A DIGITILISATION MODEL FOR IMPROVING OPERATIONAL EFFICIENCY: A CASE OF A SOUTH AFRICAN INSURANCE COMPANY

By

Siyabonga Gama

Student Number: 68176783

Submitted in accordance with the requirements for the degree of

MASTER OF SCIENCE IN COMPUTING (Information Systems)

in the

COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY

(School of Computing: Information Systems Department)

at the

UNIVERSITY OF SOUTH AFRICA (UNISA)

Supervisor: Dr Mampilo Phahlane

Co supervisor: Dr Lario Malungana

12 - 01 - 2025

DECLARATION

Name: Siyabonga Gama

Student number: 68176783

Degree: 98961 - Master of Science in Computing (Information Systems)

Exact wording of the title of the dissertation or thesis as appearing on the copies submitted for examination:

A Digitilisation Model for Improving Operational Efficiency : A Case of A South African Insurance Company

I declare that the dissertation/thesis above is my work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



SIGNATURE

21 - 05 - 2025

DATE

Abstract

Digitalisation is the integration of digital technology in business operations to enhance efficiencies. This shift has transformed strategies in the insurance industry, leading to greater competitiveness, revenue growth, and productivity. However, current research on the relationship between digitalisation and business processes in the South African (SA) insurance industry is limited, with little emphasis on environmental, technological, and industry factors. In addition, research on digitalisation in developing countries, particularly in SA, remains scarce.

The aim of this research is to investigate how digitalisation can improve operational efficiency in the South African insurance industry. The study employed the technology-organisation-environment (TOE) framework along with contingency theory (CT) as its theoretical basis to attain this goal. The research centres on digital innovation within the industry, using a SA insurer as a case study to create an adaptable digitalisation model.

This research employs a qualitative case study approach, adopting an interpretivist perspective and focusing on the insurance industry. The study gathered data through a thematic analysis of semi-structured, open-ended interviews and document analysis.

The findings highlight the difficulties the SA insurance industry faces, such as a dependence on traditional communication methods, high costs for smaller firms, and slow adoption of digital technologies. Even though automation has enhanced processes, challenges related to data security remain. In addition, ineffective leadership, unclear strategies, and barriers related to regulatory compliance particularly concerning the Protection of Information Act (POPIA) further hinder progress. Consequently, collaboration is necessary to address these barriers and promote faster digital adoption.

This study enhances the understanding of digital innovation in the SA insurance industry by identifying adoption patterns, trends, and key focus areas for practitioners, policymakers, and researchers while inspiring new frameworks and advancing a digitalisation model for emerging markets.

Keywords

Contingency theory , digitalisation, digital technologies, operational efficiencies, insurance industry, Technology-organisation-environment

Peer-Reviewed publications from this research

Gama S.M., Malungana L. and Phahlane M.M. (2024). A digitilisation model for operational efficiency of operations in the insurance industry. *South African Journal of Information Management*.

Gama S.M., Phahlane M.M., and Malungana L. (2024). The evaluation of the usage of Artificial Intelligence in the South African insurance industry. *Acta Commercii - Independent Research Journal in the Management Sciences.* (**under review**)

Accepted for publication.

Gama S.M., Malungana L. and Phahlane M.M. (2024). A digitilisation model for operational efficiency of operations in the insurance industry. *South African Journal of Information Management*. (**published**)

ACKNOWLEDGEMENTS

I want to express my gratitude to my mother, Ziningi and my father Thabizolo for guidance and support, as well as for always having faith in me and my abilities. To my 'partner in crime': I appreciate your continuous support and encouragement as I work toward my objectives and academic goals. A special thank you to my late heavenly guardian angel, Anna Gama, for your unconditional love and support. To the young Elethuthando Gama and the one who has not been named, I hope to be a good example of what can be achieved with determination. To all the friends and family who inspired me to continue even when I had doubts about continuing my studies: a big thank you. To conclude, I want to express my sincere gratitude to my supervisors, Dr Mampilo Phahlane and Dr Lario Malungana. Your consistent guidance, willingness to invest your time, and ongoing support have been incredibly important throughout this process. I sincerely value everything you have done to assist me.

.

Table of Contents

List of Tables 9
CHAPTER ONE: INTRODUCTION AND BACKGROUND 11
1.1 Introduction and background 11
1.1.1 Background of the SA insurance industry 13
1.2 Problem statement and research questions 14
1.2.1 Problem statement 14
1.2.2 Research aim and objectives 15
1.2.3 Research questions 15
1.3 Overview of the methodological approach 15
1.4 Research contributions 16
1.5 Terms and definitions 17
1.5.1 What is digitalisation? 17
1.5.2 What are digital technologies? 18
1.5.3 What are operational efficiencies? 18
1.5.4 What is the insurance industry? 18
1.6 Dissertation structure 19
1.7 Conclusion 20
CHAPTER TWO: THEORETICAL FOUNDATIONS AND LITERATURE SURVEY . 21
2.1 Introduction 21
2.1.1 Overview 22
2.2 Literature review 22
2.2.1 Digitalisation in insurance 22
2.2.2 Benefits of digital technologies 24
2.2.3 Impact on clients and markets 26
2.2.3.1 How digitalisation is reshaping customer behaviour and expectations 26
2.2.3.2 The market-level challenges faced by insurance firms in emerging economies such as SA 26
2.2.4 Barriers to digitalisation 26
2.2.4 Digitalisation trends 27
2.3 Literature screening process 29
2.3.1 Database and search items 29
2.3.2 Inclusion and exclusion criteria 30
2.3.3 Search results 31

2.4 Conceptual model and summary of literature 40
2.4.1 Conceptual model 40
2.4.2 Contingency theory elements 42
2.4.3 Research questions 42
2.4.4 Summary of the literature review 42
2.4.1.2 Research deficits 43
2.4.1.3 Publication period 44
2.4.1.4 Journal outlet 44
2.4.1.5 Digital technologies and insurance industry publications 45
2.4.1.6 The focus of technologies over the years 46
2.4.1.7 Value chain observations 46
2.4.1.8 Theoretical framework 48
2.4 Conclusion 48
CHAPTER THREE: THEORIES UNDERPINNING THE RESEARCH 50
3.1 Introduction 50
3.2 Introduction to theory in information systems 50
3.3 Theories in information systems research (continued) 52
3.4 Background to the underpinning theories for this research 54
3.4.1 TOE framework 54
3.4.2 Contingency theory 55
3.4.3 Application of the TOE framework and CT in the insurance industry 56
3.5 TOE framework and CT structures 57
3.6 Basic TOE framework and CT principles 60
3.6.1 Basic TOE framework principles 60
3.6.2 Basic CT principles 60
3.7 Theoretical Integration of TOE and CT 61
3.9 Why was CT chosen as an underpinning theory for this research. 63
3.10 Conclusion 63
CHAPTER FOUR: RESEARCH METHODOLOGY 65
4.1 Introduction 65
4.2 Research design 66
4.2.1 Research onion 66
4.2.2.2.1 Objectivism 71
4.2.2.2.2 Constructivism 72

4.2.3 Research approach 72
4.2.3.1 Positivist paradigm 73
4.2.3.2 Interpretivist paradigm 74
4.2.3.3 Why an interpretivist paradigm was chosen (application) 75
4.2.4 Types of research methods 75
4.2.4.1 Qualitative research method 75
4.2.4.1.1 Features of qualitative research 76
4.2.4.2 Features of quantitative research 76
4.2.4.1.3 Why a qualitative research method was chosen. 76
4.2.5 Research strategy 77
4.2.5.1 Case study 77
4.2.5.1.1 Case study principles 77
4.2.5.1.2 Justification for employing the case study approach. 78
4.2.6 Research design 78
4.2.6.1 Unit of analysis 79
4.2.6.2 Population 79
4.2.6.3 Sample 79
4.2.7 Time horizon 80
4.2.8 Data Collection Methods 80
4.3 Ethical clearance procedures 81
4.4 Conclusion 81
CHAPTER FIVE: DATA ANALYSIS AND DISCUSSION OF FINDINGS 83
5.1 Introduction 83
5.2 Analysis of interview data 83
CHAPTER SIX: INTERPRETATION OF FINDINGS AND RECOMMENDATIONS 101
6.1 Introduction 101
6.3 Conclusion 103
CHAPTER SEVEN: THE EVALUATION OF THE RESEARCH 104
7.1 Introduction 104
7.2 Overview of the research 104
7.3 Research questions revisited. 105
7.3.1 The primary research questions 105
7.3.2 The three sub-questions supporting the primary research question 105
7.4 Evaluation of methodology 106

7.4.1 Why was a case study approach appropriate for this research? 106
7.4.2 Appropriateness of the data collection techniques 106
7.4.3 Appropriateness of the unit of analysis 106
7.5 Research contributions and conclusions 107
7.5.1 Research Contributions 107
7.5.2 Conclusion 107
7.6 Limitations 108
7.7 Future research into recommended areas 108
Appendix A: Interview Guide 120
The table below links the interview questions back to the RQs outlined in Chapter 1.For ease of reference the questions are listed below : 120
Appendix B: Ethical Clearence 124

List of Figures

Figure 1: Challenges and barriers related to organisational change due to digitalisation. Source (Gupta, 2018). 27
Figure 2: PRISMA Approach Applied. 32
Figure 3: Conceptualised Framework for digitilisation in the insurance industry. 40
Figure 3: Technology-Organisation-Environment (TOE) Framework (Masana, 2019). 58
Figure 4: The contingency theory of organisations (Tiessen and Waterhouse ,1983) 59
Figure 6: Research Onion. Source (Saunders, Lewis, and Thornhill, 2009: p. 138). 67
Figure 7: The Basic Elements of Research Process Source. (Crotty, 1998, p.4). 71

List of Tables

Table 1 Consolidated overview and synthesis of the publications used in this literature review 34
Table 2 – Contingency theory elements. 42
Table 3 – Number of publications. 45
Table 4 – A Taxonomy of Theory Types in Information Systems Research (Gregor, 2006). 51

Table 5 – Category Grouping of IS theories (Gregor, 2006)..... 51
Table 6 – Research frameworks. 53
Table 7 – Methodological choices. 66
Table 8 – Components of the research design deal with quantitative and qualitative methods (Crotty, 1998)..... 72
Table 9 – Explanations of positivism and interpretivism. Source (Ragab and Arisha, 2018). 73
Table 10 – Profile of respondents (by context)..... 79
Table 11 – Participant demographics..... 83
Table 12 – TOE theory elements. 85
Table 13 – Contingency theory elements. 85
Table 14 – Theme One contingency theory elements and description. 86
Table 15 – Theme Two contingency theory elements and descriptions. 87
Table 16 – Theme Three contingency theory elements and description. 88
Table 17 – Theme Four contingency theory elements and description. 88
Table 18 – Theme Five contingency theory elements and description. 89
Table 19 – Theme Six contingency theory elements and description. 90
Table 20 – Theme Seven contingency theory elements and description. 91
Table 21 – Theme Eight contingency theory elements and description 92
Table 22 – Theme Nine contingency theory elements and description. 93
Table 23 – Theme Ten contingency theory elements and description. 94
Table 24 – Theme Eleven contingency theory elements and descriptions. 95
Table 25 – Theme Twelve contingency theory elements and description 96
Table 26 – Theme Thirteen contingency theory elements and description 97
Table 27 – Theme Fourteen contingency theory elements and description 98
Table 28 – Theme Fifteen contingency theory elements and description..... 99

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction and background

This study investigates the finance and technology industries, focusing on how the South African (SA) insurance industry uses digital platforms to improve operations and services. It analyses how these digital tools are adopted and integrated to solve industry problems, streamline business processes, and meet changing market needs in the SA insurance industry.

Over the past ten years, information systems (IS) have been instrumental in starting the largest industry transformation across all businesses. In this research, IS analyses processes, stores, collects, and disseminates information, providing the capability to digitalise insurance (Rainer and Prince, 2021). Indeed, the change from traditional to digital business models has been simplified by IS, which resulted in changes to industry structures, products, and processes (Modiba and Kekwaletswe, 2020). Therefore, digitalisation encompasses leveraging digital technologies to disrupt value chains, leading to restructuring business models and processes (Holland, 2022). The incorporation of digital solutions improves business operations and operational efficiency while also transforming markets and driving economic development and growth across a range of industries (Schwab, 2018). Undeniably, most insurance value chain activities display the effects of digitalisation, which improves communication between insurers and stakeholders, including present and prospective policyholders. The industry has been able to restructure enterprise business models and operational workflows and streamline operations because of this transformation (Van Dyk and Van Belle, 2019).

Consequently, the research aim is to investigate how digitalisation can enhance business operations in the South African insurance industry, employing Technology-organisation-environment (TOE) framework along with contingency theory (CT) as its foundational frameworks for analysis in this research. TOE demonstrates how three main factors, the environment, industry, and technology, affect digitalisation adoption. IS frameworks aid the understanding of how the digitilisation process is influenced by the structure, regulations, and technological resources of a company (Stenberg and

Nilsson, 2020). CT suggests that the success of IS strategies and structures depends on specific conditions, including environmental, industry, and technological factors, aligning with the focus of this research (Abedin, 2022). TOE highlights essential elements influencing digital adoption, whereas CT helps customise digital solutions to meet diverse requirements. Together, these approaches enable a thorough analysis of the strategic and operational characteristics of digitilisation in the South African insurance industry. The researcher employed a case study method, using a qualitative approach to gather data through semi-structured interviews to strengthen the study.

The study seeks to enhance the current body of literature and broaden understanding, as well as provide support to future researchers, policymakers, and practitioners by identifying key areas to maximise and advance a digitalisation model for the insurance industry. By recognising the importance of digitalisation for financial service providers (FSPs) (Financial Industry Outlook Research, 2022), this research addresses important matters within the IS realm, especially considering the early stage of digitalisation in SA. Given the limitations of existing research on the topic, this research stresses the importance of environmental, industry related, and technological factors to the success of a digitalisation journey (Modiba, 2020). SA is notable as a significant case study since it is the largest and most developed insurance market in Africa, representing the biggest portion of insurance premiums written on the continent (Asongu and Odhiambo, 2020). Hence, this research improves knowledge by creating a framework for digitalisation intended to enhance operations in SA's insurance industry. It examines how digital technologies can improve operations and make processes more efficient. The study addresses the research deficit in the existing literature on digitalisation in SA and provides useful models for academics and the insurance industry. As a result, it provides perspectives on innovations unique to the insurance industry, including digital underwriting, and proposes directions for future research and strategic planning.

The selected case study setting was a SA insurer recognised for its rapid growth in the individual risk market and a strong commitment to automation and modern technologies. As a holding company, the SA insurer operates through its subsidiaries to offer a range of financial and life insurance services, including medical underwriting, conversion policy products, short, medium, and long term insurance, and claims

adjustment services (Hogg, 2023). The company serves clients across SA and is an ideal case study due to its extensive digitilisation strategy that has driven major automation initiatives and the adoption of digital solutions (Hogg, 2023). This success ultimately led to an insurer, Sanlam, acquiring a 100% stake in the company because of its digital drive, thereby solidifying its market position (Hogg, 2023).

The remainder of this chapter is structured thus: First, Chapter One defines the research subject and essential terminology to set the context. Next, the chapter reviews the area, which provides background information on the research problem and leads to identifying the research question. The goals and purposes of the study are detailed, and the chapter concludes with a summary and a description of the organisation of the dissertation.

1.1.1 Background of the SA insurance industry

The international monetary handbook “South Africa: Financial Industry Assessment Program-Technical Note on Insurance Industry Regulation and Supervision” (IMF Staff Country Reports, 2022) outlines the SA insurance industry. This section provides an overview of the South African insurance industry. The establishment of the South African insurance industry dates to 1831 and holds a prominent position within the nation’s financial industry. The industry is complex, with a global presence and intense competition. As a result of the accessibility and consumption of insurance products, this South African insurance industry has expanded to constitute 18% of the financial industry in SA (IMF Staff Country Reports, 2022). Numerous operational models exist within the industry, including traditional approaches, conglomerates led by banks, groups focusing on asset management, and innovative newcomers leveraging technology. The industry is diverse, with insurers actively pursuing regional and global expansion. The Financial Industry Conduct Authority (FSCA) oversees the insurance industry in SA, which seeks to “ensure the insurance industry operates equitably, transparently, and with stability, safeguarding all parties and maintaining the financial industry integrity” (Financial Industry Outlook Research, 2022).

Despite its substantial adoption of modern technologies promising simplicity, scalability, availability, and accessibility, the industry faces challenges in fully applying the capabilities of technological innovations. Transformation barriers still exist. Cost

considerations, complexity, and adoption strategies particularly evident in emerging markets have led to the digitalisation of only select activities within the value chain or departments (Stanković, Stanković J.Z and Tomić, 2022). Digitalisation is perceived as very dynamic and challenging, requiring extensive changes to the SA insurance industry culture, staffing, decision making and resources (Davenport, 2018). The insurance industry perceives adoption as extremely challenging because of concerns regarding data privacy and protection, along with regulatory requirements, which impact automation and technological advancements.

Therefore, insurance is typically characterised (especially in SA) as expensive, not meeting clientele competence with technology, being impatient, and having limited time availability (Niraula and Kautish, 2019). Currently, it is challenging for clients to afford insurance premiums, particularly during economic hardship periods in SA, prompting them to prioritise other expenses over insurance. With the diverse range of options available from insurers and the evolving demands of modern day customers, it has become imperative for the industry to offer efficient online services, including accelerated payment processing, service availability, and reduced premiums. Cost cutting measures are necessary to achieve this, and the most effective approach is through digitalisation.

1.2 Problem statement and research questions

1.2.1 Problem statement

The South African insurance industry should provide fast and easy online services, including quick payment processing, 24 hour access, and competitive prices to meet the needs of contemporary digitally proficient customers. However, the industry has trouble fully adopting digital solutions, leading to inefficiencies and higher costs. This issue is heightened during economic recessions, when customers prioritise basic expenses over insurance, making it more difficult for companies to retain clients (Niraula and Kautish, 2019). Client retention is why digitalisation is critical to ensuring operational efficiency and productivity, thereby enabling the industry to deliver prompt and efficient services to customers constrained by money and time. Consequently, to achieve this level of service, insurers need to appoint leaders with adaptable

leadership styles and develop effective communication plans and strategies to enhance operations. Despite the rapid global growth of digitalisation, a scarcity of research on this topic within the SA insurance industry remains. Due to the above mentioned difficulties and the importance of digitalisation, this research investigates and highlights the need for digitalisation to improve operational efficiency.

1.2.2 Research aim and objectives.

This study aims to develop a strategic framework to support the digitilisation of operational services within the South African insurance industry.

The study formulated the objectives outlined below to accomplish the research goal:

1. To determine how digitilisation affects operational performance.
2. To determine which digital technologies, enhance operational efficiency.
3. To determine how industry factors influence the effective adoption of digital technologies.

1.2.3 Research questions

Main research question: What approach could be employed to digitise and enhance service operations?

The following sub-questions were derived from the main research question:

1. How does digitalisation affect operational efficiency?
2. What are the key digital technologies adopted to enhance operational procedures?
3. What impact do industry factors such as culture, leadership, and resources have on the adoption of digital technologies in insurance firms?

1.3 Overview of the methodological approach

Chapter 4 describes the methodology by outlining a structured approach to investigating the relationship between digitalisation and operational efficiency in the South African insurance industry. Guided by the research onion framework (Lewis,

Thornhill and Saunders, 2009), the study adopted an interpretive philosophical framework and inductive approach to uncover patterns and themes in qualitative data. The research entailed a case study focused on a SA insurer, using semi structured interviews with staff from Client Operations and ICT to obtain insights. In addition, the study used cross-sectional data collection and thematic analysis with systematic coding to identify key themes. This study is underpinned by the TOE model and IS contingency theory, ensuring accuracy and consistency while addressing ethical considerations. The TOE model helps the researcher understand how technology, factors within the insurance industry, and outside pressures lead to digital adoption for improved efficiency. On the other hand, IS Contingency Theory shows the need to adjust digital solutions to match the specific structure, environment, and needs of the insurance company, making sure the model is practical and fits well within its situation.

1.4 Research contributions

This research is necessary as it enhances existing research and supports the creation of a digitalisation model customised for SA. As a result, it could provide a benchmark for similar research in other emerging markets. As previously mentioned, SA is an ideal research setting since it is the most advanced and extensive African insurance market, with the largest share of insurance premiums on the continent. First, the study addresses the limited research on digitalisation in the insurance industries of developing countries, particularly SA. Second, it focuses on digital strategies, business models, and the interplay between digitalisation and business processes within the SA insurance industry. Third, it examines how environmental, industry and technological factors influence and shape the digitalisation journey of the insurance industry. Moreover, it focuses on the impact of digitalisation on existing legacy systems, customer experience, operational efficiency, and the need to address cybersecurity and data privacy risks within the industry.

This study strives to explain how digitisation affects the insurance industry. It utilised a case study method along with qualitative techniques to gather insights. It offers a contextual examination of digitalisation by investigating various processes and developments while incorporating diverse viewpoints from data collected through semi-structured interviews, making it an effective approach for comprehending real

world situations. In considering ethical aspects, the research upheld validity and integrity, ensuring the protection of participants and yielding credible, high quality results, thereby significantly contributing to the insurance industry. The upcoming chapters expand on the research methodology and ethical considerations. The study identifies important areas for future research, practitioners and policymakers, focusing on promoting theory development and the digitalisation model in the SA insurance industry while leveraging digital innovations to create value.

1.5 Terms and definitions

Section 1.5.1 describes the dissertation topic, reflected in its title: “A digitalisation model for improving operational efficiency: a case of a Soth African insurance company” along with the keywords. The section seeks to enhance the reader's understanding of the research and the resulting dissertation. Chapter 2 provides extensive information on the same fundamental concepts.

1.5.1 What is digitalisation?

Digitalisation is the process of enhancing business performance and streamlining processes employing modern technologies, including the Internet of Things (IoT), robotics, and artificial intelligence (Moodley, 2019; Phokwane, 2022). The process can deliver better data integration capabilities and increase profitability, sales, and market share if well managed. In addition, digitalisation promotes collaboration and a digital culture within the insurance industry, facilitating faster adaptation and innovation, which, in turn, improves overall performance (Căpușneanu, Mateș, Tűrkeș, Barbu, Staraș, Topor, Stoenică and Fűlöp, 2021).

There are three primary categories of digitalisation based on social, technological, and industry aspects (Vial, 2019). The social aspect focuses on how digitalisation impacts the personal and collective aspects of people’s lives, especially employees. Therefore, the technological goal is to create and use advancements such as cloud computing, data analysis, and IoT. However, Vial (2019) notes that definitions might vary based on the specific technologies being considered. From an insurance industry perspective, the attention shifts to how digitalisation prompts changes in the

operational processes, business procedures, product offerings, customer service, customer experience, and business models of a company.

1.5.2 What are digital technologies?

Attaran (2020) defines digital technologies as networks, software, and hardware, employing digitised data to facilitate digitilisation. Innovative technologies and applications enable digital interaction, communication, and information management. Digital technologies are crucial for businesses to enhance customer engagement, optimise business processes, and empower employees.

1.5.3 What are operational efficiencies?

Operational efficiencies involve optimising workflows, operations, and business processes to boost profitability and productivity by leveraging digital technologies (Choudhuri, 2020). Such efficiencies would allow the SA insurance industry to provide products or services cost effectively while ensuring high quality. Attaining operational efficiency involves refining multiple processes, minimising waste, and boosting productivity. Key aspects include streamlining processes, managing resources, automation, quality control, optimising supply chains, measuring performance, and improving continuously. The SA insurance industry can lower expenses, improve customer satisfaction, and obtain a competitive advantage by improving these areas.

1.5.4 What is the insurance industry?

The industry is part of the financial services landscape and provides risk management through various insurance policies. It includes agents, brokers, and operational staff who support customers to protect against financial losses resulting from unforeseen events. In SA, the insurance industry is crucial to the financial services sector and helps stabilise the economy. In 2020, insurance company assets were around 60.14% of the national GDP, demonstrating the cruciality of the industry for the economy (Trading Economics, 2023). By 2022, South African insurance companies had total assets of R3.89 trillion, confirming the strength of the industry and its ability to support economic growth (Baron, 2023). Experts foresaw that the SA insurance market would garner R1.007 trillion in gross written premiums by 2024, with life insurance products constituting the largest market share (Baron, 2023).

In summary, this industry is vital to the world economy as it manages risks and provides financial security to individuals and companies. (IMF Staff Country Reports, 2022).

1.6 Dissertation structure

This dissertation has seven chapters. Each chapter builds on the one before it to explore how to create a digitalisation model that improves operational efficiency in a South African insurance industry. Below is a brief overview of each chapter to help the reader understand the research process:

Chapter One: Introduction. This chapter introduces the research topic. It provides background information, presents the main problem, and outlines the research aims and questions. It also explains why the study is important, defines key terms, and shows why digitalisation in the insurance sector is worth examining.

Chapter Two: Literature Review. This chapter reviews important literature on digitilisation, operational efficiency, and trends in the insurance industry. It highlights knowledge gaps, examines the role of digital technologies, and evaluates existing models and frameworks. This chapter lays the groundwork for the study.

Chapter Three: Theoretical Framework. This chapter introduces the theories that support the research. It focuses on the Technology-Organisation-Environment (TOE) framework and Information Systems (IS) Contingency Theory. These theories help inform the study's goals and provide a way to analyse digital adoption and performance results.

