS) has successfully adopted emerging technologies in their IT and telecommunications solutions.

Hypothesis 2: The transition from analogue to digital and IP-based PBX systems has provided significant benefits to EOS and their clients.

Hypothesis 3: Customization of IT and telecommunications solutions by EOS is driven by key factors such as industry-specific needs and client requirements.

1.5 Significance of Study

The study's findings can contribute solutions to the problems faced by organizations in the IT and telecommunications sector. By examining EOS's experiences and challenges, the research can shed light on the common industry problems and provide insights into how to overcome them leading to overall growth and advancement in the telecommunications sector.

The study's findings can also help uncover the market trends, specifically on how new technologies are adopted by industries in Zimbabwe. Through the analysis of the data from EOS data on market trends, customer preferences can be uncovered and emerging trends on the most preferred and adopted telecommunications solutions discovered.

1.6   Delimitation of the study

The Study will be conducted on Entire Office Systems, since the case study's focus is on EOS which is within a specific region there is a chance that it may result in limiting the generalizability of the research findings to other regions.

1.7 Limitations of the study

The researcher is a student wo will have to simultaneously manage the research, work and school.

The study's findings may be limited by the availability and the easy accessibility of data related to EOS's adaptation efforts. Data constraints or limitations in obtaining proprietary information from EOS or other partner organizations may impact the depth and comprehensiveness of the analysis.

Another limitation may be that, the study will rely on self-reported data from EOS or client feedback, which can possibly introduce reporting biases and subjective interpretations of the adaptation processes and its outcomes.

Finally, the study may not account for external factors, such as market conditions, regulatory changes, or economic fluctuations, that could heavily influence EOS's adaptation efforts and outcomes.

CHAPTER 2: REVIEW OF RELATED LITERATURE

2.1   Introduction

The telecommunications industry is undergoing a period of profound transformation driven by rapid technological advancements (Cisco, 2022). These advancements have significantly impacted business communication solutions, necessitating a shift from legacy analogue systems to digital and Internet Protocol (IP) based solutions (Gartner, 2021). This chapter delves into the academic literature surrounding this transition, specifically focusing on the challenges and benefits associated with this move from analogue to digital telecommunication systems, for telecommunications organizations like Entire Office Systems (EOS).

We will examine the factors influencing businesses to adopt new technologies, drawing insights from Diffusion of Innovation Theory (Rogers, 2003) and Technology Acceptance Model (TAM) (Davis, 1989). Additionally, the Resource-Based View (RBV) (Barney, 1991) sheds light on how internal resources and capabilities can facilitate a successful transition, as likely experienced by EOS.

2.2 Theoretical Framework

This theoretical framework's objectives are to investigate important ideas and theories that clarify the obstacles and difficulties faced by organizations in the telecommunications industry, in the transition from analogue to digital systems. Through an analysis of existing literature and theoretical frameworks in the fields of business and telecommunications. Understanding the transition undertaken by Entire Office Systems (EOS) from analogue to digital solutions can be facilitated by applying

two relevant theoretical frameworks, Disruption Theory and Technology adoption theories.

2.2.1 Disruption Theory

Disruption theory, introduced by Clayton Christensen, posits that established companies in an industry can be challenged by new entrants offering more convenient or cost-effective solutions. In the context of the telecommunications industry, the rise of digital PBX systems disrupts the dominance of analogue solutions. These digital systems offer a range of advantages, including scalability, advanced features, and lower costs (Gartner, 2023). This then forces established players like EOS to adapt or risk losing market share to more agile competitors (Christensen & Raynor, 2003).

2.2.2 Technological Adoption Theories

Several models explore technology adoption within organizations. A prominent model is Diffusion of Innovation Theory by Everett Rogers. This theory identifies factors influencing the spread of new ideas and technologies. These factors include:

Relative Advantage: The perceived benefits of the new technology compared to existing solutions (Rogers, 2003). For EOS's clients, digital systems likely offered advantages like improved call quality, mobility features, and cost savings, compared to limitations of analogue systems.

Compatibility: The alignment of the new technology with existing systems and workflows (Rogers, 2003). A smooth transition from analogue to digital systems for EOS's clients would require compatibility with existing infrastructure to minimize disruption.

Complexity: The ease of use and learning associated with the new technology (Rogers, 2003). User-friendly interfaces and adequate training for employees can influence the adoption rate of digital solutions within EOS's client base.

Trialability: The opportunity to experiment with the new technology before full-scale adoption (Rogers, 2003). Pilot programs or limited deployments could have been beneficial for EOS's clients to assess the suitability of digital systems before wider adoption.

Observability: The visibility of the results achieved through the new technology (Rogers, 2003). Demonstrating the improvements in communication efficiency, cost savings, or customer satisfaction with digital systems could have further encouraged adoption among EOS's clients (Green et al., 2019).

2.3 Relevance of the Theoretical Framework to the Study

The chosen theoretical frameworks - Disruption Theory and Technological Adoption Theories, offer valuable insights into the challenges and opportunities faced by telecommunication companies in the evolving telecommunications landscape.

Disruption Theory by Christensen highlights the pressure faced by established players like EOS from new entrants offering more innovative and cost-effective solutions. The rise of digital PBX systems and cloud-based communication platforms disrupts the traditional analogue PABX market. EOS, to maintain its market position, needs to adapt and offer competitive digital solutions that address the evolving needs of its clients (Christensen & Raynor, 2003).

Technological Adoption Theories, such as Diffusion of Innovation Theory by Rogers, can illuminate the factors influencing EOS's clients' decisions to transition from

analogue to digital systems. Understanding factors like relative advantage which is the perceived benefits of digital solutions like Voice over Internet Protocol and Unified Communication systems, compatibility which is the alignment of the offered solution with existing workflows, complexity which ease of use and training provided by EOS), trialability, and observability which is demonstration of cost savings and improved communication through digital systems (Rogers, 2003), will help EOS tailor their communication strategies and offerings to effectively encourage client adoption.

By applying these frameworks, we can gain a deeper understanding of, EOS's adaptation strategies. How EOS is innovating and adapting its service portfolio to include digital communication solutions like Voice over Internet Protocol, Unified Communication, and cloud-based systems.

Client decision-making processes: The factors influencing EOS's clients' decisions to transition from traditional analogue systems to embrace new digital solutions and the factors affecting EOS themselves influencing to adapt the services they offer.

2.4 Summary

This chapter explored the challenges and opportunities associated with the transition from analogue to digital telecommunication systems for organizations in the telecommunications industry. It highlighted the theoretical frameworks that can inform this transition process. The chapter emphasizes the importance of understanding the theoretical frameworks and key trends shaping the transition from analogue to digital telecommunication systems. By embracing these advancements, businesses like EOS can gain a competitive advantage and achieve sustainable growth. This chapter covered literature review the next chapter is on the research methodology and will include the introduction and research design, population sampling, data collection and any ethical considerations made.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This mainly chapter focuses on the research methods and procedures to be used to accomplish the study's objectives. It outlines the methodological approach which will be used to investigate the adaptation to the advancements in telecommunication technologies of Entire Office Systems (EOS). The chapter discusses the research design, the chosen population and sample of the study and, the sampling procedures. The chapter will also outline the data collection instruments, describes how the data will be analysed and organised, and finally any ethical considerations arising from the study.

3.2 The Research Design

A research design is a framework to respond to the question posed by the research question (McCombes, 2021). This is done through the use of empirical data. It serves as a blueprint for defining the topic, research location, and data collection process. This is useful for answering research questions. The goal of a robust research design is to provide reliable results.

Creswell (2016) identified three main research design approaches which are qualitative, quantitative and mixed methods. Qualitative research explores the nuances of a phenomenon, aiming to understand its various sides through in-depth interpretation (Queiro et al., 2017). Quantitative research, conversely, focuses on measuring and analysing data statistically to test hypotheses and support knowledge claims (Kumar, 2011).

