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The adoption of efficient technology in emerging markets within State Owned Bank in South Africa

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Johannesburg, 2022

University of the Witwatersrand, Johannesburg School of Commerce,

Law and Management

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Abstract

This study aims to explore the adoption of efficient technologies in a South African state-owned enterprise (SOE) or state-owned bank (SOB), specifically investigating the factors that affect how efficient technologies are adopted, the challenges that come during the adoption phase, and the advantages that result from successfully adopting efficient technologies. The research study applied a qualitative research design and used interviews with open-ended questions to collect data. The findings reveal a complex landscape influenced by various elements such as communication, leadership, organisational culture, and operational efficiency. The study highlights the importance of technology adoption within an SOE or SOB. Based on the findings, recommendations were formulated that can be used to enhance how the South African State-Owned Bank can manage the adoption of new technologies efficiently while reducing the risks connected with technology adoption. Despite certain limitations, the study provides valuable insights into the intricate dynamics of new technology adoption in a traditionally oriented country like South Africa.

KEYWORDS

State-owned bank, Adoption, South Africa, Efficient technologies, Challenges, Advantages

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List of Acronyms

4IR	Fourth Industrial Revolution
CIO	Chief Information Officer
FI	Financial Inclusion
FINTECH	Financial Technology
HR	Human Resource
ICT	Information Communication Technology
IT	Information Technology
IGPS	Integrated Grant Payment System
RBV	Resource Based View
SA	South Africa
SO	State-Owned
SOB	State-Owned Bank
SOE	State-Owned Enterprise
TAM	Technology Acceptance Model
TOE	Technology Organisation-Environment
UTAUT	Unified Theory of Acceptance and Use of Technology

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CHAPTER 1. INTRODUCTION

1.1 Statement of Purpose

The research is a case study aimed at examining the adoption of efficient technologies in a South African State-Owned Enterprise (SOE) bank. Specifically, the study focuses on investigating the factors that affect how efficient technologies are adopted in an SOE, the challenges that come during the adoption phase, and the benefits that result from the successful adoption of efficient technologies. Through performing this research, the intention is to advance knowledge on how the use of efficient technologies can improve the productivity, effectiveness, and competitiveness of SOE banks, which would eventually promote South Africa's economic development and ensure they stay in business and not lose their current clientele to the private banks.

The main objective of this study is to identify and analyse the variables that affect how efficient technologies are adopted in state-owned banks in South Africa (SA). A clear analysis of the literature on technology adoption in the banking industry will be utilised, emphasizing state-owned bank SA. Primary data will be collected to complete the study.

1.2 Background of The Study

South African SOEs (State-Owned Enterprises) have a significant role to play in advancing the economy of South Africa (SA) through the adoption of the 4IR (Fourth Industrial Revolution) and mass skill development. The digital economy that can be unlocked through the SOEs in SA is vast and has to be followed to achieve positive results (Malope et al., 2021).

Postbank is currently operating on old infrastructure (hardware) with limited capacity, resulting in a lack of innovation and digitization of the bank. There are several challenges that the bank is faced with resulting from a lack of adoption of efficient technology, such as Fintech. The Integrated Grant Payment System (IGPS) used by Postbank has negatively impacted the bank’s beneficiaries, resulting in the decision to decommission the application and consolidate its capabilities into the core banking system.

The financial sector/industry in South Africa (SA) has seen significant growth and modernisation in recent years. Nonetheless, it has been difficult for the state-owned (SO) bank to keep up with the quickly evolving technological environment for ease of financial inclusion. According to Alabi and Olaoye (2022), it is of great importance for governments and other

stakeholders to adopt improved technology aimed at improving the financial inclusion of the unbanked population (p. 9). Abdulquadri et al. (2021) mention that the digitalisation of financial services offers a different view on how banking services are being offered and delivered to satisfy their clients.

A state-owned bank is essential to supplying the underserved population with financial services. “Technology adoption is an excellent method for achieving the Financial Inclusion (FI) goal of bringing the unbanked people into the mainstream financial system” (Alabi and Olaoye, 2022, p. 9). “Technology has simply taken over the functionality of businesses in the 21st century, and the banking industry which plays a significant part in the economic development of a country is not an exemption from the innovation orchestrated by this phenomenon” (Adeku, 2020).

1.3 Research Problem

A State-owned bank in South Africa faces significant challenges in adopting efficient technologies due to financial constraints, a shortage of skilled personnel, and insufficient digital strategies. These issues hinder their ability to remain competitive in a rapidly evolving banking industry. In order to be competitive in South Africa’s competitive banking market, the government must keep up with technological advancements. In particular, the lack of a well-defined digital transformation plan and budgetary limitations hinder its investment in new technologies, while the scarcity of skilled workers affects the successful implementation of these technologies. (Dyk and Belle, 2019, p 3).

According to Dyk and Belle (2019), the decision of a company to move forward with implementing new technologies is negatively impacted by factors linked to its financial resources, such as the cost of adopting new technologies or the cost of modifying technologies already existing within the company. In most instances, state-owned enterprises (SOE) in South Africa complain about lack of finances to enable them to advance in the implementation of new technology trends to increase effectiveness and efficiency. Based on general finding in this field financial constraints frequently hinder SOE banks in developing countries from investing in cutting-edge technology where Banks are often constrained by strict budget regulations, which can limit their capacity to invest in digital transformation and technology advancements.

South Africa (SA) has deficiencies in skills due to the failure of the education system, which then affects the supply of researchers, skilled managers, and workers needed for the 4IR (Fourth

Industrial Revolution). Sutherland (2020) suggests that South Africa has yet to fully adopt or benefit from 4IR, primarily due to an extensive skills shortage. The automation of work and the potential loss of jobs compounds this problem, highlighting the need for South Africa to strengthen its basic and higher education systems, reinforce continuing professional development (CPD), and implement retraining initiatives for workers and managers affected by automation. It is also important to note the challenges of poor-quality infrastructure, state capture, and weak governance (Sutherland, 2020).

Although funding and skills are essential for technology adoption, the role of management in prioritizing resources, allocating budgets, and leading change is also crucial. Effective management is key to aligning the adoption process with organisational objectives and ensuring successful technology implementation.

1.4 Research Questions

1. What are the current technology adoption practices in South African state-owned enterprises and how do they impact the efficiency and effectiveness of technology integration compared to global standards?

2. What are the key issues faced by the State-Owned Bank in South Africa in the adoption of new technologies, and how can these issues be addressed?

3. Which technologies were effectively adopted by State-Owned Banks in South Africa and what factors contributed to their successful implementation to enhance operational efficiency?

4. How can South African State-Owned Banks manage the risk associated with adopting new technologies and what measures have been useful in ensuring their efficient integration?

5. Which steps can be taken to overcome cultural and organisational factors that affect the adoption of new technologies in South African state- owned bank, and how can these factors be mitigated?

1.5 Rationale

The introduction of new technology companies can be seen as a threat to traditional banks particularly state-owned banks, as it could lead to a loss of market share, which will affect their profits negatively affecting their profits and their role as central conversational partners with customers in terms of their financial lives (Valero et al., 2020). The research will help in understanding most of the benefits that can come from adopting efficient technologies, how

the State-Owned Banks can compete with other banks in the private sector, increase its profitability, and customer satisfaction and also retain employees. State-owned enterprises require advanced technology in order to create job security and serve the underserved. The state-owned bank in South Africa faces substantial challenges in terms of market share, profitability, and customer satisfaction which leads to the bank losing clients to private sector banks as a result of the intense competition in the banking industry. Understanding the variables that impact the adoption of efficient technology in South Africa's state-owned bank can help identify challenges and potential for growth in the sector. According to Iain and Heather (2008, as cited in Kanungo and Gupta, 2021) "socio-economic inequality deprives the poor of leading a healthy life, and their standard of living largely depends on how adequately they are integrated into the mainstream financial system, and the adoption of efficient technology can make it easy for (SO) Bank to create financial inclusion.

1.6 Delimitations of the Study

I. The study will examine the decision-making processes and practices of managers within the state-owned bank rather than the experiences of single bank employees or customers.

II. Instead of attempting to include every technology that a state-owned bank might utilise, the study will only look at specific types of technologies, like mobile banking, online banking, and/or block-chain technology.

III. The study will look into the adoption of new technologies within the state-owned bank itself rather than examining external factors that may delay this process, such as regulatory policies or economic conditions.

IV. The study will concentrate on a certain time, such as the previous five years, in order to track current advancements in technology adoption in the South African banking sector for the public bank.

V. The study's geographic scope will be limited to state-owned banks in South Africa, excluding private banks from other parts of the world and other categories of financial institutions.

1.7 Assumptions

Assumption of a negative attitude toward technology: Since this is likely to be a crucial component of the failure to adopt efficient technology, the study may assume that employees and managers at the state-owned bank have a negative attitude towards technology adoption

and innovation. Assumption of insufficient resources: The study may assume that the state-owned bank has insufficient financial and human resources to support the adoption of new technologies. This includes the financial means to buy and maintain new technologies, as well as the skilled personnel necessary to implement and manage new systems with the organisation. The study may assume that corruption from the government affects the development of the state-owned bank and also government involvement in decision-making.

Assumption of regulatory compliance: The study may assume that the state-owned bank is not compliant with relevant regulatory policies and guidelines related to technology adoption and data privacy. This considers ensuring that the bank's technology systems meet relevant security standards, and that customer data is adequately protected. The study may assume that the state-owned bank does not have organisational structure and culture that can champion the implementation of new technologies. This considers elements including the bank's employee's openness to adopting new trending technologies that will enhance the bank. The study may assume that the state-owned bank places a high priority on meeting the needs of its customers through their old technology functionality, and they do not want the implementation of new efficient technology such as "fintech" to replace their operations.

1.8 Chapter Outline

This report is structured into five main chapters. Chapter 1 sets the stage with an introduction and background information pertinent to the study. Chapter 2 delves into a comprehensive literature review and outlines the theoretical frameworks that form the foundation of the research. Chapter 3 details the research design and methodology, providing a blueprint of the study's underpinnings. Chapter 4 is dedicated to presenting the results, alongside a thorough discussion and interpretation of the findings. Finally, Chapter 5 offers a summary of the findings, along with recommendations and conclusions drawn from the study.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

According to Hu et al. (2019), there have been a lot of studies which have been conducted on the correlation between technical advancements and financial innovation from various positions by both domestic and international academics. In this systematic literature review, we will be looking at answering the following questions adopted from assignment one of the research, using mostly research articles that are relevant to this topic. The literature review follows a thematic format that provides key findings using themes that come from the literature from different scholars with different perspectives in relation to the topic's research questions.

The research questions that will be answered are "What are the current technology adoption practices in South African state-owned enterprises and how do they impact the efficiency and effectiveness of technology integration compared to global standards?

What are the key issues faced by the State-Owned Bank in South Africa in the adoption of new technologies, and how can these issues be addressed?

Which technologies were effectively adopted by State-Owned Banks in South Africa and what factors contributed to their successful implementation to enhance operational efficiency?

How can South African State-Owned Banks manage the risk associated with adopting new technologies and what measures have been useful in ensuring their efficient integration?

Which steps can be taken to overcome cultural and organisational factors that affect the adoption of new technologies in South African-owned bank, and how can these factors be mitigated?''

This research aims to examine the adoption of efficient technologies in emerging markets, focusing on a state-owned bank in "South Africa", identifying the research gaps, challenges, types of technology adopted by other commercial banks, and benefits of adopting efficient technologies.