Chapter Four: Research Methodology. Chapter Four explains the research approach. It describes the qualitative case study design and the methods for data collection, including interviews and document analysis. It also discusses the sampling strategy, ethical considerations, and how to analyse the data. This chapter ensures the research is valid and dependable.

Chapter Five: Data Analysis and Findings. This chapter presents the analysed data from the fieldwork. It highlights key themes, patterns, and insights about digitalisation and operational efficiency. The findings connect directly to the research questions and include support from participant quotes and document analysis.

Chapter Six: Discussion of Findings. In this chapter, the results are compared to the reviewed literature and the theoretical framework. It explains how the findings align with or differ from the TOE framework and IS Contingency Theory and discusses implications for digitilisation in the insurance sector. The chapter also reviews how the research objectives have been met.

Chapter Seven: Conclusion and recommendations. The concluding chapter summarises the main insights and contributions of the research. It reflects on the findings' implications, acknowledges limitations, and offers recommendations for future research and practical strategies for insurance companies aiming to improve operational efficiency through digital initiatives.

1.7 Conclusion

This chapter introduces the research by looking at digitilisation in South Africa’s insurance industry. It clarifies the main issue being studied and explains the study's purpose and goals, along with the key research questions. The chapter also highlights the importance of research, defines key terms, and shows how digital technologies can improve operations. This sets the background and reason for the study, preparing the reader for the following chapters.

CHAPTER TWO: THEORETICAL FOUNDATIONS AND LITERATURE SURVEY

2.1 Introduction

This chapter provides a detailed examination of the current literature related to the concept of a digitalisation model aiming to enhance operational efficiency within the South African insurance industry. This study highlights the importance of reviewing existing literature because of its broad scope. The chapter initially explores the idea of digitalisation and the importance of employing contemporary technology. In addition, it explores digitalisation in insurance, detailing its functions, advantages, and impacts on the industry, business culture, and customers, thus identifying challenges and new developments in the digitalisation domain. Furthermore, the study employed the theoretical foundation and literature survey to explain the findings by identifying research trends, emerging deficiencies, and suggestions for future studies. Lastly, the chapter evaluates the impact on the insurance value chain and presents significant observations.

This chapter intends to improve the understanding of the background related to digitalisation in insurance. Chapter Two is structured as follows:

- Reiterating the definition of digitalisation and exploring its adoption.
- Offering background information on the subject, including a summary of digitalisation and its interaction with the Fourth Industrial Revolution (4IR).
- Discussing the associated advantages, effects, and challenges of digitalisation.
- Outlining the literature screening process, detailing the inclusion and exclusion criteria to filter articles from papers deemed irrelevant.
- Discussing conceptual model and contingency theory elements.
- Reiterate the research questions to provide a clear framework for understanding the study's objectives.
- Presenting reviewed papers in the summary, highlighting key findings, themes, and patterns related to digitalisation in the SA insurance industry.

- Concluding with suggestions for future research and reiterating the key concepts discussed in the chapter.

2.1.1 Overview

Digitalisation drives substantial transformation in SA insurance. Digitalisation encompasses leveraging modern technologies to improve existing business models, generate revenue, and accelerate growth (Bhardwaj, 2021). In addition, digitalisation drives the reorganisation of activities, processes, and products, thereby affecting business operations, end products, and overall business models (Modiba and Kekwaletswe, 2020).

The Fourth Industrial Revolution (4IR) refers to rapid technological transformations integrating digital, biological, and physical realms (Kasza, 2019). The effects of 4IR on the South African insurance industry are apparent in the growing adoption of technologies such as blockchain, artificial intelligence (AI), IoT, and robotic process automation (RPA) (Mamela, 2021).

The combination of digitalisation and 4IR technologies leads to greater innovation, efficiency, and adaptability in the SA insurance industry (Molloy and Ronnie, 2020). This perspective aligns with Nwaiwu (2018), who claims digitalisation is a key force behind 4IR, fundamentally transforming customer engagement and experience. While modern technologies are crucial to driving change, they are not the only factors contributing to business success. As a result, companies can derive more value from technology than simply through adoption; they can also leverage the new business methods that technology enables for increased productivity (Wiesboeck and Hess, 2020).

2.2 Literature review

2.2.1 Digitalisation in insurance

Digitalisation has sparked transformation across many industries, leading to changes in operational methods, product offerings, and industry structures, thus enabling the transition from traditional to digital business models. Therefore, it allows enhancement

in the operational environment to enhance overall performance (Moodley, 2019; Phokwane, 2022). For example, digitalisation has driven the restructuring of company culture, business processes and strategic approaches to align with industry demands, eventually contributing to economic growth within the business landscape (Martínez-Caro, Cegarra-Navarro and Alfonso-Ruiz, 2020).

Digitalisation in the SA insurance industry provides significant data integration capabilities, encompassing process, cloud, and network integration. This development has facilitated better access to information across multiple platforms. In addition, digitalisation has led to higher sales, a larger market share, and greater profitability for insurance firms. Accordingly, the adoption of digital solutions has enhanced overall performance within the industry, enabling quicker adaptation and innovation, encouraging collaboration, and promoting digital culture and continuous learning in the industry (Căpușneanu et al., 2021). Technologies such as cognitive analysis and RPA have empowered SA insurance companies to modernise business models, streamline operational workflows, and enhance efficiency (Van Dyk and Van Belle, 2019). Automation facilitates online agility, whereby applications and claims are processed and expedited for payment procedures and automated service consultants are deployed. As a result, its adoption has led to shorter turnaround times, reduced operational costs, and potentially lower premiums (Rutashobya, Chiwona-Karltun, Wilson, Ilomo and Semkunde, 2021). Besides enhancing performance, adopting innovations could fulfil the demands of contemporary digitally proficient, time constrained, and impatient consumers (Niraula and Kautish, 2019).

The current global economic challenges have placed the insurance industry under pressure, with premiums becoming increasingly expensive. For example, the official unemployment rate in SA is 32.1% (StatsSA, 2024), prompting clients to focus on basic expenditures rather than insurance. Considering the concerns around affordability and changing customer expectations, the South African insurance industry must adopt digitalisation.

Even though the SA insurance industry has made significant efforts to accelerate digitalisation, the existing literature suggests a slow adoption of digital technologies, particularly in developing nations such as SA (Bvuma and Marnewick, 2020).

Comparatively, developed countries such as Japan, Canada, China, The United States, and The United Kingdom have high adoption rates, with digitalisation driving both industry and social infrastructures (Didenko and Sidelnyk, 2021). Thus, countries such as SA evidently lag in adoption (Sibanda, 2019), even though industries such as high tech, finance, and telecommunications within the country are indeed investing in digitilisation. This rising acceptance indicates a growing trust in digital technologies such as AI, blockchain, RPA, cognitive computing, and IoT to create value. These technologies are undoubtedly acknowledged for effectiveness in improving insurance operations in the South African insurance industry, as highlighted by Zanni (2019). However, despite the clear potential of digitalisation, a sizable portion remains untapped, indicating that much work is required in the SA insurance industry.

This literature review offers a thorough examination of existing studies on digitalisation in SA, assessing the level of digitalisation currently experienced (Eckert and Osterrieder, 2020). It examines the digitalisation models and technologies previously investigated and applied in different SA insurance industry environments (Moodley, 2019) and shows how these advancements have added value to the industry (Modiba and Kekwaletswe, 2020). The review also examines the question of which model can be used to digitalise and improve service operations in SA insurance to fulfil the objective of developing a model to aid in the digitalisation and enhancement of service operations.

2.2.2 Benefits of digital technologies

Technologies such as AI, blockchain, big data, cognitive computing, RPA, machine learning, and IoT have become essential. Such technologies add value to organisations and are necessary for them to remain competitive and relevant. Big data denotes large and complicated sets of information from different sources that are difficult to manage using regular tools. It helps businesses extract essential insights to improve decision making (King, Timms and Rubin, 2021). Applying big data and big data analytics (BDA) allows the industry to recognise customer segments, tailor services to clients, enhance efficiency, and identify fraudulent activities (Banu, 2022). This research states that big data analytics enables the analysis and collection of unstructured or structured data from various sources, leading to more accurate

valuations and services (Bertello, Ferraris, Bresciani and De Bernardi, 2021). Furthermore, machine learning applications enhance real time data analysis by detecting patterns and correlations that traditional risk assessment methods might miss. Big data capability results in faster and more accurate assessment and management (Rawat, Rawat A., Kumar and Sabitha, 2021). Digitalisation addresses key challenges in the industry, such as data security concerns, slow payments, claims processing, and fraud, while significantly enhancing operational efficiency. For example, IoT technology provides an effective communication framework to improve operational safety. Furthermore, the adoption of blockchain has shown positive effects within the SA insurance industry (Budman, Khan and Hurley, 2019). In addition, advancements in cybersecurity in the SA insurance industry are empowered to meet customer demands by ensuring the protection of sensitive information through technological controls (Mbatha, 2020).

The perception persists that digitalisation is costly and complex, but its adoption has proven to increase profits and reduce operational costs (Moyo, Watyoka and Chari, 2022). Digitalisation has significantly impacted all activities in the SA insurance industry value chain. The most notable changes include improved interactions between insurers and stakeholders, particularly prospective and current policyholders, increased business process efficiency, and a wider range of advanced insurance products (Stanković et al., 2022). Even though technological advancements might lead to potential job cuts and raise concerns about job security and employee wellbeing (Nkomo and Kalisz, 2023), automation and intelligent technologies add value by reducing errors, improving work quality, and increasing productivity (Căpușneanu et al., 2021). Consequently, digital solutions benefit not only businesses but also clients and society.

The literature indicates that various factors shape the digitilisation of the South African insurance industry, including management practices, cultural aspects, infrastructure, employee competencies, and customer demands. Aina, Ganiyu and Oloriegbe (2023) stress that effectively implementing digital technologies requires management to match technologies with operational requirements while ensuring staff engagement. Kazim (2019) points out the importance of management in developing innovation, trust, and transparency to unlock the full benefits of digital tools. Moodley (2019)

emphasises the importance of management offering training programs, while Molloy and Ronnie (2021) support the need for ongoing education. Carlsson, Olsson and Eriksson (2022) point out that a supportive organisational culture and collaboration among stakeholders are essential for achieving successful digitilisation.

2.2.3 Impact on clients and markets

2.2.3.1 How digitalisation is reshaping customer behaviour and expectations.

Recent research indicates contemporary insurance customers are technologically adept yet impatient, with limited available time (Kajwang, 2022). Therefore, customer behavior is impacted by digital empowerment (Niraula and Kautish, 2019) and the industry must evaluate and meet clients' expectations and needs accordingly. Effective customer interaction, including pricing, privacy, cybersecurity, privacy control, and data security, is advised while creating strategies centred on addressing end users' concerns (Bokolo, 2023).

2.2.3.2 The market level challenges faced by insurance firms in emerging economies such as SA.

Owing to financial constraints and anticipated challenges in adopting digital solutions, businesses in emerging markets sometimes only digitise specific value chain activities. When contemplating practicalising IT solutions, insurance companies face several obstacles, including inadequate funding for software and hardware, inadequate legal frameworks, a lack of policy and regulation flexibility in response to emerging technologies, and cybersecurity issues (Stanković et al., 2022). These obstacles are a lesser concern for developed economies because they typically have more established models.

2.2.4 Barriers to digitalisation

This research investigates the difficulties the SA industry encounters in embracing cloud computing, IoT, and big data: for example, inadequate infrastructure, complicated regulations, increased costs, data security, resistance to change, and concerns about further delays with the transition. Thus, addressing these problems is necessary for achieving successful digitilisation (Vial, 2019). Figure 1 shows a clearer

understanding of such obstacles by emphasising the potential challenges at various stages of the digitalisation process.

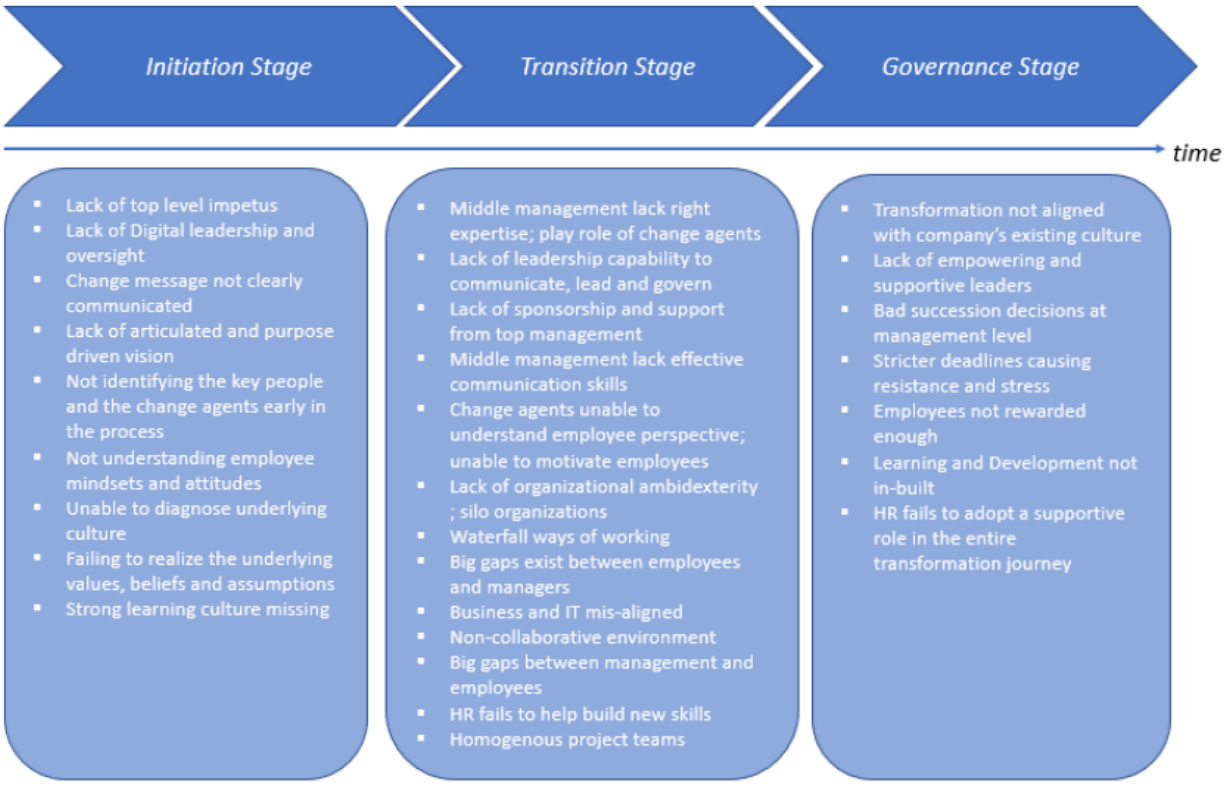

Figure 1: Challenges and barriers related to organisational change due to digitalisation. Source (Gupta, 2018).

2.2.4 Digitalisation trends

This section looks at how new digital technologies are changing the insurance industry in South Africa. It focuses on the impact of artificial intelligence (AI), blockchain, and advanced fraud detection systems, discussing roles, benefits, and challenges.

2.2.4.1 Artificial Intelligence and Generative AI

AI technologies, including tools such as ChatGPT, are changing how insurers communicate with customers and manage data. AI chatbots now handle basic questions, providing quicker answers and letting staff focus on more complex issues. In marketing and product development, AI helps analyse data and allows for more targeted and personalised messaging. It also speeds up claims processing by

automating document reviews and quickening decision making. While AI improves efficiency and consistency, it also comes with risks. Relying too much on AI can reduce human oversight and lead to biased or incorrect outcomes. Additionally, heavy automation may limit employees' ability to think creatively and critically (Ntoutsi et al., 2020).

2.2.4.2 Blockchain Technology

Blockchain is becoming a popular, secure way to manage data in insurance operations. It allows for clear claims validation, smart contracts, and policy tracking, which reduces the chances of data tampering and builds trust among stakeholders. However, blockchain has its own challenges. Combining it with existing systems can be expensive and complex. Regulatory uncertainty also makes wider adoption difficult. Still, ongoing investment shows increasing confidence in its future in the industry.

2.2.4.3 AI Powered Fraud Detection

AI tools for fraud detection are essential for catching suspicious claims. By analysing large sets of data, these systems can spot unusual patterns, identify high risk cases, and prevent financial losses. They also help ensure compliance with regulations by keeping detailed audit tracks. These systems must constantly adapt to stay ahead of new fraud tactics. Integrating them with older systems can be tough, and concerns about privacy and the clarity of AI decisions remain (Ryman-Tubb, Krause & Garn, 2018).

2.2.4.4 Summary

Digital technologies such as AI, blockchain, and fraud detection systems are changing how insurers operate and improving efficiency, transparency, and service delivery. However, successfully implementing these technologies requires overcoming key technical, ethical, and regulatory challenges. The next section will explain how relevant literature was chosen to support this study.

2.3 Literature screening process

This review adopted a systematic approach to assess the digital technologies employed in SA; it explored how digital technology has affected the insurance value chain between January 2010 and August 2024. The synthesis included gathering the requisite required readings from various sources and organising and incorporating the information to create an original narrative. This section outlines the sources of information, the search keywords used, and the criteria for including and excluding items. The papers were selected for review based on specific criteria deemed relevant. These criteria include research design, target population, and time limit. The exclusion criteria were employed to explain why some papers were rejected because of poor methodology or incongruity with the research question. Together, these criteria set the limits of the review and ensured the chosen studies supported the research goals. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) guidelines were followed for the review process to make sure it was clear, repeatable, and transparent. This method ensured that the literature examined directly supported our research goals.

Conference papers were also utilised:

- Zanni (2019) *KPMG Investment in Technology*
- Budman, Khan and Hurley (2019) *Deloitte Tech Trends Executive Summary* were used.

2.3.1 Database and search items

The study systematically collected various articles and papers from respected databases such as *ScienceDirect*, *EBSCOhost*, and *Google Scholar*. The academic community highly regard these databases for providing extensive access to a significant repository of scholarly material.

This review employed an extensive search across multiple databases, focusing on specific search terms related to digitalisation in the insurance industry. The initial search terms included “digital technology” OR “digitisation” OR “operational efficiencies”, and “insurance”. The study identified additional keywords by analysing

the uncovered articles. The search strategy contained combinations such as (“"insurance" AND ("digitalisation" OR "digitalisation" OR "digital transformation" OR "technology" OR "information system" OR "ICT")) AND ("operational performance" OR "operational efficiency" OR "business process" OR "productivity") AND ("adoption" OR "implementation" OR "integration") AND ("industry factors" OR "leadership" OR "culture" OR "resources") to locate articles in the databases. For example, the advanced search feature of *Google Scholar* allowed for various search combinations and the ability to specify terms appearing anywhere in the article, and the standard author search function was employed throughout the investigation process.

2.3.2 Inclusion and exclusion criteria

In order to keep the literature review focused and relevant, we used clear criteria to decide what to include and what to exclude during the filtering process.

Inclusion Criteria:

- This review looked at academic articles, conference papers, and industry reports published from January 2010 to August 2024.. This time saw fast growth in digital technologies and use in the insurance industry.
- The studies examined topics such as digitalisation, the use of digital tools, and wider digitilisation efforts in insurance. The focus was on improving efficiency, simplifying business processes, and encouraging the use of technology.
- Priority was given to research based on South African data or case studies, but also included relevant international studies that could apply to the South African insurance scene.

Exclusion Criteria:

- Only articles in English were included to keep the analysis clear and consistent.
- We excluded publications that were not related to the insurance industry or that focused on digitalisation in other fields such as agriculture or retail.
- Non research sources were excluded, such as opinion articles, editorials, and blogs, because they lack evidence based on research.

- Studies that did not directly examine the connection between digital technologies and operational performance or adoption challenges were considered outside the scope.

By using these selection criteria, the review focused clearly on the study's goals. This approach allowed for including literature that provides useful insights into how digitalisation improves operational efficiency in the South African insurance industry.

2.3.3 Search results

Nineteen Thousand Two Hundred reviewed articles relevant to the South African insurance industry, and 35,200 related to the international insurance industry were initially identified by applying the specified search terms and inclusion criteria. A series of filtering procedures was then applied to ensure alignment with the research objectives. Lower ranked papers were excluded during the initial sorting based on citation metrics and relevance. Publications deemed irrelevant based on titles and abstracts were also excluded. The remaining publications were carefully examined, and research not meeting the research criteria was eliminated. One hundred and twenty one articles were retained for analysis (see Figure 1). Quality Appraisal.

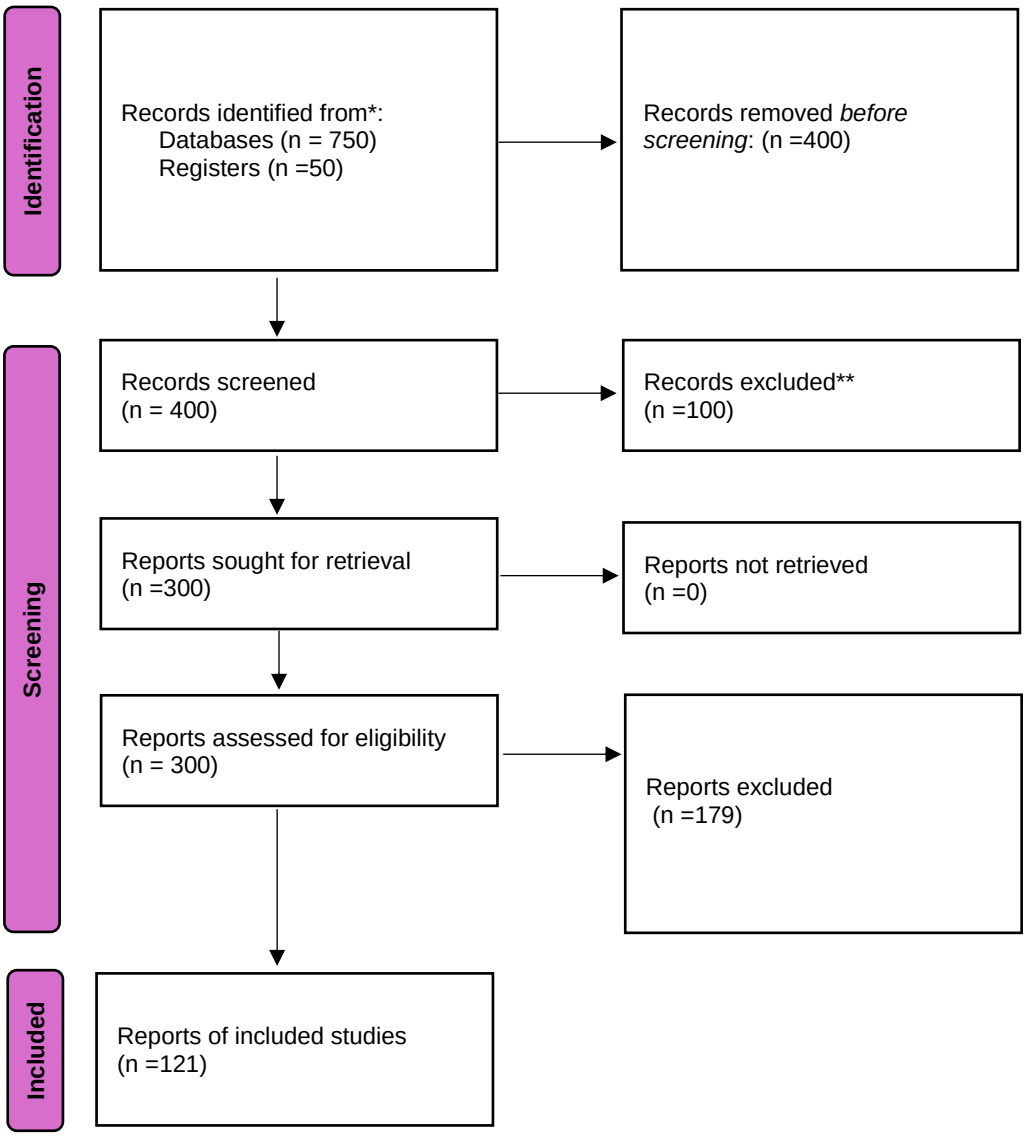

Figure 2: PRISMA Approach Applied.

Figure 2 above illustrates the selected search terms and inclusion criteria. First, the search retrieved 35,200 peer reviewed articles on the international insurance industry and 19,200 peer reviewed articles on the SA insurance industry. In the next step, the researcher applied a sequence of filtering procedures aligned with the research goals. Since the publications had initially been arranged according to citation metrics and relevance, papers with lower rankings were not included. Subsequently, publications not aligned with the research focus were excluded following a comprehensive review of abstracts and titles. The review achieved further refinement by scrutinising the publications and eliminating any research that did not reach the predetermined standards. One hundred and twenty-one articles were ultimately retained for analysis.

Table 1 below presents a consolidated overview and synthesis of the publications scrutinised in this literature review.