The researcher has decided on a mixed methods design, combining both qualitative and quantitative approaches to gain a comprehensive understanding of EOS's adaptation to digital telecommunication technologies. This approach aligns with the strengths identified by Johnson and Onwuegbuzie (2004) who highlight its ability to deepen qualitative results with quantitative data, validate quantitative findings with qualitative insights and offer a more flexible approach to a research design.

 A major principle of using a mixed-methods research approach is that when researchers collect data using different strategies, approaches, and methods, the mixture or combination will result in complementary strengths and nonoverlapping weaknesses (Johnson & Turner, 2003).

 The study employs a case study design. The qualitative approach allows for an in-depth exploration of EOS's adaptation process, considering the company's unique experiences and challenges. The case study will explore how EOS has transitioned from analogue PABX systems to digital solutions, the factors influencing this shift, and the outcomes of their adaptation efforts. As per Queiro et al. (2017), placing emphasis on identifying the situation rather than a mathematical model, so this methodology will provide quality research platform to observe the adaption of EOS to the technological developments in the telecommunications industry.

Documents such as annual reports and marketing materials if available will offer valuable insights into EOS's transition process (Yin, 2018). The quantitative component of the study will utilize existing business data from EOS to assess the measurable outcomes of their digital transformation. This data may include records of the customers they have and their chosen telecommunications solution, this data will

help us quantitatively assess the transition from analogue to digital solutions among the clients.

By combining qualitative and quantitative data, this mixed methods design aims to provide a richer and more complete understanding of EOS's adaptation process.

3.3 Population and Sampling

Population is defined as a count data type that measures the size of the entire group that should be studied (Banerjee and Chaudhury, 2010). It is not directly related to a group of people but can involve species, organisms, countries, events, etc. The target population should be relevant to the study and capable of producing the data that is consistent with the research question. The population of this study are the employees from Entire Office Systems.

In research, sampling allows researchers to study a manageable group (sample) that reflects the characteristics of the entire population of interest (Creswell & Creswell, 2018). According to Taherdoost (2016), researchers typically employ sampling techniques to select a representative population to achieve research objectives due to limitations in analysing all elements within a population. Gentles et al (2015) describes in qualitative research as the identification of relevant datasets from which information will be drawn to satisfy research objectives.

In this research, the researcher utilized purposive sampling on Entire Office Systems staff as stated in the case study declaration. The purposive sample will focus on key informants within the EOS who possess in-depth knowledge about the company's transition to digital telecommunications.

The researcher will collect data up to the point of information saturation hence the sample size will be determined by the point of saturation of the collected data. In purposive sampling, researchers collect data until reaching saturation, the point at which no new information or themes emerge from additional participants (Neuman, 2007).

3.4 Data Collection Instruments

According to Grey (2018), primary data enables information to be free of bias since it is first-hand knowledge. Using semi structured interviews, the researcher will collect primary data which is data that is more precise for the research and first-hand knowledge, in order to gather relevant information from the study participants.

The primary data collection method will be semi-structured interviews. which allows for flexibility in guiding the conversation while enabling participants to expand on their thoughts and experiences.

According to Kumar (2019), secondary data is data that has already been collected and is readily available from other sources The following are the primary secondary data sources used in this study, the first being company annual reports, company marketing material and any other relevant company documents.

3.6 Data Collection Procedure

The process of gathering data was divided into three sections: pre-fieldwork, fieldwork, and post fieldwork. Before drafting the research proposal, the researcher sought permission from Africa University and Entire Office Systems to conduct the

research, Informed consent forms will be provided, outlining the research objectives, data collection procedures, and confidentiality measures.

Potential EOS participants will be identified and contacted to seek their consent for participation. Using a purposive sampling procedure, the interviews will be conducted with the chosen sample group.

Semi-structured interviews will be conducted face-to-face or virtually, depending on participant preference. Interviews will be audio-recorded with permission and transcribed later for analysis. The data gathered from the field will be documented, presented, interpreted and analysed for the study's results and conclusions during post-field work. Secondary data will be collected from publicly available sources and company documents.

3.7 Analysis and Organization of Data

The data analysis in the study will involve multiple processes due to the research design being a mixed methods design. For the qualitative data using a qualitative approach Thematic analysis will be employed to identify recurring themes and patterns within the interview data. Transcripts will be coded and categorized to understand key aspects of EOS's adaptation process. Secondary data will be combined with interview findings to improve the validity and credibility of the research.

Meanwhile, for the quantitative data, the study will process, analyse, and interpret the data using a quantitative approach, in quantitative data analysis, mean and standard deviation descriptive analyses will be carried out using the statistical software. The analysed data will be shown in tables with frequency distribution, means, percentages, and standard deviations if applicable.

3.8 Ethical Consideration

A code of ethics must be adhered to by the researcher when conducting a study. Before starting the investigation, the researcher needed permission from the relevant organizations which were Africa University and Entire Office Systems. Informed consent will be obtained from all participants before data collection. As a result, all participants should feel comfortable answering the questions after the researcher gives them an explanation of the purpose of the study.

Special measures will be taken to ensure that human volunteers in the study are not harmed in any way and that the research is not being done for personal gain (Bernard, 2008).

Other ethical concerns that were raised about the investigation were privacy and anonymity, participation that is voluntary, and respondent fairness. Interview data will be stored securely and only accessible to the researcher, also the data will only be used for research purposes and nothing else.

The participants in the study will be allowed to leave at any time if they feel uncomfortable continuing. The investigator additionally pledges that the information acquired would be kept in strict confidence and would only be used for research purposes. Anonymity and confidentiality will be ensured throughout the research process.

3.9 Summary

The research approach that the investigator employed to conduct the study was the main topic of this chapter. The research design was discussed. We also discussed the sample strategy and its justification, as well as the population under investigation. The methods employed to gather the data were justified and described. The explanation for the researcher's selection of research tools was also included. The methods of data analysis and organisation of data were also discussed. Finally, the researcher notes the ethical considerations they had to be aware of while conducting the research. In the following chapter, we will look at the Research Data Presentation, Analysis and Interpretation.

CHAPTER 4: DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1   Introduction

The primary objective of this chapter is to present the analysis and results of the study conducted on Entire Office Systems adaptation to advancements in telecommunication technologies. The purpose of this study was to evaluate how EOS transitioned from analogue telecommunications to newer digital and IP-based communication technologies while remaining competitive in the advancing telecommunications industry. The Semi-Structured Interview findings are organized around the central research questions and linked to the corresponding interview questions.

4.2 Data Presentation and Analysis

Thematic analysis was employed to analyse the qualitative data collected from semi-structured interviews, interview guide appendix 3. The researcher manually recorded the interviews on their smartphone and then the researcher manually coded the interview transcripts to identify recurring patterns, themes, and insights. This process involved familiarization with the data, generating initial codes, searching for themes, reviewing themes, and defining and naming the themes. The data analysis aimed to align the identified themes with the central research questions of the study. The data is presented based on the central research questions of the study. Each research question is addressed through the themes identified during the analysis, supported by participant responses.