2.2 Definition of Topic or Background Discussion

"Banks play significant role in financial intermediaries in any nation's economic development, effectively converting the community's savings into different banking products such as

investment and loans therefore encouraging economic growth and social development" (Cho and Chen, 2021). The (4IR) Fourth Industrial Revolution, according to Malope et al. (2021), can be defined "as technological advancements that merge the lines between the physical, digital and biological spheres and integrates cyber-physical systems and the Internet of Things, Big data; Cloud computing, Robotics, Artificial intelligence-based systems; Advanced Analytics; and Additive manufacturing". South African State-Owned Enterprises (SOEs) have a big role to play in advancing the economy of South Africa (SA) through the adoption of the Fourth Industrial Revolution (4IR) and mass skills development for locals. The digital economy that can be unlocked through the SOEs in South Africa is enormous and ought to be followed purposefully (Malope et al., 2021). According to Cho and Chen (2021), "the government of China explicitly regards the development of financial technology (Fintech) as a vital strategy for enhancing banking performance". "South African SOEs are of critical importance to the country, agents of change to contribute to the economy, social transformation, creation of decent jobs, growth, and development of the society and development of the economy" (Malope et al., 2021). SOEs should be treated as drivers of change and make sure they adopt efficient technologies that will drive the growth of the economy.

According to (Darolles, 2016 as cited in Wang et al., 2020), "Financial Technology (Fintech) includes the application of different advanced technologies to support the advancement of the financial sector in both private and public sector". "The introduction of Fintech into the market has had a big impact on the traditional way of conducting business of commercial banks" Petralia et al. (2019, as cited in Wang et al., 2020). "Fintech incorporates digital innovations and technology-enabled business model innovations in the financial sector" (Wang et al., 2020). According to Alsmadi et al. (2023), the concept of Fintech entails the adoption of digital technologies by organisations such as the internet and mobile computing for a more efficient and effective way of conducting business operations and enabling customers.

"The steadily developing digital economy is now impacting different industries, both in the private and public business sectors and causing changes at rapid speed and intensity (Arner et al., 2016 as cited in Tanda and Schena, 2019)". "There are new ways of living, thinking and acting which are emerging and impacting on people's economic lives: their spending habits and professional activities" (Tanda and Schena, 2019). The South African government should be at the forefront of adopting these technologies in order to create financial inclusion for the underbanked/underserved in the banking sector. "The digital transformation landscape has

transformed the way financial institutions offer their services" (Khattak et al., 2023). In this study, we will be using the adoption of 4IR components to build a sustainable and advanced state-owned bank in South Africa, as well as the adoption of Fintech technologies as key concepts. "Fintech has an influence on the efficiency of commercial banks in a few different ways" (Wang et al., 2020).

2.3 Technology Adoption practices of State-owned enterprises in South Africa and Comparison to Global Standards

The first research question for this discussion section is focused on the current technology adoption practices in South African state-owned enterprises and how do they impact the efficiency and effectiveness of technology integration compared to global standards?

The keywords in this research question are:

- "Technology adoption"
- "State-Owned Enterprises"
- "Global standards"

2.3.1 Technology Adoption

According to Dadoukis et al. (2021), technology adoption increases the chances of financial stability for a bank by ensuring that it has the capabilities to withstand any challenges that may come from unforeseen issues. "High technology adopters perform extremely better than other traditional banks in terms of market returns" (Dadoukis et al., 2021). According to Khattak et al. (2023) "banks focus on digital transformation with the aim of improving their overall efficiency and reduce operational costs". "Information Technology (IT) adoption is a key influencer when it comes to a bank's performance through customer relationships. Banks that are IT-intensive can have a lot of influence, which can drive the expansion of the bank's customer base, as banks can now adopt technology products that can digitalise the platforms, which can lead to a huge reduction in costs for customers to search for and switch banks" (Dadoukis et al., 2021). "Technology adoptions have significantly increased the hopes of banks across all nations in terms of attaining a prominent place in global finance" (Cho and Chen, 2021). India's growing digital banking sector has played a critical role in the growth of the country's economy. India's banking system has improved the economy of the country, and this is due to technological advancements the Bank of India adopted and other improvements that contribute to economic expansion. (Sharma and Aggarwal, 2023). Thach et al. (2020) mentions

that, “Fourth Industrial Revolution (Industry 4.0) and digital technology has been affecting how banking activities are being conducted in most of the banking system in emerging markets”

2.3.2 State-Owned Enterprise

Like many other countries, South Africa has a number of state-owned enterprises (SOEs) that are either totally or partially owned; as of this writing, there are 715 SOEs total, including trusts, municipalities, and section 21 companies. Similar to the developed country’s economies, South Africa's SOEs are viewed as crucial change agents for the country's economy, social transformation, creation of decent jobs, growth, and development of society (Malope et al., 2021). “Technology advancement, global and social economics are also the driving forces that require the South African SOEs to revamp themselves in order to attain quick growth and contribute to the socio-economic advancement of South Africa or become obsolete” (Malope et al., 2021).

2.3.3 Hypothesis 1

The adoption of efficient digital technology by South African State-Owned Enterprise (SOE) banks will lead to increased competitiveness, financial stability, and operational efficiency, consequently positively impacting the country's overall economic development

2.4 Enhancing Efficiency and Customer Experience with Technology in South African State-Owned Banks

The second research question for this discussion section is focused on “Which technologies were effectively adopted by State-Owned Banks in South Africa and what factors contributed to their successful implementation to enhance operational efficiency what”?

2.4.1 Effective Technologies (Fintech)

“Financial Technology (Fintech) is a digital technology with block chain, big data, and intelligent investment consulting at its core and is utilised more by the financial institutions” (Hu et al., 2019). Banks implement Fintech in order to improve the whole customer experience and ensure that the bank is operating efficiently (Hu et al., 2019). According to Hu et al. (2019), the utilisation of Fintech can improve the efficiency of a bank and broaden the product offerings and methods that can be used to offer those products and services through the application of technology within the banking spectrum.

According to Sharma and Aggarwal (2023), “digital banking refers to an electronic banking system that allows clients to access their finances through different digital platforms. "Currently, the traditional banking network are being replaced by digital banking platforms, which come with automated customers interactions at lower costs and grant customers a variety of options in terms of service delivery (Darlington, 1999 as cited in Sharma and Aggarwal, 2023 “One of Digital banking's primary objective is to ensure the delivery of secure financial services to consumers through the utilisation of the internet” (Sharma and Aggarwal, 2023). “Banks lately have focused on digitalising their operations to improve their overall efficiency and reduce operational costs while being effective in rendering their services” (Khattak et al., 2023). Digitalisation, disruptive innovation, and new technologies are changing traditional business models and processes. Due to that, banks must learn to adapt their operation models to change how they communicate with clients, manage their back and front office operations, to be competitive and ready for the future (Kitsios et al., 2021). According to Sharma and Aggarwal (2023), these are the components of digital banking:

- Electronic fund transfer
- Online banking
- Automated Teller Machines (ATMs)
- Unified payment interfaces
- Digital wallet

2.4.2 Customer Experience

The adoption of effective technologies such as internet banking, also referred to as online banking, allows clients to perform different financial and non-financial transactions from the comfort of their own homes or offices (Sharma and Aggarwal, 2023) A significant number of customers are now able to perform a lot of banking transactions from their mobile phones and computers (Kitsios et al., 2021). “Through the utilisation of the digital applications customers are able to get real-time information about their investment positions, they also are aware of the banks rewards programs in place and they able to track their expenses as they incur them” (Kitsios et al., 2021).

2.4.3 Hypothesis 2

The effective use of digital banking platforms and financial technologies (Fintech) in South African State-Owned Banks leads to an improvement in customer experience and operational efficiency by enabling more streamlined, accessible, and affordable banking services.

2.5 Analytical Framework

“The banking sector serves as a fundamental pillar and enabler of economic development in the economy, it plays a vital role in promoting sustainable development in a country” (Weber, 2015 as cited in Kumar and Prakash, 2018). This framework will examine the factors or barriers which hinder the adoption of efficient technologies in emerging markets - State-Owned Bank "South Africa"

Factors that affect the adoption of efficient technologies in emerging markets (State-Owned Enterprise "South Africa":

a) **Lack of Skills**: The lack of specialised workforce with an adequate skill set to carry out technological transformation processes is an important barrier to the adoption of efficient technologies inside South African state-owned enterprises (SOEs). According to Kitsios et al. (2021) “lack of labour which specialises and has the appropriate skill-set to perform the transformation processes can cause delays in completing the adoption of efficient technologies”.

b) **Corruption**: A common outcome of corruption is the inefficient use of human and financial resources. Funding that should be invested in cutting-edge technologies is diverted, leading to a lack of investment in critical areas. This makes it more challenging for SOEs to integrate and utilise efficient technology. It leads to a lot of problems when it comes to the sustainable development of a country (Ganda, 2020).

c) **Psychological barriers**: Technology adoption comes with some risk. According to Gardner (2008, as cited in Komulainen and Natti, 2023), within the financial sector, risk perceptions grow instantly as quick and emotional thinking when the reputation of the organisation and financial penalties are at stake. Often, leaders' decisions are heavily impacted by their sense of risk.

d) **Uncertainty of job loss**: Most employees see the adoption of technology as a threat to their jobs and job security as a whole (Shoss, 2017, as cited in Komulainen and Natti, 2023).

How State-Owned Enterprise can make it easy to efficiently adopt new technologies according to Malope et al. (2021):

a) Committing to providing training and development for managers first and later on boarding the entire organisation for training and development, with the main focus being on the Fourth Industrialisation Revolution (4IR).
b) The adoption of technology is critically promoted by adequate funding. The funding for technology investment must be set aside specifically for SOEs, and it has to cover not only the initial investment in technology and implementation costs but also ongoing maintenance, upgrades, and training. To support technology efforts, SOEs can also look into alternate funding sources like grants or public-private partnerships.
c) Collaboration: By investigating and finding organisations with shared services, innovation hubs, prototype projects, training facilities, and other opportunities, SOEs should create synergies on 4IR developments.
d) Leaders should constantly stress the fact of technology/digitalisation adoption to key stakeholders in order to increase the chances of them embracing the adoption of digitalisation.
e) Environment: Digitalisation of government enterprises in South Africa must be clearly defined, provide awareness of, and be influenced by the government policy framework on Digitalisation.

2.5.1 Theoretical Framework

The theoretical framework for this study provides a systematic perspective to analyse the variables influencing technology adoption in state-owned banks in South Africa.

The adoption of technology within emerging markets can be studied using theoretical frameworks such as the Technology-Organisation-Environment (TOE) framework and the Resource-Based View (RBV). These frameworks work well together since the TOE framework offers a thorough understanding of the variables influencing technology adoption, while the RBV focuses on the operational use of internal resources to gain and maintain a competitive advantage. When combined, they provide a robust theoretical framework for analysing the adoption of technology in the specific context of emerging markets.

2.5.1.1 Technology-Organisation-Environment (TOE) framework

The TOE framework, established in 1990 by DePietro, Wiarda, and Fleischer (often referred to as "Tornatzky and Fleischer"), seeks to understand the adoption and implementation of technological innovations within organisations.