Table 1 Consolidated overview and synthesis of the publications used in this literature review (pascal testing)

Authors_Title_Year	Methodologies	Underpinning theories or models	Deficits in the literature	Level of analysis	Empirical insights	Relevance to real-world applications
Aina, J., Ganiyu, K. and Oloriegbe, K.S. 2023. Cloud based collaborative suite and employee enablement as digitilisation strategies for achieving organizational sustainability among insurance companies in Nigeria. ESUT *Journal* of *Social Sciences*, 8(1).	Purposive sampling	Sustainability theory and theory of dynamic capabilities	Additional investigations and literature are required on cloud-based computing	Industry level focus on Nigeria's insurance companies	The research found digitilisation, including cloud-based tools and employee support, influences how sustainable insurance companies in Nigeria are.	The research shows employing a cloud-based collaboration tool and empowering employees as part of digitilisation can help improve the sustainability of insurance companies.
Banu, A., 2022. Big data analytics–tools and techniques–application in the insurance sector. In Big data: *A game changer for insurance industry* (pp. 191–212). Emerald Publishing Limited.	Quantitative analysis	Technology-Organisation-Environment (TOE) framework	Further literature focusing on big data analytics is required. .	Organisational level	The study indicates that big data analytics (BDA) in the insurance industry is developing into a valuable area for extracting insights from large data collections and enhancing results while lowering expenses. Its potential is significant; nonetheless, there are still obstacles to address.	BDA tools help organisations in decision-making, predictive insights and fraud detection.
Bertello, A., Ferraris, A., Bresciani, S. and De Bernardi, P. 2021. Big data analytics (BDA) and degree of internationalization: the interplay between governance of BDA infrastructure and BDA capabilities. *Journal of Management and Governance*, 25(4), pp.1035–1055	Quantitative analysis	Resource-based view RBV theory	Additional studies concentrating on BDA are needed.	Organisational level	This research demonstrates that the complicated hardware setup and infrastructure needed for BDA can be a challenge.	BDA tools help organisations in decision-making, predictive insights and fraud detection.
Bhardwaj, G., 2021. Analysis of digitization, IOT and blockchain in bancassurance. In 2021 International Conference on Technological Advancements and Innovations (ICTAI) (pp. 506–509). *IEEE*.	Qualitative in nature, employing descriptive research design.	Data analysis of the topic	Presenting tremendous growth opportunities means substantial amounts of literature will be developed	Data from secondary sources, online websites and articles.	Creating a favourable client experience necessitates substantial investment and tools, along with a focus on digitisation and advancements. Given both are primarily driven by consumer needs, innovation, and transformation are closely intertwined.	Digitalisation opens up a lot of opportunities to the digitalise economy.
Bokolo, Z. 2023. *Data security in chatbots for the insurance industry: a case study of a South African insurance company* (Doctoral dissertation, Cape Peninsula University of Technology).	Mixed-methods research methodology	The threat model was developed based on STRIDE modelling	The topic of data security in chatbots within the insurance industry has not garnered significant attention in existing literature, to date.	Industry-level focus on SA insurance companies	The threat model improves security and helps protect against attacks. It also finds and addresses threats in chatbots.	The security chatbots enhance overall security.
Bvuma, S. and Marnewick, C. 2020. An information and communication technology adoption framework for small, medium, and micro enterprises operating in townships [in] South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management*, 12(1), p.12.	A qualitative exploratory research method	Actor network theory (ANT) and technology acceptance model (TAM).	Further literature focusing on digitalisation by township SMMEs is required.	Industry level	The process of digitalisation in township SMMEs is both dynamic and multifaceted, shaped by various factors. Township SMMEs have not completely adopted ICT, and the technologies embraced are not being employed to full potential due to external limitations.	Implies the necessity for an ICT adoption framework and intervention aimed at facilitating ICT adoption among township SMMEs
Carlsson, L., Olsson, A.K. and Eriksson, K. 2022. Taking responsibility for industrial digitalization: navigating organizational challenges. *Sustainability*, 14(2), p.866.	Explorative longitudinal case research	N/A	Further literature is required to cover multiple cases or even different business industries.	Industry level	Digitilisation thrives in a culture that promotes adaptability, learning, and skills development.	The culture of the industry plays a huge role in successful digitilisation.
Căpușneanu, S., Mateș, D., Tűrkeș, M.C., Barbu, C.M., Staraș, A.I., Topor, D.I., Stoenică, L. and Fűlöp, M.T. 2021. The impact of force factors on the benefits of digitilisation in Romania. *Applied Sciences*, 11(5), p.2365.	A qualitative exploratory research method	The PLS-SEM (structural equation modeling) model.	There are limitations in the current literature and further studies are required	Industry-level focus on Romanian companies sampling unit by industry management.	Digitalisation improves communication, operational efficiency, productivity, and service delivery speed.	Suggesting digital technologies enhance operational efficiency

Authors_Title_Year	Methodologies	Underpinning theories or models	Deficits in the literature	Level of analysis	Empirical insights	Relevance to real-world applications
Chui, M., Roberts, R. and Yee, L. 2022. Generative AI is here: How tools like ChatGPT could change your business. *Quantum Black AI by McKinsey*, 20.	A qualitative exploratory research method	N/A	There are limitations in the current literature and further studies are required.	Industry level and industry	The influence of generative AI on productivity has the potential to generate trillions of dollars in value for the global economy.	The abilities of generative AI have reduced the proportion of time dedicated to work-related tasks.
Didenko, I. and Sidelnyk, N. 2021. Insurance innovations as a part of financial inclusion. *Business Ethics and Leadership*, 5(1), pp.127–135	Qualitative in nature employing descriptive research design.	Data analysis providing analysis of the topic	There has been a rise in the quantity of research concentrating on big data.	Information from the global database of academic publications, *Scopus*.	Discussions regarding innovations in insurance are prevalent in the USA, with more than eight hundred publications, followed by Great Britain, which has over 150 publications. India and China each contribute over 120 publications to this topic, while Germany has surpassed one hundred publications. Countries showing the highest interest in insurance innovations tend to be those with a high degree of economic development.	Comprehension of digital technologies provides significant benefits, including machine learning, predictive analytics, and consumer protection systems in the digital environment, the concept of unstructured data, artificial intelligence, blockchain technology, and telematics.
Dwivedi, Y.K., Kshetri, N., Hughes, L., Slade, E.L., Jeyaraj, A., Kar, A.K., Baabdullah, A.M., Koohang, A., Raghavan, V., Ahuja, M. and Albanna, H. 2023. Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges, and implications of generative conversational AI for research, practice, and policy. *International Journal of Information Management*.	A qualitative exploratory research method	N/A	There are limitations in the current literature and further studies are required.	Organisational and industry level	ChatGPT is a major AI tool of recent years, offering both opportunities and challenges for organisations and individuals. While generative AI can boost productivity, it also raises various ethical and policy issues.	ChatGPT is a major AI tool of recent years
Eling, M., Nuessle, D. and Staubli, J. 2022. The impact of artificial intelligence along the insurance value chain and on the insurability of risks. *The Geneva Papers on Risk and Insurance Issues and Practice*, 47(2), pp.205–241.	A qualitative exploratory research method	Porter's (1985) value chain and Berliner's (1982) insurability criteria	There are limitations in the current literature and further studies are required	Industry level	The use of artificial intelligence in the insurance sector could enhance the accuracy of loss probability predictions, tackling the issue of asymmetric information. Additionally, AI may shift some risks from events that are low in severity but high in frequency to those that are high in severity but occur less often.	Artificial intelligence enhances operations and productivity
Kasza, J., 2019. Forth Industrial Revolution (4IR): Digital disruption of cyber physical systems. *World Scientific News*, 134(2).	A qualitative exploratory research method	RDF (resource description framework)	There are limitations in the current literature and further studies are required.	Industry level	The Fourth Industrial Revolution introduced new ways technology integrates into society, the economy, culture, and even the human body and mind, through what is known as cyber-physical systems.	The Fourth Industrial Revolution introduces new ways of working
Kazim, F.A. 2019. Digitilisation and leadership style: a multiple case study. *The ISM Journal of International Business*, 3(1), pp.24–33.	A qualitative exploratory research method	The theoretical framework of Cohen and Neubert (2017) and Neubert (2017a)	Further research literature is needed than the existing literature	Industry level	The results of this research indicate that for digitilisation to succeed, business leaders and operational managers must modify management approaches and	Business leaders play a critical role in digitilisation success

					embrace agile, inclusive, cross-functional practices.	
King, M.R., Timms, P.D. and Rubin, T.H. 2021. Use of big data in insurance. *The Palgrave Handbook of Technological Finance*, pp.669–700.	N/A	N/A	Further research literature is needed than existing literature	Industry level	Many insurance companies now stand out by offering complete risk solutions along with helpful extra services.	Use of big data in insurance is increasing exponentially
Luo, G., Zhou, Y., Ren, T., Chen, S., Sun, X. and Ji, R. 2024. Cheap and quick: Efficient vision language instruction tuning for large language models. *Advances in Neural Information Processing Systems*, 36.	N/A	N/A	Further research literature is needed than existing literature	Industry level	The fourth has significant effects on the economy, society, and ethics for humanity. To deal with its complex challenges, we need to adopt a more advanced and thoughtful approach to empathy and creativity in designing solutions focused on people.	The fourth has significant effects on all aspects of society
Mapingire, K., Smuts, H. and Van der Merwe, A., 2022. Components of a Digitilisation Strategy: A South African Perspective. In Proceedings of Sixth International Congress on Information and Communication Technology: ICICT 2021, London, Volume 2 (pp. 437–447). Springer Singapore.	Qualitative research approach (qualitative internet-based questionnaire)	technology-organisation-environment (TOE) framework	Further research literature is needed as existing literature is evolving but still lacking.	Industry level	The majority of organisations have implemented a digitilisation strategy (DTS) within the past decade, with few exceptions. Digitalisation should encompass the following elements: digitising business processes, digitising employee workflows, digitising products, and services, and digitising the customer experience	Employing digital technologies empowers the organisation to maintain competitiveness, encourage innovation, expand the business, and achieve its strategic objectives.
Martínez-Caro, E., Cegarra-Navarro, J.G. and Alfonso-Ruiz, F.J., 2020. Digital technologies and firm performance: The role of digital organisational culture. *Technological Forecasting and Social Change*, 154, p.119962.	N/A	N/A	Further research literature is needed than existing literature	Industry level	Digitilisation offers many benefits, such as improving communication and operational performance or efficiency, increasing productivity and speed of delivery of services.	Suggests additional frameworks are required to address digitilisation in business
Mbatha, N. S. 2020. *Factors influencing cyber insurance adoption in the South Africa industry* [Research report, University of the Witwatersrand].	Structured interviews	technology-organisation-environment (TOE) framework	Existing literature is limited, and further research is required.	Organisational and industry level	Cyber insurance will ensure businesses are able to continue with operations post cyber breach.	Provides insight into the benefits of cybersecurity
Mamela, T.L. 2021. *Assessment of the impact of artificial intelligence on the performance of the workforce at a South African banking institution*. [Thesis, University of Johannesburg (South Africa)].	Quantitative and quantitative techniques	digitalre_invention_framework, digital innovation strategy framework, technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT) framework	Existing literature is limited, and further research is required	Organisational and industry level	The responsibility for AI initiatives aimed at enhancing workforce performance was given to those in the middle office.	AI enhances overall performance and productivity.
Meno, T., 2020. An assessment of risk associated with digitalisation in the South African construction industry. [Thesis, University of Johannesburg (South Africa)].	Empirical and theoretical data	technology-organisation-environment (TOE) framework	Existing literature is limited, and further research is required.	Organisational and industry level	Digital technology should be absorbed in small portions, as fully substituting tasks with machines can be overwhelming.	The adoption of digital technologies must occur in phases for full impact on the intended targets.
Molloy, L. and Ronnie, L. 2020. Sustaining the life insurance industry in the Fourth Industrial Revolution. *South African Actuarial Journal*, 20(1), pp.81–107.	A qualitative exploratory research method	N/A	Existing literature is limited, and further research is required	Industry level	The widespread absence of trust, flexibility, and promptness in the industry is stated as a barrier to digital innovation.	Individuals must adopt a mindset shift to fully benefit from 4IR.

Authors_Title_Year	Methodologies	Underpinning theories or models	Deficits in the literature	Level of analysis	Empirical insights	Relevance to real-world applications
Molloy, L. and Ronnie, L. 2021. Mindset shifts for the Fourth Industrial Revolution: Insights from the life insurance sector. *SA Journal of Human Resource Management*, *19*, p.13.	A qualitative exploratory research method	N/A	Existing literature is limited, and further research is required	Industry level	The main themes we identified concerning organisational change and resistance to change in the industry included insufficient urgency, a deficiency in agility, the importance of partnerships and ecosystems, and the skills of individuals and leaders.	Individuals must adopt a mindset shift to fully benefit from the 4IR.
Moodley, A.J. 2019. Digitilisation in South Africa's short term insurance sector: traditional insurers' responses to the Internet of Things (IoT) and Insurtech. *The African Journal of Information and Communication*, 24, pp.1–16.	Qualitative data-gathering method via semi-structured, one-on-one interviews	Focus on insurance industry	There is a need for further literature on the journey is challenging for a traditional insurer and changes to business models	Organisational and industry level	Due to limited history, insurance firms can rapidly embrace novel concepts and adopt modern technologies to address challenges faced by the customer base.	Suggesting digital technologies enhance operational efficiency
Modiba, M.M. and Kekwaletswe, R.M. 2020. Technological, organizational, and environmental framework for digitilisation in South African financial service providers. *International Journal of Innovative Science and Research Technology*, 5(5), pp.180–196.	Interpretivist paradigm	TOE framework	Existing literature is limited, and further research is required	Industry level, focusing on the SA financial service providers.	Existing environmental, Industry, and technological factors either inhibit or enable digitilisation with the FSP industry in SA.	Suggestions: industry, technological, and environmental factors are critical for successful transformation
Moyo, J., Watyoka, N. and Chari, F. 2022. Challenges in the adoption of artificial intelligence and machine learning in Zimbabwe's insurance industry. In *2022 1st Zimbabwe Conference of Information and Communication Technologies* (ZCICT) (pp. 1–6). *IEEE*.	Pragmatist research philosophy where researchers used both qualitative and quantitative methods	TOE framework	Further investigation and research studies are required	Industry level	Zimbabwean insurance industry is still lagging in its digitalisation journey, impacting the introduction of new products in the industry.	Suggesting digital technologies enhance operational efficiency
Musaigwa, M. and Mutula, S. 2022. Impact of digitilisation on strategy in the insurance sector. *International Journal of Research in Business and Social Science*, (2147–4478), 11(4), pp.69–76.	Quantitative and quantitative techniques	RBA theory	Further investigation and research studies are required	Industry level	There is a need to adjust its business strategy to include digitilisation and integrate it into the strategy for reaching its long-term goals.	Suggesting digital technologies enhance operational efficiency
Niraula, P. and Kautish, S. 2019. Study of the digitilisation adoption in the insurance sector of Nepal. *LBEF Research Journal of Science, Technology and Management*, 1(1), pp.43–60.	Questionnaires.	Evaluates the existing digital strategies implemented and the barriers preventing technological advancement within the Nepalese insurance industry	Limited research exists regarding the identification of customer expectations and the evolving behaviors of customers by insurance companies. Further comprehensive research is required to periodically ascertain the needs and expectations of customers.	Industry level focusing on fourteen insurance Companies in Nepal	Out of the insurance customer group surveyed, 82% expressed readiness to employ digital platforms for purchasing policies. Presently, product and marketing efforts are hindered by changes in prices and underwriting issues. Insurance continues to prioritise compliance and risk assessment.	Suggests enabling digital channels for customers to find insurance products and complete the process
Nkomo, L. and Kalisz, D. 2023. Establishing organisational resilience through developing a strategic framework for digital transformation. *Digital Transformation and Society*, 2(4), pp.403–426.	Qualitative in nature employing semi-structured in-depth interviews	The research follows the 3Ps structure: (1) people, (2) processes, and (3) plant (technology and tools).	Further investigation and research studies are required	Industry level	It features other basic components beyond the mechanical cycles' framework, including individuals, interaction, and administration.	Distinguished associations going through DT to reinforce versatility ought to focus on guaranteeing worker prosperity

Authors_Title_Year	Methodologies	Underpinning theories or models	Deficits in the literature	Level of analysis	Empirical insights	Relevance to real-world applications
Nwaiwu, F. 2018. Review and comparison of conceptual frameworks on digital business transformation. *Journal of Competitiveness*.	Qualitative in nature employing descriptive research design.	digitalre_invention_framework, digital innovation strategy framework, TAM, UTAUT framework	Further literature needs to be developed	Search databases such as *Scopus* and *Google Scholar* were used at an industry level	Industry dynamics have changed with digitalisation with the adoption of automated business models and processes.	Digitalisation opens up many opportunities to the digitalise economy.
Ohei, K.N., Brink, R. and Abiodun, A. 2019. Information and Communication Technology (ICT) graduates and challenges of employability: A conceptual framework for enhancing employment opportunities in South Africa. *Gender and Behavior*, 17(3), pp.13500–13521.	SLR research methodology	USEM theory, DOTS theory, career EDGE theory	Further literature needs to be developed	Organisational and industry level	Graduates in ICT across various qualification levels face difficulties in securing employment, regardless of credentials. This situation stems from socioeconomic issues that lead to a lack of job opportunities and an insufficient number of roles available for emerging ICT graduates.	Suggesting digital technologies enhance operational efficiency
Pauch, D. and Bera, A., 2022. Digitisation in the insurance sector–challenges in the face of the Covid-19 pandemic. *Procedia Computer Science*, 207, pp.1677–1684.	Data available in national and international reports	N/A	Further literature needs to be developed	Organisational and industry level	More than 80% of insurance providers believe that the future of the insurance market is destined for organisations that will heavily invest in innovation and digital transformation.	Suggests digital technologies enhance operational efficiency
Phokwane, I. 2022. *Optimising and modelling business processes for a successful implementation of process automation* (Doctoral dissertation, University of Johannesburg).	Quantitative methodology	theory of constraints (TOC) is a way of thinking about improving the efficiency of a system.	Existing literature is limited, and further research is required	Industry level focuses on two organisations who participated in initiatives employing business process modeling and mappings as a foundation for the successful adoption of process automation.	Modelling and optimisation of processes play a significant role in enabling the successful adoption of automation	Suggests the system development life cycle approach must be followed in the adoption drive.
Rawat, S., Rawat, A., Kumar, D. and Sabitha, A.S. 2021. Application of machine learning and data visualisation techniques for decision support in the insurance industry. *International Journal of Information Management Data Insights*, 1(2), p.100012.	exploratory data analysis (EDA)	Machine-learning algorithms are employed on a dataset, and a structure is utilised to define the procedure. This structure streamlines the process and also enhances comprehension.	The potential for further exploration in this area can involve addressing the problem of significant information awkwardness through the resampling of the dataset.	Industry level	Twenty-eight per cent of large organisations opt for associations with Insurtech organisations and, surprisingly, under 14% effectively participate in r projects or adventures	Suggests digital technologies enhance operational efficiency.
Rutashobya, L.K., Chiwona-Karltun, L., Wilson, M., Ilomo, M. and Semkunde, M. 2021. Gender and rural entrepreneurship in digitising Sub-Saharan Africa. In *Business in Africa in the Era of Digital Technology: Essays in Honour of Professor William Darley*, pp.63–84.	Systematic review of literature, drawing from secondary sources	This research constructs an integrated model connecting barriers and driving forces of supply chain management	Africa lags in terms of technological adoption and use, mirroring the deficiencies in the existing literature. Additional research is required in this area.	Public industry in Ghana	Digitilisation offers many benefits, such as transparency, revenue collection, improving communication and operational performance or efficiency, increasing productivity and speed of delivery of services.	Offers concrete evidence of a skills gap and capacity are foundational issues in adoption in Africa.
Sibanda, T. 2019. Digital reinvention can spur South Africa's economy. *McKinsey* and *Company*.	Comprehensive survey questionnaire	Theoretical framework for collaboration	More literature is required, focusing on the influence of technology	Industry-level focus on 68 UAE Federation of Bank members	Digitalisation revolutionises the customer experience, emphasising that the longer banks engage with customers, the greater	Suggests digitalisation can enhance customer experience and build long-term relationships.

					the opportunity to cultivate a rewarding long-term relationship, thereby reducing the probability of customers switching to other options.	
Stanković, J., Stanković, J.Z. and Tomić, Z. 2022. Factors affecting digitilisation of insurance in the Republic of Serbia. *Economic Themes*, 60(1), p.p.133–149.	Logistic regression and panel data approach	TOE framework	Further research literature is needed as existing literature is evolving but still lacking	Industry and industry-level (Republic of Serbia)	IT adoption is exceptionally low, particularly concerning more funding in innovative technologies, such as robotics, machine learning, and artificial intelligence, and in developing markets. The majority implemented the basic services, and 50% provided advanced services to policyholders.	Provides the key motivations for adoption of digitilisation in Serbia.
Van Dyk, R. and Van Belle, J.P. 2019, September. Factors influencing the intended adoption of digitilisation: A South African case study. In *2019 Federated Conference on Computer Science and Information Systems* (FEDCSIS) (pp. 519–528). *IEEE*.	Case research approach	TOE framework	Further research literature is needed as existing literature is evolving but still lacking.	Industry level	More understanding is required in the digitalisation of the SA retail industry.	Offers understanding fundamental technologies underpinning digitilisation.
Vial, G. 2019. Understanding digitilisation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2). DOI: https://doi.org/10.1016/j.jsis.2019.01.003	Inductive approach to reviewing the literature on DT	grounded theory	Further literature needs to be developed.	Industry level	Advanced technologies lower the costs of data management, communication, and connectivity, fostering collaboration among diverse, distributed organizations.	Research indicates collaboration is still important in digitalising organisations.
Williams, V.A., 2023. *The effects of transformational leadership on virtual onboarding within the US insurance industry* (Doctoral dissertation, Tiffin University).	A qualitative exploratory research method	N/A	Existing literature is limited and further research required	Industry level	The integration of digital technologies plays a crucial role in improving operational efficiency within organisations.	Leadership plays a critical role in successful digitilisation.
Wiesböck, F. and Hess, T., 2020. Digital innovations: Embedding in organisations. *Electronic Markets*, 30(1), pp.75–86.	Analysis, synthesis, generalisation, and tabular and graphical data presentation	Technology-driven linking framework	Further investigation and research studies are required	Retrieval of data from the scientific publication *Scopus*	Digitilisation offers many benefits, such as improving communication and operational performance or efficiency, increasing productivity and the speed of delivery of services.	Suggests additional frameworks are required to address digitilisation in business.
Zanke, P. 2023. AI-Driven fraud detection systems: a comparative study across banking, insurance, and healthcare. *Advances in Deep Learning Techniques*, 3(2), pp.1–22.	Quantitative and quantitative techniques	Resource-based view theory	Further investigation and research studies are required	Industry level	Sophisticated analytics and machine learning techniques allow for the monitoring of transactions and activities in real time, facilitating the prompt identification of inconsistencies and possible fraudulent activities.	Suggests digital technologies enhance operational efficiency and fraud prevention.

2.4 Conceptual model and summary of literature

2.4.1 Conceptual model

This section presents a conceptual model that explains how digitalisation is adopted in South Africa's insurance industry. The model is based on the TOE framework and IS Contingency Theory. It highlights important factors that drive digitilisation and how they affect operational efficiency.

This model shows how technology, organisation, and environment work together with specific factors such as industry needs, leadership, and regulations. To improve performance through digitalisation, it is important to align these elements successfully.

The model, shown in Figure 3, is divided into three main areas based on the TOE framework:

- Technology: This includes digital tools such as artificial intelligence, automation platforms, and fraud detection systems.
- Organisation: This refers to internal strengths such as leadership support, readiness for change, and available resources.
- Environment : This covers factors such as regulations, market competition, customer expectations, and socio economic conditions.

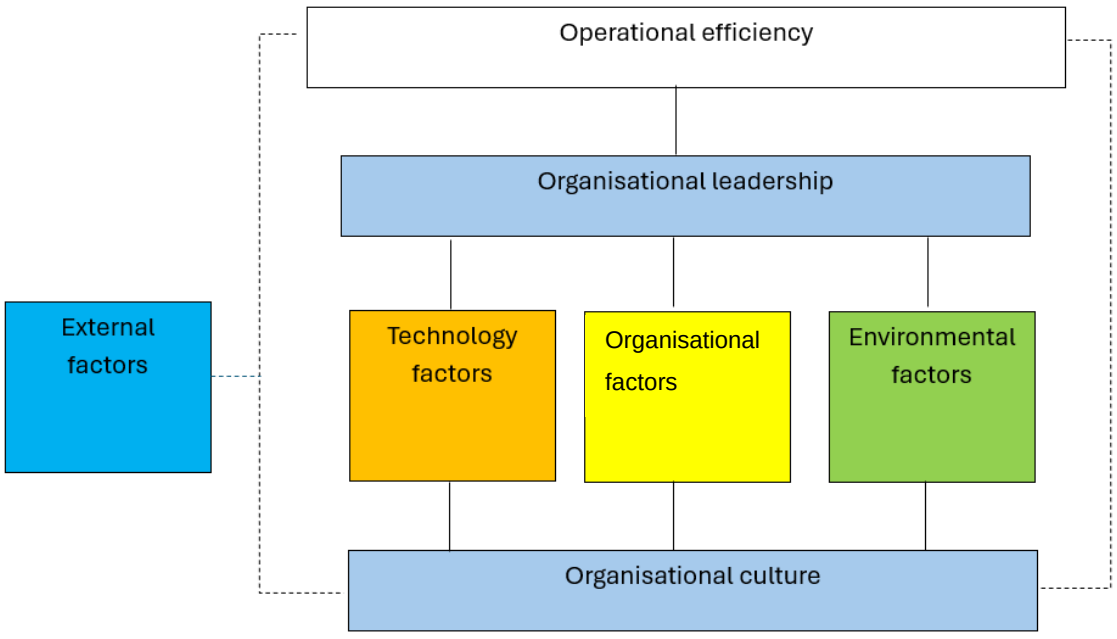

Figure 3: Conceptualised Framework for digitilisation in the insurance industry.