Demographic Characteristics of Participants

The study included eight participants (P1–P8) from EOS, representing different roles and departments within the organization. The participants' demographic characteristics are summarized in **Table 4.1.**

Participant Code	Role	Years of Experience
P1	Technician	25 years
P2	Technician	15 years
P3	Technician	7 years
P4	Technician	10 years
P5	Technician	3.5 years
P6	Technician	2 years
P7	Technical Intern	1 year
P8	Sales & Marketing	5 years

Table 4.1 Demographic Characteristics of Participants

The participants represented a diverse range of experiences and perspectives, providing a holistic understanding of EOS's adaptation to telecommunication advancements.
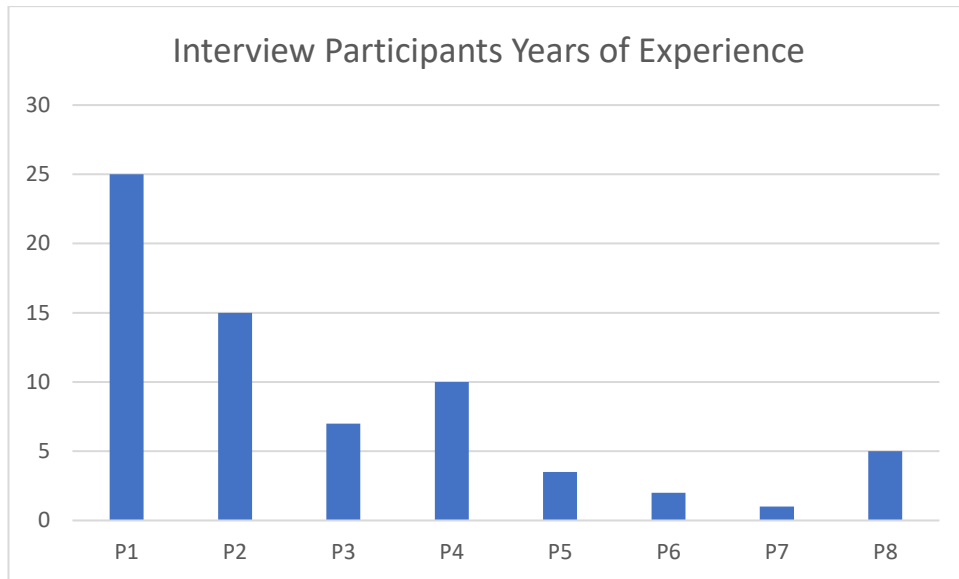
Figure 4.1

4.2.1 What are the emerging technologies that EOS has successfully adopted and added to their IT and telecommunications solutions since their adaptation from analogue systems?

Interview Questions Contributing to This Research Question:

Q5: What specific digital technologies has EOS adopted in recent years?

Themes Identified:
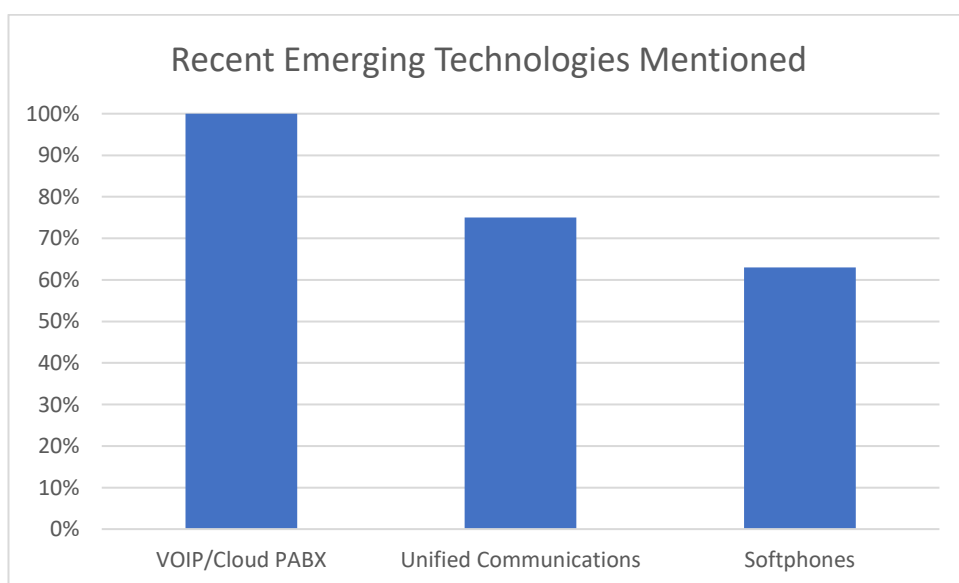
Figure 4.2

1. **Adoption of VoIP and Cloud PABX** (8/8 participants, 100%):

EOS transitioned from analogue PABX systems to VoIP and Cloud PABX systems, enabling flexible and scalable communication solutions, all of the interviewed employees gave response that agreed on this transition, in response to Q5.

"We've adopted various technologies, including VoIP and Cloud PABX, which have significantly changed how we approach telecommunication solutions" **P3**.

"The shift to cloud solutions has allowed us to offer more flexible and scalable options, which are crucial in today's market" **P4**.

2. **Integration of Unified Communications (UC) Platforms** (6/8 participants, 75%):

EOS incorporated UC platforms, combining voice, video, and messaging into a single solution for their clients, 75% of the EOS employees mentioned UC Platforms as a new technology they have added as a communications solution to their clients, in response to Q5.

"We have also integrated Unified Communications (UC) platforms to provide clients with integrated communication solutions" **P5**.

3. **Use of Softphones** (5/8 participants, 63%*)*:

EOS incorporated Soft Phones, which are software applications that allows users to make voice calls over the internet using computers or smartphones. They simulate the

functionality of a traditional telephone, enabling features such as call handling, video conferencing, and messaging. 63% of the EOS employees mentioned softphones as a new technology the company added to their offering for clients, in response to Q5.

"Softphone functionality is in demand from our large clients as it reduces the need for physical handsets" **P4**.

4.2.2 How extensively has EOS integrated these new emerging technologies into their regular business operations and offerings?

Interview Questions Contributing to This Research Question:

Q7: How have these new technologies impacted EOS's business operations?

Q5: What specific digital technologies has EOS adopted in recent years?

Q6: What was the reasoning behind selecting these particular digital solutions?

Themes Identified:
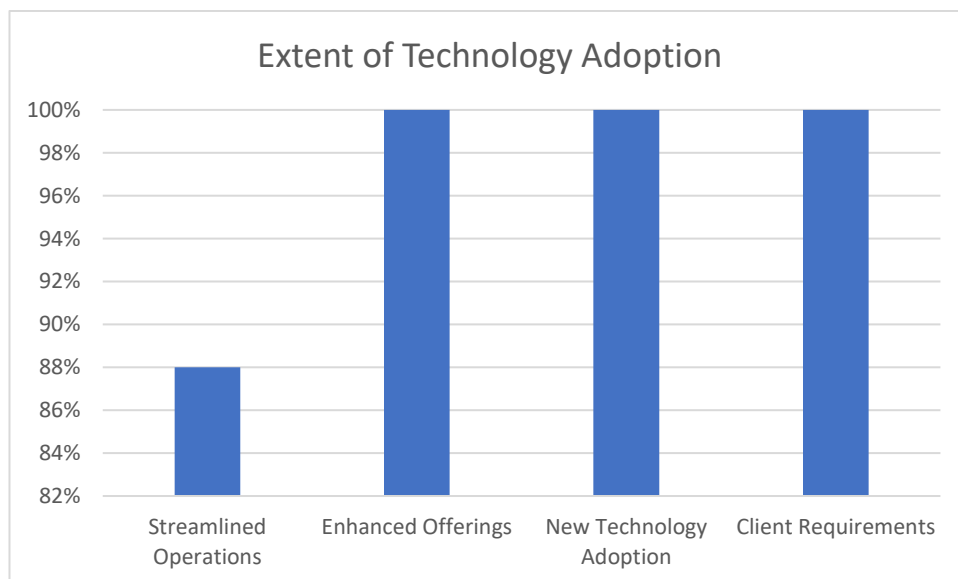
Figure 4.3

1. **Streamlining Internal Operations** *(7/8 participants, 88%)*:

88% of the EOS employees mentioned how their modern telecommunications solutions have resulted in improved work flows for the employees, Remote management tools and automation improved efficiency, in response to Q7.

Internally, the transition has improved the efficiency of EOS operations, enabling remote system management and faster troubleshooting" **P1**.

2. **Enhanced Client Offerings** *(8/8 participants, 100%)*:

100% of the EOS employees mentioned improved client offerings in response to Q7, modern digital Technologies were seamlessly integrated into client solutions.

"Our marketing strategies now focus heavily on promoting the flexibility and scalability of cloud solutions" **P8**.

3. **Adoption of New Technologies** (8/8 participants, 100%):

100% of the EOS mentioned at least one new communications technology among VoIP, IP and cloud PABX, and Unified Communications Technology that, the company had adopted to its telecommunications solutions in response to Q5.