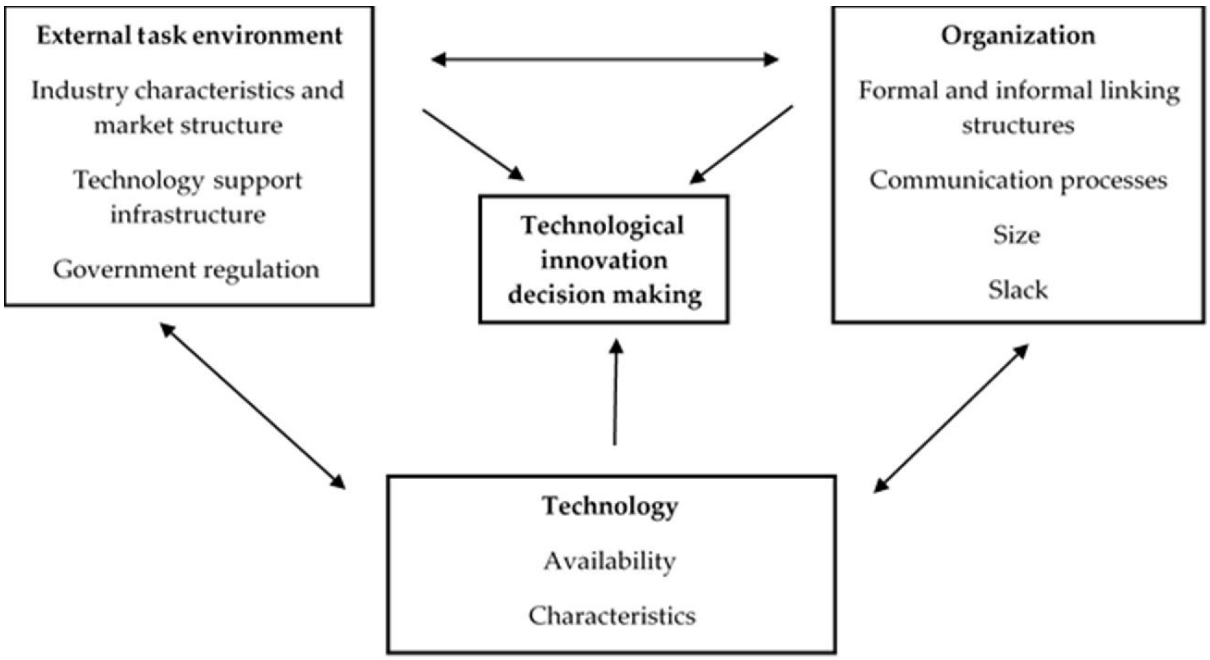


Figure 1 Technology Organisation Environment (TOE) Framework adopted from DePietro et al. (1990)

It is an effective approach for examining how various variables impact the adoption of Information and Communication Technology (ICT). This framework has been widely used to study the adoption of many technologies, such as cloud computing (Yaseen et al., 2023), customer relationship management systems (Cruz-Jesus et al., 2019), and artificial intelligence (Horani, Al-Adwan, et al., 2023).

As described by (Malope et al., 2021), the framework consists of three main components:

Technology Factors

These factors apply to technology, incorporating its apparent benefits, ease of integration with current systems, complexities, and the level of support available.

The Technology component focuses on the characteristics of the technology being adopted. According to Oliveira and Martins (2011), major considerations include relative advantage, compatibility, complexity, and observability. Technologies like digital banking platforms, blockchain, and cybersecurity solutions are becoming increasingly important in South Africa. Zhang et al. (2020) found that the adoption of green technologies in financial institutions is driven by perceived benefits and regulatory pressures. The challenge for SOEs and Post Bank is integrating new technologies with existing systems and addressing concerns about technological complexity and compatibility.

Organisational Factors

These factors apply to the organisations' internal qualities such as size, structure, resources, and managerial support as well as the state of readiness to adopt new technologies and its current Information Technology (IT) infrastructure.

The Organisation component examines internal variables that influence technology adoption, such as resources, organisational structure, and employee skills. According to Ali et al. (2022), financial constraints and organisational culture have a significant effect on technological adoption. Resource constraints are a major barrier for South African state-owned enterprises and banks. Ramanathan et al. (2017) identified skill shortages and inadequate training are common challenges. Organisational readiness, which includes aligning technology strategies with organisational objectives, is critical for successful technology adoption (Kalaitzi and Tsolakis, 2022).

Environmental Factors

These apply to external factors such as market conditions, competition, regulatory requirements and technological advancements.

The Environmental component takes into consideration external variables like regulatory requirements, market conditions, and competitive pressures. South African SOEs and Postbank operate within a complex regulatory framework shaped by data protection and financial regulations. Hoang et al. (2021) discuss how market variables and legislative changes affect technology adoption in emerging markets. The South African financial system faces specific issues, such as regulatory compliance and competition from private banks (Cunha et al., 2022). The interaction of these elements affects the adoption decisions of SOEs and Postbank.

These components collectively help in understanding the adoption process by analyzing how technological advancements, organisational capabilities, and environmental factors interact to influence ICT adoption, usage, and the value creation.

Resource-Based View (RBV) framework

This study uses the Resource-Based View (RBV) to examine how South African state-owned banks adopt new technologies. According to Barney et al. (2001), the RBV framework proposes that the competitive advantage of an organisation is reliant on its capacity to invest in, manage, and maximize its strategic resources, which comprise of financial capital, human resources, and technology infrastructure.

RBV is relevant to this study as it addresses the financial and skill shortage that many state-owned banks in South Africa have, which has a direct impact on their capacity to adopt and implement new technologies. Many studies have used the RBV to explain technology adoption, particularly in organisations constrained by resources. In this regard, Mikalef et al. (2020) demonstrates that enterprises that have limited human and financial resources usually struggle to adapt to emerging technologies, which hinders their ability to compete in rapidly evolving digital markets. In the context of state-owned banks, Zahra (2021) points out how effective resource management is vital for implementing innovations, particularly in developing nations where budgetary constraints and skills shortages are widespread.

Technology Adoption and Financial Resources

A key consideration that determines whether an organisation can invest in new technologies is its financial capacity, which is a vital resource in the RBV framework (Barney et al., 2001). Financial constraints have made it challenging for state-owned banks in South Africa, including Postbank, to upgrade their IT infrastructure and compete with private banks that have embraced digital transformation. This lack of investment emphasizes the necessity of financial initiatives, such as government-backed subsidies or partnerships with FinTech companies. These initiatives can provide the resources needed to upgrade infrastructure, enabling SOE banks to adopt efficient technologies.

Furthermore, partnerships with FinTech companies not only minimize the upfront cost of establishing these systems internally but also enable access to cutting-edge technologies such as AI-driven financial platforms enabling the bank to compete more effectively with the private sector.

Managing financial constraints is just one aspect of the challenge; without qualified and skilled employee even the most advanced technologies cannot be efficiently used.

Skills Shortages

According to Mikalef et al. (2020), the RBV highlights that in order for an organisation to stay competitive, it needs to have valued and unique capabilities. The lack of qualified IT employee has hindered South African state-owned banks' efforts to use effective technology. The difficulties Post Bank is having with its Integrated Grant Payment System demonstrate how skills shortages can lead to system failures which highlights the necessity for targeted skills development initiatives such as IT Certifications, collaborations with institutions and workshops on digital transformation could assist SOE banks in developing the internal expertise required for successful technology adoption in order to solve the skills gap and to improve the banks' technological capabilities.

Technological Infrastructure

Another crucial component of the RBV is technological resources since organisations need to update their systems often to accommodate developments in technology (Zahra,2021). The South African state-owned banks' reliance on legacy systems has limited their capacity to implement advanced digital solutions therefore hindering their competitiveness in the financial industry. In addressing this these organisations would need to give priority to making investments in scalable technologies like cloud computing and AI-based systems this would improve customer service, automate repetitive tasks, and offer real-time data analytics to enable better decision-making in addition to modernizing the banks' operations and enhance their competitive advantage in the financial sector in alignment with RBV framework on leveraging internal resources.

2.5.2 Conceptual Framework

The study takes a multi -theory approach, incorporating the Technology-Organisation-Environment (TOE) Framework, Resource- Based View (RBV), and Technology Acceptance Model (TAM), as well as elements of the Unified Theory of Acceptance and Use of Technology (UTAUT), to investigate the variables influencing the adoption of new technologies in South African state – owned banks. The framework is visually represented in the diagram below.

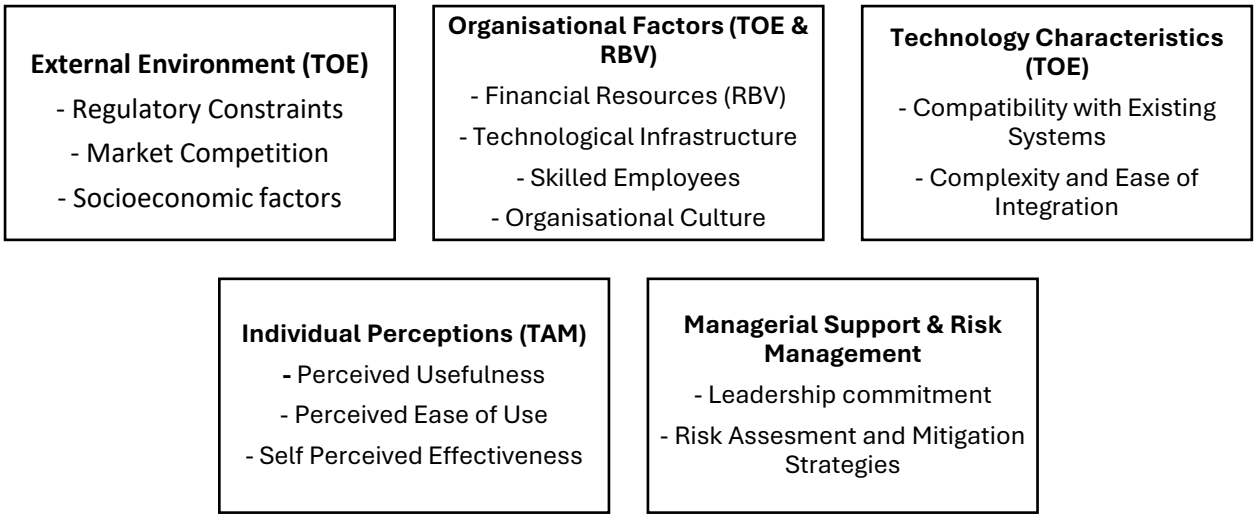


Diagram 1 Presenting Conceptual Framework Theories

Technology – Organisation – Environment (TOE) Framework:

Technology: South African state-owned banks have significant challenges in trying to integrate cutting edge technologies such as blockchain and Artificial Intelligence (AI) into their existing legacy systems. To the degree where the success of these integrations depends on the compatibility and complexity of these technologies (Alalwan et al., 2017). The banks' capacity to adopt new technologies is significantly influenced by the perceived ease of integration and the condition of their technological infrastructure (Hu et al., 2019).

Organisation: The capacity of an organisation to successfully adapt technology depends on a number of factors, including its financial resources, technological resources and a workforce of skilled employees. Stronger financial support and sufficient resources place banks in a better position to adopt innovative technologies (Hu et al., 2019). Another important factor is the organisational culture of state-owned banks; this study focuses on how these cultures either encourage or resist the adoption of cutting-edge digital solutions (Kitsios et al., 2021).

Environment: Some of the external factors that impact state owned banks adoption of technology include competition from commercial banks, government regulations in general social economic considerations for example the efforts of these institutions to undergo digital transformation are frequently Hindered or delayed by strict regulatory constraints (Vial, 2019;

Malope et al., 2021). This research will look at how these external factors impact the adoption of technology, specifically in relation to state owned banks in South Africa.

Resource – Based View (RBV) and Technology Adoption in State -Owned Banks:

According to Resource - Based View (RBV), the capacity of a bank to efficiently utilise its internal resources gives it a competitive edge. This includes human and financial resources in the context of state-owned banks, as these are important factors in determining the success of technology adoption.

Financial Resources: state owned banks typically have financial limitations, which makes it difficult for them to make investments in cutting edge technologies. Their incapacity to secure capital limits their ability to pursue technological that would otherwise improve their competitiveness and operational efficiency (Verhoef et al., 2021). However, despite these financial challenges, investments in efficient technology could result in long term cost reductions and increased profitability (Kitsios et al., 2021). The banks strategic success is dependent on its capacity to strike a balance between short term financial constraints and the long-term advantages of technological adoption.

Human Resources: a major obstacle for state owned banks utilizing new technologies is a shortage of skilled employees. A successful digital transformation depends on employees self-efficacy or confidence in utilizing emerging technologies (Hu et al., 2019). The adoption of technological advancements may be hindered by a lack of appropriately skilled employees, which emphasizes the significance of ongoing professional development and training initiatives targeted at enhancing digital competencies among employees (Alalwan et al., 2017). Even the most well-funded technology programs may fall short of their expected outcomes if the skills gap is not addressed.