These areas come together to focus on digital adoption drivers' essential factors that support successful digital change. Based on IS Contingency Theory, this model shows the need to align a company's internal strengths with outside challenges. It emphasises that the results of digitilisation depend on the specific situation of the organisation.

The framework shows how key factors work together to encourage digital technology use and improve operational efficiency in South Africa's insurance industry. It can be used for future research and practical application in the sector , as illustrated in Figure 3.

Scenario

You work for a SA insurer and need to help a client complete a life cover application to meet your monthly targets. The client lives on a farm 300 km from the city. The cars are both being repaired and you have poor cellphone coverage. The financial advisor cannot reach the client, and the nearest neighbours are away, so clients cannot get in-person help. However, you remember the client gave you an email address and mentioned slow but working internet. You quickly send an email to the client with the online questionnaire, application form, important details, and clear instructions. Soon after, the client replies, completing the process by submitting the signed electronic forms and uploading the needed documents through the portal.

This framework highlights the digitilisation of the South African insurance industry by incorporating technologies such as AI, big data, and blockchain. These tools promote innovation and enhance efficiency, leading to lower costs, improved operational performance, and increased customer satisfaction. However, several challenges persist, including a reliance on traditional methods, high adoption costs, and inefficiencies in underwriting processes. The insurance industry must focus on improving automation, engaging leadership, creating clear strategies, and adhering to regulations to address these challenges. When implemented successfully, this approach enhances competitiveness, raises customer loyalty, and supports sustainable growth. It enables insurance companies to optimise operations and effectively navigate the challenges of a digital landscape.

2.4.2 Contingency theory elements

Table 2 below captures the essential elements of CT and describes how each element interacts with information systems in the insurance industry.

Table 2 – Contingency theory elements.

Element	Description
Contingency Factors	Variables such as size, technology, and leadership influencing organisational structure and strategy.
Environmental Factors	External influences, such as regulations and market trends, affect operations.
Organisational Structure	Allocation of tasks and authority to improve communication and achieve goals.
Technological Factors	IT assets support efficient operations.
Management and Leadership	Management and leadership planning and inspiring employees towards a common vision.
Strategic Fit	Guides to decisions and resource management for long term success.
External Pressure	Outside challenges, such as competition, requiring adaptation.
Adaptability and Flexibility	Organisational capacity to adapt its strategies and structures efficiently.

2.4.3 Research questions

To answer the main research question, How can we digitise and improve service operations? this study focuses on three supporting questions. These questions look at how digitalisation affects operational efficiency, identify key technologies for optimising processes, and examine how factors such as organisational culture, leadership, and available resources impact technology adoption. Together, these topics provide a clear way to understand and develop effective digital strategies in the insurance industry.

2.4.4 Summary of the literature review

This section provides a recap of the main points, discoveries, and themes explored throughout the chapter. Consequently, it highlights relevant findings, theoretical

research frameworks, emerging trends, recommendations, and deficits in the literature to elucidate future studies, which are further detailed in upcoming sections.

2.4.1.1 Underpinning theories

Section 2.4 explains the study's main ideas, using the Technology–Organisation–Environment (TOE) framework and IS Contingency Theory. The TOE framework helps us understand how technology, organisation, and environment affect digital adoption, which connects to the study's focus on operational strategies. IS Contingency Theory shows that successful digital efforts depend on matching internal structures with outside conditions. Together, these ideas support the model by highlighting that effective digitilisation needs both the right technologies and strategic alignment. This research employed TOE and CT as its theoretical basis to examine how digitalisation enhances business processes in the South African insurance industry, as interrogated in Chapter Three.

2.4.1.2 Research deficits

Research deficits are areas within a particular field not thoroughly explored by previous studies. These deficiencies highlight topics or issues requiring further investigation. Several aspects of the current research topic still need deeper examination and analysis, as discussed below. This research identified both knowledge and theoretical deficits.

Despite the significant increase in research on global markets, there remains a notable shortage of studies focused on the SA insurance industry (Musaigwa and Mutula, 2022). Currently, current literature lacks examination of the direct impact of digitalisation on operational risk factors in SA insurance firms (Meno, 2020). Moreover, there is a scarcity of research exploring the difficulties this industry encounters in implementing digital technologies, such as its effect on outdated systems, as well as issues related to privacy and data security. Furthermore, internal and external factors such as insufficient management support, poor communication, high perceived costs, complexity (Pauch and Bera, 2022), and the shortage of ICT skills in Africa (Ohei, Brink and Abiodun, 2019) require closer analysis. While research on emerging technologies, including artificial intelligence and blockchain, is growing, few studies have focused on the effect of digitalisation on the insurance industry in developing countries, particularly

in SA. The existing research predominantly addresses digital strategies and business models, often disregarding the nuanced relationship between digitalisation and business processes and how technological, environmental, and industry factors shape the digitalisation journey within the insurance industry, which primarily focuses on early adopters such as the manufacturing and retail industries (Mapingire, Smuts and Van der Merwe, 2022).

Existing research on digitalisation within the insurance industry highlights global frameworks and theories, particularly TOE and TAM. These frameworks offer insights into how technology is integrated and accepted, emphasising user acceptance and the background of industry. Nevertheless, this focus might neglect other applicable theories that could enhance the understanding of digitalisation. For example, CT stresses the importance of aligning organisational structures with external environments, while the diffusion of innovation theory (DoI) examines the methods by which modern technologies are adopted. Integrating these theories could extend the understanding of digitalisation in the insurance industry by discovering various adoption paths and adapting strategies. The next chapter explores these frameworks.

Eliminating research deficits is essential for a comprehensive understanding of digitalisation and its effect on the insurance industry.

2.4.1.3 Publication period

The selected publications, spanning 2019 to 2024, highlight the growth of literature focused on the digitalisation of the insurance industry, covering areas such as home, business, and auto insurance, among many more. The volume of publications has fluctuated over time, with a noticeable upward trend in the past nine years. Of the 121 articles published over a 13 year period from both domestic and international sources, 65 articles (or 54%) were released between 2016 and 2023. This trend underlines the rapid pace of digitilisation within the insurance industry.

2.4.1.4 Journal outlet

Table 2 details the distribution of articles across various papers. Information systems produced the highest number of publications (37 of the 121 reviewed papers), followed by computer science (17) and The International Conference on System Sciences (25). Notably, despite the limited focus on digitalisation in specialised insurance papers, only

one article out of 121 was published in management and five in the business fields. Given the increasing impact of digitalisation on business operations, it is recommended that the relevant papers encourage more in depth research and provide guidance to support digitilisation in the insurance industry.

Table 3 displays several types of information systems frameworks available.

Table 3 – Number of publications.

The number of publications in each journal

Journal	Number of publications
Economics	3
International Conference on System Sciences	25
Computer Science	17
Business	5
Management	2
Information systems	37
Small Business & Entrepreneurship	1
International Conference on System Sciences	7
International Journal of Research in Business and Social Science	8
Journal of Industrial Policy and Technology Management	10

Note : Examples of journals : *Economics* (3*), International Conference on System Sciences* (25), *Computer Science* (17), *Business* (5), *Management* (2), *Information systems* (37), *Small Business* and *Entrepreneurship* (1), *International Conference on System Sciences* (7), *International Journal of Research in Business and Social Science* (8), *Journal of Industrial Policy and Technology Management* (10)

2.4.1.5 Digital technologies and insurance industry publications

The publications are categorised into three areas: nonlife, health, and life insurance, encompassing diverse topics within the insurance industry. Life insurance dominates the collection, representing many articles (54%), while nonlife insurance, with only four papers, has the smallest share (4%).

Although robotics, IoT, chatbots, and BDA share some common features, each study generally emphasises different components of these technologies. As a result, they are typically improved by technology. Many publications examine multiple technologies and frequently group related articles, leading to recurring themes in the discussions. Robotics, blockchain, and AI have gained research attention for transformative

potential in insurance. Robotics automate tasks such as claims processing, improving efficiency and reducing costs. Blockchain enhances security and transparency, which are crucial for preventing fraud. AI analyses data for better risk assessment and customer insights. Together, these technologies have the potential to enhance operational efficiency and advance innovation adoption within the insurance industry, while social media and virtual reality have attracted significantly less attention.

IoT, BDA, and AI have attracted considerable attention from researchers, while blockchain technologies have also gained momentum (Zanni, 2019). However, research on social networking, collaboration technologies, and on demand marketplace platforms remains limited, despite benefits and low costs.

2.4.1.6 The focus of technologies over the years

Since 2018, there has been a significant increase in studies related to AI, IoT, machine learning, and BDA (Paruchuri, 2020). The outcomes of such research indicate that, particularly since 2019, there has been a noticeable escalation in researchers' attention to blockchain and IoT technologies. According to Zanni (2019), in the KPMG Technology Industry Innovation Survey, "the Internet of Things was identified as the primary driver of digitalisation over the next few years".

During the same period, business executives have considered incorporating blockchain technology into industries. Similarly, nearly half (48%) of survey participants indicated it would significantly transform operations in the coming years.

2.4.1.7 Value chain observations

The *Google Scholar* search yielded a myriad of publications, with approximately 150,000 focusing on the SA environment. A deep understanding of the value chain of an industry can help reduce waste, save costs, and enhance operational efficiency. Hence, value chain analysis enables businesses to streamline processes and identify opportunities to integrate technology, improving customer service while reducing expenses. To this end, the present study examines how digital technologies are employed in various insurance industry business functions.

Eling, Nuessle and Staubli (2022) explain that the insurance value chain consists of primary and supporting activities, each requiring various steps to deliver products or services. The primary activities include claims evaluation, customer support, underwriting, marketing, contract management, sales, and product development. In contrast, the supporting activities encompass public relations, management, legal, IT, and human resources.

This study thoroughly analysed each activity to identify which stage of the value chain received the most focus by dividing the value chain into three sections: (1) Application: gathering personal information and addressing health related inquiries. (2) Underwriting: reviewing applications, conducting further inquiries, scheduling appointments, and evaluating results. (3) Conditions Provided: making decisions about applications. The underwriting process emerged as the primary area where digital technology could be applied most effectively in the value chain. The dissertation later discusses the claims process.

Highlighting the scarcity of literature discussing the application of digital technologies in SA insurance stresses the need for further research, innovation, and collaboration to enhance industry practices and inform decision making. The previous section identified this deficiency in literature. Notably, IoT, BDA, and AI are widely discussed, with implications for every aspect of the insurance value chain. The rise in published articles on social media is unsurprising, given its significant role in the application stage. However, it is crucial to recognise that other digital technologies have not been thoroughly explored for potential contributions. While research has investigated robotic technologies, virtual reality, and the benefits of blockchain (Zanni, 2019), impact on the SA insurance industry has been limited but is starting to attract more attention.

There has been limited exploration of the benefits of robotics and artificial intelligence during the application stage, which is a crucial link in the value chain. Most research has focused on blockchain, on demand marketplace platforms, and data mining technologies.

However, additional research is urgently required to explore the benefits of digital technologies at distinct stages of the insurance process. Researchers should focus on

how technologies such as IoT, robotics, AI, and blockchain can transform the insurance value chain, particularly at the application stage, currently lacking.

Life insurance has received more prominence regarding digitisation than health or nonlife insurance, thus attracting greater research attention. Therefore, a thorough analysis of the benefits of digitalisation in this area is needed. Since digitalisation is becoming more widespread, it is crucial to conduct further research on its impact on various stages of the insurance process.

2.4.1.8 Theoretical framework

Current research on insurance digitalisation focuses on TOE and TAM. These models provide insight into user adoption and technology integration in the SA insurance industry, but such a narrow scope might overlook other relevant theories. For example, DoI explores technology adoption, while contingency theory highlights the need to align industry structures with external factors. Incorporating these theories could enhance understanding of digitalisation in the insurance industry. The following section discusses the conceptual model contingency theory elements and reiterates the research questions to provide a clear framework for understanding the study's objectives.

2.4 Conclusion

The research revealed there is a notable scarcity of existing literature, addressing the life insurance industry while ignoring health insurance and overlooking nonlife insurance. The study gained significant insights into the topic, especially in SA, through an extensive review of reputable papers. The analysis identified trends and patterns of digital integration in the digitalisation transformation journey.

While acknowledging the methodological limitations inherent in every research project, the study recognises potential weaknesses in this literature review. Initially, the study implemented a filtering procedure to guarantee that only reputable papers were considered. However, this approach might have inadvertently excluded significant, high caliber papers from other sources. It is also crucial to understand that valuable contributions can arise from practitioner focused publications, blogs, and seminars,

which were not the main focus of this review. Such alternative sources are well respected in professional circles for offering fresh perspectives and innovative ideas. Therefore, it would be beneficial to explore the emerging trends presented in these sources. The researcher carefully reviewed the papers, yet some personal opinions might have influenced selections, thereby missing studies. Future research should use broader search terms to uncover more studies since this researcher's unconscious biases might have affected selection. In summary, while current research mainly focuses on global frameworks such as TOE and TAM, this review establishes a solid basis for future studies.

CHAPTER THREE: THEORIES UNDERPINNING THE RESEARCH

3.1 Introduction

This chapter provides a more thorough understanding of the theoretical frameworks the study used to investigate digitalisation in the South African insurance industry. It centres on IS, utilising TOE in combination with CT as its theoretical basis to examine how digitalisation can enhance operational efficiency. The TOE framework suggests that environmental, industry, and technological factors are instrumental in shaping technology adoption. CT posits that the success of an information system is influenced by its alignment with particular industry and environmental elements. The framework emphasises that there is no universal solution to digitising but establishes how the insurance industry can adapt digital strategies to various operational environments to improve efficiency. Hence, merging the theories would provide a comprehensive analysis of technology adoption by integrating TOE and CT. This integration enhanced decision making and adaptability while aligning strategies more effectively, resulting in a deeper understanding of digitilisation within the SA insurance industry.

The chapter opens with an exploration of the background and core concepts of the selected theories, followed by a discussion of fundamental principles. It then explores the key assumptions, significance, and frameworks of the study to offer a more profound insight into how these theories were applied. Chapter Three concludes by justifying the choice of these theories as foundational frameworks and providing a comprehensive summary.

3.2 Introduction to theory in information systems

Theories are integral to IS because theoretical models provide frameworks to guide research, explain phenomena, predict outcomes, and influence practices. IS theories advance an understanding of how technology interacts with organisations, individuals, and society. The theories provide researchers and practitioners with tools to explore, understand, and improve the constantly changing technology landscape. Therefore, a strong theoretical foundation ensures that IS research adds to academic knowledge and practical use (Gregor, 2006).

In his paper, "The Nature of Theory in Information Systems", Gregor (2006) provides a clear framework for understanding what theories are, purposes, and how they are categorised in the IS field. Gregor (2006) groups theories into five different types, each type serving a specific function.

Table 4 – A Taxonomy of Theory Types in Information Systems Research (Gregor, 2006).

Theory type	Distinguishing attributes
I. Analysis	Says what is. The theory does not extend beyond analysis and description. No causal relationships among phenomena are specified and no predictions made.
II. Explanation	Says what is, how, why, when and where. The theory provides explanations but does not aim to predict with any precision. There are no testable propositions.
III. Prediction	Says what is and what will be. The theory provides predictions and has testable propositions but does not have well developed justificatory causal explanations.
IV. Explanation and prediction (EP)	Says what is, how, why, when, where and what will be. Provides predictions and has both testable propositions and causal explanations.
V. Design and action	Says how to do something. The theory gives explicit prescriptions (e.g., methods, techniques, principles of form and functions) for constructing an artifact.

Therefore, key IS theories can be grouped as follows based on the classification by Gregor (2006):

Table 5 – Category Grouping of IS theories (Gregor, 2006).

Theory type	IS theories
Theory for Analysing	Technology-organisation-environment (TOE) framework
	Structuration theory (ST)
Theory for Explaining	IS contingency theory (CT)
	Sociotechnical systems theory (STS)

Theory for Predicting	Innovation diffusion theory (IDT)
	Technology acceptance model (TAM)
Theory for Explaining and Predicting (EP Theory)	Unified theory of acceptance and use of technology (UTAUT)
	Task-technology fit (TTF) model
Theory for Design and Action	Design science research (DSR)
	Action design research (ADR)

The system by Gregor (2006) for categorising theories elucidates various IS concepts. By sorting IS theories into groups based on analysis, explanation, prediction or design, researchers can better connect work to specific goals. This system strengthens the quality of IS research and also helps apply it to solve complex technology problems.

3.3 Theories in information systems research (continued)

Information systems research investigates how technology affects the South African insurance industry. Section 3.3 details frameworks used in IS:

- TOE (technology-organisation-environment): Demonstrates how the insurance industry works with outside factors to adopt new technology.
- Contingency theory (CT): Highlights the need for information systems (IS) to match the insurance industry environment.
- Diffusion of innovation (DoI): Explains how innovations spread (Matsepe, 2022).
- Technology acceptance model (TAM): Points out that perceived usefulness and ease of use are key in digital technology acceptance (Bryan and Zuva, 2021).
- Resource based view (RBV): Explains how using technology and organisational resources can strategically create lasting advantages for the insurance industry.
- Unified theory of acceptance and use of technology (UTAUT): Offers a broad view of user behavior by examining how performance expectancy, social influence, and conditions advance technology usage.
- Actor network theory (ANT): Explores how people, technology, and organisational practices interact with and influence digitilisation.

The above mentioned frameworks promote an understanding of how IS can improve efficiency in the SA insurance industry. Studies show that IS adoption can streamline processes, lower costs, and improve decision making leading to higher productivity

(Sandner, Sieber, Tellermann and Walthes, 2020). Using IS frameworks facilitates better customer data management, streamlines workflows, and provides faster responses, all of which are vital for remaining competitive in the insurance industry (Zanke, 2021).There are different types of information systems frameworks available, as discussed in Table 6 below:

Table 6 – Research frameworks.

Framework	Definition	Authors	Reason for not using the theory
Technology-organisation-environment (TOE)	The technology-organisation-environment (TOE) framework demonstrates the impact of environmental, insurance industry, and technological elements on the adoption of new technologies in the insurance industry (Hoosen, 2023)	Tornatzky and Fleischer (1990)	This theory was selected, and additional justification is provided in upcoming sections.
Contingency theory (CT)	Contingency theory suggests the success of information systems (IS) in the insurance industry depends on compatibility with the external environment (Abedin, 2022).	Fiedler (1964)	This theory was selected, and additional justification is provided in upcoming sections.
Technology acceptance model (TAM)	The technology acceptance model (TAM) illustrates how users' perceptions influence choice to embrace new technology (Natasia, Wiranti and Parastika, 2022).	Davis (1986)	The theory was rejected for disregarding factors such as industry culture and user behavior, focusing on perceived usefulness and ease of use.
Diffusion of Innovation (DoI)	The diffusion of innovation (DoI) theory indicates the speed at which technology is adopted in the insurance industry differs based on the level of innovation (Du Plessis and Smuts, 2021).	Rogers (1962)	The theory was rejected for being too complicated and focused on individual adoption.
Resource-based view (RBV)	The resource-based view (RBV) highlights how strategic technology, and organisational assets can provide lasting advantages in the insurance industry.	Barney (1991)	The theory simplifies competitive advantage too much by ignoring outside factors and rapid changes in technology.
Unified theory of acceptance and use of technology (UTAUT)	The unified theory of acceptance and use of technology (UTAUT) explains user behavior. It examines how performance expectations, social influences, and conditions affect how people use technology.	Venkatesh, Morris, Davis and Davis (2003)	The theory was rejected for being too focused on predictions and does not consider cultural or situational differences in how people adopt technology.
Actor-network theory (ANT)	Actor-network theory (ANT) investigates how people, technology, and organisational practices work together and impact digitilisation.	Callon, Latour and Law (1986)	The theory was rejected for being too complicated and theoretical for practical research.

[1]Please note there are countless theories or frameworks used in IS research, hence the study does not discuss the entire list.

The examination of information systems includes several relevant frameworks; for this research, the researcher selected TOE and CT because of strong association with research on digitalisation in the insurance industry. These frameworks are suitable for researching technology adoption due to comprehensive examination of the relationship between technology, insurance industry capabilities, and external influences. They enable the development of personalised strategies for adaptability in changing environments by thoroughly exploring the connections among these factors. Hence, given the varied sizes and structures of the insurance industry, digitalisation strategies must be adaptable to external pressures such as customer expectations and regulatory requirements. The theories emphasise aligning digital technologies with the specific needs of the insurance industry. By applying the chosen theories, the research explores how insurance companies can adapt digitalisation efforts to improve operational efficiency. The later sections of Chapter 3 present a detailed comparison of information systems theories. Section 3.4 introduces and defines TOE and CT.

3.4 Background to the underpinning theories for this research

The following section presents the foundational theories supporting this research.

3.4.1 TOE framework

The TOE framework is a conceptual model explaining the interrelation between the insurance industry and technological and environmental factors and thus emphasises the importance of these three fundamental elements of modern technology adoption within the insurance industry (Ahmed, 2020). In addition, TOE illustrates those technological attributes, the advantages present in the insurance industry, and external context impact decisions regarding technology adoption. These characteristics, in turn, impact the insurance industry's performance and efficiency (Nguyen, Le and Vu, 2022). Tornatzky and Fleischer (1990) introduced the theory that provides a tool to analyse how various factors affect digitilisation. TOE is respected for its uncomplicated approach to adopting technology; it is relevant across various industries, highlights the importance of the environment in which technology is used, facilitates decision making, and is backed by practical research. The model is flexible, enabling the incorporation

of supplementary elements as needed to address specific organisational environments and technological innovations (Amini and Jahanbakhsh, 2023). This flexibility is corroborated by earlier research highlighting the importance of models adapting to swift technological shifts across various industries. Notably, adaptable models have demonstrated the ability to improve the alignment between technology and organisational objectives, leading to enhanced operational performance (Nguyen and Tran, 2023).

The TOE framework has several benefits. It aids in understanding how technology is adopted, works across different industries, and highlights the factors that assist in good decision making. While it offers several advantages, some notable disadvantages should be considered. The adoption process can be complex and often lacks clear guidelines; it can be challenging to adapt to rapid changes and may place excessive emphasis on external factors. The outcomes might be difficult to generalise across discrete industries, and it frequently ignores the gradual nature of technological adoption. TOE has the capacity to boost responsiveness and spur innovation, allowing for the adaptation of information systems to address specific organisational requirements, which includes enhancing customer support, expediting claims handling, and refining risk evaluation processes. Researchers have successfully applied TOE, e.g., Kuan and Chau (2001), e-SCM adoption and Abdullahi et al. (2021), ICT use in agribusiness; and recent works on blockchain in supply chains, and AI in talent management, highlighting its versatility in analysing technology adoption across diverse environments.

3.4.2 Contingency theory

CT suggests that the effectiveness of information systems in the insurance industry depends on alignment with the external environment, emphasising the need for adaptation to unique environmental, industrial, and technological factors to enhance operational performance (Abedin, 2022). As Fiedler (1964) recognised, the theory posits that effective leadership styles are determined by situational factors, with subsequent perspectives linking operational environments and technology to industry structure (Tiessen and Waterhouse, 1983). Its acceptance stems from challenging traditional management theories by asserting that there is no singular best way to perform tasks (Csaszar and Ostler, 2020). The theory supports the adaptation of

information systems to accommodate the particular requirements of the insurance industry instead of using a universal solution (Amhalhal, Anchor, Tipi and Elgazzar, 2022), highlighting the importance of adaptability in uncertain environments for operational efficiency (Lartey, 2020). While the theory acknowledges key structural, environmental, and technological factors, its complexity might result in a lack of clear management guidelines.

The strengths of the adaptability and flexibility of CT apply across industries, allowing businesses to tailor digitalisation strategies to operational environments (Alsheyadi, 2024). However, this theory emphasises that situational solutions can hinder the development of standardised approaches and obscure general patterns, leading to potential inconsistencies in findings. Nonetheless, applying the theory reveals its potential for improving responsiveness and encouraging innovation in the insurance industry by adapting information systems to specific organisational environments. Researchers such as Fiedler, leadership effectiveness (1964), Lawrence and Lorsch, organisational adaptation to environmental demands (1967), and Scott, open systems theory (1961) have applied CT, demonstrating its relevance to analysing IS strategies and structures.

The following sections examine TOE and CT and compare to other theories.

3.4.3 Application of the TOE framework and CT in the insurance industry

Digitilisation in South Africa's insurance sector is influenced by various factors that differ between companies. The level of digital technology adopted and its impact on efficiency depends on key aspects.

Larger, well-resourced insurance companies usually invest in advanced technologies such as IoT, AI, blockchain, machine learning, big data, and robotic process automation to improve operations. However, these bigger companies often adopt these technologies more slowly than smaller, agile insurers, who can implement digital initiatives quickly, despite having fewer resources. According to Contingency Theory (CT), successful digital adoption requires aligning digital strategies with both the industry environment and the organisation's resources.

South Africa's strict regulatory framework adds challenges to digitilisation. Compliance costs and legal requirements often delay the adoption of new technologies. CT emphasises the need to customise digital strategies to address regulatory challenges while still using technology to improve efficiency.

Competitive pressures force insurance firms to adopt modern digital solutions that optimise operations and meet changing market demands. CT stresses the importance of aligning digital efforts with customer expectations and the competitive landscape. For example, some insurers focus on automating claims processing and application workflows, while others enhance service automation or speed up payment processes.

A significant hurdle is the legacy systems used for managing policies and billing, which can hinder integration and lead to high maintenance costs. CT highlights the need for new digital solutions to work well with existing technology to ensure successful adoption.