"We've adopted various technologies, including VoIP and Cloud PABX, which have significantly changed how we approach telecommunication solutions" **P3**.

"We have also integrated Unified Communications (UC) platforms to provide clients with integrated communication solutions." **P5**.

4. **Industry Trends and Client Specific Needs** (8/8 participants. 100%):

100% of the EOS employees mentioned the company adopts the technologies that it adopts due to adapting to industry trends and meeting client specific needs in response to Q6.

'' As time progressed, it became essential for EOS to adopt these technologies to remain competitive in the market and improve the quality of service offered to customers. For example, moving from analogue to IP-based PABX allowed us to offer more advanced features and better scalability.'' **P1**.

4.2.3 What are the main benefits EOS and their clients have experienced from transitioning to digital and IP-based PBX systems?

Interview Questions Contributing to This Research Question:

Q7: How have these new technologies impacted EOS's business operations?

Q8: Can you describe changes in customer satisfaction since adopting digital solutions?

Themes Identified:
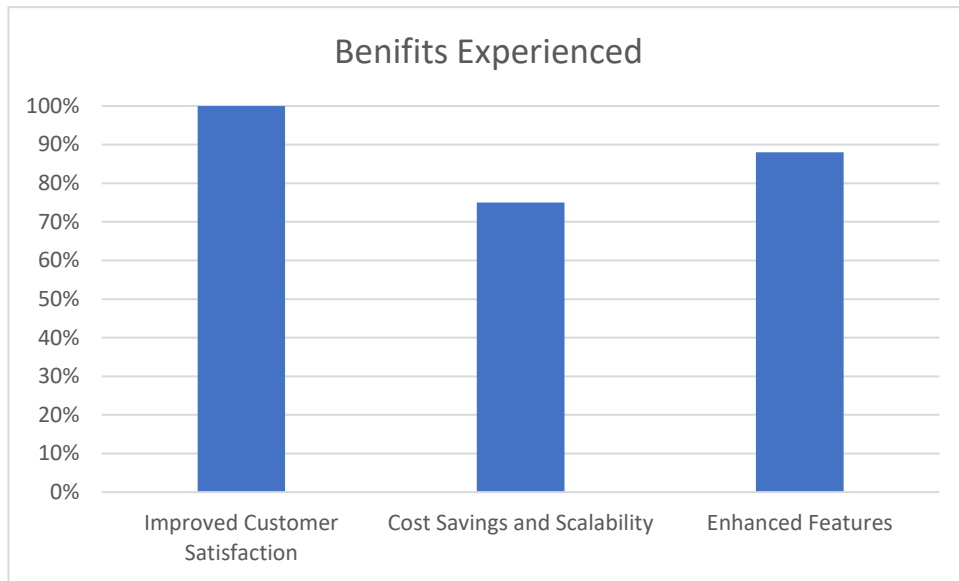
Figure *4.4*

1. **Improved Customer Satisfaction** (8/8 participants, 100%):

All the EOS employees 100%, agreed that clients reported higher satisfaction due to advanced features and flexibility offered by their modern communication solutions, in response to Q7 and Q8.

In response to Question 7, "Clients have expressed appreciation for the flexibility these systems provide, especially in adapting to their growing business needs." **P2**.

In response to Question 8, "Clients often express excitement and curiosity when we introduce new telecommunications solutions." **P5**.

2. **Cost Savings and Scalability** *(6/8 participants, 75%)*:

75 % of EOS employees mentioned reduced operational costs and cost savings for both the company and their clients in their responses to Q7.

Digital technologies like VoIP reduce operational costs by using internet connections instead of traditional phone lines." **P6**.

3. **Enhanced Features** (7/8 participants, 88%*)*:

88% of the Interview responses mentioned enhanced features such as call analytics and mobile integration improving client operations, in their response to Q7.

"Real-time call analytics and mobile integration have been particularly well-received by clients." **P3**.

4.2.4 What challenges did EOS encounter during the transition, and how did they address and overcome them?
Interview Questions Contributing to This Research Question:

Q4: What were some of the challenges faced by EOS due to the shift towards digital solutions?

Q9: What strategies did EOS employ to facilitate employee adoption of these new technologies?

Themes Identified:
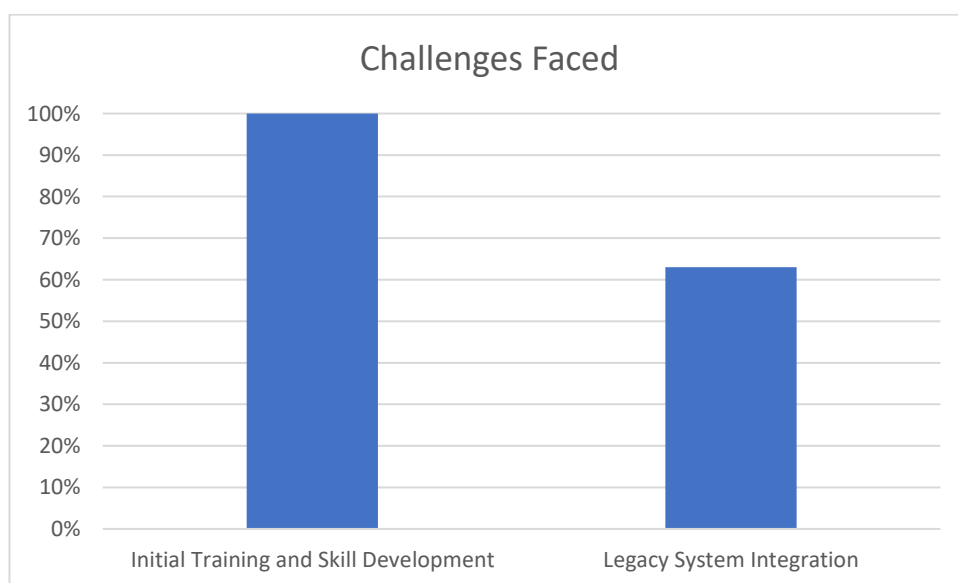
Figure 4.5

1. **Training and Skill Development** *(8/8 participants, 100%)*:

100% of the EOS employees mentioned extensive training programs being implemented, in response to both Q4 and Q9.

In response to question 4, "Training both our technicians and clients' employees on new systems was a significant challenge. Many customers were unfamiliar with digital interfaces and required hands-on guidance. ", **P2**.

In response to question9, "We conducted hands-on training sessions and workshops to ensure all employees were comfortable with the new systems", **P1.**

2. **Legacy System Integration** (5/8 participants, 63%):

63% of the EOS employees mentioned creative solutions being required for ensuring compatibility between new modern telecommunications systems and legacy systems, in response to Q4.

"We had to ensure that legacy systems remained operational, which often required creative solutions and additional wiring.", **P2**.

4.2.5 What are the key factors driving EOS's customization of IT and telecommunications solutions for different industries and clients?

Interview Questions Contributing to This Research Question:

Q12: How do you think EOS can continue to adapt to these future advancements?

Q13: Is there anything else you would like to share about EOS's adaptation to digital telecommunication technologies?