The Technology Acceptance Model (TAM):

The Technology Acceptance Model (TAM) provides a theoretical lens to understand how users' perceptions influence their adoption of new technologies. This process is shaped by two main factors:

Perceived Usefulness: when managers and employees are convinced that the use of technology will improve their ability to effectively perform their jobs, it is more likely that they will adopt it. This study will evaluate how the rate of technology adoption in state owned banks is

influenced by views of its usefulness, such as the possibility of increasing productivity and enhancing customer satisfaction (Kitsios et al., 2021).

Perceived Ease of Use: when people believe a new technology is simple to use, they are more likely to adopt it. This study will look into how employees' perceptions of new technologies are influenced by elements like usability and complexity. The study will also take into account the significance of self-perceived efficacy, looking at how employees' likelihood to adopt new technologies is influenced by their level of confidence in utilizing them.

Managerial Support to Technology Adoption:

In the context of technology adoption, managing change resistance and ensuring the successful implementation of new technologies depends heavily on managerial support. Effective leadership create an environment that is beneficial to digital transformation through the encouragement of employee buying, the allocation of necessary resources and adoption initiatives. Managers can mitigate barriers and improve their chances of successful technology integration by actively promoting and financially backing risk mitigation strategies (Vial,2019). On the other hand without managerial commitment, inadequate support or resource allocation it could lead to even the most promising advancements in technology to fail (Verhoef et al., 2021).

Another crucial component that is directly related to managerial support is risk management proactively recognizing and addressing the risks linked to technology adoption by manages helps safeguard the process from common issues such as vulnerabilities in security, excessive expenditure and operational disruptions. Furthermore, leadership not only reduces risks but also increases the organisation's capacity to adapt effectively to advancements in technology through putting robust risk management frameworks in place.

Challenges to Technology Adoption:

Financial Constraints: One of the biggest obstacles facing state owned banks is funding. It is a challenge for many of these enterprises to set aside the funds required for technology investment, which has an impact on their capacity to stay competitive (Kitsios et al., 2021).

Lack of skills: For adoption of technology to be successful, the skills gap must be closed. Banks will find it difficult to successfully adopt and use new technologies if they lack the necessary technical know-how (Hu et al., 2019).

Legacy systems: Compatibility with technology presents another important challenge. When new technologies are integrated with outdated systems it can be expensive time consuming and disruptive if not done properly (Alalwan et al., 2017).

2.6 Conclusion of Literature Review

In summary, enhancing the competitiveness and effectiveness of South Africa's state-owned banks necessitates the use of efficient technologies. But the process is complex and requires providing serious consideration to elements like employee training, leadership support, and organisational preparedness. This approach can be guided by the Technology Acceptance Model (TAM), in conjunction with frameworks such as RBV and TOE. It is recommended that banks make investments in employee training, get top-level management support, and work with public and private sector banks to address issues and enable smooth technology adoption in the Fourth Industrial Revolution (4IR) in order to assure a successful digital transformation.

2.6.1 Hypothesis 1

The adoption of efficient digital technology by South African State-Owned Enterprise (SOE) banks will lead to increased competitiveness, financial stability, and operational efficiency, consequently positively impacting the country's overall economic development

2.6.2 Hypothesis 2

The effective use of digital banking platforms and financial technologies (Fintech) in South African State-Owned Banks leads to an improvement in customer experience and operational efficiency by enabling more streamlined, accessible, and affordable banking services.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research Approach

The purpose of this study is to investigate “The adoption of efficient technologies in emerging markets within State-Owned Bank in "South Africa." The research will be conducted to examine the factors influencing the adoption of efficient technologies within the banking sector, with a focus on a state-owned bank in South Africa, the challenges faced, and the potential benefits that can be derived from adopting and implementing such technologies. The research will adopt a qualitative approach. “It is appropriate to conduct this study using a qualitative research approach due to its ability to explore in-depth insights, capture the complexity of human experiences, and uncover underlying motivations and perceptions” (Ertz and Gasteau, 2023). “Qualitative approach provides a understanding from the viewpoint of an individual in and across different environments” (Wilson and Anagnostopoulos, 2021). The study will use methods such as interviews to gather information. “Qualitative approach methods include focus groups, interviews, and observations making it an appropriate approach for what the study aims to accomplish as it produces rich, in-depth data that can represent the complexity and richness of people's experiences and viewpoints” (Shankar et al., 2020). “A wide range of disciplines use qualitative research in one of its many forms” (Hagman, 2023).

The study will concentrate on understanding the challenges, solutions, and results connected with this adoption procedure by assuming that the State-Owned Bank in SA is aggressively pursuing the adoption of efficient technologies. This will enable the need to investigate the SOE bank's motivations, decision-making procedures, and implementation initiatives. “Qualitative research approach provides sufficient (detailed) explanation of participant’s opinions, feelings, and experiences; and translates the meanings of their actions” (Denzin, 1989, as cited in Rahman, 2017). The research can capture a thorough picture of the adoption process by presuming that stakeholders, including bank executives, employee, and consumers, have a variety of perspectives and experiences. This enables researchers to investigate various attitudes, convictions, and perceptions about the adoption of efficient technologies, which may have an impact on choices and implementation methods.

The research will delve into the precise contextual aspects that influence decisions about technology adoption in the State-Owned Bank by presuming the impact of socio-economic

factors. The opportunities and challenges brought on by the socio-economic environment can be explored in depth.

3.2 Research Design

The study will adopt the case study design as it provides a more in-depth analysis of the adoption of efficient technologies in emerging markets within state-owned banks in "South Africa". As the research approach is qualitative, it requires gathering detailed information from a variety of sources, through interviews and observations, in order to comprehend the precise context, difficulties, and approaches used by the bank in adopting these technologies. The case study technique offers in-depth insights into the realities of technology adoption complexity.

According to Baxter and Jack (2008, as cited in Rashid et al., 2019), “a qualitative case study is a research methodology that aids in the examination of a phenomenon within a specific context using a number of data sources. The exploration is done via a variety of lenses in order to highlight the phenomenon's many features.”. “The case study approach uses a variety of strategies for gathering empirical data in order to provide the most comprehensive answers to the research questions” (Rashid et al., 2019). According to Yin (2002, as cited in Rashid et al., 2019), case study does not have a legitimate position as a social science research strategy, as it does not have well-structured and fully defined protocols, so new researchers who attempt to make use of this methodology at times become confused about what a case study really entails and how it differs from other types of qualitative research methodologies.

3.3 Data Collection Methods

Data will be collected in the form of interviews, which will be scheduled with stakeholders within the state-owned enterprise (Bank), those directly involved in the procurement of efficient technologies (executives), IT personnel, employees, and customers who have insight and experience pertaining to the adoption of efficient technologies within the bank, and customers who bank with the state-owned bank, which is an SOE. “The interviews will be conducted to revolve around experiences, motives, process, learning, and outcomes of the collaboration” (Rashid et al., 2019). The interviews will be held at the South African Postbank office to make sure the participants are comfortable and also online on MS Teams and Zoom to make room for those who do not visit the office daily, and they will be conducted in English. “Interactions with research participants through interviews play a significant role in idea

generation and concept testing. Additionally, using this process, informants can offer criticism and ideas to reinforce and improve the study's findings." (Rashid et al., 2019).

3.4 Population and Sample

Information will be gathered from the population of the bank (State-Owned Bank in South Africa). This population (stakeholders) will include individuals who are involved in the adoption, utilising and implementation of efficient technologies such as:

Bank executives: Senior-level managers and decision-makers in charge of strategic planning and adoption of technology inside the state-owned bank.

IT personnel: The employee members and technical experts in charge of implementing, running, and maintaining the bank's effective technology.

Employees: Individuals who are directly or indirectly impacted by the use of effective technologies inside the bank's many departments and positions.

3.4.1 Case Site

Case Site (State-Owned Bank in South Africa): The case site for this study is the State-Owned Bank in South Africa, an SOE too many; the name of the organisation will not be mentioned as yet, as approval has not been granted. For the following reasons, conducting a case study within this particular SOE (Public Bank in South Africa) is appropriate:

Relevance: The State-Owned Bank of South Africa is a significant player in the country's

financial sector for the financially excluded, and the adoption of efficient technologies is a critical area of focus for banks in today's digital age if they want to be competitive. Studying this public bank allows for an examination of the unique challenges, strategies, and outcomes associated with technology adoption within the context of a state-owned bank in South Africa.

Rich Context: The State-Owned Bank operates within the socio-economic and regulatory context of South Africa. By focusing on this case site, the study can capture the specific socio-cultural, economic, and technological factors that influence the adoption of efficient technologies within the bank, providing a nuanced understanding of technology adoption in an emerging market setting for a SOE.

Depth of Analysis: A case study approach enables a thorough examination of the bank's motives, decision-making procedures, implementation strategies, difficulties encountered, and

results attained during the adoption of technology. The study can produce deep insights and identify intricate linkages between many factors that affect technology adoption by immersing itself in the particular environment of the state-owned bank.

3.4.2 Sample and Sampling Method

The sample and sampling method that will be applied is purposive sampling. “The reason for using purposive sampling is that it allows for a better match between the sample and the research's goals and objectives, enhancing the study's rigor and the reliability of its data and findings. “Credibility, transferability, dependability, and confirmability are the preceding descriptions of the four facets of this idea” (Campbell et al., 2020). The number of interviews will solely depend on the availability of resources; executives, IT personnel, and employees, but the interviews might range from 10-20 participants. The questions will be limited to five (5) questions that are not closed-ended to allow participants to share as much information as they can, which will assist in finding the solution for the study. The precise figure can be altered, though, depending on elements like the narrowness of the study question, the variety of viewpoints sought, and the degree of data saturation attained.

3.5 The Research Instrument

The research instrument will follow an interview style for conducting the research questions in order to gather the required information for the study.

Sample Interview Schedule

Introduction:

a. Welcome the participant and express appreciation for their time.

b. Ask them to describe their position in the company and the reason for the interview.

c. Describe the procedures for informed consent and confidentiality measures.

Background Information:

a. Volunteers will be asked about their role in the adoption of efficient technologies and their experience with them.

Technology Adoption Process:

a. Describe the drivers behind the bank's use of efficient technologies.

b. Examine the decision-making process and the variables that affect the adoption of technology.

c. Ask about any difficulties experienced during the adoption process.

d. Ask about the methods used to solve these difficulties.

Impact and Outcomes:

a. Explore the perceived benefits of technology adoption within the bank.

b. Ask about any unforeseen effects or difficulties that appeared after the adoption, if any.

c. Discuss any alterations in operational effectiveness, customer satisfaction, or other pertinent factors that you have noticed.

Barriers and Facilitators:

a. Determine any organisational, technological, cultural, or governmental adoption impediments.

b. Talk about any enabling elements that led to effective technology adoption.

c. Examine the participant's viewpoints on the resources or support mechanisms offered by the bank.

Recommendations:

a. Inquire about the participant's suggestions for accelerating the use of effective technologies.

b. Will ask about any tactics, regulations, or procedures that might make the adoption process better.

c. Will encourage the participant to discuss any best practices or lessons learnt.

Conclusion:

a. Thank you to the participant for their insightful comments and involvement.

b. Participants will be given a chance to ask questions or contribute further details.

c. The participant will be reminded that the interview will be kept private and explain how the information will be utilised.

3.6 Procedure for Data Collection

The procedure for data collection will be in the form of in-person or online interviews, involving several key steps before the actual commencement of collecting data. The procedure

for conducting these interviews in qualitative research on “The adoption of efficient technologies in emerging markets within State Owned Bank in "South Africa"”

Participant Recruitment: Find and enlist participants who have appropriate knowledge, skill, or experience relating to efficient technologies, or technology in general, and its role in the organisation.

Informed Consent: “One of the most vital steps in any research is getting consent in a timely manner” (Rashid et al., 20219). Obtain the participants' informed consent prior to conducting the interviews. Give them a permission document or verbally describe the study's goals, confidentiality safeguards, participant rights, and their freedom to withdraw at any time.