Organisational readiness, including workforce skills and effective change management, is essential for implementing digital technologies smoothly. CT points out the importance of preparing staff and management processes to support transformation efforts.

Section 3.4 reviewed the Technology-Organisation-Environment (TOE) framework and Contingency Theory, discussing main concepts and providing a SWOT analysis. This analysis showed why these frameworks were chosen. CT explains the need for alignment between internal and external factors in digital adoption, while TOE offers a broad view of the technological, organisational, and environmental influences. The next section will include a visual representation of how CT applies specifically to the insurance sector.

3.5 TOE framework and CT structures

The following section presents the graphical representation of the foundational theories supporting this research.

3.5.1 TOE framework

Figure 4 provides a graphical representation of the TOE framework, demonstrating the connections between its main elements. It shows how the effectiveness of the insurance industry depends on synchronising elements such as technological, organisational, and environmental conditions within the industry.

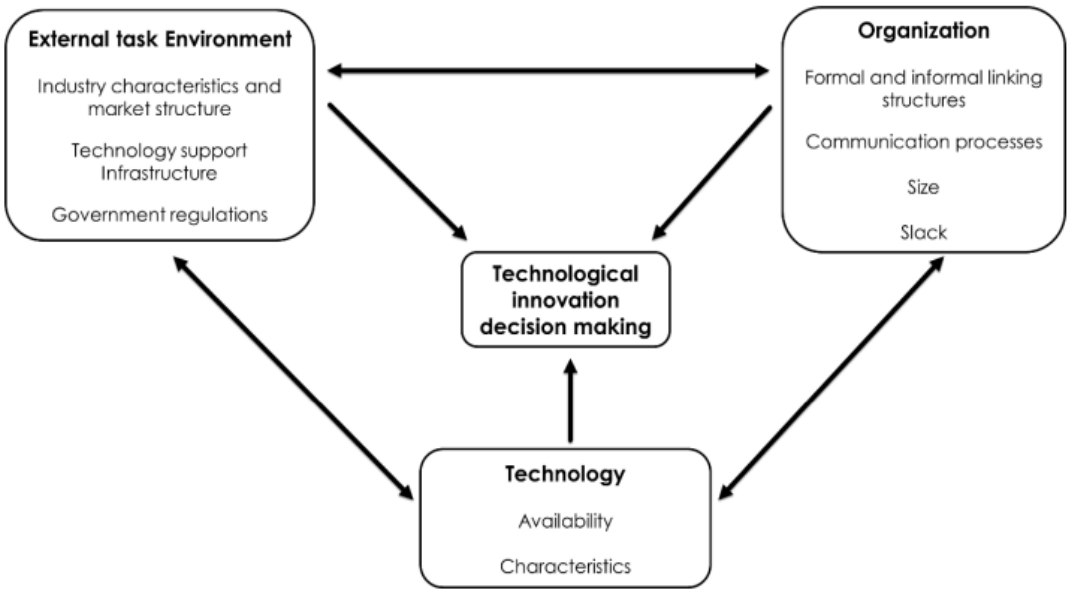

Figure 4: Technology-Organisation-Environment (TOE) Framework (Masana, 2019).

Figure 4 demonstrates that the insurance industry relies on three key factors: technological, industry, and environmental and thus needs a strong IT infrastructure, skilled employees, and significant user engagement time (Jere and Ngidi, 2020). The technology setting incorporates available internal and external technologies. The circumstances within the insurance industry include aspects such as structure, size, and employee relationships. Environmental circumstances involve external influences such as competitors and regulations. Together, these situations reveal constraints and opportunities for technological innovation and are essential for assessing readiness for adopting new technology.

3.5.2 Contingency structure

Figure 5 illustrates CT, highlighting the relationship between its key components. It demonstrates how performance in the insurance industry depends on the alignment

between external environmental factors, such as regulations, competition, and market conditions, and its internal structure, including leadership, technology, and processes.

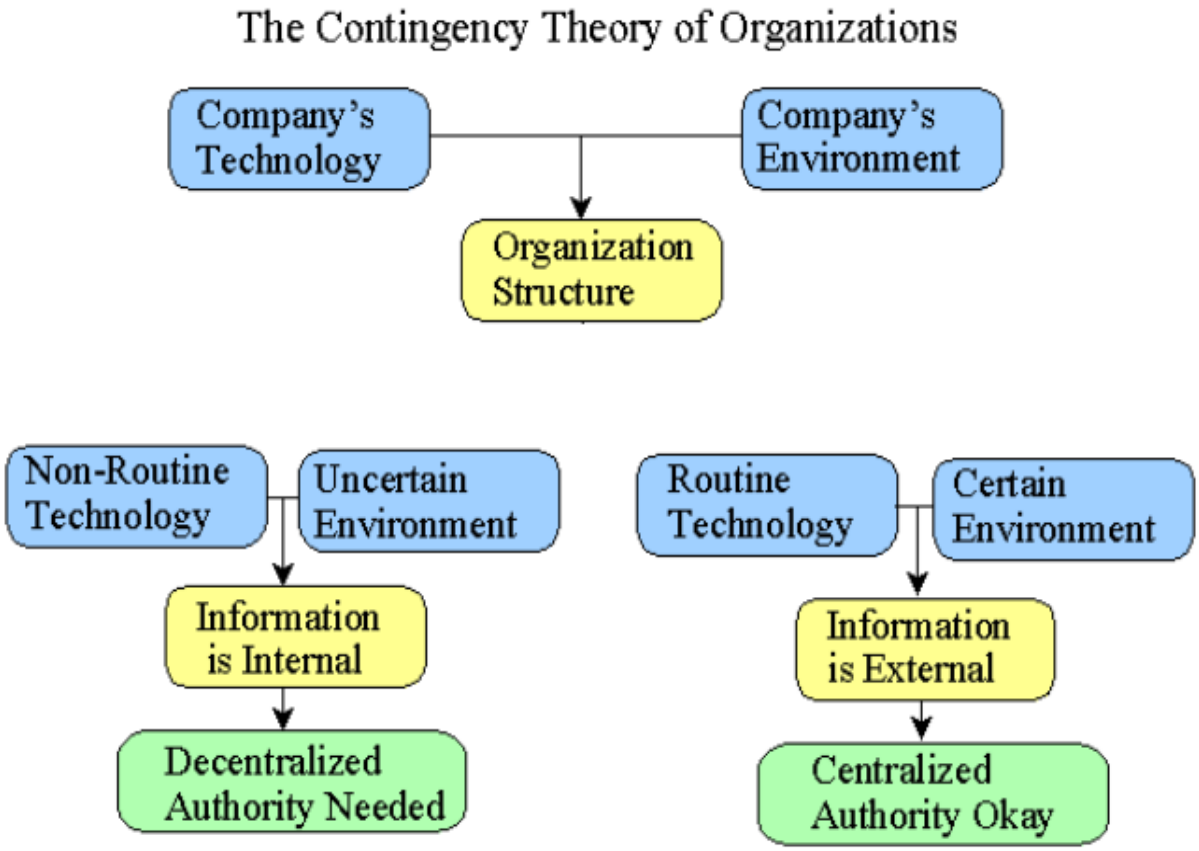

Figure 5: The contingency theory of organisations (Tiessen and Waterhouse, 1983)

Figure 5 highlights how the interaction between the insurance industry data, technology, and the operational environment shapes the insurance industry structure. In environments with unpredictable and unclear technology, information is managed internally; in environments with predictable technology, information is primarily applied externally. Integrating digital solutions improves decision making, and authority distribution facilitates better acceptance.

This research aims to develop a framework for streamlining processes, reducing costs, and enhancing customer satisfaction by employing modern technologies. It provides insights to assist insurance companies in adopting digitalisation and improving operational efficiency by merging theory with real world applications.

3.6 Basic TOE framework and CT principles

This section presents the basic principles of the foundational theories supporting the present research.

3.6.1 Basic TOE framework principles

The TOE framework explains how the insurance industry adopts technology. It addresses three key areas: industry readiness, environmental factors, and technological abilities. The core TOE principles are discussed below:

- Technology**:** This principle includes both internal and external factors affecting technology adoption in the insurance industry (Stanković et al., 2022). It explores how these factors influence digitisation in insurance.
- Industry**:** This includes centralisation, management attitudes, social influences, cultural and structural features, company size, available resources, resource efficiency, communication methods, and information sources (Stanković et al., 2022). This context shows how these insurance industry traits impact technology adoption and use.
- Environment**:** This principle incorporates the characteristics of the industry, technology service providers, and regulations. The principle of congruence suggests the success of an information system depends on its ability to integrate with various insurance industry elements, including size, structure, and the external environment. For example, while a smaller, stable business might manage with simpler solutions, a large insurance company in a rapidly changing market would need more advanced digital solutions (Akkor and Ozyukse, 2020).

Combined, these three principles advance an understanding of the different influences on how the insurance industry adopts technology.

3.6.2 Basic CT principles

Lartey (2020) identifies the key contingency theory principles, including adaptation and equifinality, introduced in the 1960s, and effectiveness and congruency, which emerged in the 1980s. The core principles of CT are detailed below:

- The principle of adaptation and flexibility states that subsystem components adjust to the environment to maintain the overall stability of a system. As the

external environment becomes more complex, this principle argues the insurance industry information systems structure must become increasingly flexible and adaptable to manage external pressures (Lartey, 2020).

- The equifinality principle suggests that a system can employ various techniques and starting points to arrive at the same result. Lartey (2020) maintains that this property of open systems makes it possible to achieve the expected results through many pathways or unexpected results through a single approach.
- For the insurance industry managing automotive issues, the ability to adapt and succeed is crucial to achieving effectiveness. Thus, the principle of effectiveness in the contingency approach is paramount. Businesses can achieve effectiveness in several ways, including productivity and employee satisfaction, driven by elements such as remuneration, job security, work–life balance, and results related to social responsibility (Sanusi and Johl, 2022).
- The principle of congruence contends that the success of an information system depends on its ability to integrate with various insurance industry elements, including size, structure, and the external environment. For example, while a smaller, stable business might manage with simpler solutions, a large insurance company in a rapidly changing market would need more advanced digital solutions (Akkor and Ozyukse, 2020).

These guiding principles enable companies to implement information systems solutions customised to specific needs, ensuring enhanced operational efficiency.

3.7 Theoretical Integration of TOE and CT

This study aims to build a strong foundation by combining two frameworks: the Technology–Organisation–Environment (TOE) framework and Information Systems Contingency Theory (CT). Together, they help us understand digitalisation in South Africa’s insurance industry. The TOE framework identifies key drivers of digital adoption, including technology, organisational readiness, and external pressures such as AI tools, leadership skills, and regulations. However, it does not fully explain how these elements need to work together for digital efforts to succeed.

Contingency Theory helps fill this gap by emphasising the importance of matching internal capabilities with external conditions. It highlights that digital strategies should be tailored to the specific needs of the industry for maximum effectiveness. Combined, these frameworks provide a complete view: TOE identifies the main factors that influence adoption, while CT explains how aligning these factors improves performance. This integrated approach offers a practical model for increasing operational efficiency through digitilisation in the South African insurance sector.

3.8 Comparison with IS theories.

The TOE framework shows how important such models are in digitalising the insurance industry. It focuses on three key areas: the business environment, the insurance industry, and technology (Wallace, Green, Johnson, Cooper and Gilstrap, 2020). It considers external factors and emphasises the significance of embracing technology within the insurance industry (Matsepe, Nkhulang and Van der Lingen, 2022). On the other hand, CT argues that no universal solution applies to every situation. It highlights the need to align information systems with specific scenarios in the insurance industry and external factors (Faragone, 2023). This approach focuses on tailoring digital strategies to meet unique requirements, such as legal rules, technology infrastructure, and industry needs (Chatterjee, Mikalef, Khorana and Kizgin, 2024). Both theories acknowledge that technology strategies depend on the insurance industry and the environment. However, TOE offers a more exact way to explore these factors.

In comparison, TAM focuses on how personal decisions on technology adoption are influenced by perceived usefulness and ease of use (Chetty, 2020; Ndebele and Mbodila, 2022). While TAM offers valuable insights into user behavior, it does not address broader factors in the insurance industry, such as TOE or CT do. Other models, including RBV, UTAUT, ANT, and TTF, provide additional views on technology adoption but mainly focus on specific aspects such as resource influence, social influence, actor roles, and task alignment, leaving some deficiencies in understanding the environmental and structural dynamics of digitalisation in the insurance industry.

In summary, the TOE framework has a broad structure, while CT emphasises the need for the insurance industry to adopt strategies based on internal and external

challenges. TAM centres on how individual users accept technology by emphasising user factors more than industry or environmental influences.

3.9 Why was CT chosen as an underpinning theory for this research?

This study employed both CT and the TOE framework as its foundational theories. While CT highlights the importance of aligning factors, such as variables in the insurance industry, environmental circumstances, and flexible frameworks to address the varied situations found within the insurance industry, the TOE framework enhances this alignment by analysing how technology, insurance industry capabilities, and environmental elements influence adoption strategies in combination. Therefore, CT allows the insurance industry to customise innovation strategies according to distinct contingent factors, such as technological infrastructure, industry composition, and external circumstances, moving away from a uniform approach in favor of customised strategies (Faragone, 2023). The emphasis on adaptability in both theories especially applies to the SA environment, where changing regulatory and environmental factors demand flexibility. Furthermore, this integrated approach provides a structured method for aligning the culture, goals, and digitalisation strategies within the insurance industry, aiding in the integration of digital technologies to enhance operational efficiency (Müller, Konzag, Nielsen and Sandholt, 2024). Consequently, by applying both CT and the TOE framework, the study seeks to identify the most effective digitalisation strategies for improving operational efficiencies while addressing industry specific challenges such as data management, customer expectations, and compliance regulations.

3.10 Conclusion

This research centres on the TOE framework and CT, which both suggest that no single strategy for managing information systems exists. This aspect emphasises the need to adapt digitalisation strategies to the distinctive operational environments and external pressures of the insurance industry. CT stresses the importance of adaptable digital initiatives responding to changing regulatory requirements, market conditions, and insurance industry structures, while the TOE framework provides insight into how technological capabilities, internal factors, and external pressures influence adoption decisions.

The study chose CT because of its focus on solutions specific to context, which balance various factors and enhance adaptability, thus improving responses to new opportunities, streamlining operations, and strengthening decision making. The TOE framework adds value by presenting a structured view of how technology, the insurance industry, and the environment interact during digitalisation. As a result, these frameworks address both the need for flexibility and consistency, which are essential for an effective digitalisation model.

In conclusion, CT and the TOE framework offer a thorough theoretical basis for directing the establishment of digitalisation models intended to address the particular opportunities and challenges faced by the SA insurance industry. The next chapter outlines the research methodology employed in this study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter expands on the research methodology employed to achieve the research objectives and answers and discusses the questions outlined in Chapter One. Research methodology is a systematic framework directing data collection and analysis, thereby ensuring precision, validating the research design, formulating significant conclusions, and addressing ethical issues (Creswell, 2021). In this study, the research methodology was carefully structured by employing the research onion model developed by Lewis et al. (2009). Lewis et al. (2019) assert that the research onion provides a comprehensive, systematic framework for detailing the steps involved in designing research methodology, thus maintaining consistency throughout the research process. Accordingly, this chapter revolves around the research onion framework (Lewis et al., 2019).

The chapter presents the research onion and its various layers. It also evaluates the selected research approach, explains the reason for its selection, explores the research philosophy, and introduces the research strategy and methods. Lastly, the chapter summarises the research design, time horizon, and data collection and analysis methods to offer a thorough overview.

Al-Ababneh (2020) defines methodology as the main procedure, design or strategy guiding the choice and application of particular techniques while connecting these techniques to intended results. Taherdoost (2021) describes methodology as a researcher’s approach to selecting case studies, determining appropriate data collection methods, and formulating analytical strategies. Pathiranage, Jayatilake and Abeysekera (2020) describe research methodology as the systematic assessment of strategies employed in a specific field of research by applying a theoretical framework and integrating concepts, theories, and models to guide researchers in selecting the most appropriate techniques for analysis and data collection. The next section presents the methodological choices of the current study and introduces the research onion.

Table 7 – Methodological choices.

Research Design	**Methodology**
Research philosophy	Interpretive
Research approach	Qualitative (inductive)
Research strategy	Case study
Unit of analysis	The client operations and ICT departments of an SA insurer are involved in all the phases of the insurance life cycle
Population	Employees of a SA insurance company including senior, middle management and operational staff
Sample	Executive: Operational Efficiencies and Performance -Client Operations ICT Manager Manager Requirements Management Underwriters Project Manager Manager Data Capture Senior Business Analyst Senior Developers Senior Testers
Sampling strategy	Purposive sample
Time Horizon	Cross-sectional
Data Collection Methods	Semi-structured online interviews (one-on-one)
Data analysis	Latent level thematic analysis

4.2 Research design

4.2.1 Research onion

The introduction clearly states this research aims to achieve the goals, objectives, and questions outlined in Chapter One. A research approach is necessary to draw logical

conclusions and reach research goals. The research onion proposed by Lewis et al. in 2009 provides a strong framework for research design.

According to Hancock, Algozzine and Lim (2021), research design refers to a strategy outlining how a researcher intends to address research questions. It provides insightful advice on methodological and philosophical issues as well as other crucial components required to satisfy the methodological requirements of high quality research. Without a well-structured research design, a researcher risks straying from intended course, potentially leading to inaccurate data and conclusions; therefore, one must recognise and comprehend the key role of research design in the research process.

Researchers can employ the research onion model to determine the most suitable research procedure, starting from its outer layers and moving inwards. This section defines the concept and illustrates its application to the research framework this dissertation reports on.

The research onion shown in Figure 6 demonstrates the progression from the outermost layer to the innermost layer, guiding researchers as the research philosophy is explored.

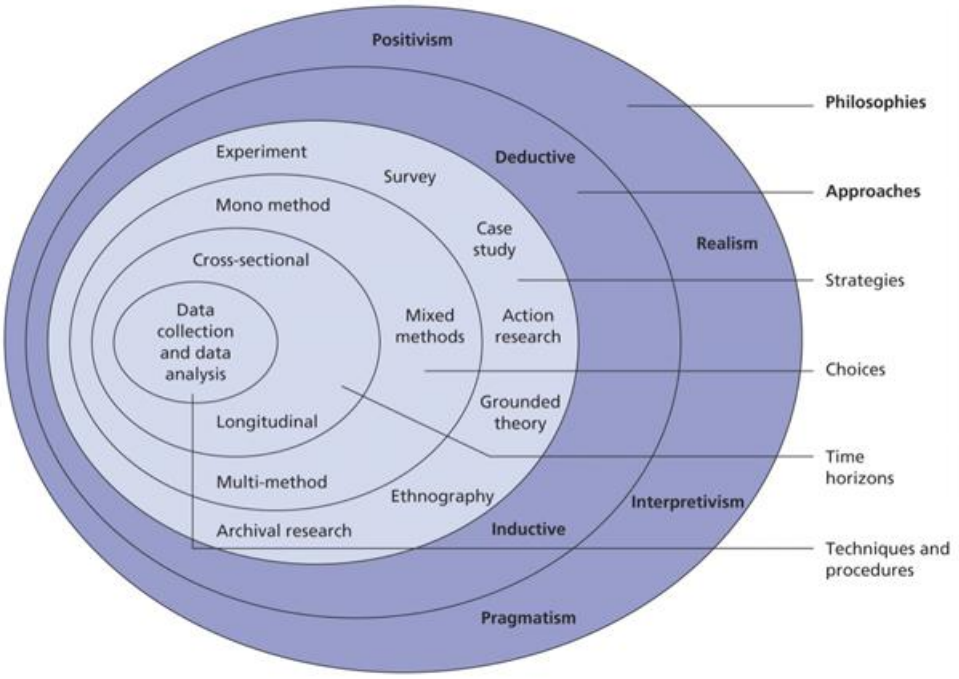

Figure 6: Research Onion. Source: Lewis, Saunders et al. (2019) .

Research philosophy deals with research of the nature of knowledge and its development (Al-Ababneh, 2020). Thus, it assists researchers in choosing the most appropriate approach for a given research study by addressing important questions, such as who the participants are, what the research focus entails, when the research will occur, where it will take place, and why the research is important (Steiner, Farmer, Yates, Moran and Carlisle, 2023). Research philosophy impacts on the overall research methodology and how information is collected, analysed, and translated (Ugwu, Ekere and Onoh, 2021). Al-Ababneh (2020) indicates the philosophies researchers can adopt, including realism, interpretivism, pragmatism, and positivism. The interpretivist philosophy is particularly relevant to this dissertation and is further examined in the next section.

The second layer of the research onion addresses the research approach. It explains a researcher's overall plan to solve the research problem by logically integrating the various parts of the research (Taherdoost, 2022). This study chose an inductive approach, which allows researchers to uncover patterns, themes, and categories in data through interpretation, deriving the key ideas from the data, thus supporting the inductive approach. This approach differs from the deductive approach, whereby researchers start with a theory and try to test or confirm it through research (Mohajan and Mohajan, 2022). The inductive approach is suited to qualitative research as it allows themes and patterns to emerge from the data, leading to new insights or theories.

The inner circle of the research onion contains the research strategy. Researchers use systematic techniques (research strategies) to manage, gather, and examine information to answer research questions (Makri and Neely, 2021). Researchers can choose from different research designs, such as mono, multi or mixed methods, each corresponding to various research strategies. This research selected a case study method to ascertain how digitisation impacts operational efficiency in the South African insurance industry.

Research choices outline the methods employed for data collection. Three main data collection methods exist: single, multiple, and mixed. A single data collection strategy

is employed in the monomethod, while multiple methods combine quantitative and qualitative techniques, known as mixed method data collection (Azer, Taheri and Gannon, 2022). This research employed a qualitative research strategy, specifically focusing on the monomethod for data collection. This chapter uses the research onion framework to explain and support the research approach for this study.

The research onion provides a detailed framework but does not clearly address how to choose samples, sampling methods, units for analysis, and participant details, which can limit its effectiveness. Focusing on a SA insurer might reduce the relevance of the study since its digitalisation efforts might not apply to the entire insurance industry. In addition, choosing a SA insurer purposefully could have introduced bias, since its unique characteristics might differ from other companies in South Africa or worldwide.

Employing purposive sampling raises concerns about whether the sample accurately represents all views, as the participants might have biases and, thus, the study might not capture the full range of opinions. Focusing too much on a particular group, such as management, could skew results and overlook salient insights from operational staff or IT experts.

Studying digitilisation at a SA insurer was complicated since it encompassed many areas, including technology use, training, and cultural changes. Taking a limited sample from one company might have reduced the variety of insights, especially if lower level employees or outside advisors were not well represented. The participants directly involved in digitalisation might have demonstrated bias, potentially highlighting successes while downplaying challenges, which could affect the trustworthiness of the data. Practical issues in reaching participants or unwillingness to engage could have also limited the study's scope. Recognising these limitations helps clarify the methodology and highlights potential effects on the study's results.

4.2.2 Research philosophy: ontology and epistemology

This study used the research onion framework to understand research philosophy. Research philosophy is integral to epistemology, which focuses on knowledge, and ontology, which investigates the nature of reality (Al-Ababneh, 2020).

4.2.2.1 Ontology

Ontology is a part of philosophy. It studies what reality is and what exists, especially in the insurance industry, suggesting reality is not absolute but shaped by societal influences and is open to individual interpretation (Lukyanenko, Storey and Pastor, 2021). Lehrer, Wieneke, Vom Brocke, Jung and Seidel (2018) contend that ontology acknowledges highly personal perspectives on digitalisation within the insurance industry, influenced by individuals' unique experiences. The researcher recognised the variety of realities in digitilisation, emphasising that no single objective reality exists but rather a selection shaped by diverse viewpoints. For example, in the insurance industry, a claimant must obtain a case number from the police before a theft claim can be officially filed. This process is essential to verify the validity of a claim to prevent fraudulent activity and support potential investigations by law enforcement.

4.2.2.2 Epistemology

Epistemology examines what knowledge is and how it works. This research uses a constructivist approach, meaning people create knowledge through interactions with each other and the environment (Burns, Bally, Burles, Holtslander and Peacock, 2022). It acknowledges that the findings are situation dependent and shaped by the participants' experiences with technology and insurance industry processes. For example, it is common knowledge that medical tests are required to apply for life insurance; accordingly, insurers request a medical assessment, to assess the applicant's health. Insurers require this process to determine the risk level, establish suitable premium rates, and ensure the policy meets the applicant's needs.

Bakker (2019) affirms that when initiating a research project, the study must ground all research in fundamental logical assumptions about what valid research entails, identify the most effective techniques for advancing knowledge within a specific situation, and

justify the selected methods (Panya and Nyarwath, 2022). Moreover, the chosen methodologies must align with the foundational assumptions of the research to ensure consistency among the research objectives, data collection, and theoretical frameworks (Sweet and Davis, 2020). The theoretical framework shapes human knowledge, which, in turn, formulates the methodology, while epistemology guides the selected approach (Matshwane, 2021). Research design encompasses four key elements: theoretical perspective, methodology, and epistemology (Diniso, 2023).

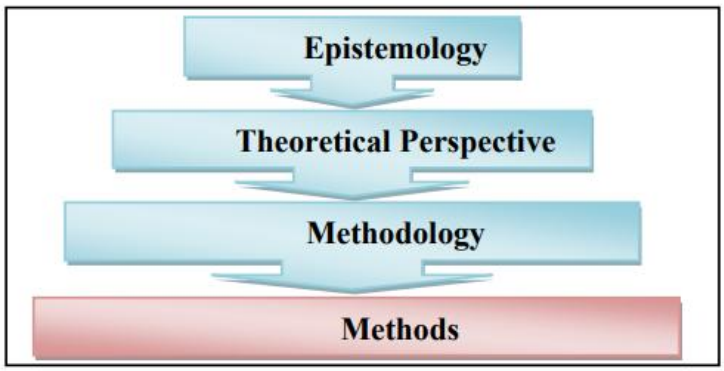

Figure 7: The Basic Elements of Research Process Source (Crotty, 1998, p.4).