Themes Identified:
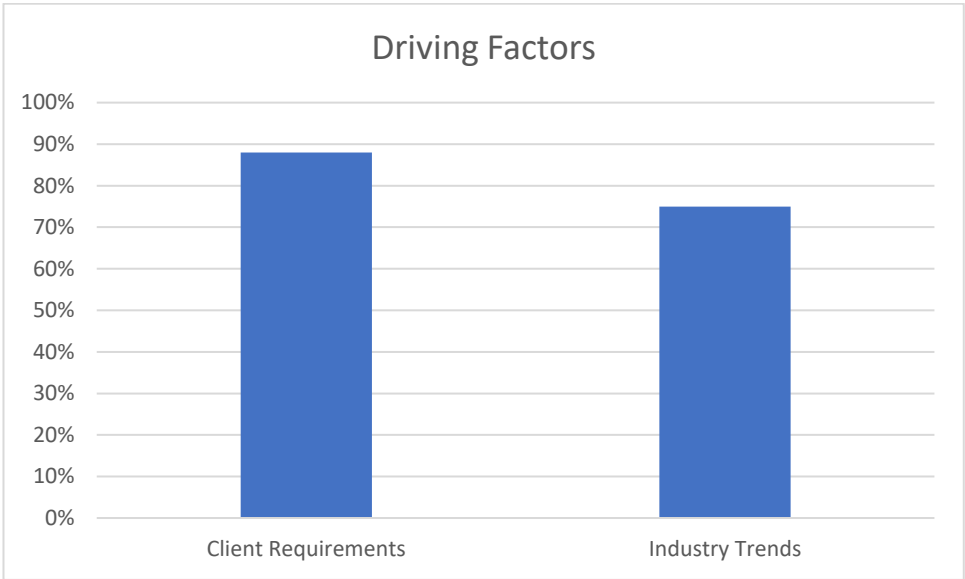
Figure 4.6

1. **Client-Specific Needs** *(7/8 participants, 88%)*:

88% of the EOS employees mentioned developing Solutions tailored to unique client requirements, in response to Q12.

"Staying customer-focused and tailoring solutions to meet specific client needs will help EOS maintain their position as a leader in the industry.", **P2**.

2. **Industry Trends** (6/8 participants, 75%):

75 % of the EOS employees mentioned adaptation to market trends and changes to anticipate client needs, in response to Q13.

"EOS's success has always been rooted in its ability to adapt to change and prioritize customer satisfaction. As technology continues to evolve, our focus will remain on staying ahead of the curve and delivering value to clients.", **P2**.

4.2.6   Analysis   of   Existing   Customer   Chosen   PABX   Solutions. Table 4.2 below summarizes the distribution of PABX solutions adopted by EOS clients, based on their chosen telecommunications Solution. While all clients have IP-capable systems, their configurations varied depending on their operational needs:

PABX Configuration	Percentage of Clients
Hybrid (Analogue + IP)	74%
Full IP	17%
Analogue with IP Capabilities	9%
Total	**100%**

Table 4.2 Preferred Client Solutions

Figure 4.7

31
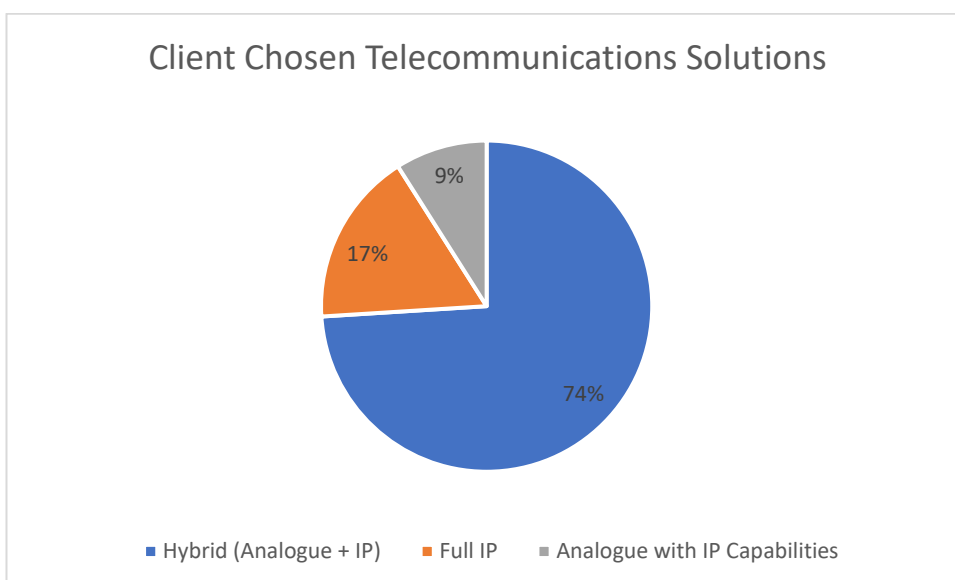
1. **Hybrid Systems (74%)**:

The majority of clients use hybrid systems, combining legacy analogue infrastructure with IP-based features.

2. **Full IP Adoption (17%)**:

17% of the clients have fully adapted IP-based systems, prioritizing advanced features such as Unified Communications (UC) and remote management.

3. **Analogue (9%)**:

A minority have IP capable systems but strictly use them with analogue technologies only.

4.3 Interpretation and Discussion

4.3.1 What are the emerging technologies that EOS has successfully adopted and added to their IT and telecommunications solutions since their adaption from analogue systems?

All EOS employees (100%) identified at least one new technology, such as VoIP, UCM, IP, or cloud PABX, when asked about recent telecommunications technology adoptions by the company, demonstrating a clear effort to integrate contemporary solutions into their offerings.

Analysis of EOS client data regarding their technology choices revealed that the company provides Internet Protocol (IP) cable PABX devices to all clients while also maintaining support and integration for analogue technology for those with ongoing requirements, as detailed in Table 2. The data further indicates that 17% of clients have

fully adopted the latest IP and cloud PABX offerings, whereas a significant majority (74%) utilize a hybrid system that combines both IP and analogue technology support. This reflects a common transitional stage where organizations retain existing infrastructure while incorporating digital functionalities like VoIP or cloud integration.

When asked about the rationale behind adopting these recent technologies, all employees (100%) cited the need to keep pace with market trends and meet the evolving requirements of their clientele. As a prominent entity within their sector, EOS prioritizes the needs of their clients when deciding which technologies to incorporate into their service portfolio.

Regarding the impact of new technology adoption on business operations, EOS employees reported that these technologies streamlined internal processes (88%) and resulted in the company providing improved services to their customers (100%). These findings collectively illustrate that EOS has extensively integrated new technologies into their offerings, further clarifying the motivations behind their technology choices and the positive effects these choices have had on the company's operations.

The prevalence of hybrid adoption (74% IP-analogue systems) aligns with Rogers' (2003) concepts of trialability and complexity, where organizations gradually introduce digital solutions to minimize disruption. The unanimous emphasis from employees on market trends resonates with the concept of observability, where clients witness the success of competitors using digital systems (Rogers, 2003). The Resource-Based View (RBV) (Barney, 1991) further elucidates EOS's success, suggesting that their internal capabilities, such as well-trained technicians and client-focused research and development, have enabled the seamless integration of cloud and IP technologies, transforming these resources into a significant competitive advantage.

This observation is consistent with academic literature that highlights the critical importance of scalability and flexibility in successful digital transitions (Farooq & Zhang, 2015).

4.3.2 How extensively has EOS integrated these new emerging technologies into their regular business operations and offerings?

100% of EOS employees surveyed identified at least one new technology among VoIP, UCM, IP, and cloud PABX as recently adopted by the company, demonstrating a proactive approach to integrating new technologies into their offerings.

Analysis of EOS data revealed that all clients were offered IP cable PABX devices, while analogue technology support and integration were maintained for those requiring it, as shown in Table 4.2. Notably, 17% of clients fully adopted the latest IP and cloud PABX offerings, while 74% utilized a hybrid system combining IP and analogue technologies, reflecting a transitional phase where organizations retain existing hardware while incorporating digital functionalities like VoIP or cloud integration.

When asked about the reasons for adopting new technologies, all employees cited the need to keep pace with market trends and client requirements. As an industry leader, EOS prioritizes client needs when selecting technologies for adoption.

EOS employees reported that the adoption of new technologies streamlined internal operations by 88% and led to improved customer service across the board. These findings highlight the extensive integration of new technologies into EOS's offerings, providing insights into the rationale behind their choices and the positive impact on the company.