Interview Preparation: Create a roadmap for the interview that outlines the subjects, inquiries, and probing to be made. To ensure a natural flow of conversation and the capacity to go deeper for more insightful answers, become familiar with the interview questions. Prepare any required note-taking materials, consent paperwork, and recording equipment.

Conducting the Interviews: Set up interviews with participants at a time and place that work for both parties. When doing in-person interviews, make sure the setting is appropriate, relaxing, and offers solitude with few interruptions. Make sure you have a calm, concentrated space available while doing interviews online. Establishing rapport and restating the study's goal at the start of the interview will help. While maintaining flexibility and probing to discover other topics of interest, stick to the interview timetable. Encourage individuals to openly express their ideas, experiences, and thoughts.

Active Listening and Note-Taking: During the interview, pay close attention to the participants' comments and take notes on any important details, pertinent quotes, and observations. To ensure reliable data documentation, take thorough notes either during or just after the interview. To promote a relaxed and open environment, note-taking should be combined with keeping eye contact and being actively engaged with the participant.

Data Recording: If the participants agree, audio record the interviews to guarantee precise data collection. Respect the participants' preferences, though, and let them know why the recording is being made, how it will be kept private, and what will be done with the information.

Transcription and Data Management: To verify that the interview data is accurately represented, transcribe the audio recordings or carefully review your notes. To protect confidentiality, anonymize the data by deleting any identifying information. To make data analysis easier, manage and arrange the data in a safe and efficient way.

Thanking and Follow-up: Thank the participant for their time and input at the end of the interview. Give them the chance to provide any more information or ask any questions they may have. If further time is needed, follow up with the participants to ask any questions or get any clarifications.

By following these guidelines, researchers may guarantee the gathering of insightful and rich data during in-person or online interviews, encouraging candid communication with study participants.

3.7 Data Analysis Strategies and Interpretation

"In the literature, data analysis is described as the most complex and mysterious phase of a qualitative project, and it receives the least attention" (Thorne, 2000, as cited in Kiger and Varpio, 2020). Thematic analysis will be used for this study when analysing the data and interpreting it. "Thematic analysis is a potent yet flexible technique for assessing qualitative data that can be applied in a number of paradigmatic or epistemological directions. When looking to comprehend events, thoughts, or actions that are present across a data collection, thematic analysis is the good way of analysis" (Kiger and Varpio, 2020). Thematic analysis is appropriate for this study as one of its advantages is that "compared to the other qualitative methods which are many, thematic analysis is relatively simple to learn and apply" (Kiger and Varpio, 2020).

Below is a table that highlights the steps that will be followed when conducting thematic analysis:

Steps	**Description**	**References**
1. Data familiarisation	"Transcribing interviews"	(Hagman, 2023).
2. Initial Coding	"Coding assists in organising the data at a granular, specific level"	(Kiger and Varpio, 2020).
3. Generating themes	Look for connections or trends as you analyse the codes.	(Hagman, 2023).

4. Developing and reviewing themes	"Reread transcripts and activate codes in sets to find potential themes."	(Hagman, 2023).
5. Defining and Naming Themes	"Give the topics names that are significant, descriptive, and appropriately reflect their content and character"	(Kiger and Varpio, 2020).
6. Writing up	"Describing themes using coded Data"	(Hagman, 2023).
7. Producing the Report	"Themes should be given descriptive and meaningful names that accurately reflect their content"	(Kiger and Varpio, 2020).

3.8 Possible Limitations and Challenges of the Study

•Unavailability of resources can hinder the progress of getting more insights from certain individuals within the population at the State-Owned Bank in South Africa. "Despite efforts to mitigate many potential biases, certain aspects of the process will be determined by human resource and time constraints" (Serrano, et al., 2021).

- Load-sheddingcan cause constraints when conducting interviews online. Some information might be omitted due to network issues.
- Ethical considerations, individuals may take time to sign consent forms.
- Participants' representativeness may not represent perspectives which are diverse.
- Executives and senior-level managers may provide biased and subjective answers.
- Data quality and reliability might be affected by bias judgement.
- The study will be limited to qualitative perspectives and thematic methodology, and some interviews might have to be done remotely due to flexible work schedules.
- Individuals might be scared to answer some of the issues that might be hindering the adoption of efficient technologies by the bank.

3.9 Quality Assurance

The research will follow these equivalents: transferability, dependability, credibility, and confirmability, which will be analysed in detail below. The equivalents are relevant for this

study as it follows a qualitative research approach. “These principles have been deemed as having trustworthiness, which are seen as significate and crucial by many qualitative researchers” (Nassaji, 2020).

3.9.1 Transferability:

“The concept of transferability is analogous to that of generalisability in quantitative research. However, the study is qualitative research, and it is interpretive, and the participants will be small in number and not representative of the general population, so the findings cannot be generalised as quantitative research is” (Nassaji, 2020). According to Nassaji (2020), “as the research evolves, it is important to document all the activities and conclusions”. Will be documenting every piece of information collected to make sure it is included in the conclusion of the findings.

3.9.2 Credibility:

The information that will be shared by the participants might vary, and some individuals’ insights might be subjective and biased, which will affect the credibility of their information and then affect the data that will be analysed at the end of the process to establish the findings. Triangulation will have to be used as “the validity and reliability of the results are increased by the use of it” (Nassaji, 2020). “Obtaining credibility requires a careful description of the data analysis and a verification of the sources of data obtained with participants” (Daniel, 2019).

3.9.3 Reliability:

Triangulation was utilised in the study to improve reliability and validity by cross checking results using several data sources. This approach made sure that the state-owned banks use of technology was better understood overall (Naassaji,2020). In order to improve credibility, the process of data analysis was systematically detailed, and participant verification was conducted to confirm that the conclusions accurately reflected what they thought and experienced (Daniel,2019). The conclusions of the study were validated by using this approach.

Furthermore, the data analysis was closely matched to established theories of management, including the Resource-Based View (RBV) and the Technology – Organization - Environment (TOE) framework. This alignment provided a solid theoretical framework that clarified the ways in which organisational issues impact the adoption of technology. All these steps work together to provide a more reliable and valid research outcome, ensuring that the conclusions are reliable and applicable to South African state - owned banks.

3.10 Ethical considerations

The procedure that will be followed to ensure that the data collected is ethically collected when continuing with the study will follow the below steps to ensure that the study is performed in a fair and acceptable manner for all:

Step 1. Will request a formal meeting with key stakeholders within the organisation including HR, Legal, and Risk, to inform them of the research study I would like to conduct within and outside the premises (online) of 'State-Owned Bank in South Africa' (XXX) with willing executives, IT personnel, and employees of the organisation. A request to also use the entity name will be tabled, and once approved, it will be added to the research topic.

Step 2. An attachment such as the WBS ethics form, proof of registration and consent forms, etc., of supporting documents will be shared with relevant parties within the organisation to highlight to them that this is legit.

Step 3. Upon approval to conduct the research within the premises and also with the stakeholders who are willing to participate in this study, an email will be sent to the communications department to ask them to send a broadcast email with my details and research topic, asking those who are willing to volunteer in the study to simply respond to the email or direct their response to me either via email or via WhatsApp.

Step 4. Once volunteers raise their hands to participate in the study from executives, IT personnel, and employee. Direct emails will be sent to them with the research topic, interview questions, and consent forms to make sure, before scheduling individual interview sessions with them, they have consented to the study by signing the consent form. The email will also highlight how the interviews will be conducted, either in-person or online (MS Teams or Zoom) and how the sessions will be recorded differently; if in person, it will be through voice audio using a smart phone belonging to me. But they have the final say in picking either method for the interview to be conducted.

Step 5. When the individual volunteers have signed and sent back the consent forms. A separate email will be sent with more interview details, promising them confidentiality; Individuals will be asked if they are comfortable with their personal details, such as names being used, or if they would prefer to be in disguise, rather than use their position names within the bank or use anonymous.

Step 6. Once the above has been met, interview schedule dates will be sent, and they will be offered a chance to choose days that will work for them and where they would like the interview to take place, either in a separate room in the office or online.

Step 7. The interviews will be conducted in a manner where there is transparency. More details will be shared with the participant before conducting the interview. Data handling and storage methods will be shared with the participants, as will the reasons behind conducting the research.

Step 8. Before running any interview, volunteers will be afforded a chance to either retract or retract their approval of the invite. Volunteers will be asked if they are comfortable starting with the interview and if the session can be recorded.

Step 9. The interviews will be conducted in a manner where no harm will be done, and cultural beliefs will be respected.

Step 10. While the interview is running, there will be pause moments to find out if the participant is still comfortable.

CHAPTER 4: RESULTS, DISCUSSION, AND INTERPRETATION OF FINDINGS

4.1. Introduction

Data collection is a crucial aspect of any research work, as without it, a vast array of data would be meaningless (Makalela, 2019). Hence, providing an overview of the data gathered for this study is a significant scientific endeavour. In all research endeavours, it is evident that genuine data analysis should enable researchers to swiftly identify definitions and establish distinctions and parallels for exploring new possibilities. The findings of the report are consistently presented in this chapter for easy understanding. The primary goal was to assess the data in line with the research intent and objectives, which were centered on an in-depth examination of the adoption of efficient technology in emerging markets within state-owned banks in South Africa. This study adopted a normative research design and followed a qualitative research methodology. Qualitative interviews were conducted with fifteen primary informants (n=15), who were chosen based on their active involvement in the selected state-owned bank. The insights gained from these interviews are presented using tables, and various related methods were employed for data interpretation. This chapter includes the analysis, presentation, and discussion of the qualitative information gathered from the key informants.

The data is analysed through the lens of management theories, particularly the Resource-Based View (RBV), the Technology-Organisation-Environment (TOE) Framework and the Technology Acceptance Model (TAM). These theories help contextualize the organisational dynamics and managerial decision-making processes and perceptions and behaviours of user of state-owned banks regarding the adoption of technology.

The RBV highlights the significance of internal resources in determining the state-owned banks banks capacity to embrace new technologies, including skilled employees, adequate technology infrastructure and financial capital. According to this concept, an organisation can gain a competitive edge by making effective use of the resources at its disposal.

In contrast, the TOE Framework takes a broader approach, taking into account the technological, organisational and environmental variables that influence technology adoption. It emphasizes how external factors such as regulatory requirements, market competitiveness and internal organisational preparation including managerial support and employee training influence the adoption process.

The Technology Acceptance Model (TAM) emphasizes how people's attitudes and perceptions within the state-owned bank affect the acceptance and utilization of new technologies, with a focus on perceived usefulness and ease of use When it comes to challenges like resistance to change, user training and perceived benefits of the implemented technologies, the TAM framework is essential for comprehending how managers and employees respond to technology.

By using these theories, the analysis in this chapter goes into the factors that enable or hinder technology adoption within state - owned banks. The data is discussed in light of various management theories, resulting in a thorough understanding of organisational dynamics, strategic decision making and technological adoption issues. The integration of the different managerial views allows for a better discussion of the study's findings, placing them within the broader context of technology adoption in state-owned enterprises.

4.2. Presentation of Findings from Qualitative Interviews

Wong (2008) defines qualitative data analysis as a meticulous process where the researcher organises and evaluates various non-textual sources such as interview transcripts, field notes, and observation notes to gain a deeper understanding of the phenomena under study. The distinguishing feature of qualitative research, as compared to quantitative techniques, lies in its approach to data analysis. It involves a dynamic, intuitive, and creative process of inductive reasoning and theorising, rather than a technical exercise as seen in quantitative methods (Basit, 2003). Qualitative research, unlike its quantitative counterpart, which relies on statistical methods, focuses on exploring the values, meanings, beliefs, thoughts, experiences, and feelings inherent to the phenomenon being studied (Tashakkori and Teddie, 2010).