According to Al-Ababneh (2020), epistemology studies knowledge employing academic frameworks and techniques. It focuses on human knowledge, including its sources, limits, boundaries, and justifications. Philosophy is often linked to the exploration of knowledge and wisdom (Baruwa and Shutaleva, 2022). This research specifically investigates two distinct epistemological viewpoints: objectivism and constructivism.

4.2.2.2.1 Objectivism

Objectivism is a philosophical stance emphasising that reason can be employed to interpret sensory data to comprehend a singular, objective reality. Svihura (2024) maintains that the process along with considering its implications leads to understanding knowledge. Hence, researchers must uncover objective truths accurately.

4.2.2.2.2 Constructivism

Constructivism challenges conventional objective methodologies and disputes the application of universal solutions (De Soto, 2022). Consequently, constructivists maintain that truth arises from interactions with reality rather than objective discoveries and add that individuals generate own meanings. As Letsoara (2022) points out, individuals might perceive the same phenomenon differently, thereby demonstrating that a universal approach is ineffective.

MacLeod, Burm and Mann (2022) argue that constructivism allows researchers to identify perspectives influencing interpretations and analyses. Table 8 outlines the elements of the research framework for both qualitative and quantitative methods.

Table 8 – Components of the research design deal with quantitative and qualitative methods (Crotty, 1998).

Research design element	Qualitative research	Quantitative research
Epistemology	Constructivism	Objectivism
Theoretical perspective	Interpretivism	Positivism
Methodology	Grounded theory	Experimental/survey
Method	one- on-one interviews Case study Focus group	Sampling Measurement and Scaling Questionnaire

4.2.3 Research approach

The second layer of the research onion explains the research method. This research uses an inductive approach, which complements qualitative research. This method

helps identify themes and patterns in the data, making it easier to create new hypotheses and gain insights (Proudfoot, 2023).

The preceding section offered an overview and explanation of research philosophy, emphasising the concept of epistemology. It is essential to consider the theoretical framework and its underlying assumptions as epistemology impacts both qualitative and quantitative methodologies. Nayak and Singh (2021) describe a theoretical perspective as a conceptual framework researchers use to comprehend and anticipate various aspects of reality. Within this framework, a network of interconnected principles, concepts, and assumptions guides the formulation of theories and hypotheses. The upcoming sections compare positivism and interpretivism and explore the interpretivist viewpoint on the subject matter. Some integral aspects of reality relate to how things are known, including the nature of the world and how different ideas connect. Table 9 below summarises the key features and differences between positivism and interpretivism.

Table 9 – Explanations of positivism and interpretivism. Source (Ragab **and** Arisha, 2018).

Research Approach	Deduction	Induction
Approach to investigation	Highly structured	Flexible
Paradigm	Positivist	Interpretivist
Sequence of Investigation	1. Theory 2. Hypothesis 3. Observation 4. Confirmation	1. Observation 2. Patterns 3. Hypothesis 4. Theory
Purpose	Explanatory; Explanation of causal relationships between variables	Exploratory; Gaining un understanding of the phenomena
Data Collected	Quantitative	Qualitative
Generalisation	Need to generalise conclusions	Less concern with generalisation

4.2.3.1 Positivist paradigm

Positivism stresses the importance of clear statements and recommendations, resulting in an accurate understanding of the world. Gavrilov (2020) argues that

positivism employs a scientific method to examine individuals and society to establish a comprehensive social framework. It is closely aligned with objectivist epistemology (Williams, 2023), which suggests that individuals have direct access to reality. Furthermore, by prioritising empirical observation and scientific methods, positivism advances the development of objective, verifiable facts and theories to advance knowledge.

In a positivist approach, researchers strive to research phenomena objectively without influencing the researcher, requiring quantitative observations, statistical analysis, and a structured methodology (Johnson and Christensen, 2024). The philosophy assumes researchers analyse and interpret the collected data without bias (Al-Ababneh, 2020).

Admittedly, the positivist approach is limited by failing to account for the numerous ways individuals think and respond to the same stimuli despite its emphasis on a rigid scientific understanding of human behavior. This research demonstrates that its application in sociology has encountered difficulties since quantitative methods often do not adequately capture the complexities of social realities, meanings, and truths, particularly by overlooking the role of language in shaping these constructs. Another disadvantage of positivism is its assumption that social structures are static and do not change over time.

4.2.3.2 Interpretivist paradigm

Pervin and Mokhtar (2022) link interpretivism to positive theoretical perspectives, such as social constructivism, phenomenology, and hermeneutics. Brady (2019) argues that the material, natural world only becomes meaningful when analysed and interpreted. These viewpoints highlight how the interpretivist paradigm strongly focuses on examining the subjective meanings within social, cultural, and human knowledge and behavioural systems. Thus, an interpretivist approach requires examining societal facts based on the meanings ascribed by the subjects under study.

The interpretive perspective stresses the importance of recognising and examining the personal meanings people attach to experiences. It also involves rethinking and developing theories based on Brady (2019). The interpretive approach is a better fit for

this research as it aims to explain why people take part in certain activities. The next section discusses this concept in more detail.

4.2.3.3 Why an interpretivist paradigm was chosen (application)

This research is based on interpretivism, which is grounded in specific ontological and epistemological positions. The interpretivist paradigm focuses on comprehending and interpreting phenomena rather than just quantifying and was deemed the most suitable framework for investigating how digitisation enhances operational efficiency and aligns with the qualitative method.

4.2.4 Types of research methods

Section 4.2.4.1 discusses the two primary research approaches: qualitative and quantitative.

4.2.4.1 Qualitative research method

According to Busetto, Wick and Gumbinger (2020), qualitative research delves into the principles of phenomena, emphasising characteristics, diverse expressions, environments, and perspectives from which observations occur. Therefore, aspects including range, frequency or objective cause and effect relationships do not apply to qualitative research. Hennink, Hutter and Bailey (2020) define qualitative research as a methodology that employs methods such as visual aids, content analysis, focus groups, in depth interviews, observations, and life history to examine people's experiences thoroughly. Brennen (2021) further elucidates that qualitative researchers actively participate in research. Researchers question established ideas and understand reality depends on social interactions; reality can have different interpretations and meanings.

Hennink et al. (2020) emphasise that qualitative research allows researchers to understand the interpretations and meanings participants assign to actions, events, and objects, thereby revealing matters from perspectives. Consequently, this methodology allows thorough data analysis to examine social behaviors and individual experiences. Qualitative research captures participants' viewpoints and interpretations to explain situations from different perspectives (Tracy, 2024). Therefore, by analysing

experiences and perspectives from specific viewpoints, qualitative research examines complex phenomena in greater depth.

4.2.4.1.1 Features of qualitative research

Qualitative research emphasises the definition of fundamental components, summarised below per Mirgissa (2024):

- Maintains empathic neutrality by leveraging personal insight while remaining unbiased.
- Differentiates social interactions as dynamic processes and provides a holistic perspective considering the entire framework.
- Maintains empathic neutrality by incorporating the researcher's viewpoints while ensuring objectivity.
- Employs flexible and context sensitive data collection methods to explore processes, meanings, and environments.
- Applies qualitative methods to address 'what is' how', and 'why' questions.
- Is mindful of influencing the researcher's perspectives.

4.2.4.2 Features of quantitative research

Quantitative research is the methodical and empirical investigation of phenomena by employing theoretical, statistical, and numerical data analysis. Informed numerical estimates are essential for linking mathematical representations of relationships between variables and empirical data (Rameez and Sainudeen, 2021).

Mohajan (2020) defines quantitative research as the data collected for a study expressed in numerical terms or measurements. Whether experimental or nonexperimental, quantitative research designs strive to achieve accurate and reliable measurements (Brown, 2024).

4.2.4.1.3 Why a qualitative research method was chosen.

This study utilised qualitative research since it examines people's experiences and social interactions; the approach accords with the goal of better understanding such experiences. Qualitative research is also effective in capturing perceptions and gaining insights by interpreting and conveying study participants expressed meanings.

4.2.5 Research strategy

The third layer of the research onion focuses on the research strategy. Iyamu (2021) indicates various techniques for conducting information systems research, such as grounded theory, critical theory, ethnography, action research, surveys, simulations, and case studies. A comprehensive research strategy, including a comprehensive approach and methodology, is imperative to addressing research questions or objectives. This investigation employed a case study methodology.

4.2.5.1 Case study

A case study investigates a phenomenon in its real world context. It observes behaviors without trying to change the behaviours (Martinsuo and Huemann, 2021). Nayak and Singh (2021) highlight the risk of separating a phenomenon from its context, urging researchers to study both intentionally since the context can influence the phenomenon under investigation. The authors also note that the case study method is simple to implement for several reasons:

- Researchers must account for assumptions and perceptions of reality and knowledge.
- Key considerations include deciding on the number of cases to investigate (single vs. multiple) and the research scope (holistic vs. embedded), both informed by the strategy.

Schoch (2020) defines a case study as a way to scrutinise a specific event, industry or occurrence. It strives to assist in understanding complex matters in a real world setting.

4.2.5.1.1 Case study principles

Schoch (2020) suggests that case study designs are suitable for ‘what’ or ‘how’ questions about current events the researcher cannot control. De Jager (2021) emphasises its suitability for conducting in depth research across various insurance industry categories. Therefore, the researcher chose a case study research design for this investigation due to the importance of examining how culture functions within the insurance industry.

Various recommendations for collecting data for case studies include creating a case study database for future researchers. This study accessed different data sources to ensure accuracy, assisted throughout by an external observer to help establish a distinct audit trail.

Participant observations, direct measurements, group discussions, and physical artefacts are also data collection methods in case studies (Hancock et al., 2021).

4.2.5.1.2 Justification for employing the case study approach.

This research employed the case study methodology to investigate digitisation efficiency in SA in depth. Case studies are particularly useful in qualitative research to examine complex phenomena and provide a flexible framework for collecting data through document analysis and interviews. In this study, the researcher engaged with ten participants to gain insight into technology and digital culture adoption within the insurance industry, focusing primarily on a SA insurer.

The SA insurer. is a holding company providing financial and life insurance services through its subsidiaries. These services include short, medium, and long term insurance, medical underwriting, conversion policy products, and claims adjustment services, serving clients throughout South Africa (Hogg, 2023). The researcher chose this insurer for its comprehensive digitalisation strategy, which has led to significant automation and the integration of digital solutions (Hogg, 2023).

4.2.6 Research design

The researchers used qualitative methods to collect information, focusing on semi-structured interviews and observations. This approach aligns with the data collection part of the research onion, which aims to gather and analyse information to answer research questions (Ganesha and Aithal, 2022). The team conducted semi-structured interviews with selected employees of a SA insurer through online platforms, making it convenient and minimally disruptive. This method helped gather detailed open-ended responses, while observations provided more insight into the employees' experiences and the company environment.

4.2.6.1 Unit of analysis

The main focus was the Client Operations and ICT departments. The ICT department manages and develops internal systems through digital technologies, while Client Operations employ these technologies to enhance operational processes.

4.2.6.2 Population

The employees in the aforementioned departments represent the target population for this research. They are responsible for ensuring the efficient execution of operational processes and contributing to the overall goal of improving client service and operations. The study selected an SA insurer because of its significant growth in the financial services industry and its commitment to embracing innovative digital solutions.

4.2.6.3 Sample

Researching an entire population can be costly and impractical; consequently, qualitative studies typically employ smaller sample sizes (Guest, Namey and Chen, 2020). This research utilised purposive sampling to identify and select cases to provide valuable insights while maximising limited resources (Bakkalbasioglu, 2020). Purposive sampling selects people or groups with the necessary expertise or knowledge about the research topic. Such participants must be available, committed, and able to communicate, reflect, and share ideas and experiences.

Table 10 – Profile of respondents (by context)

Population	Description of respondent	Number sampled
SA insurer insurance company employees	• Executive: Operational Efficiencies and Performance Client Operations • ICT Manager • Manager Requirements Management • Underwriters • Project Manger • Manager Data Capture • Senior Business Analyst • Senior Developers • Senior Testers	1 1 1 2 1 1 1 1 1

Total number of respondents:	10

4.2.7 Time horizon

The fourth layer of the research onion contains the time horizon. A longitudinal research design collects data from the same group or source over an extended period, such as months, years or decades. It focuses on observing events and changes over time as well as stability and continuity processes (Bernardi, 2021). According to Patrick, Treanor and Wenham (2021), researchers employing a longitudinal research design are interested in tracking changes over time and understanding how individuals rethink and reinterpret the past, present, and future in different situations. It allows researchers to observe changes, trends, and developments over time and provides important insight into cause and effect relationships and the long term effects of factors.

Bartram (2021) describes a cross-sectional research design as analysing data collected from a population at a specific moment in time, focusing on particular variables at a single point. The author highlights several advantages of this approach, including direct observation of a phenomenon, faster data analysis without the need for participant follow up, and cost effective results.

This study uses a cross-sectional research design as it helps analyse data collected from a population at a specific time. Since the data were collected over a two week period from employees of an SA insurer at a particular juncture, this approach was deemed the most suitable given the research time limit.

4.2.8 Data Collection Methods

The next layer of the research onion encompasses data collection methods, i.e., gathering and analysing information from various sources to address research questions, providing insights, assess outcomes, and make probabilistic predictions (Ganesha and Aithal, 2022). It is a vital step in research, analysis, and decision making. This study conducted semi structured interviews with selected employees of a SA insurer. These interviews were held online for convenience and scheduled to avoid disrupting the participants' daily routines. Each session lasted for a mutually agreed upon time and was conducted in English.

This approach was chosen because it allowed for the collection of qualitative, open-ended data, providing insights into the participants' thoughts, emotions, and perspectives, thus leading to a deeper understanding of the subject.

4.2.9 Data analysis method

The present study applied thematic analysis, which involved coding the interview transcripts and documents to identify patterns and themes. Thematic analysis was chosen for its wide application in analysing qualitative research data and its adaptability, allowing for the development of detailed and comprehensive data descriptions. The method includes various techniques for identifying and analysing documented data, focusing on uncovering underlying themes. Its key feature is a systematic coding process to interpret meanings and craft a narrative, capturing social reality by developing themes.

4.3 Ethical clearance procedures

Prior to collecting data, the researcher sent all our research tools such as interview schedules and survey questionnaires to the ethics committee for review. This step ensured that our research followed ethical guidelines and protected the rights, privacy, and autonomy of the participants, as suggested by well-known ethical frameworks. The committee gave us approval after a careful evaluation, emphasising our commitment to ethical research practices. The ethical clearance number for this research is 3827, which confirms that the researcher obtained official approval according to both institutional and national standards.

4.4 Conclusion

Chapter 4 described how the study topic, i.e., ways to improve efficiency in the insurance industry in South Africa through digitalisation, was researched. The study took a qualitative approach to gather insights and data from key industry players' experiences and views. The researcher carefully selected the appropriate data collection and analysis methods, research design, and analysis techniques to achieve the research goals. These techniques helped the researcher understand how digital technologies can enhance operational efficiency.

The research methodology explored the changing relationship between digitilisation and operational outcomes by conducting interviews and analysing secondary data from case studies in the SA insurance industry. The researcher adopted a targeted sampling strategy and employed data analysis techniques such as thematic analysis to ensure reliability and diligence in addressing the research questions. Chapter Five details and examines the findings emanating from these methods, accentuating a strong connection between the research objectives and conclusions.

CHAPTER FIVE: DATA ANALYSIS AND DISCUSSION OF FINDINGS

5.1 Introduction

This chapter examines and explains the collected data using the chosen research methods. It focuses on how digitalisation affects operational efficiency in the South African insurance industry. The chapter begins by reviewing the semi-structured interviews and how the findings are presented. It also discusses prominent themes emanating from the data, such as operational efficiency, digital technology usage, challenges in the digitalisation process, and how regulatory compliance affects digitalisation. Each theme is analysed to identify trends, connect with existing research, and improve the digitalisation framework. The chapter ends with a summary of the findings.

5.2 Analysis of interview data

This section provides the information collected from interviews with participants using *Microsoft Teams*. It reviews the interactions during individual meetings with these participants. The researcher interviewed employees of a SA insurer., specifically from the Client Operations and ICT departments, to obtain data for creating a model to improve and digitise operational services in the South African insurance industry. The researcher assigned codes to the participants to protect privacy, ranging from Participant 1 to Participant 10.

Table 11 – Participant demographics

Name	Position	Number of Years of Experience	Gender	Age group
Participant 1	Underwriting Specialist	40+	Female	50+
Participant 2	Senior Test Analyst	7	Female	25–30
Participant 3	Manager: Data Capture and Medical Receipting	11	Male	35–40
Participant 4	Associate Business Architect	15	Male	35–40

Participant 5	Project Manager	7	Female	25–30
Participant 6	Associate Underwriting Consultant	16	Male	41+
Participant 7	Manager: ICT	15	Male	35–40
Participant 8	Team Lead Developers	10	Male	30–35
Participant 9	Systems Architect	16	Male	35–40
Participant 10	Manager: Medical Requirements	30+	Female	50+

This research utilised online semi-structured interviews to collect data. The researcher analysed the data through thematic analysis, which assisted in finding and summarising patterns in the data (Naeem, Ozuem, Howell and Ranfagni, 2023). Hence, the researcher selectively determined which themes to focus on during the analysis. The audio recordings are transcribed using *Microsoft Teams*, which assisted in recognising patterns and meanings within the data. The study performed initial coding to identify data patterns and meanings, thereby categorising related or similar pieces of information for further analysis. Themes emerged from the codes and further developed. As the themes became more explicit, the researcher employed *vivo* coding to create a table reflecting the underlying theory. The study chose qualitative content analysis because it differs from quantitative methods, using a framework based on categories to identify significant parts of the text, thus guiding the text evaluation.

As previously stated, CT requires information systems in the insurance industry to align with the external environment. Consequently, the insurance industry must adapt to various environmental, industrial, and technological factors to enhance operational performance. The theory indicates that no single solution works for all situations. The design and adoption of information systems must be based on internal factors, such as organisational structure, available resources, and external influences, including technology and market pressures. This design ensures systems remain flexible and adaptable in meeting organisational needs (Abedin, 2022).

In supporting this view, the Technology-Organisation-Environment (TOE) framework adds to Contingency Theory (CT) by showing how organisations adopt digital technologies. TOE points out that three main factors shape adoption: (1) Technological which involves how useful and complex the innovations are; (2) Organisational which

includes the size of the organisation, its management structure, and whether it has the necessary resources; and (3) Environmental which covers competitive pressures, regulatory needs, and customer expectations. Together with CT, the TOE framework gives a clear picture of how both outside and inside factors influence digitilisation strategies in the insurance industry. Therefore, it is important to reinforce this combined viewpoint, as the next section will look at theme analysis and connect IS alignment to the key factors identified in both Contingency Theory and the TOE framework.

Tables 12 and 13 below restate the key elements of the TOE framework and Contingency Theory (CT) discussed in Chapters Two and Three and explain how each element interacts with information systems in the insurance industry.

Table 12 – TOE theory elements.

Element	**Description**
Technological	Current and new digital tools and systems that the organisation can access or use.
Orginisational	The internal factors of the company, such as its size, structure, employee skills, leadership style, and available financial and operational resources.
Environmental	This includes external pressures such as competition, regulations, customer expectations, and market trends.

Table 13 – Contingency theory elements.

Element	**Description**
Contingency Factors	Variables, such as size, technology, and leadership influencing organisational structure and strategy
Environmental Factors	External influences, such as regulations and market trends, affect operations.
Organisational Structure	Allocation of tasks and authority to improve communication and achieve goals.
Technological Factors	IT assets support efficient operations.
Management and Leadership	Management and leadership planning, and inspiring employees towards a common vision.

Strategic Fit	Guides to decisions and resource management for long-term success.
External Pressure	Outside challenges, such as competition, requiring adaptation.
Adaptation and Flexibility	Organisational capacity to adapt its strategies and structures efficiently.

The next section analyses the interview data, beginning with the theme, followed by quotations and an interpretation of the element. Table 12 highlights and interprets CT elements.

5.2.1 Theme One: Additional time for meetings and in-depth conversations

> *I have become more productive in a good way. We can complete our testing in minimum time. It creates more time to have meetings and have more in-depth conversations since you are not physically having to do all the manual work.* (Participant 2)

Table 14 – Theme One contingency theory elements and description.

Element	**Additional time for meetings and in-depth conversations**
Contingency Factors	Adapting information systems (IS) to align with industry size and strategic goals, enhancing interaction and engagement efficiency.
Environmental Factors	Adapting digital solutions to meet employee expectations.
Organisational Structure	Leveraging digital tools to support processes enhances time efficiency and encourages more meaningful interactions.
Technological Factors	Prioritising technology adoption to improve interaction and engagement efficiency.
Management and Leadership	Focusing on technology to improve interaction and engagement times.
Strategic Fit	Supporting digital initiatives aiming to enhance employee engagement.
External Pressure	Regulations and competition drive efficiency and compliance.
Adaptation and Flexibility	Developing IS to adapt to changing environments and employee needs.

The Additional Time for Meetings and Conversations theme addresses more interaction and less manual work.

5.2.2 Theme Two: Ease of access and understanding digital documentation.

> *Yes, definitely. We no longer have to scramble to read someone's handwriting as it's electronic and is typed. The information you are looking for is now just one click away.* (Participant 3)

Table 15 – Theme Two contingency theory elements and descriptions.

Element	**Ease of access and understanding digital documentation**
Contingency Factors	Adapting information systems (IS) for industry size and strategy to increase accessibility and understanding.
Environmental Factors	Adapting digital solutions to meet employee needs of accessibility and understanding.
Organisational Structure	Supporting processes with digital tools improves accessibility and understanding.
Technological Factors	Focusing on technology adoption enhancing ease accessibility and understanding.
Management and Leadership	Focusing on technology to improve accessibility and understanding.
Strategic Fit	Supporting digital initiatives with goals to enhance accessibility and understanding.
External Pressure	Regulations and competition drive efficiency and compliance.
Adaptation and Flexibility	Developing IS to adapt to changing environments.

The Ease of Access and Understanding Digital Documentation theme highlights key factors such as the simplicity of obtaining, reading, and interpreting digital records.

5.2.3 Theme Three: Accelerated underwriting efficiency.

> *In some respects, we are more efficient, yes, in others, no. Sometimes the human brain can process information much faster than the system. While it is great for handling the bulk of tasks, it can be a challenge with complex, high-*

level issues. But overall, we are able to process underwriting cases much faster with the automation of underwriting rules. (Participant 1)

Table 16 – Theme Three contingency theory elements and description.

Element	**Accelerated underwriting efficiency**
Contingency Factors	Ensures automation aligns with underwriting processes.
Environmental Factors	Automation addresses underwriting process demands.
Organisational Structure	Ensure automated processes are aligned with workflows for seamless integration of the underwriting process.
Technological Factors	The right automation technologies to reduce inefficiencies in the underwriting process.
Management and Leadership	Build continuous improvement into automation for the underwriting process.
Strategic Fit	Align automation with objectives such as time to process underwriting cases and improving services.
External Pressure	Ensure automation complies with underwriting regulations.
Adaptation and Flexibility	Design adaptable automation solutions for long-term improvement of the underwriting process.

The Accelerated Underwriting Efficiency theme highlights factors such as faster processing, reduced manual work, improved decision making, enhanced data accuracy, and quicker client responses.

5.2.4 Theme Four: Streamlined processes for brokers.

We mainly used Excel and Microsoft Word to do our work. We've definitely made things much easier for brokers, who no longer have to fill out a 20 page form in person. Brokers can complete it anytime near a computer. (Participant 10)

Table 17 – Theme Four contingency theory elements and description.

Element	**Streamlined processes for brokers**

Contingency Factors	Ensures automation aligns with insurance industry needs for brokers.
Environmental Factors	Automation addresses compliance, broker demands, and competition.
Organisational Structure	Ensure automated processes align with workflows for seamless integration.
Technological Factors	The right automation technologies to reduce inefficiencies for brokers.
Management and Leadership	Build continuous improvement into automation for broker services.
Strategic Fit	Align automation with objectives such as errors, time consumption and improving services.
External Pressure	Ensure automation complies with regulations.
Adaptation and Flexibility	Design adaptable automation solutions for long term improvement.

The Streamlined Processes for Brokers theme highlights factors such as simplified workflows, reduced administrative tasks, improved information access, and faster decision making.

5.2.5 Theme Five: Enhanced efficiency and customer service

> *So, with each initiative, the end goal is to create efficiencies for our employees and clients, improving customer service through productivity, and ultimately becoming more efficient in our processes.* (Participant 4)

Table 18 – Theme Five contingency theory elements and description.

Element	**Enhanced efficiency and customer service**
Contingency Factors	Ensures automation aligns with insurance industry needs.
Environmental Factors	Automation addresses employee, customer demand, and competition needs.
Organisational Structure	Ensure automated processes align with workflows for improved efficiency and customer satisfaction.
Technological Factors	The right automation technologies to reduce employee and customer inefficiencies.
Management and Leadership	Build continuous improvement into automation for employees and customers.