The prevalence of hybrid adoption (74% IP-analogue systems) aligns with Rogers' (2003) trialability and complexity factors, where businesses gradually phase in digital solutions to minimize disruption. The employees' unanimous emphasis on market trends aligns with the concept of observability, where businesses witness competitors' success with digital systems (Rogers, 2003). The Resource-Based View (RBV) (Barney, 1991) further explains EOS's success, as their internal capabilities, such as trained technicians and client-centric R&D, enabled seamless integration of cloud and IP technologies, transforming these resources into a competitive advantage. This aligns with the literature's assertion that scalability and flexibility are crucial in digital transitions (Farooq & Zhang, 2015).

4.3.3 What are the main benefits that EOS and their clients have experienced from their transition to the new digital and IP-based PBX systems?

The research found that all the EOS employees 100% agreed that the adoption of New digital and IP based PABX technologies has resulted in higher customer satisfaction for the company. This customer satisfaction can be attributed to the customers being satisfied with their needs and requirements being often meet with quality and modern communication solutions that they are provided, with advanced features and flexibility added to their offering.

The research also found out that, 75% of EOS employees mentioned reduced operational costs and cost savings for both the company and their clients. Modern telecommunications solutions are resulting in reduced operational costs for the clients as technologies like VOIP which replaced PSTN lines offer better value to the clients and are also easily scalable while also offering great improvements and features when

compared to their analogue PSTN counterpart. Benefits such as these are not only limited to VoIP technologies but can also be found with the Unified Communications Solutions, IP and Cloud PABX these offerings provide great cost saving and improved scalability for the EOS clients.

88% of the Interview responses mentioned enhanced features as a benefit of adopting new technologies. Both EOS and their clients have benefited from these additional modern features. The clients gain additional features to their existing services improving their user experiences while EOS and their technicians also reap the benefits on new ways of troubleshooting and fixing issues for the clients for example remote access technology built into new systems. All of these added features have resulted in, increased client satisfaction.

The reported customer satisfaction and cost savings resonate with the Technology Acceptance Model (TAM) (Davis, 1989), where perceived usefulness (e.g., VoIP's cost efficiency) and ease of use (e.g., UC's unified interface) drive adoption. Enhanced features like remote troubleshooting align with the literature's emphasis on digital systems' advanced functionalities (Gupta et al., 2012). The RBV framework (Barney, 1991) also applies: EOS's investment in technician training directly contributed to improved service quality and client satisfaction, reinforcing the link between internal capabilities and external benefits.

4.3.4. What challenges did EOS encounter during the transition, and how did they address and overcome them?

The research indicated that all EOS employees unanimously agreed that the integration of new digital and IP-based PABX technologies has led to improved customer

satisfaction for the organization. This positive customer feedback can be attributed to customers feeling that their needs and requirements are consistently met through high-quality and contemporary communication solutions, which offer advanced capabilities and increased flexibility.

Furthermore, the research revealed that 75% of EOS employees reported a decrease in operational costs and financial savings for both the company and their clientele. Modern telecommunications solutions are contributing to lower operational expenses for clients, as technologies such as VOIP, which replaced traditional PSTN lines, provide enhanced value and are easily adaptable to changing needs, while also offering significant improvements and features compared to their analogue PSTN counterparts. These advantages are not limited to VoIP technologies; Unified Communications Solutions, IP, and Cloud PABX offerings also provide substantial cost savings and improved scalability for EOS clients.

The interviews showed that 88% of respondents identified enhanced features as an advantage of adopting new technologies. Both EOS and their customers have experienced benefits from these additional modern functionalities. Clients have gained access to more features within their existing services, leading to improved user experiences, while EOS and their technicians have also benefited from new methods of diagnosing and resolving client issues, such as remote access technology integrated into the new systems. These added features have collectively resulted in greater client satisfaction.

The reported levels of customer satisfaction and cost reductions are consistent with the Technology Acceptance Model (TAM) (Davis, 1989), where the perceived usefulness (e.g., the cost efficiency of VoIP) and ease of use (e.g., the unified interface of UC)

drive adoption. Enhanced features, such as remote troubleshooting, are also in line with existing literature that emphasizes the advanced functionalities of digital systems (Gupta et al., 2012). The Resource-Based View (RBV) framework (Barney, 1991) is also relevant: EOS's investment in training its technicians has directly contributed to improved service quality and client satisfaction, highlighting the connection between internal capabilities and external benefits.

4.3.5 What are the key factors driving EOS's customization of IT and telecommunications solutions for different industries and clients?

The study found that 88% of EOS employees concurred that to ensure the company's ongoing adaptation within the telecommunications sector, maintaining a customer-centric approach and staying informed about industry trends, as they have historically done, is essential. By basing their technological adaptations on the requirements of their clientele, they can sustain their position as a leading entity in the industry. Furthermore, 75% of EOS employees also agreed that to maintain their status as an industry leader, EOS should continue to monitor and respond to industry trends in their technology adoption strategies, enabling them to readily anticipate and adapt to the evolving needs of their clients.

EOS's focus on the client aligns with Rogers' (2003) principle of compatibility, which suggests that solutions are more likely to be adopted if they are consistent with the existing values, past experiences, and needs of the adopters. The emphasis on industry trends reflects the principles of Disruption Theory (Christensen & Raynor, 2003), as anticipating client needs allows EOS to proactively respond to potential market shifts.

The Resource-Based View (RBV) (Barney, 1991) also provides an explanation for this: EOS's capacity to tailor solutions to specific client requirements originates from the organization's accumulated knowledge of diverse industries, a valuable resource that underpins their competitive advantage. This observation is consistent with the emphasis found in existing literature on the importance of agility within the telecommunications industry (Cisco, 2022).

4.4 Summary

This chapter presented the results of the study, analysed how EOS transitioned from analogue to digital systems, highlighting the themes and insights derived from the interviews. Key findings include the dominance of hybrid PABX solutions, improved client satisfaction through advanced features, and the critical role of training in overcoming resistance, the findings indicate that EOS has successfully transitioned to digital telecommunications technologies, overcoming challenges and delivering significant benefits to clients. The next chapter will summarize and conclude the findings of the research and provide recommendations for future strategies.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This research aimed to investigate how Entire Office Systems (EOS), a Zimbabwean telecommunications company, adapted its services from legacy analogue PABX systems to modern digital and IP-based solutions to remain competitive in a rapidly evolving industry. The study explored the technologies adopted, benefits and challenges of the transition, customization strategies for clients, and the broader implications for SMEs in the telecommunications sector. Chapter 4 revealed that EOS successfully integrated VoIP, Cloud PABX, and Unified Communications (UC) platforms, overcoming challenges through training and client-centric innovation. This chapter summarizes key findings, discusses their implications, and provides actionable recommendations for EOS and similar organizations.

5.2 Discussion

This study aimed to investigate how Entire Office Systems (EOS) transitioned from legacy analogue PABX systems to digital and IP-based solutions to remain competitive in Zimbabwe's telecommunications sector. The research objectives outlined in Chapter 1 were addressed through semi-structured interviews with EOS the employees, whose insights revealed critical patterns in technology adoption, benefits, challenges, and customization strategies. The findings confirm the hypotheses proposed and align with established theoretical frameworks.

5.3 Conclusions

5.3.1 Adaptation of Services for Sector Competitiveness

EOS successfully adapted its services by adopting VoIP, Cloud PABX, and Unified Communications (UC) platforms, aligning with industry trends and client demands. Strategic training programs for employees and collaboration with technology providers enabled seamless integration of these technologies. By prioritizing client-centric innovation (e.g., hybrid systems for phased transitions), EOS retained its competitive edge in Zimbabwe's telecommunications sector.

5.3.2 Benefits and Challenges of the Digital Transition

The transition yielded significant benefits: 100% client satisfaction, 75% cost savings, and 88% adoption of enhanced features (e.g., mobile integration, remote management). Challenges included legacy system integration (63% of participants) and training gaps, which were mitigated through employee upskilling and partnerships with technology providers. Hybrid systems (74% adoption) emerged as a pragmatic solution to balance innovation with legacy infrastructure.