In this study, qualitative data were gathered through semi-structured, face-to-face interviews and subsequently analysed thematically. Thematic analysis, as described by Caulfield (2022) and Mamokhere (2022), is a method used for analysing qualitative data, typically a collection of texts such as interview transcripts. The researcher meticulously scrutinises the data to identify recurring themes, concepts, and patterns of meaning. The researcher managed, compared, read, reread, categorised, and coded the collected data to identify common themes. The researcher also reviewed the field notes from the interviews to familiarise themselves with the data.

The NVivo coding system was utilised by the researcher to analyse and interpret the collected data. Neuman (1997) posits that the purpose of coding is to assign labels and meanings to the collected data, allowing the researcher to sort, arrange, and categorise the text by themes. The researcher employed thematic data analysis. Themes were identified according to the categories under which the data were collected, and the data were grouped under these themes. Information that was similar was grouped together and presented in a descriptive manner. Common and distinctive themes were also identified and appropriately presented. Therefore, this section includes the analysis, presentation, and discussion of the qualitative information gathered from the key informants. The responses and initial codes are available upon request, and the outcomes are displayed below:

4.2.1. Technology Adoption practices of the State-Owned Enterprises in South Africa and Comparison to Global Standards

To understand the technology adoption practices of South African state-owned enterprises (SOEs) the researcher asked the interviewees: what are the technology adoption practices of the State-owned enterprises in South Africa and how do they compare to global standards? The themes that were generated from the interviews are discussed below, contextualised using the Technology-Organisation- Environment (TOE) framework, Resource – Based View (RBV) and Technology Acceptance Model (TAM):

Themes Identified	Explanation of theme
Challenges in Technology Adoption	Lack of adequate training, infrastructure limitations, regulatory restrictions, cultural differences, and procurement complexities hindering technology adoption within state-owned enterprises.
Gap in Global Standards Alignment	Incomplete alignment with global standards, slow progress in IT modernization, and reluctance to automate processes
Efforts and Strategies in Technology	Exploration of digital solutions, strategic decisions in technology adoption, consideration of user proficiency, and efforts to enhance technology integration.

Source: Author

The themes under discussion provide a detailed exploration of the complex and nuanced nature of technology adoption within South African State-Owned Enterprises (SOEs). They offer a

comparative study of these practices set against international benchmarks, providing a holistic view of the position of South African SOEs in the global technology adoption landscape.

Through the integration of the Technology– Organisation – Environment (TOE) framework, the Resource-Based View (RBV) and the Technology Acceptance Model (TAM) a nuanced understanding of the variables influencing technology adoption emerges. When scrutinising the technology adoption strategies of South African SOEs, it is vital to acknowledge the significance of transparent communication and alignment across the organisation. The deployment of communication strategies from the top down and cultivating an environment of transparency and innovation can aid in aligning technological endeavours with the organisation's objectives and principles.

The main challenge, as seen from the perspective of the TOE framework, are cultural resistance, regulatory restrictions and lack of infrastructure. These challenges are a result of the interaction of organisational, environmental and technological elements. SOEs have to deal with factors such as organisational preparedness (support from management and employees), technology readiness (access to IT infrastructure) and environmental constraints (regulatory frameworks). This indicates the integration of advanced technology is challenging for South African state-owned enterprises (SOEs) as they face challenges in integrating their internal structures with external circumstances. These variables directly relate to Research question 1, which asks about current practices and their impact on the efficiency of technology integration.

From an RBV perspective, the internal resources of SOEs such as skilled employees and robust IT infrastructure can position organisations to embrace and profit from emerging technologies. Insufficient infrastructure and training have made it more difficult for South Africa state-owned enterprises (SOEs) to use these resources as a competitive advantage. These organisations are unable to fully utilise the advantages of cutting-edge technologies if they do not make necessary investments in IT infrastructure and human resources.

The gap in global standards for technology adoption such as slow IT modernisation and resistance to process automation highlights both internal and external limitations. According to the RBV, SOEs' competitiveness is compromised by their lack of capacity to allocate financial and human resources to technological modernisation. Improving infrastructure and addressing the skills gap are vital starting points toward attaining global standards.

Moreover, it is essential to prioritise ongoing employee training and development to augment skills and expedite technology adoption. Comparing against global norms can yield valuable insights into effective practices and potential areas for enhancement, allowing SOEs to maintain competitiveness on a global level. Engaging with international counterparts and capitalizing on global expertise can further boost technological competencies and ensure compliance with international standards. Recent studies have complemented these findings. For instance, the adoption of cloud-based enterprise resource planning (ERP) systems in South African SOEs has been explored (Nakeng, Mokwena, and Moeti 2021). While the adoption of cloud computing seems attractive, most companies are still using on-premises ERP systems (Nakeng, et al. 2021). Another study uncovers the determinants influencing the adoption of emerging technologies, particularly artificial intelligence (AI), cloud computing, and distributed ledger technologies (DLT), in South African financial services firms (Matsepe and Van der Lingen, 2022).

Incorporating these insights, it can be said that the adoption of advanced technologies such as AI, cloud computing, and DLT can further enhance the operational efficiency of South African SOEs. These technologies not only offer solutions to combat cybercrime but also provide opportunities for innovation and competitiveness. However, the successful integration of these technologies requires a comprehensive strategy that addresses the challenges and leverages the advantages they offer (Nakeng et al. 2021; Matsepe and Van der Lingen, 2022).

The integrated approach of TOE, RBV and TAM presents an exhaustive overview of the state of technology adoption in South African state-owned enterprises. In order to effectively utilise cutting-edge technologies and comply with global standards these organisations need to get beyond obstacles related to internal resources, cultural norms and external regulations. Through the implementation of global best practices, innovation and employee training as top priorities, SOEs can improve their technological competence and competitiveness in a constantly changing global market.

4.2.2. Critical Challenges Encountered by South African State-Owned Banks in the Adoption of New Technologies

The researcher asked the interviewees: what are the key issues faced by the State-Owned Bank in South Africa in the adoption of new technologies, and how can these issues be addressed? The themes that were generated from the interview data collected were written by using the questions to generate meaning. The emerging themes are shown and discussed below:

These theories provide insights on how organisations can successfully drive change, coordinate internal resources and navigate difficult environments. The major themes of the study are covered in the section that follows. Management theories including the Resource – Based View (RBV), Change Management Theory, Technology-Organization-Environment (TOE) framework, and Leadership Theories are integrated to contextualize the significant challenges faced by state-owned banks.

Themes Identified	Explanation of theme
Governance and Documentation Challenges	Emphasises the importance of proper governance,documentation, and adherence to business processes during technology adoption. **Application of management theory:** Structured processes and governance help the organisation adapt to changing technology environments.
Skills Shortage and Strategic Sourcing	Highlights challenges in finding skilled personnel, particularly in open-source technologies. Advocates for strategic sourcing approaches, including hiring junior professionals and engaging third-party providers. **Application of management theory:** The RBV focuses on using internal resources including skills to gain a competitive edge. The optimization of resources is emphasized in the RBV, which is consistent with strategic sourcing.
Infrastructure Overhaul and Legacy System Concerns	Discusses the need for infrastructure overhaul to support new applications. Identifies challenges related to legacysystems hindering the adoption of new technologies. **Application of management theory:** The TOE framework advocates a comprehensive modernization of infrastructure in line with emerging technological developments. Maintaining a balance between organizational capacity, market competition and regulatory needs as well as internal readiness is necessary for this process.
Procurement Process Complexityand Leadership Gaps	Addresses delays and complexities in the procurement process affecting technology adoption. Recognizes the need for experienced leadership to drive the adoption of relevant technology.

	Application of management theory: Leadership theories emphasize the necessity of skilled leaders who can advocate for technology adoption, manage cross-functional teams and guarantee that procurement challenges are solved quickly. Strong leadership enables a clear vision and direction for technological efforts, reducing bureaucratic red tape and accelerating decision-making.
Communication and Awareness Gaps	Highlights the importance of clear communication andinformation about technology adoption practices. Recommends seeking clarification and updates from relevant sources within the organisation. **Application of management theory:** TAM to ensure that employees are aware of the advantages of adopting new technology and how it will enhance their work processes, it is important to put effective communication strategies in place. Training programs can also be designed to show how advances in technology are easy to use and address perceived challenges.
Cultural Differences and Resistance tochange	Discusses the impact of cultural differences on the slower pace of technology adoption. Emphasises the need for improved technology education and training initiatives. **Application of management theory:** TAM suggests that to overcome resistance, organizations can focus on change management approaches such as workshops, communication campaigns and training efforts that promote an innovative culture. SOBs can reduce resistance to technological advances by emphasizing their long-term benefits and creating a more adaptive workforce.
Political Interference and Governance	Explores how political interference impacts the adoption of new technologies. Discusses misalignment of policies and the need for a responsive approach in dealing with banking requirements. **Application of management theory:** The environmental part of the TOE framework emphasizes the

	importance of SOBs successfully navigating external political variables. Increasing independence in decision-making while adhering to government regulations may contribute to speeding up technology adoption processes and minimize the adverse impacts of political interference.
Job Loss Concerns and Automation Challenges	Addresses concerns about potential job losses with technology automation. Highlights the importance of upskilling resources before initiating automation processes. **Application of management theory:** The TAM model highlights the need to address employee concerns by demonstrating the value that technology brings to their roles such as increased productivity and job fulfillment. Furthermore, the RBV perspective recommends investing in employee upskilling to ensure their value in an increasingly automated economy.
Budgetary Constraints and Cost Considerations	Discusses how reduction in government expenditure impacts technology adoption. Recommends the establishment of a dedicated research and development team to enhance decision-making capabilities. **Application of management theory:** The RBV emphasizes the importance of maximizing current resources and prioritizing investment in areas with the highest return on investment. Creating a specialised research and development team helps improve decision-making and makes sure that financial resources are allocated to the most important technology initiatives.
Skills Gap and Innovation Challenges	Highlights the lack of skills and innovation within the state-owned bank. Advocates for partnering with smaller companies and revising PFMA for technology procurement.

Source: Author

Fundamentally, these themes provide an in-depth analysis of the complex processes involved in the adoption of technology within South African state-owned banks. They highlight the need for a holistic strategy that considers a variety of factors to ensure successful technology integration. South African State-Owned Banks (SOBs) encounter several obstacles in their

technology adoption journey, including resistance to change, administrative red tape, and unstable leadership. To tackle these challenges, a diverse approach is required, beginning with robust management backing and stewardship of technology initiatives. The implementation of thorough change management strategies, encompassing communication, training, and cultural workshops, can aid in mitigating resistance and cultivating a culture of innovation.

Furthermore, fostering autonomy and reducing political interference in technology-related decisions can streamline decision-making and implementation processes. Promoting a collaborative environment and knowledge exchange among employees, along with tapping into external expertise when needed, can significantly bolster efforts towards technology adoption.

Recent studies have indeed complemented these findings. For instance, the use of Artificial Intelligence (AI) and 5G technology in South African banks has been explored as a means to combat cybercrime and financial crime (Chitimira and Ncube, 2021). The adoption of these technologies can enhance competitiveness and expand business operations (Chitimira and Ncube, 2021). Furthermore, the potential of Blockchain Technology (BCT) in transforming the financial services industry has been highlighted (Barrett and Van Belle, 2021). South African investment organisations have shown mixed perceptions about BCT, with some viewing it as disruptive while others see it as mere hype (Barrett and Van Belle, 2021). Incorporating these insights, it can be said that the adoption of advanced technologies such as AI, 5G, and blockchain can further enhance the operational efficiency of South African SOBs. These technologies not only offer solutions to combat cybercrime but also provide opportunities for innovation and competitiveness. However, the successful integration of these technologies requires a comprehensive strategy that addresses the challenges and leverages the advantages they offer (Barrett, and Van Belle, 2021; Chitimira, H. and Ncube, 2021).