Strategic Fit	Align automation with objectives such as reducing errors and improving services.
External Pressure	Ensure automation complies with regulations.
Adaptation and Flexibility	Design adaptable automation solutions for long term improvement.

The enhanced Efficiency and Customer Service theme highlights factors such as improved productivity, streamlined workflows, optimise resources, faster response times, and better communication.

5.2.6 Theme Six: Use of digital tools for communication and development

> *We use email, along with communication apps as Teams and, in some cases, Zoom for meetings and calls with third parties. For development, we rely on Office Online, Visual Studio, Visual Studio Code, and Azure DevOps. We also have tools for remote access to cloud hosted computers, such as SQL Server Management Studio and Internet Information Services (IIS), as well as hosting solutions such as Kubernetes and Docker. For real time collaboration, we use SharePoint from the Microsoft Office suite to securely store documents in a central location.* (Participant 9)

> *All participants indicated the use of Microsoft Team[s] has aided the ability to communicate and collaborate from any place at any time.* (Researcher)

Table 19 – Theme Six contingency theory elements and description.

Element	**Use of digital tools for communication and development**
Contingency Factors	Measures technology suitability based on industry needs.
Environmental Factors	Digital technologies meet market trends, regulatory changes, and customer expectations.
Organisational Structure	Ensure digital technologies integrate effortlessly with existing structures to maximise efficiency.
Technological Factors	Choose technologies align with organisational needs and enhance digitilisation.

Management and Leadership	Guide technology is used to support strategic direction.
Strategic Fit	Align technology adoption with strategic goals for long term benefits.
External Pressure	Encourage technology adoption to maintain competitiveness and compliance.
Adaptation and Flexibility	Choose scalable and adaptable technologies for future changes.

The Digital Technologies Adoption and Use theme focuses on how technologies are selected, deployed, and adapted to meet the needs of the insurance industry.

5.2.7 Theme Seven: Easier technology adoption with newer generations

> *I think in the past, it was more challenging to get older colleagues to adopt technology quickly. However, recently, with more younger people joining, adoption has become much easier, as we are now at an age where everyone engages with technology daily. There is also a lot of internal enablement, especially through our marketing team.* (Participant 8)

Table 20 – Theme Seven contingency theory elements and description.

Element	**Easier Technology Adoption with Newer Generations**
Contingency Factors	Select technology based on industry characteristics such as size, culture, and resources.
Environmental Factors	Regulatory requirements, market competition, and customer expectations drive adoption.
Organisational Structure	Companies need to adjust structures to integrate new technologies and align with workflows.
Technological Factors	Technologies enabling data analytics, risk assessment, and customer management are crucial for maintaining competitiveness.
Management and Leadership	Lead adoption with a clear vision and resource allocation.
Strategic Fit	Adoption should align with strategic objectives, such as enhancing claims processing and reducing costs.
External Pressure	Speed up adoption due to regulatory or competitive pressures.
Adaptation and Flexibility	Select flexible technologies to address changing risks and requirements.

The Easier Technology Adoption with Newer Generations theme emphasises aligning technology use with internal goals and external needs for optimal integration and value.

5.2.8 Theme Eight: Leadership engagement

> *So, engage with employees to help in understanding the changes and how the changes relate to the business' goals. It is important to make employees aware of why the change is necessary and ensure when we make those changes, we consider the needs from the start.* (Participant 8)

Table 21 – Theme Eight contingency theory elements and description .

Element	**Leadership engagement**
Contingency Factors	Leaders must ensure innovation aligns with industry needs and characteristics.
Environmental Factors	Leadership advances innovation by addressing market regulatory and competitive pressures.
Organisational Structure	Effective leadership ensures innovation is in harmony with the organisational structure and encourages collaboration.
Technological Factors	Leaders identify and implement technologies to improve performance.
Management and Leadership	Leadership plays a vital role in cultivating innovation throughout the industry.
Strategic Fit	Innovation strategies should be aligned with the long term vision for sustainable success.
External Pressure	Leaders leverage external pressures as a driving force for innovation.
Adaptation and Flexibility	Leaders must embrace adaptability within teams to leverage innovation for competitive advantage.

The Leadership Engagement theme highlights the role of leadership in adopting innovation, addressing external challenges, and aligning technology with organisational goals for sustained success.

5.2.9 Theme Nine: Employee and client-focused strategy and development

So, in (sic) *said, there is definitely a strong drive here to move toward technology. Every strategy, system, or development we implement is designed with the employee and client in mind, aiming to improve experience with technology.* (Participant 8)

Table 22 – Theme Nine contingency theory elements and description.

Element	Employee and client-focused strategy and development
Contingency Factors	Adapt transformation strategies to align with industry needs.
Environmental Factors	Strategies should address market trends, regulations, and customer expectations.
Organisational Structure	Adopt a digital culture by aligning roles, processes, and workflows.
Technological Factors	Employ technologies to drive digital adoption and ongoing improvement.
Management and Leadership	Leaders drive transformation with a clear vision and a culture of innovation.
Strategic Fit	Strategies must align with organisational vision for successful digital integration.
External Pressure	Adapt to external pressures through transformation.
Adaptation and Flexibility	Encourage adaptability to embrace evolving digital tools and practices.

The Employee and Client-Focused Strategy and Development theme aims to embed a digitalisation culture by emphasising a holistic approach. It ensures that transformation encompasses both technology adoption and a shift in organisational mindsets towards continuous change and innovation.

5.2.10 Theme Ten: Training and knowledge sharing

We've had training sessions, and once people understand the tools through examples, there's rarely any negative feedback as it is seen how efficient the tool is for employees. (Participant 5)

We have a lot of training, and our model, which we use for training external clients, has been highly successful so far. (Participant 8)

Table 23 – Theme Ten contingency theory elements and description.

Element	**Training and knowledge sharing**
Contingency Factors	Adapt training to suit industry characteristics and maturity.
Environmental Factors	Training should address external changes such as regulations, market demands, and emerging technologies.
Organisational Structure	Align training with organisational hierarchy and workflows for relevance.
Technological Factors	Use digital tools to enhance knowledge sharing and training efficiency.
Management and Leadership	Ensure leadership commitment to advancing a learning culture.
Strategic Fit	Align training initiatives with organisational goals to build essential skills.
External Pressure	Address external demands through efficient training and knowledge sharing practices.
Adaptation and Flexibility	Training programmes should evolve to meet changing needs and technologies.

The Training and Knowledge Sharing theme emphasises that a framework should ensure employees have the skills to adapt to digitilisation successfully.

5.2.11 Theme Eleven: Challenges and obstacles

So, clients want to be more digital and are expecting more policy services now. Clients do not have the time and patience if we do not deliver, clients will find another insurer who does. (Participant 3)

There are a lot of budgetary constraints affecting the adoption of new technologies. (Participant 4)

People always expect a new tool to work the way it used to employ the previous tool, therefore some employees resist adopting digital tools. (Participant 5)

The challenge at the moment is getting our internal systems, which we've built and developed, to communicate effectively with the systems for which we currently have licenses. (Participant 6)

We must ensure our infrastructure is solid, especially in areas where we play a direct role in setting it up. The bigger challenge is migrating from older applications. (Participant 7)

Table 24 – Theme Eleven contingency theory elements and descriptions.

Element	**Challenges and obstacles in digitalisation**
Contingency Factors	Factors such as size, resources, and industry type in insurance can create obstacles.
Environmental Factors	External challenges include regulatory constraints, market volatility, and customer resistance to digital processes.
Organisational Structure	Misalignment between digital initiatives and existing processes results in inefficiencies and resistance.
Technological Factors	Issues arise from selecting, implementing, and maintaining compatible, scalable technologies.
Management and Leadership	Weak leadership, lack of commitment, and ineffective change management can impede transformation.
Strategic Fit	Digital efforts not aligned with long term goals lead to fragmented strategies.
External Pressure	Regulatory, customer, and competitive pressures complicate transformation.
Adaptation and Flexibility	Limited system adaptability hampers responsiveness to shifting digital landscapes.

The Challenges in Digitilisation theme highlights the need for planning, communication, and strategy to address internal and external factors effectively.

5.2.12 Theme Twelve: Enhancing communication strategy.

No, I do not think there is enough communication. If you don't make the effort to talk to people, you won't know what's going on. (Participant 1)

In my opinion, whenever new technologies are introduced, communication is key, and's happening effectively at the SA insurer. (Participant 2)

We knew it was coming, but we weren't given an in-depth explanation of how it works, so I don't think the communication was effective. (Participant 6)

Yes, I definitely think so since the IT team is responsible for sourcing technologies and determining how the tools best fit the insurance industry. (Participant 9)

Table 25 – Theme Twelve contingency theory elements and description .

Element	**Enhancing communication strategy**
Contingency Factors	Adapt communication strategies to fit industry size, culture, and structure.
Environmental Factors	Address external demands such as regulatory requirements, market expectations, and stakeholder needs.
Organisational Structure	Align communication strategies with organisational hierarchies for clarity and consistency.
Technological Factors	Leverage communication technologies (e.g., digital platforms and AI) to improve engagement.
Management and Leadership	Leaders ensure communication aligns with transformation goals.
Strategic Fit	Communication strategies should reinforce organisational goals and vision.
External Pressure	Adapt communication approaches to address market or regulatory challenges.

Adaptation and Flexibility	Communication systems must be flexible to adapt to changing situations, such as crises or market shifts.

The Enhancing Communication Strategy theme focuses on the importance of effective communication to align stakeholders, reduce resistance, and ensure successful digitilisation.

5.2.13 Theme Thirteen: Integrating data analytics with new systems.

> *Quite a big talking point in, in the company we are dealing with full data analytics team. The data we have is impressive, but we need to ensure it integrates well with the new systems we adopt.* (Participant 8)

Table 26 – Theme Thirteen contingency theory elements and description .

Element	**Integrating data analytics with new systems**
Contingency Factors	Adapt data analytics to the industry's size, resources, and requirements.
Environmental Factors	Analytics must address external pressures such as regulations, customer expectations, and market trends.
Organisational Structure	Data processes should integrate with the organisation to improve decision making and efficiency.
Technological Factors	Select analytics tools aligned with organisational capacity and needs.
Management and Leadership	Leadership drives the vision and resources for cultivating a data driven culture.
Strategic Fit	Align analytics strategies with organisational goals to enhance insights and competitiveness.
External Pressure	Use data analytics to respond to competitive and regulatory pressures.
Adaptation and Flexibility	Analytics systems must evolve to accommodate changing data sources and business needs.

The Integrating Data Analytics with New Systems theme highlights how the insurance industry uses data to drive transformation, improve efficiency, and support strategic decisions.

5.2.14 Theme Fourteen: Shift from paper based to digital change management requests.

We... Yes, we used to do data change requests on paper, print and filing the papers for the change request forum meetings, now we use ChangeGear to focus on our IT change management which includes workflows and approvals. (Participant 4)

Table 27 – Theme Fourteen contingency theory elements and description .

Element	**Ensuring regulatory and legal compliance**
Contingency Factors	Ensures automation aligns with digital change management requests for the change management forum.
Environmental Factors	Automation addresses change management requests for the change management forum.
Organisational Structure	Ensure automated processes are aligned with change management requests integration.
Technological Factors	The right automation technologies to reduce inefficiencies for change management requests.
Management and Leadership	Build continuous improvement into automation for broker services.
Strategic Fit	Align change management systems with objectives such as improving change request management.
External Pressure	Ensure change management systems comply with regulations.
Adaptation and Flexibility	Design adaptable change management solutions for long term improvement.

The Ensuring Regulatory and Legal Compliance theme focuses on how the insurance industry can effectively manage legal and regulatory requirements while pursuing digitalisation. It emphasises mitigating legal risks, remaining competitive, and prioritising cybersecurity.

5.2.15 Theme Fifteen: Ensuring regulatory and legal compliance.

We have a compliance team ensuring we meet regulatory and legal requirements, and a cybersecurity department safeguards our data and systems. (Participant 8)

Table 28 – Theme Fifteen contingency theory elements and description.

Element	Ensuring regulatory and legal compliance
Contingency Factors	Adapt compliance strategies to suit the size, industry, and location of the organisation.
Environmental Factors	Compliance must meet legal, regulatory, and market requirements.
Organisational Structure	Align compliance efforts with processes and roles to ensure smooth adoption.
Technological Factors	Employ secure technologies to manage data protection, risk, and legal standards.
Management and Leadership	Leaders prioritise compliance and promote legal awareness.
Strategic Fit	Compliance and security must align with broader organisational goals to ensure efficiency.
External Pressure	Adapting to market and regulatory pressures necessitates new compliance measures.
Adaptation and Flexibility	Compliance systems must evolve to accommodate changing regulations, threats, and legal requirements.

The Ensuring Regulatory and Legal Compliance theme focuses on how the insurance industry can effectively manage legal and regulatory requirements while pursuing digitalisation. It emphasises mitigating legal risks, remaining competitive, and prioritising cybersecurity.

5.3 Summary of findings

In summary, the researcher collected information through semi-structured interviews with participants to achieve the research goals described in Chapter One.

Semi-structured interviews with participants.

This study draws the following conclusions:

- Most participants strongly supported digital tools, noting substantial improvements in processing times and task management.
- They pointed out benefits such as online questionnaires, automated premium calculations, and reduced manual work in underwriting.
- Digital tools provided participants with more time for meetings and deeper discussions, facilitated easier access to and understanding of digital

documents, sped up underwriting, streamlined processes for brokers, and improved overall efficiency and customer service.

- The participants also expressed concern about the learning curve and the different skill levels required among employees.
- The participants agreed on the importance of strong leadership, a positive company culture, and available resources for successful technology adoption.
- Younger employees were generally more receptive to change than older staff.
- Despite good training and communication efforts, some participants struggled to understand the broader effects of digitalisation.
- The participants also identified challenges to adoption, such as resistance to change, budget issues, and difficulties in integrating new systems with current ones.
- The participants indicated that clear communication and aligning technology use with business goals to ensure successful adoption was crucial.
- The participants stressed the need for change management systems to assist in managing the challenges of organisational change.
- The managers stressed the need to comply with industry regulations.

In sum, these factors significantly impact the digitalisation of the insurance industry and lead to better operational efficiency.

5.4 Conclusion

This chapter examined the interview data by identifying common themes and relevant quotes, presented in Tables 12 to 27, with clear explanations of the theory. Chapter Six explains the results and makes recommendations.

CHAPTER SIX: INTERPRETATION OF FINDINGS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the research findings using the Technology–Organisation–Environment (TOE) framework and Contingency Theory (CT). It connects the insights to the study's conceptual model and research questions. The analysis reveals several barriers to digitalisation and operational efficiency in the South African insurance sector. It also offers recommendations to tackle these challenges. The findings show how each theme fits into the technological, organisational, and environmental factors of the TOE model, while also recognising that specific contexts, as described in Contingency Theory, influence the success of digital initiatives.

6.1.1 Continuous use of traditional communication practices

This issue relates to the organisational aspect of TOE. It shows how employee resistance and established work cultures can slow down the use of digital tools. Outdated communication methods make collaboration harder and slow down workflows, affecting digitalisation's impact on operational efficiency. The conceptual model supports structured change management programs and regular training to build digital readiness among employees.

6.1.2 High costs of digitilisation

High costs for implementing digital technologies reflect both organisational limits and external pressures such as compliance demands. These financial challenges directly influence choices about system upgrades and adoption rates. The study suggests forming strategic partnerships with technology providers and regulators to reduce financial burdens and promote sustainable innovation.

6.1.3 Slow rate of digital technology adoption in insurance

The slow adoption of digital technologies is linked to outdated legacy systems, market competition, and other environmental factors. This finding relates to the question of

what influences digital adoption. The conceptual model advises a phased approach to adoption that considers each insurer's size, resources, and strategy.

6.1.4 Lack of accelerated underwriting process efficiency

While automation aims to improve processes, some complex underwriting cases still need human judgment. This issue connects to the technological side of TOE and emphasises CT’s focus on aligning systems with real world operations. Findings suggest a mixed approach that combines automation with human oversight for accuracy and responsiveness..

6.1.5 Further need for streamlined automation processes for brokers.

Digital tools have made brokers' jobs easier yet have created new challenges. Learning to use these tools can be difficult, and flexible working hours can lead to stress and exhaustion. Automation speeds up tasks but relies more on technology, which can fail and lead to data breaches. Keeping up with digital changes can overwhelm brokers and damage relationships with clients and the ability to make decisions.

6.1.6 Need for better leadership engagement

The lack of active leadership involvement is an organisational weakness that holds back digital progress. Both TOE and CT stress that strong leadership is crucial for successful transformation. Strengthening leadership commitment and clearly stating a digital vision are key to building a culture of innovation and accountability.

6.1.7 Need for a clearer explanation of digitilisation strategies and vision

The participants had differing views about why digital tools must be adopted. Management understood the overall goal, but staff at lower levels were confused because the reasons for digitalisation were not clearly communicated.

6.1.8 Ensuring regulatory and legal compliance.

The insurance industry has trouble with digital changes, especially with rules and data protection laws such as POPIA. Larger companies can navigate these requirements more easily, while smaller businesses often find it arduous because of the high costs and new systems. Insurers should create compliance teams and work with regulators and other insurance firms to solve this problem and create useful guidelines for both large and small businesses.

6.3 Conclusion

This chapter combined findings with the TOE framework, Contingency Theory, and the study's conceptual model. It showed how internal abilities, technological conditions, and external pressures interact to shape digitalisation in the insurance sector. The recommendations provide practical steps for improving operational efficiency, addressing key obstacles, and guiding future digital efforts. Therefore, the findings answer the main research question: What strategies can help successfully digitise operations and enhance service delivery in the South African insurance industry?.

CHAPTER SEVEN: THE EVALUATION OF THE RESEARCH

7.1 Introduction

This chapter examines the research process and ascertains how well the research goals have been met. The chapter discusses the importance of the research and its effect on digitalisation in the South African insurance industry, specifically to improve how the industry operates. The findings show that digitalisation changes how the insurance industry creates value and remains competitive, making it vital for increasing operational efficiency.

The chapter commences with a summary of the research and then examines the research questions to determine how the data and analysis answer these questions. Next, it evaluates the research methodology and discusses the contributions and conclusions of the research. The chapter concludes by summarising the findings and suggesting ideas for future research.

7.2 Overview of the research

This section provides an overview of the structure and content of the dissertation and outlines the main focus of each chapter:
Chapter One introduced the research topic and explained its importance. The chapter briefly described the research area, identified the main problem, discussed the research argument, and outlined the study's goals, objectives, and questions.

Chapter Two reviewed key literature and past research, defined learning, and highlighted diverse types identified by earlier researchers, especially in digitalisation within the insurance industry. This chapter also explained how digital tools could help improve operational efficiency.

Chapter Three outlined the theoretical framework of the research, CT, explaining what the theory was, describing its parts, discussing its relevance to this research, and clarifying why it was chosen as the framework by which to conduct the research.

Chapter Four explored the research methods, and the philosophical approach used in the study. It informed readers about other relevant methods and philosophies in information systems research.

Chapter Five focused on data analysis and the researcher's observations from semi-structured interviews. The researcher applied contingency theory to analyse the data by themes.

Chapter Six summarised the findings from Chapter Five and offered recommendations for improvement. The chapter further presented a framework to support digitalisation in the South African insurance industry.

7.3 Research questions revisited.

The research investigated the main research question: What approach could be employed to digitise and enhance service operations within the SA insurance industry? The study formulated five secondary questions to assist in answering the primary question, as discussed below.

7.3.1 The primary research questions

What approach could be employed to digitise and enhance service operations within the SA insurance industry?

7.3.2 The three sub-questions supporting the primary research question.

The first sub-question investigates how digitalisation affects efficiency in the insurance industry. It explains how digital technologies can improve productivity, simplify processes, reduce manual tasks, and enhance overall efficiency.

The second sub-question identifies the main digital tools insurance companies use to improve operations. It focuses on technologies such as automation systems, cloud based platforms, and data analytics that help streamline workflows and advance service delivery.

The third sub-question examines how factors such as company culture, leadership style, and available resources impact digital technology usage in insurance firms. It explores how these internal factors contribute to integrating digital solutions successfully in insurance companies.

The research objectives encompass the following:

- To determine how digitilisation affects operational performance.
- To determine which digital technologies, enhance operational efficiency.
- To determine how industry factors influence the effective adoption of digital technologies.

7.4 Evaluation of methodology

7.4.1 Why was a case study approach appropriate for this research?

This research employed a case study to scrutinise how digitisation influences operational efficiency in the South African insurance industry. Case studies are useful in qualitative research as they help explore complex issues and provide a flexible way to collect data through document reviews and interviews. The researcher interviewed ten participants to determine how technology and digital culture were adopted in the insurance industry, mainly focusing on a SA insurer.

7.4.2 Appropriateness of the data collection techniques

This research employed written conversations to collect data. This method was chosen because it focuses on people's experiences and social interactions, which matches the research goal of understanding. Qualitative research effectively captures how people see things, provides insights through interpretation, and shares the meanings participants express.

7.4.3 Appropriateness of the unit of analysis

The SA insurer is a holding company providing financial and life insurance services through its subsidiaries. These services include short, medium, and long term insurance, medical underwriting, conversion policy products, and claims adjustment services for clients in South Africa (Hogg, 2023). The researcher selected this insurer for its strong digitalisation strategy, which has led to significant automation and digital

solution usage (Hogg, 2023). The main focus was on the client operations and ICT departments. The ICT department develops and manages internal systems employing digital technologies, while Client Operations use these technologies to improve processes.

7.5 Research contributions and conclusions

7.5.1 Research Contributions

This study helps us understand how digital tools can improve operations in the South African insurance industry. The main findings show that digital technologies make processes better by automating routine tasks and optimising resource use, which boosts productivity and competitiveness. Participants noted significant efficiency gains, especially with automated systems such as online questionnaires and premium calculation tools. The research also identifies several obstacles to adopting digital technology, such as employees resisting change, budget limitations, and the difficulties of learning new technologies. These insights stress the importance of strong leadership, a supportive workplace culture, and ongoing training programs for successful digitilisation. Additionally, the study highlights the need for regulatory compliance and data protection to ensure digital initiatives meet industry standards and protect sensitive information. Together, these findings provide useful guidance for insurance companies looking to improve efficiency through digitalisation.

7.5.2 Conclusion

In conclusion, this research shows that while digital tools offer great opportunities to enhance efficiency in the insurance sector, successful implementation relies on tackling challenges related to people, finances, and regulations. The study emphasises that managing the relationship between technology, readiness within the organisation, and external regulations is crucial for maximising benefits. Overall, the findings create a strong foundation for developing strategies and frameworks to help insurers navigate the digitilisation journey, leading to a more agile, efficient, and competitive insurance industry.

7.6 Limitations

The research had some limitations, including its design, which examined the data emanating at a single juncture over two weeks from a SA insurer employee. This design hampers observing long term trends. The study employed purposive sampling within a small target group from one company only, thereby limiting how broadly the findings can be applied. While this method produced useful insights, it might not fully represent the entire insurance industry. Focusing on a single company restricts how the digitalisation model can be applied more broadly.

7.7 Future research into recommended areas

The insurance industry is an essential sector, protecting people and businesses from unexpected risks and losses. However, it has been slower to adopt digital technologies compared to industries such as manufacturing and retail. This study investigated how digital technologies are applied in the South African insurance industry. The results reveal a need for more research in this area and highlight deficiencies that require attention, providing practical insights for future studies.

This section examines the current state of digitalisation, focusing on the interest level and period reported on by key publications. The findings indicate that digitalisation in health and non-health insurance has not received as much attention as life insurance. Using digital technologies can improve productivity, profitability, and efficiency throughout the insurance process. The review stresses the need for more publications and resources about digitalisation in these less explored industries.

This analysis also explores the distribution of digital technologies across various industries, highlighting the limited focus on technologies such as blockchain, social media, and virtual reality within the insurance industry. For example, in the KPMG 2014 report on Blockchain for Technology, Media, and Telecommunications Companies, Nicholas and Beesley (2014) indicate that only 41 per cent of technology company leaders anticipated its adoption within industries. The ability of virtual reality to create simulations shows promise in the SA insurance industry by allowing for simulations of building structures, which can help identify potential vulnerabilities and accurately calculate premiums. In addition, tools such as social media have become essential for

product promotion and cost-effective stakeholder engagement. Therefore, further investigation into the benefits of digitalisation, particularly within the SA insurance industry, is crucial.

The analysis emphasised the operational advantages of digitalisation, including enhanced productivity and profitability, reduced operating costs, improved business efficiency, valuable insights derived from increased data, and the automation of business processes. Given these factors directly influence business success, it is essential to prioritise these operational benefits and explore how digitalisation could further enhance overall performance.

Health and non-health insurance have received less attention in the literature, with departments such as marketing, human resources, and legal, along with processes including application and policy finalisation, not thoroughly examined. Therefore, future research should focus on exploring the benefits of digitalisation in these overlooked areas.

Lastly, employing technologies, such as social media for applications, blockchain for underwriting, and robotics for claims, could improve the insurance process. However, there is limited research on these topics; therefore, more studies are required to gain further insight into improving informed decision making.

References

Abedin, B., 2022. Managing the tension between opposing effects of explainability of artificial intelligence: a contingency theory perspective. *Internet Research*, *32*(2), pp.425–453.

Ahmed, I. 2020. Technology organization environment framework in cloud computing. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, *18*(2), pp.716–725.

Aina, J., Ganiyu, K. and Oloriegbe, K.S. 2023. Cloud-based collaborative suite and employee enablement as digital transformation strategies for achieving organizational sustainability among insurance companies in Nigeria. *ESUT Journal of Social Sciences*, *8*(1).