5.3.3 Customization of Telecommunications Solutions

EOS tailored solutions to meet client-specific needs (88% of participants) and industry trends (75%). For example, hybrid systems catered to clients requiring gradual transitions, while UC platforms addressed demands for unified workflows in sectors like finance and healthcare. This customization aligns with Christensen's Disruption Theory, as EOS anticipated client needs rather than reacting to market shifts.

5.3.4 Utilization and Impact of New Technologies

The adoption of VoIP, Cloud PABX, and UC platforms streamlined EOS's operations (88% efficiency gains) and enhanced client offerings. Digital tools enabled remote troubleshooting and real-time analytics, directly improving service quality. Crucially, the findings counter assumptions about PABX obsolescence, demonstrating its relevance when modernized with IP and cloud capabilities.

5.3.5 Rate of Technology Adoption by Clients

Analysis of client preferences revealed 74% hybrid systems (analogue + IP), 17% full IP adoption, and 9% analogue-only use. This phased adoption reflects Rogers' (2003) trialability and complexity principles, where clients prioritized minimal disruption. Industries with stringent uptime requirements (e.g., healthcare) favoured hybrid models, while tech-driven sectors embraced full IP solutions.

5.4 Implications

5.4.1 Theoretical Implications

The study validates and extends key theoretical frameworks in technology adoption. Rogers' (2003) Diffusion of Innovation (DOI) Theory is reinforced by the dominance of hybrid systems (74% adoption), illustrating how SMEs in emerging markets prioritize gradual transitions to manage complexity and trialability. Furthermore, the findings enrich the Resource-Based View (RBV) by demonstrating how EOS leveraged internal capabilities—such as technician expertise and client-centric R&D—to convert limited resources into sustained competitive advantages, even in resource-constrained environments. Christensen's Disruption Theory (2003) is also

nuanced by the findings: rather than being displaced by digital disruptors, EOS proactively innovated through hybrid solutions and customization, challenging the assumption that incumbents are inherently vulnerable to disruption.

5.4.2 Practical Implications

For EOS, the study underscores the strategic value of hybrid systems as a transitional tool to retain clients reliant on legacy infrastructure while integrating digital features. The company should continue investing in employee upskilling, mirroring the 100% emphasis on training observed in the findings, to address future technological shifts such as AI-driven unified communications. Similarly, SMEs in the telecommunications sector can adopt EOS's phased transition model, balancing legacy compatibility with digital scalability. Collaboration with technology providers, as demonstrated by EOS's success in overcoming integration challenges, offers a replicable strategy for mitigating technical and financial barriers during digital transitions.

5.4.3 Sectoral Implications

The telecommunications industry must recognize the enduring relevance of hybrid PABX systems in emerging markets, where analogue infrastructure remains integral to operational continuity. Providers should prioritize backward-compatible digital solutions to cater to transitional demands. Additionally, EOS's agility in aligning innovations with client needs highlights how SMEs can compete without large capital investments, emphasizing client-centricity over disruptive overhauls. This model

challenges the notion that technological advancement necessitates abrupt shifts, advocating instead for adaptive, incremental modernization.

5.5 Recommendations

5.5.1 For Entire Office Systems (EOS)

Building on the success of its hybrid systems (74% adoption), EOS should prioritize the development of phased transition plans tailored to clients still reliant on analogue infrastructure. This approach aligns with Rogers' (2003) trialability principle, ensuring minimal disruption while fostering trust in digital solutions. Expanding training programs to include emerging technologies is critical, given that 100% of participants emphasized upskilling as a key driver of successful integration. EOS can continue leveraging its client-centric innovation model to maintain its competitive edge, while continuing collaborations with technology providers to refine legacy-compatible solutions to further solidify its market leadership.

5.5.2 For SMEs in the Telecommunications Sector

SMEs should adopt EOS's hybrid model as a blueprint for balancing legacy systems with digital transformation, particularly in markets where analogue infrastructure remains prevalent. The dominance of hybrid configurations (74% of EOS clients) underscores their viability in minimizing operational disruptions while delivering cost savings. Partnering with technology providers, as EOS did to address legacy integration challenges, can mitigate technical and financial barriers.

Furthermore, SMEs should prioritize client-centric customization, mirroring EOS's strategy of aligning solutions with industry-specific needs. This agility, coupled with continuous employee training, will enable SMEs to replicate EOS's success in turning limited resources into competitive advantages.

5.6 Recommendations for Further Research

Further research should take into account the following areas surrounding the Adaptation to Advances in Telecommunication Technologies.

First, replicating this research with a broader sample of SMEs across Zimbabwe including startups, small enterprises, and industry leaders would enhance the generalizability of findings. While this study focused on EOS, expanding the scope to diverse market players could reveal nuanced patterns in technology adoption and resilience strategies, particularly in resource-constrained contexts.

Second, longitudinal studies tracking the long-term impacts of digital transitions on client retention, revenue growth, and operational efficiency would provide valuable insights into the sustainability of hybrid models (74% adoption in this study). Such research could assess whether phased transitions yield lasting competitive advantages or merely serve as interim solutions.

Third, cross-regional comparisons across African markets could uncover how cultural, economic, and infrastructural factors shape technology adoption. For instance, comparing Zimbabwean SMEs with counterparts in South Africa, Kenya or Nigeria which might highlight region-specific barriers or opportunities in telecommunications modernization.

Finally, investigating emerging technologies like AI-driven analytics and IoT-enabled PABX systems could advance understanding of next-generation telecommunications solutions. As EOS clients increasingly prioritize advanced features (88% adoption of enhanced functionalities), exploring AI's role in predictive maintenance or IoT's integration with UC platforms could redefine scalability and customization in the sector.

To address this study's limitations, future research should incorporate macroeconomic variables e.g., currency fluctuations or regulatory shifts and expand geographically beyond Harare to evaluate the broader applicability of hybrid systems and client-centric models

References:

Christensen, C. M., & Raynor, M. E. (2003). The innovator's solution: Creating and sustaining successful growth. Harvard Business School Press.

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

Athey, S., & Ritzberger, K. (2017). Technology adoption and firm growth. Review of Economics and Statistics, 99(4), 1003-1019.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.

Cisco. (2022, June 01). The network: A catalyst for digital transformation. Cisco website. https://www.cisco.com/c/dam/m/en_us/never-better/assets/files/Cisco_on_Cisco_Digital_Business_Transformation_Interactive_2_1.pdf

Farooq, M. U., & Zhang, L. (2015). The impact of collaborative technologies on firm performance: A meta-analysis. Journal of Business Research, 68(12), 4233-4242.

Frost & Sullivan. (2024). The future of unified communications in [Industry].

Gartner. (2021, June 01). Key considerations for migrating to a cloud-based unified communications solution. Gartner website. https://www.gartner.com/reviews/market/unified-communications-as-a-service-worldwide

Gartner. (2023, February 22). Unified communications (UC) benefits and features. Gartner website. https://www.gartner.com/reviews/market/unified-communications

Green, S., Carmeli, A., & Halevy, Y. (2019). The effects of perceived risk and observability on user adoption of cloud computing in organizations. Information Systems Journal, 29(1), 127-153.

Gupta, M., Seetharaman, A., Raj, S. P., & Jain, S. (2012). A comprehensive cost-benefit analysis of VoIP for enterprises. International Journal of Computer Applications, 47(22).

Machina Research. (2024). The impact of unified communications on business productivity.

McAfee, A., Weinberg, S., & Varian, H. R. (2018). Digital security: A primer (2nd ed.). W. W. Norton & Company.

Mehra, A., Raj, S., & Seetharaman, A. (2004). A cost-benefit analysis of VoIP for enterprises. International Journal of Computer Applications (0975 – 8887), 17(4),41-48.

Minaei, A., & Jamali, D. (2013). A review of mobile cloud computing security: Challenges and future directions. Journal of Network and Computer Applications, 36(1), 388-404.

Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

Singh, S., Singh, M., & Kaur, A. (2016). A survey on security issues in VoIP. International Journal of Computer Science and Trends, 6(2), 90-94.