4.2.3. Successful Implementation of Technologies by South African State-Owned Banks for Enhanced Operational Efficiency and Customer Experience

The researcher asked the interviewees what are the most effective technologies that can be adopted by State-Owned Banks in South Africa to enhance their operational efficiency and customer experience? The themes that were generated from the interview data collected were written by using the questions to generate meaning. The emerging themes across responses are shown and discussed below:

Themes Identified	Explanation of theme

Technology Adoption and Modernisation	This theme encompasses various suggestions related to adopting modern technologies such as cloud computing, AI, blockchain, and automation to enhance operational efficiency and customer experience.
Security and Compliance	Suggestions related to cybersecurity measures, compliance with standards like PCI DSS, and the importance of data privacy and security form this theme.
Customer-Centric Approach	This theme highlights the significance of prioritising customer needs and preferences by offering simple, accessible, and innovative banking solutions like mobile banking, CRM systems, and customer feedback mechanisms.
Infrastructure and System Enhancement	Recommendations related to upgrading existing systems, implementing robust core banking systems, enhancing connectivity through branch expansion, and optimizing data management systems fall under this theme.
Operational Efficiency	Suggestions aimed at improving operational processes through technologies like RPA, machine learning, and analytics engines, as well as adopting hybrid infrastructure models for cost-effectiveness, constitute this theme.
Future Readiness and Scalability	This theme emphasises the importance of building future-ready solutions, scalability, and flexibility to adapt to changing technological landscapes and client demands over time.
Collaboration and Integration	Recommendations regarding collaboration with ecosystem partners, integration of open API architectures, and leveraging IoT for enhanced customer engagement contribute to this theme.
Awareness and Training	Suggestions advocating for increasing awareness about technological advancements, providing training for employees, and fostering a culture of innovation and readiness are grouped under this theme.

Source: Author

These themes delve into the diverse viewpoints on the effective integration of technology to boost operational efficiency and enrich the customer experience within South Africa's state-owned banks. To elevate operational efficiency and customer experience, South African State-

Owned Banks (SOBs) could focus on embracing technologies such as digital banking platforms, artificial intelligence (AI) for automating customer service, and data analytics for tailoring banking services. The implementation of stringent cybersecurity protocols is crucial to safeguarding sensitive customer information and fostering trust. Utilising cloud computing and mobile technologies can offer increased accessibility and flexibility for customers, while the use of blockchain technology can heighten transparency and security in financial transactions. Partnerships with fintech startups and technology collaborators can pave the way to state-of-the- art solutions and stimulate innovation in the banking sector. To complement these findings, it is essential to recognise that the strategic integration of new technologies such as AI, blockchain, and cloud computing can significantly streamline banking operations and offer personalized customer experiences (Fares, Butt, and Lee, 2023). Moreover, establishing strategic partnerships with fintech startups can provide access to innovative solutions, fostering a culture of continuous improvement and technological advancement within the banking sector (Broby, 2021; Matsepe and Van der Lingen, 2022).

4.2.4. Efficient Management of New Technology Adoption and Risk Mitigation in South African State-Owned Banks

The researcher asked the interviewees how can South African State-Owned Bank manage the adoption of new technologies efficiently while reducing the risks connected with technology adoption? The themes that were generated from the interview data collected were written by using the questions to generate meaning. The emerging themes across responses are shown and discussed below:

Themes Identified	Explanation of theme
Training and Skill Development	This theme encompasses the need for proper training and skill development programs to ensure that employee are adequately prepared to adopt and utilise new technologies effectively. It includes addressing gaps in understanding, upskilling existing employee, and aligning skill sets with the requirements of new technologies.

Change Management and Strategy	Change management emerges as a critical theme, emphasizing theimportance of managing transitions effectively, aligning with long-term strategic goals, and establishing clear strategies for technology adoption. It includes considerations for assessing risks, setting standards, and ensuring alignment with organisational objectives.
Security and Risk Mitigation	This theme focuses on addressing security concerns and mitigating risks associated with technology adoption. It includes measures to manage security vulnerabilities, adhere to compliance standards, and implement robust security protocols to safeguard against internal and external threats.
Alignment with Industry Standards and Best Practices	The theme highlights the significance of aligning with industry standards and best practices when adopting new technologies. It involves establishing structured plans, conducting thorough research, and selecting proven technologies with demonstrated success in the market.
Internal Capacity Building and Accountability	This theme emphasises the importance of internal capacity building, accountability, and minimizing reliance on external resources. It includes strategies for internal hiring, fostering accountability within the organiation, and enhancing control over core banking systems.
Collaboration and Synergies	Collaboration and synergies emerge as essential themes, emphasizing the need for inter-departmental collaboration, knowledge sharing among State-Owned Enterprises (SOEs), and leveraging each other's strengths to drive efficient technology adoption.
Education and Awareness	This theme underscores the significance of education, training, and raising awareness among employee about new technologies and cybersecurity measures. It includes initiatives to promote continuous learning, enhance employee knowledge, and address cybersecurity risks effectively.
Transition Management and Legacy Systems	Transition management and legacy systems represent a key theme, focusing on managing the transition from old to new systems, involving employee in the process, and ensuring the continuity of legacy systems during technology adoption.

Source: Author

These themes together offer a holistic blueprint for the efficient management of new technology adoption, while mitigating associated risks within South African State-Owned Banks. The effective management of technology adoption, coupled with risk reduction, necessitates a forward-thinking approach that underscores meticulous planning, stakeholder involvement, and risk management. The establishment of transparent governance structures and accountability mechanisms can facilitate effective decision-making and supervision throughout the adoption journey. Undertaking exhaustive risk evaluations and instituting strong cybersecurity measures are crucial to protecting against potential threats and vulnerabilities. Emphasising scalability, interoperability, and adaptability in technology solutions can assist in future-proofing the bank's infrastructure and adapting to changing business requirements. Cooperation with regulatory authorities and industry stakeholders can ensure adherence to pertinent regulations and standards, thereby reducing the legal and regulatory risks linked to technology adoption. It is evident that the integration of new technologies in the banking sector requires a robust framework that not only addresses the immediate operational needs but also anticipates future trends and challenges. This involves a commitment to continuous learning and adaptation, ensuring that the organisation remains agile and responsive to the evolving technological landscape (Broby, 2021). Moreover, fostering a culture of innovation and risk-awareness is essential for navigating the complexities of technology adoption while safeguarding the bank's infrastructure and customer data (Fares et al. 2023).

4.2.5. Strategies to Overcome Cultural and Organisational Barriers Influencing the Adoption of New Technology in South African State-Owned Banks

The researcher asked the interviewees Which steps can be taken to overcome factors such as cultural and organisational variables that influence the adoption of new technology in South African state-owned bank? The themes that were generated from the interview data collected were written by using the questions to generate meaning. The emerging themes are shown and discussed below:

Themes Identified	Explanation of theme
Communication and Alignment	Clear communication from management about technological changes. Top-down communication to ensure everyone understands and aligns with the changes. Cultural alignment to facilitate understanding and adoption across the organisation.

Employee Support and Recognition	Recognition of the sacrifices made by employees during technological transitions. Providing support for employees with religious commitments or scheduling challenges. Establishing compensation mechanisms and acknowledging personal sacrifices.
Cultural Change and Innovation	Cultivating a technology-oriented culture within the organisation. Addressing resistance to change by highlighting benefits and similarities with existing systems. Promoting a culture of innovation and proactive behaviour to drive the bank's competitiveness.
Leadership and Organisational Perspective	Recognizing the need for fresh perspectives and diverse experiences within the organisation. Implementing stable leadership and reducing political interference to facilitate technological advancement. Ensuring executive support and ownership of technology projects to drive successful implementation.
Change Management and training	Following comprehensive change management steps, including training and cultural change workshops. Prioritizing continuous employee training to enhance skills and facilitate technology adoption. Creatingplatforms for employees to apply newly acquired skills and reducing reliance on external consultants.
Cultural Diversity and Adaptation	Understanding and leveraging cultural diversity to manage change effectively. Gathering data on individual backgrounds and experiences to anticipate and address resistance. Transparently transferring skills and knowledge through education to promote informed decision-making.
Organisational Culture and Identity	Establishing a distinct organisational culture for the state-owned bank, separate from its parent company. Fostering a supportive organisational culture that values employee contributions and empowers innovation. Aligning technology adoption with organisational values and goals to drive success.
Operational Efficiency andAutonomy	Addressing bureaucratic challenges and promoting autonomy for efficient operation. Planning for long-term stability and commitment to appointed personnel to drive technological strategies forward. Creating an operational environment that values both existing and new technologies and encourages openness to innovation.

Source: Author

These themes underscore the complex array of factors that influence technology adoption in state- owned banks, spanning from communication and leadership to organisational culture and operational efficiency. A comprehensive approach to these themes can help surmount obstacles and enable the successful integration of new technologies. To tackle cultural and organisational factors impacting technology adoption, South African State-Owned Banks (SOBs) can undertake several proactive measures. This encompasses nurturing a culture of openness, transparency, and innovation through effective communication, training, and acknowledgment of employee achievements. The execution of change management strategies that emphasise cultural transformation workshops, stakeholder involvement, and knowledge exchange can help mitigate resistance and establish organisation-wide support. Advocating for diversity and inclusivity in technology initiatives can warrant that the requirements and viewpoints of all stakeholders are considered. Furthermore, investment in leadership growth and talent management can foster a workforce that is prepared to spearhead technological innovation and effectively manage organisational change. To further support the integration of new technologies in South African State-Owned Banks, it is critical to recognise the role of leadership in steering the adoption process. Leaders must not only endorse technological advancements but also actively participate in the change management process, fostering an environment where innovation is valued and pursued (Matsepe and Van der Lingen, 2022). Additionally, the adoption of technology should be viewed as a continuous journey, requiring ongoing assessment and refinement to align with global best practices and the evolving needs of the organisation (Broby, 2021).

4.3. Linking Themes Generated to the Theoretical Framework

The data uncovers themes that resonate strongly with the fundamental elements of the Technology Acceptance Model (TAM), offering insights into the determinants that shape the integration of new technologies in South African state-owned banks. The critical role of effective communication and alignment is underscored, mirroring TAM's emphasis on perceived usefulness and ease of use. The fostering of an innovative and change-ready culture aligns with TAM's perceived innovation factor, while the requirement for stable leadership and minimal political intervention correlates with perceived organisational support. The focus on addressing employee needs, recognising their contributions, and delivering comprehensive training aligns with TAM's perceived ease of use factor, thereby facilitating a more seamless transition towards technology adoption.

The prioritisation of technologies that augment operational efficiency and enrich the customer experience aligns with perceived usefulness, while the execution of robust risk management strategies corresponds with perceived risk. The identified themes emphasise the importance of perceived usefulness, ease of use, innovation, organisational support, and risk perception in propelling technology acceptance within South African state-owned banks.

4.4. Conclusion

In summary, this study has yielded significant insights into the efficient adoption of technology in emerging markets, specifically within South African State-Owned Banks (SOBs). Utilising a normative research design and a qualitative approach, data were collected from fifteen key informants through semi-structured interviews and subsequently analyzed thematically using NVivo coding software. The results provide an extensive examination of the intricacies associated with technology adoption within SOBs, illuminating critical issues, effective technologies, management strategies, and the impact of cultural and organisational factors. The identified themes underscore the importance of clear communication, alignment, continuous employee training, and benchmarking against global standards in spearheading successful technology adoption initiatives within SOBs. Strategies to tackle challenges such as resistance to change, bureaucratic obstacles, and leadership instability were detailed, stressing the need for executive backing, solid change management practices, and collaboration with external partners. Effective technologies for boosting operational efficiency and enhancing the customer experience, including digital banking platforms, AI, data analytics, and blockchain, were explored, along with risk management strategies to mitigate associated risks.