Smith, J., & Jones, M. (2018). The impact of self-service technologies on customer satisfaction in the telecommunications industry. Journal of Customer Behaviour, 17(3), 345-358.

Bernard, H. R. (2008). Research methods in anthropology: Qualitative and quantitative approaches. Rowman Altamira.

Bryman, A. (2016). Social research methods. Oxford University Press.

Cohen, L., Manion, L., & Morrison, K. (2017). Research methods in education (8th ed.). Routledge.

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). SAGE Publications.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). The SAGE handbook of qualitative research (5th ed.). SAGE Publications.

Flick, U. (2014). An introduction to qualitative research (5th ed.). SAGE Publications.

Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K. A. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. The Qualitative Report, 20(11), 1772-1789.

Grey, D. E. (2018). Doing research in the real world (4th ed.). SAGE Publications.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7), 14-26.

Johnson, R. B., & Turner, L. A. (2003). Data collection strategies in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), Handbook of mixed methods in social and behavioral research (pp. 297-319). SAGE Publications.

Kumar, R. (2011). Research methodology: A step-by-step guide for beginners (3rd ed.). SAGE Publications.

McCombes, Shona (2022): Sampling Methods | Types, Techniques & Examples, Scribbr, [online] https://www.scribbr.com/methodology/sampling-methods/

Kumar, R. (2019). Research methodology: A step-by-step guide for beginners (5th ed.). SAGE Publications.

Lachney, M. (2018). The importance of research design in political science. Journal of Political Science Education, 14(3), 295-306.

Mahachi, T. (2018). Secondary data sources in research. ABC Publishing.

Mancosa (2016). Research methods and techniques. Mancosa Publications.

Mugenda, O. M., & Mugenda, A. G. (2019). Research methods: Quantitative and qualitative approaches. Acts Press.

Neuman, W. L. (2000). Social research methods: Qualitative and quantitative approaches (4th ed.). Allyn & Bacon.

Neuman, W. L. (2007). Basics of social research: Qualitative and quantitative approaches (2nd ed.). Pearson.

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). SAGE Publications.

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. European Journal of Education Studies, 3(9), 369-387.

Taherdoost, H. (2016). Sampling methods in research methodology: How to choose a sampling technique for research. International Journal of Academic Research in Management, 5(2), 18-27.

Yin, R. K. (2018). Case study research and applications: Design and methods (6th ed.). SAGE Publications.

McCombes, Shona (2022): Sampling Methods | Types, Techniques & Examples, Scribbr, [online] https://www.scribbr.com/methodology/sampling-methods/ [retrieved am 24.10.2022].

McCombes, S. (2022, October 10). *What Is a Research Design | Types, Guide & Examples*. Scribbr. https://www.scribbr.com/methodology/research-design/

Appendicies

APPENDIX 1: PROJECT BUDGET AND TIMELINE

Project Budget

	ACTIVITY	COST(USD)
1	Transportation	$240
2	Food	$60
3	Internet	$50
	Total	$350

Project Timeline

	Sep-24	Oct-24	Nov-24	Dec-24
Data Collection	■			
Data Analysis		■		
Compilation of Data and Literature			■	
Documentation			■	■
Review and Submission				■

APPENDIX 2: INFORMED CONSENT FORM

INFORMED CONSENT FORM

My name is Tanaka Godzi, a final year Computer Science student from AU. I am carrying out a study on A CASE STUDY OF ENTIRE OFFICE SYSTEMS' ADAPTATION TO ADVANCES IN TELECOMMUNICATION TECHNOLOGIES. I am kindly asking you to participate in this study by answering interview questions and/ or filling in a questionnaire.

What you should know about the study:

Purpose of the study:

The purpose of the study is Evaluate how EOS successfully managed the transition from analogue telecommunications to newer digital and IP based communication technologies helping them stay competitive in the telecommunications industry. You were selected for the study because you are a key informant within EOS who possess in-depth knowledge about EOS and your experience will be greatly appreciated as it will contribute to the case study and help evaluate hoe EOS has maintained its competitiveness in the telecommunications industry.

Procedures and duration

If you decide to participate you will be asked to complete a questionnaire and/or go through an interview sharing your experiences. It is expected that the questionnaire will take about 3 minutes while the interview will take roughly 5-10 minutes.

Risks and discomforts

There are no direct foreseeable risks and discomforts that can be associated with participating in this study. The interview and questionnaire mainly focus on your professional thoughts and experiences which should not result in any legal, health, economic or psychological risks.

Benefits and/or compensation

There are no direct benefits and compensation from participating in the study. Although the findings of the research may benefit EOS by providing valuable insight and data on their adaption process which can provide information on possible areas for improvements. The findings of the study can also be generalized to the other organizations facing similar challenges and the broader telecommunications industry in the country.

Confidentiality

Any and all information that is obtained in the study that can be identified with the participant will not be disclosed without their permission. Names and any other identification will not be included in the final report or any publications of the study.

Voluntary participation

Participation in this study is voluntary. If you decide against participating in this study, your decision will in no way affect your future relationship with EOS and Africa University. If you do choose to participate, you are free to withdraw your given consent and to discontinue participation at any time without penalty.

Before you sign this form, please feel free to ask any and all of your questions on any aspect of this study that may be unclear to you. Feel free to take as much time as you need to think it over.

If you have decided to participate in this study, please sign this form in the spaces provide below as an indication that you have read and understood the information provided above and have agreed to voluntarily participate.

--   ----------------------------

Name of Research Participant (please print)   Date

Signature of Research Participant or legally authorized representative

If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension 1156 email aurec@africau.edu

Tanaka Godzi ---

APPENDIX 3: INTERVIEW GUIDE

Semi-Structured Interview Plan for EOS Adaptation to Digital Telecommunication Technologies

Introduction

Thank you for taking the time to participate in this interview. My name is Tanaka Godzi and I am a researcher investigating how Entire Office Systems (EOS) has adapted to advancements in telecommunication technologies. This interview is designed to understand your experiences and perspectives on this transition.

The interview will be audio-recorded with your permission, and all your responses will be kept confidential. You are free to stop the interview at any time or skip any questions you feel uncomfortable answering.

Background

1. Can you briefly tell me about your role at EOS and how long you have been with the company?

2. In your role, how have you interacted with EOS's telecommunication systems in the past?

Transition to Digital Solutions

3. Can you describe EOS's historical use of analogue PABX systems?

4. What were some of the challenges faced by EOS due to the shift towards digital solutions?

5. What specific digital technologies has EOS adopted in recent years?

6. What was the reasoning behind selecting these particular digital solutions?

Impact of Digital Transformation

7. How have these new technologies impacted EOS's business operations?

8. Can you describe any changes in customer satisfaction since the adoption of digital solutions?

9. What strategies did EOS employ to facilitate employee adoption of these new technologies?

10. How would you describe the overall success of EOS's digital transformation efforts?

Looking Forward

11. What are some of the new developing trends you see in the telecommunications industry?

12. How do you think EOS can continue to adapt to these future advancements?

Closing

13. Is there anything else you would like to share about EOS's adaptation to digital telecommunication technologies?

APPENDIX 4: SUPERVISOR APPROVAL NOTE

COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

18/06/2024

Africa University Research Ethics Committee

Ref: Approval for AUREC Proposal Submission

Tanaka Godzi … has worked on the proposal with the assistance of the supervisor and I confirm that it is ready for reviewed by your esteemed committee.

Respectfully submitted,

Dr. T. Zengeni   ------------------------------------

Supervisor's Name   Supervisor's Signature

APPENDIX 5: AUREC APPROVAL NOTE

"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 3423/24   21 August, 2024

TANAKA GODZI
C/O Africa University
Box 1320
MUTARE

**RE: TRANSITIONING FROM ANALOG TO DIGITAL: A CASE STUDY OF
ENTIRE OFFICE SYSTEMS' ADAPTATION TO ADVANCES IN
TELECOMMUNICATION TECHNOLOGIES**

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 3423/24
   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.

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- **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

APPENDIX 6: AUREC PROOF OF PAYMENT