Overall, the research findings emphasise the importance of a comprehensive approach that considers various factors, including communication, leadership, culture, and technology, in enabling technology adoption within SOBs. By implementing the policy and practice implications derived from these themes, SOBs can more effectively navigate the complexities of technology adoption, fostering innovation, operational efficiency, and customer satisfaction. This research adds to the existing body of literature on technology adoption in emerging markets and offers valuable insights for policymakers, bank executives, and researchers aiming to enhance technology integration within state-owned banking institutions. The next chapter provides a summary, conclusion, and recommendations to improve the adoption of new

technologies in State-Owned Banks. The next chapter provides the summary, conclusion, and recommendations of the study.

CHAPTER 5: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1. Introduction

The aim of this study was to examine the adoption of the efficient technologies in a South African State-Owned Enterprise (SOE) bank. Additionally, the study aimed at specifically investigating the factors that affect how the efficient technologies are adopted in an SOE, the difficulties that come during the adoption phase, and the advantages that result from successfully adopting the efficient technologies. This concluding chapter summarizes the study's objectives, presents key findings, and offers recommendations. The following sections provide a recap of each chapter, outlining their main points. Subsequently, the key findings and contributions of the study are summarised. Lastly, the chapter discusses the limitations of the study and suggests avenues for future research on the topic.

5.2. Summary of Chapters

The overarching aim of this study was to examine the adoption of efficient technologies in a South African State-Owned Enterprise (SOE) bank as a case. The study consists of five chapters, which are summarised below:

- **Chapter One: Introduction and background of the study**

The chapter offered a detailed overview, setting the stage for the investigation by outlining the research problem that spurred the study. It articulated the research questions, along with the rationale and objectives driving the inquiry. Additionally, the chapter delineated the study’s scope, its delimitations, and underlying assumptions, culminating in a structured outline of the study’s chapters.

- **Chapter Two: Literature Review and Theoretical Framework**

Chapter 2 explores the TOE framework demonstrated that technological, organisational and environmental variables, such as regulatory restrictions and competition are critical in encouraging the adoption of efficient technologies. Internally organisational culture and leadership were identified as significant elements influencing the outcome of technology adoption.

The RBV demonstrated that internal resources such as financial resources, skills of employees and organisational infrastructure are critical to technology adoption. Banks that effectively

manage and allocate these resources are in a better position to adopt new technologies that improve efficiency in operations and customer service.

The TAM demonstrated the value of acceptance by users in the adoption process. Employee and manager perceptions were found to be strongly influenced by the perceived ease of use and usefulness of emerging technologies. The survey also emphasized the importance of thorough training programs to increase digital literacy and ensure that employees are experienced with the new technologies that are being adopted.

- **Chapter Three: Research Methodology and Design**

The chapter offered an in-depth exploration of the research methodology, detailing the multifaceted approach taken to achieve the study's aims. It covered the spectrum of methodological aspects, including data collection methods, population and sample selection, and the case site's role. The chapter also delved into defining the study's scope, pinpointing the target demographic, selecting suitable sampling techniques, establishing sample size, opting for data collection methods, data analysis, and fortifying the validity and reliability of the results. Furthermore, it conscientiously tackled the ethical considerations integral to the research process.

- **Chapter Four: Research Findings, Analysis, Interpretations and Discussion**

This chapter delineates the empirical findings from the study, supplemented by a thorough analysis, interpretation, and discussion. The qualitative data, meticulously examined and thematically interpreted, underscore the critical factors for successful technology adoption in South African State-Owned Banks (SOBs). These factors include the imperative of clear communication, strategic alignment with organisational objectives, ongoing employee development, and adherence to international benchmarks. The study also identifies and addresses key challenges such as resistance to change and leadership instability, advocating for robust executive support and effective change management strategies. The research posits that a holistic approach, integrating communication, leadership, culture, and technology, is essential for fostering innovation, operational efficiency, and customer satisfaction in SOBs.

- **Chapter Five: Conclusion, Summary, and Recommendations**

The primary aim of this study was to examine the adoption of the efficient technologies in a South African State-Owned Enterprise (SOE) bank as a case study. The primary aim of this study was achieved and guided by the following objectives:

1. To describe the technology adoption practices of the State-Owned Enterprises in South Africa and how they compare to global standards.

2. To uncover effective technologies that can be adopted by State-Owned Banks in South Africa to enhance their operational efficiency and customer experience.

3. To recommend how the South African State-Owned Bank can manage the adoption of new technologies efficiently while reducing the risks connected with technology adoption.

4. To recommend steps that can be taken to overcome factors such as cultural and organisational variables that influence the adoption of new technology in South African state-owned bank.

5.3. Summary of the Key Findings

In this section, the researcher discusses the summary of the key findings based on the overall objective of the study. The study on technology adoption in South African State-Owned Banks (SOBs) reveals a complex landscape influenced by various elements such as communication, leadership, organisational culture, and operational efficiency. Key themes have emerged from international benchmarks and recent studies, providing valuable insights for efficient technology integration. Transparent communication and alignment are vital for successful technology adoption. Strategies that emphasise top-down communication and promote transparency and innovation can align technological initiatives with organisational goals. Employee training and development are also crucial, with investments in education for all levels of employees recommended to facilitate a smooth transition to advanced technologies.

Comparisons against global standards and engagement with international counterparts can offer insights into effective practices and potential areas for improvement. Collaboration with government agencies and commercial banks can aid in the adoption process and address challenges. Leadership plays a critical role in guiding the adoption process, endorsing technological advancements, actively participating in change management, and fostering an innovative environment. Technology adoption should be seen as a continuous journey that requires ongoing evaluation and refinement.

Emphasising scalability, interoperability, and adaptability in technology solutions ensures readiness for future challenges. Robust risk management strategies and cybersecurity measures are essential to protect against potential threats and vulnerabilities, with cooperation with regulatory authorities and adherence to standards mitigating legal and regulatory risks. In conclusion, the adoption of efficient technologies within SOBs is crucial for enhancing organisational effectiveness and competitiveness. However, the adoption process is intricate and requires careful planning, stakeholder involvement, and risk management. By adopting the recommendations outlined in this study, SOBs can navigate the challenges of technology adoption and position themselves as leaders in the digital banking landscape of the Fourth Industrial Revolution.

5.4. Recommendations of the study

Based on the findings, the study proposes the following recommendations that can be used to enhance how the South African State-Owned Bank can manage the adoption of new technologies efficiently while reducing the risks connected with technology adoption: The findings may also be applied to other state-owned enterprises in South Africa that are facing similar challenges in adopting new technologies. The following recommendations are suggested in line with the findings coming from the study:

- **Establish a Technology Adoption Framework**: Create a structured approach to technology adoption that includes clear timelines, milestones, and performance indicators. This framework should align with the bank's strategic goals and be adaptable to technological changes.
- **Prioritise Data Governance and Quality**: Develop a data governance strategy that ensures the accuracy, consistency, and security of data across all technological platforms. This includes establishing data quality standards and regular audits to maintain data integrity.
- **Enhance Digital Literacy**: Invest in comprehensive digital literacy programs for all levels of employee. This goes beyond basic training and focuses on building a deep understanding of digital technologies and their impact on the bank's operations and services.
- **Develop a Resilience Plan**: Prepare for potential disruptions caused by new technologies by developing a resilience plan. This plan should include procedures for rapid response to technological failures, data breaches, and other cyber threats.

- Monitor and Evaluate Technology Performance: Continuously monitor the performance of newly adopted technologies using key performance indicators (KPIs). Regularly evaluate these technologies to ensure they meet the bank's needs and provide the expected benefits.
- **Amendments to the Public Finance Management Act (PFMA):** In light of the swift advancements in technology and its profound influence on the financial sector, it is crucial to contemplate revisions to Section 51(1)(a)(iii) of the Public Finance Management Act (PFMA) in South Africa. This section obliges the accounting authorities of public entities to guarantee the establishment and maintenance of systems for financial and risk management, as well as internal control, that are both effective and transparent. To remain abreast of technological progress, it would be beneficial for this section to be augmented to specifically encompass the management of technological risks and the incorporation of new technologies within these internal control frameworks. Proposed amendments could include the stipulation of periodic technology audits, the formation of a dedicated committee for technology innovation, and the crafting of a strategic roadmap for technology adoption that is congruent with the financial and operational objectives of the entity. By implementing these enhancements, State-Owned Enterprises (SOEs) within the banking sector would not only adhere to the mandates of the PFMA but also position themselves to capitalise on novel technologies, thereby bolstering their competitive edge and improving the delivery of services.

5.5. Future research

Future research on technology adoption in South African State-Owned Banks (SOBs) could delve deeper into several areas. One potential area of study could be the impact of emerging technologies such as artificial intelligence, blockchain, and quantum computing on the operational efficiency of SOBs. This could include an examination of the opportunities and challenges these technologies present, as well as strategies for their successful implementation. Another potential area of research could focus on the role of leadership in driving digital transformation. This could involve a comparative study of leadership styles and their effectiveness in promoting technology adoption within SOBs. Further research could also explore the influence of organisational culture on technology adoption. This could involve investigating how different aspects of culture, such as attitudes towards innovation and risk,

affect the adoption process. Finally, future studies could examine the role of regulatory bodies in facilitating technology adoption within SOBs. This could include an analysis of current regulations and their impact on technology adoption, as well as recommendations for regulatory reforms to support digital transformation. These potential areas of research could provide valuable insights into the complex landscape of technology adoption within SOBs and contribute to the development of effective strategies for navigating the challenges of the Fourth Industrial Revolution.

5.6. Conclusion

In conclusion, this study has effectively evaluated the integration of efficient technologies within South African State-Owned Enterprises (SOEs), focusing on the banking sector. It has identified a range of measures to enhance technology adoption practices and has offered practical recommendations for future strategies. Despite certain limitations, the study provides valuable insights into the intricate dynamics of new technology adoption in a traditionally oriented country like South Africa. This understanding is crucial for navigating the difficulties and opportunities presented by the digital transformation in the banking sector.

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APPENDIX A: Consistency table: research questions, hypothesis, data collection, and data analysis

RQ #		Research Question	Hyp #	Hypothesis	Data collection detail	Data analysis method
1		What are the technology adoption practices of the State-Owned Enterprises inSouth Africa and how do they compare to global standards?			Interview (In-person or online)	
2		What are the key issues faced by the State-Owned Bank in South Africa in the adoption of new technologies, and how can these issues be addressed?			Interview (In-person or online)	Thematic analysis

3		What are the most effective technologies thatcan be adopted by State- Owned Banks in South Africa to enhance their operational efficiency and customer experience?	1	"Business enablers possess a significant impact on the performance banksoperations" (Alsmadi et al., 2022).	Interview (In-person or online)	Thematic analysis
4		How can South African State-Owned Bank managethe adoption of new technologies efficiently while reducing the risks connected with technology adoption?	2	"Digital banking will assist in increasing the economic value for banks and the entire economy" (Thach et al., 2020).	Interview (In-person or online)	Thematic analysis
5		Which steps can be taken to overcome factors such as cultural and organisational variables that influence the adoptionof new technology in South African state-owned bank?			Interview (In-person or online)	Thematic analysis

APPENDIX B: Interview Structure

Task #	Task
1.	Introduction
	Get informed consent: • Request interviewee permission to record the interview. • Explain purpose of the study and find out if there are anyconcerns. • Read shared consent form and participation sheet.
2.	Get participant information: • Name and Position. • Explain role in the organisation.
3.	**Research Question**
1	What are the technology adoption practices of the State-Owned Enterprises in South Africa and how do they compare to global standards?

2	What are the key issues faced by the State-Owned Bank in South Africa in the adoption of new technologies, and how can these issues be addressed?
3	What are the most effective technologies that can be adopted by State-Owned Banks in South Africa to enhance their operational efficiency and customer experience?
3.	**Research Question**
4	How can South African State-Owned Bank manage the adoption of new technologies efficiently while reducing the risks connected with technology adoption?
5	Which steps can be taken to overcome factors such as cultural and organisational variables that influence the adoption of new technology in South African state-owned bank?
4.	**Conclusion**
	Any questions from you?
	Thank you for agreeing to participate in the study.