Akkor, D.G. and Ozyukse, S. 2020. The effects of new technologies on the insurance sector: A proposition for underwriting qualifications for the future. *Eurasian Journal of Business and Management*, *8*(1), pp.36–50.

Al-Ababneh, M.M. 2020. Linking ontology, epistemology and research methodology. *Science* and *Philosophy*, *8*(1), pp.75–91.

Alsheyadi, A.K. 2024. A literature review on Industry 4.0 implementation and performance: a contingency perspective. *The TQM Journal*, *36*(7), pp.2048–2070.

Amhalhal, A., Anchor, J., Tipi, N.S. and Elgazzar, S., 2022. The impact of contingency fit on organisational performance: an empirical study. *International Journal of Productivity and Performance Management*, *71*(6), pp.2214–2234.

Amini, M. and Jahanbakhsh Javid, N., 2023. A multi-perspective framework established on diffusion of innovation (DOI) theory and technology, organization and environment (TOE) framework toward supply chain management system based on cloud computing technology for small and medium enterprises. *International Journal of Information Technology and Innovation Adoption*, *11*, pp.1217–1234.

Asongu, S.A. and Odhiambo, N.M. 2020. Foreign direct investment, information technology and economic growth dynamics in sub-Saharan Africa. *Telecommunications Policy*, *44*(1), p.101838.

Attaran, M. 2020. Digital technology enablers and their implications for supply chain management. In *Supply Chain Forum: An International Journal* (Vol. 21, No. 3, pp. 158–172). Taylor and Francis.

Azer, J., Taheri, B. and Gannon, M. 2022. A critical view on mixed-method approaches to tourism and hospitality research. In *Advanced research methods in hospitality and tourism* (pp. 5–24). Emerald Publishing Limited.

Bakkalbasioglu, E., 2020. How to access elites when textbook methods fail: Challenges of purposive sampling and advantages of using interviewees as “fixers.”. *The Qualitative Report*, *25*(3), pp.688–699.

Bakker, J.I. 2019. Grounded theory methodology and grounded theory method: introduction to the special issue. *Sociological Focus*, *52*(2), pp.91–106.

Banu, A. 2022. Big data analytics–tools and techniques–application in the insurance sector. In K. Sood et al. (Eds.), *Big data: a game changer for insurance industry* (pp. 191–212). Emerald Publishing Limited.
Baron, C. 2023. Total assets of insurance companies in South Africa from 2002 to 2022(in billion U.S. dollars), https://www.statista.com/statistics/421672/insurance-companies-assets-south-africa/?utm_source=chatgpt.com
Bartram, D., 2021. Cross-sectional model-building for research on subjective well-being: Gaining clarity on control variables. *Social Indicators Research*, 155, pp.725–743.
Baruwa, I. and Shutaleva, A. 2022. Nature of Knowledge in Philosophy. *Journal of Education Society and Behavioural Science*, *35*(10):47–59 DOI:10.9734/JESBS/2022/v35i1030463
Bernardi, L. 2021. Qualitative longitudinal research in family sociology. In N. F. Schneider and M. Kreyenfeld (Eds.), *Research handbook on the sociology of the family* (pp. 107–124). Edward Elgar Publishing.
Bertello, A., Ferraris, A., Bresciani, S. and De Bernardi, P. 2021. Big data analytics (BDA) and degree of internationalization: the interplay between governance of BDA infrastructure and BDA capabilities. *Journal of Management and Governance*, *25*(4), pp.1035–1055.
Bhardwaj, G. 2021, November. Analysis of Digitization, IOT and Block chain in Bancassurance. In 2021 International conference on technological advancements and innovations (ICTAI) (pp. 506–509). IEEE.
Bokolo, Z., 2023. *Data security in chatbots for the insurance industry: a case study of a South African insurance company* (Doctoral dissertation, Cape Peninsula University of Technology).
Brady, E. 2019. *Aesthetics of the natural environment*. Edinburgh University Press.
Brennen, B.S. 2021. *Qualitative research methods for media studies*. Routledge.
Brown, L., 2024. *A non-experimental quantitative correlational study of emotional intelligence as an effective tool for pastoral leadership* (Doctoral dissertation, Liberty University).
Bryan, J.D. and Zuva, T. 2021. A review on TAM and TOE framework progression and how these models integrate. *Advances in Science, Technology and Engineering Systems Journal*, *6*(3), pp.137–145.
Budman, M., Khan, A., and Hurley, B. 2019. Tech-Trends accessed5March2023,<https://www2.deloitte.com/content/dam/insights/us/articles/Tech-Trends 2019/DI_TechTrends2019.pdf>
Burns, M., Bally, J., Burles, M., Holtslander, L. and Peacock, S. 2022. Constructivist grounded theory or interpretive phenomenology? Methodological choices within specific study contexts. *International Journal of Qualitative Methods*, 21, 16094069221077758.

Busetto, L., Wick, W. and Gumbinger, C. 2020. How to use and assess qualitative research methods. *Neurological Research and Practice*, *2*(1), p.14.
Bvuma, S. and Marnewick, C. 2020. An information and communication technology adoption framework for small, medium and micro-enterprises operating in townships South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management*, *12*(1), p.12.
Carlsson, L., Olsson, A.K. and Eriksson, K. 2022. Taking responsibility for industrial digitalization: navigating organizational challenges. *Sustainability* 2022, 14, 866 [online].
Chatterjee, S., Mikalef, P., Khorana, S. and Kizgin, H. 2024. Assessing the implementation of AI integrated CRM system for B2C relationship management: integrating contingency theory and dynamic capability view theory. *Information Systems Frontiers*, *26*(3), pp.967–985.
Chetty, V. 2020. An empirical analysis of local government document management systems using constructs of the Technology Acceptance model (TAM) and Total Quality Management (TQM) across selected clusters in the eThekwini Metropolitan Municipality in KwaZulu-Natal. South Africa (Doctoral dissertation).
Choudhuri, A. 2020. Operations Excellence Journey on Digital in Enhancing Production Operations, Planning and Process Cycle Efficiency. In *Abu Dhabi International Petroleum Exhibition and Conference* (p. D041S106R002). SPE.
Chui, M., Roberts, R. and Yee, L. 2022. Generative AI is here: How tools like ChatGPT could change your business. *Quantum Black AI by McKinsey*, *20*.
Creswell, J.W., 2021. *A concise introduction to mixed methods research*. SAGE publications.
Csaszar, F.A. and Ostler, J. 2020. A contingency theory of representational complexity in organizations. *Organization Science*, *31*(5), pp.1198–1219.
Căpușneanu, S., Mateș, D., Tűrkeș, M.C., Barbu, C.M., Staraș, A.I., Topor, D.I., Stoenică, L. and Fűlöp, M.T. 2021. The impact of force factors on the benefits of digital transformation in Romania. *Applied Sciences*, *11*(5), p.2365.
Davenport, T.H. 2018. *The AI advantage: How to put the artificial intelligence revolution to work*. MIT Press.
De Soto, J.A. 2022. The constructivism of social discourse: toward a contemporaneous understanding of knowledge. *Open Journal of Philosophy*, *12*(03), pp.376–396.
Didenko, I. and Sidelnyk, N. 2021. Insurance innovations as a part of the financial inclusion. *Business Ethics and Leadership*, *5*(1), pp.127–135.
Diniso, C. 2023. Is the African National Congress (ANC) living up to its brand promises? Evaluating its brand equity using Asker's Brand Equity Framework. In *Proceedings of the 16th International Business Conference* (pp. 3186–3209).
Du Plessis, G. and Smuts, H. 2021. The Diffusion of Innovation Experience: Leveraging the Human Factor to Improve Technological Adoption Within an Organisation. In Responsible AI and Analytics for an Ethical and Inclusive

Digitized Society: 20th IFIP WG 6.11 Conference on e-Business, e-Services and e-Society, I3E 2021, Galway, Ireland, September 1–3, 2021, Proceedings 20 (pp. 318–329). Springer International Publishing.
Dwivedi, Y.K., Kshetri, N., Hughes, L., Slade, E.L., Jeyaraj, A., Kar, A.K., Baabdullah, A.M., Koohang, A., Raghavan, V., Ahuja, M. and Albanna, H. 2023. Opinion Paper: "So what if ChatGPT wrote it?". Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. add the source or publisher.
Eckert, C. and Osterrieder, K. 2020. How digitalization affects insurance companies: overview and use cases of digital technologies. *Zeitschrift Für die Gesamte Versicherungswissenschaft*, *109*(5), pp.333–360.
Eling, M., Nuessle, D. and Staubli, J. 2022. The impact of artificial intelligence along the insurance value chain and on the insurability of risks. *The Geneva Papers on Risk and Insurance-Issues and Practice*, *47*(2), pp.205–241.
Faragone, G. 2023. *A contingency approach to public sector performance management: the case of the Canadian intelligence community* (Doctoral dissertation, Université d'Ottawa/University of Ottawa).
Financial sector outlook research. 2022. Financial sector conduct authority. accessed 10 October2023, <https://www.fsca.co.za/Documents/FSCA%20Financial%20Sector%20Outlook%20Research%202022.pdf>
Ganesha, H.R. and Aithal, P.S. 2022. How to choose an appropriate research data collection method and method choice among various research data collection methods and method choices during PhD program in India?. *International Journal of Management, Technology and Social Sciences* (IJMTS), *7*(2), pp.455–489.
Gavrilov, D., 2020. Positivism-from weaknesses to new openings. *Revista Universitară de Sociologie*, *16*(1), pp.151–166.
Gregor, S. 2006. The nature of theory in information systems. *MIS Quarterly*, pp.611–642.
Guest, G., Namey, E. and Chen, M. 2020. A simple method to assess and report thematic saturation in qualitative research. *PloS One*, *15*(5), p.e0232076.
Gupta, S. 2018. Organizational barriers to digital transformation. add the source.
Hancock, D.R., Algozzine, B. and Lim, J.H. 2021. *Doing case study research: A practical guide for beginning researchers*. Teachers College Press.
Hennink, M., Hutter, I. and Bailey, A. 2020. *Qualitative research methods*. Sage.
Holland, C., 2022. Artificial intelligence (AI) and digital transformation in the insurance market: a case study analysis of BGL group. add the source.
Hoosen, K.F. Factors influencing artificial intelligence adoption in south african organisations: a technology, organisation, environment (TOE) framework. (Research report, University of the Witwatersrand).
Hogg, A. 2023 https://www.biznews.com/sa-investing/2023/02/08/watch-out-world-ceo-schalk-malan-brightrock-sanlam

Iyamu, T. 2021. *Applying theories for information systems research*. Routledge.
Jere, J.N. and Ngidi, N. 2020. A technology, organisation and environment framework analysis of information and communication technology adoption by small and medium enterprises in Pietermaritzburg. *South African Journal of Information Management*, *22*(1), pp.1–9.
Johnson, R.B. and Christensen, L.B. 2024. *Educational research: quantitative, qualitative, and mixed approaches*. SAGE Publications.
Kajwang, B.O. 2022. *Emerging trends in insurance sector*. IPR Journals and Book Publishers.
Kasza, J. 2019. Forth Industrial Revolution (4 IR): digital disruption of cyber-physical systems. *World Scientific News*, *134*(2).
Kazim, F.A., 2019. Digital transformation and leadership style: a multiple case study. *The ISM Journal of International Business*, *3*(1), pp.24–33.
Kiel, D., Müller, J.M., Arnold, C. and Voigt, K.I. 2017. Sustainable industrial value creation: Benefits and challenges of Industry 4.0. *International Journal of Innovation Management*, *21*(08), p.1740015.
King, M.R., Timms, P.D. and Rubin, T.H. 2021. Use of big data in insurance. *The Palgrave Handbook of Technological Finance*, pp.669–700.
Lartey, F.M. 2020. Chaos, complexity, and contingency theories: a comparative analysis and application to the 21st century organization. *Journal of Business Administration Research*, *9*(1), pp.44–51.
Lawrence, P.R. and Lorsch, J.W., 1967. Differentiation and integration in complex organizations. *Administrative science quarterly*, pp.1-47.
Lehrer, C., Wieneke, A., Vom Brocke, J.A.N., Jung, R. and Seidel, S. 2018. How big data analytics enables service innovation: materiality, affordance, and the individualization of service. *Journal of Management Information Systems*, *35*(2), pp.424–460.
Letsoara, L. 2022. Leadership and strategy implementation at a commercial bank in Tshwane.
Lukyanenko, R., Storey, V.C. and Pastor, O. 2021. Foundations of information technology based on Bunge's systemist philosophy of reality. *Software and Systems Modeling*, *20*(4), pp.921–938.
Luo, G., Zhou, Y., Ren, T., Chen, S., Sun, X. and Ji, R. 2024. Cheap and quick: Efficient vision-language instruction tuning for large language models. *Advances in Neural Information Processing Systems*, *36*.
MacLeod, A., Burm, S. and Mann, K. 2022. Constructivism: learning theories and approaches to research. *Researching Medical Education*, pp.25–40.
Makri, C. and Neely, A. 2021. Grounded theory: A guide for exploratory studies in management research. *International Journal of Qualitative Methods*, *20*, p.16094069211013654.this cannot be a page number.
Mamela, T.L. 2021. *Assessment of the impact of artificial intelligence on the performance of the workforce at a South African banking institution*. (Master's thesis, University of Johannesburg, South Africa).

Mapingire, K., Smuts, H. and Van der Merwe, A. 2022. Components of a Digital Transformation Strategy: A South African Perspective. In *Proceedings of Sixth International Congress on Information and Communication Technology: ICICT 2021, London, Volume 2* (pp. 437–447). Springer Singapore.
Martinsuo, M. and Huemann, M. 2021. Designing case study research. add the source.
Martínez-Caro, E., Cegarra-Navarro, J.G. and Alfonso-Ruiz, F.J. 2020. Digital technologies and firm performance: the role of digital organisational culture. *Technological Forecasting and Social Change*, *154*, p.119962.
Matsepe, N.T. and Van der Lingen, E. 2022. Determinants of emerging technologies adoption in the South African financial sector. *South African Journal of Business Management*, *53*(1), p.2493.
Matshwane, M. 2021. Women's financial inclusion in the transport industry. Southern African Transport Conference 2021.
Mbatha, N.S., 2020. *Factors influencing cyber insurance adoption in South Africa industry* [online]
Meno, T., 2020. *An assessment of risk associated with digitalisation in the South African construction industry*. (Master's thesis, University of Johannesburg, South Africa).
Mirgissa, K. 2024. Qualitative research methodology and methods: researcher's guide. *ZAIRAICHI*, pp.7–220.
Modiba, M.M. 2020. *A digital transformation framework for South African financial service providers* (Doctoral dissertation, North-West University, South Africa).
Modiba, M.M. and Kekwaletswe, R.M. 2020. Technological, organizational and environmental framework for digital transformation in South African financial service providers. *International Journal of Innovative Science and Research Technology*, *5*(5), pp.180–196.
Mohajan, H.K. 2020. Quantitative research: a successful investigation in natural and social sciences. *Journal of Economic Development, Environment and People*, *9*(4), pp.50–79.
Molloy, L. and Ronnie, L. 2020. Sustaining the life insurance industry in the Fourth Industrial Revolution. *South African Actuarial Journal*, *20*(1), pp.81–107.
Molloy, L. and Ronnie, L. 2021. Mindset shifts for the Fourth Industrial Revolution: insights from the life insurance sector. *SA Journal of Human Resource Management*, *19*, p.13.
Moodley, A.J. 2019. Digital transformation in South Africa's short-term insurance sector: Traditional insurers' responses to the Internet of Things (IoT) and Insurtech. *The African Journal of Information and Communication*, *24*, pp.1–16.
Moyo, J., Watyoka, N. and Chari, F. 2022. Challenges in the adoption of artificial intelligence and machine learning in Zimbabwe's insurance industry. In *2022 1st Zimbabwe Conference of Information and Communication Technologies (ZCICT)* (pp. 1–6). IEEE.

Musaigwa, M. and Mutula, S. 2022. Impact of digital transformation on strategy in the insurance sector. *International Journal of Research in Business and Social Science (2147–4478)*, *11*(4), pp.69–76.
Nayak, J.K. and Singh, P. 2021. *Fundamentals of research methodology problems and prospects*. SSDN Publishers and Distributors.
Ndebele, C. and Mbodila, M. 2022. Examining technology acceptance in learning and teaching at a historically disadvantaged university in South Africa through the technology acceptance model. *Education Sciences*, *12*(1), p.54.
Neale, F.R., Drake, P.P. and Konstantopoulos, T. 2020. InsurTech and the Disruption of the Insurance Industry. *Journal of Insurance Issues*, *43*(2), pp.64–96.
Nguyen, T.H., Le, X.C. and Vu, T.H.L. 2022. An extended technology-organization-environment (TOE) framework for online retailing utilization in digital transformation: empirical evidence from Vietnam. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(4), p.200.
Niraula, P. and Kautish, S. 2019. Study of the digital transformation adoption in the insurance sector of Nepal. *LBEF Research Journal of Science, Technology and Management*, *1*(1), pp.43–60.
Ntoutsi, E., Fafalios, P., Gadiraju, U., Iosifidis, V., Nejdl, W., Vidal, M.E., Ruggieri, S., Turini, F., Papadopoulos, S., Krasanakis, E. and Kompatsiaris, I. 2020. Bias in data-driven artificial intelligence systems—An introductory survey. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, *10*(3), p.e1356.
Nkomo, L. and Kalisz, D. 2023. Establishing organisational resilience through developing a strategic framework for digital transformation. *Digital Transformation and Society*, *2*(4), pp.403–426.
Nwaiwu, F. 2018. Review and comparison of conceptual frameworks on digital business transformation. *Journal of Competitiveness*.
Ohei, K.N., Brink, R. and Abiodun, A. 2019. Information and Communication Technology (ICT) graduates and challenges of employability: A conceptual framework for enhancing employment opportunities in South Africa. *Gender and Behaviour*, *17*(3), pp.13500–13521.
Panya, K.O. and Nyarwath, O. 2022. Demystifying philosophies and paradigms underpinning scientific research. *The Strategic Journal of Business* and *Change Management*, *9*(4), pp.1367–1382.
Pathiranage, Y.L., Jayatilake, L.V. and Abeysekera, R. 2020. Case study research design for exploration of organizational culture towards corporate performance. *Review of International Comparative Management*, *21*(3), pp.361–372.
Patrick, R., Treanor, M. and Wenham, A. 2021. Introduction qualitative longitudinal research for social policy–where are we now?. *Social Policy and Society*, *20*(4), pp.622–628.

Pauch, D. and Bera, A. 2022. Digitization in the insurance sector–challenges in the face of the Covid-19 pandemic. *Procedia Computer Science*, *207*, pp.1677–1684.
Pervin, N. and Mokhtar, M. 2022. The interpretivist research paradigm: A subjective notion of a social context. *International Journal of Academic Research in Progressive Education and Development*, *11*(2), pp.419–428.
Phokwane, I. 2022. *Optimizing and modelling business processes for a successful implementation of process automation* (Doctoral dissertation, University of Johannesburg).
Proudfoot, K. 2023. Inductive/deductive hybrid thematic analysis in mixed methods research. *Journal of Mixed Methods Research*, *17*(3), pp.308–326.
Ragab, M.A. and Arisha, A. 2018. Research methodology in business: A starter's guide. *Management and Organizational Studies*, *5*(1). DOI:10.5430/mos.v5n1p1
Rainer, R.K. and Prince, B. 2021. *Introduction to information systems*. John Wiley and Sons.
Rameez, A. and Sainudeen, S. 2021. A quantitative study on the challenges faced by youth entrepreneurship in the Maldives. *Impact of Pandemic on Business and Management: Strategies for Sustainability and Growth*, p.395.
Rawat, S., Rawat, A., Kumar, D. and Sabitha, A.S. 2021. Application of machine learning and data visualization techniques for decision support in the insurance sector. *International Journal of Information Management Data Insights*, *1*(2), p.100012.
Rutashobya, L.K., Chiwona-Karltun, L., Wilson, M., Ilomo, M. and Semkunde, M. 2021. Gender and rural entrepreneurship in digitizing sub-Saharan Africa. *Business in Africa in the Era of Digital Technology: Essays in Honour of Professor William Darley*, pp.63–84.
Ryman-Tubb, N.F., Krause, P. and Garn, W. 2018. How Artificial Intelligence and machine learning research impacts payment card fraud detection: a survey and industry benchmark. *Engineering Applications of Artificial Intelligence*, *76*, pp.130–157.
Sandner, K., Sieber, S., Tellermann, M. and Walthes, F. 2020. A Lean Six Sigma framework for the insurance industry: insights and lessons learned from a case study. *Journal of Business Economics*, *90*(5), pp.845–878.
Sanusi, F.A. and Johl, S.K. 2022. Sustainable internal corporate social responsibility and solving the puzzles of performance sustainability among medium size manufacturing companies: an empirical approach. *Heliyon*, *8*(8).
Schoch, K., 2020. Case study research. *Research Design and Methods: An Applied Guide for the Scholar-Practitioner*, *31*(1), pp.245–258.
Schwab, K. 2017. *The Fourth Industrial Revolution*. Crown Currency.
Scott, W.R., 1981. Developments in organization theory, 1960-1980. *American Behavioral Scientist*, *24*(3), pp.407-422.
Sibanda. T. Digital reinvention can spur South Africa's economy. 2019 add the source.

Stanković, J., Stanković, J.Z. and Tomić, Z. 2022. Factors affecting digital transformation of insurance in the Republic of Serbia. *Economic Themes*, *60*(1), pp.133–149.
StatsSA. 2014. Accessed 5 March 2024.
Steiner, A., Farmer, J., Yates, S., Moran, M. and Carlisle, K. 2023. How to systematically analyze co-production to inform future policies? Introducing 5Ws of co-production. *Public Administration Review*, *83*(3), pp.503–521.
Stenberg, L. and Nilsson, S. 2020. Factors influencing readiness of adopting AI: A qualitative study of how the TOE framework applies to AI adoption in governmental authorities. add the source/university/publisher.
Švihura, L.A. 2024. Philosophy of values and ethics in Ayn Rand's axiological objectivism. *Ethics* and *Bioethics*, *14*(1-2), pp.28–40.
Sweet, L. and Davis, D. 2024. An overview of research theory, process and design. In *Nursing and midwifery research-e-book: methods and appraisal for evidence-based practice*, p.12. Elsevier.
Taherdoost, H. 2021. Data collection methods and tools for research: A step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management (IJARM)*, *10*(1), pp.10–38.
Takundwa, S. 2022. FinTech Regulation in South Africa. (Thesis/dissertation, University of Cape Town).
Tiessen, P. and Waterhouse, J.H. 1983. Towards a descriptive theory of management accounting. *Accounting, Organizations and Society*, *8*(2–3), pp.251–267.
Tracy, S.J. 2024. *Qualitative research methods: collecting evidence, crafting analysis, communicating impact*. John Wiley and Sons.
Trading Economics, 2023. South Africa - Insurance Company Assets To GDP.https://tradingeconomics.com/south-africa/insurance-company-assets-to-gdp-percent-wb-data.html
Ugwu, C.I., Ekere, J.N. and Onoh, C. 2021. Research paradigms and methodological choices in the research process. *Journal of Applied Information Science and Technology*, *14*(2), pp.116–124.
Van Dyk, R. and Van Belle, J.P. 2019. Factors influencing the intended adoption of digital transformation: a South African case study. In 2019 Federated Conference on Computer Science and Information Systems (FEDCSIS) (pp. 519–528). *IEEE*.
Vial, G. 2021. Understanding digital transformation: A review and a research agenda. Managing digital transformation, pp.13–66.
Wallace, S., Green, K.Y., Johnson, C., Cooper, J. and Gilstrap, C. 2020. An extended TOE framework for cybersecurity-adoption decisions. *Communications of the Association for Information Systems*, *47*(1), p.51.
Wiesböck, F. and Hess, T. 2020. Digital innovations: Embedding in organizations. *Electronic Markets*, *30*(1), pp.75–86.

Williams, V.A. 2023. *The effects of transformational leadership on virtual onboarding within the US insurance industry* (Doctoral dissertation, Tiffin University).
Wolfart, D., Assunção, W.K., Da Silva, I.F., Domingos, D.C., Schmeing, E., Villaca, G.L.D. and Paza, D.D.N. 2021. Modernizing legacy systems with microservices: a roadmap. In *Proceedings of the 25th International Conference on Evaluation and Assessment in Software Engineering* (pp. 149–159).
Zanke, P. 2021. Enhancing claims processing efficiency through data analytics in property and casualty insurance. *Journal of Science* and *Technology*, *2*(3), pp.69–92.
Zanke, P. 2023. AI-Driven fraud detection systems: a comparative study across banking, insurance, and healthcare. *Advances in Deep Learning Techniques*, *3*(2), pp.1–22.
Zanni, T. 2019. Top_10_technologies_for_business_transformation. 2019. accessed 10 https://assets.kpmg.com/content/dam/kpmg/us/pdf/2019/06/investment-in-technology-innovation-2019.pdf
Zuckerman, A. 2021. Insuring crypto: The birth of digital asset insurance. *University of Illinois Journal of Law, Technology and Policy, Forthcoming*, p.75.

Appendix A: Interview Guide

The table below links the interview questions back to the RQs outlined in Chapter 1.For ease of reference the questions are listed below :

- RQ1: How does digitalisation affect operational efficiency?
- RQ2: What are the key digital technologies adopted to enhance operational procedures?
- RQ3: What impact do industry factors such as culture, leadership, and resources have on the adoption of digital technologies in insurance firms?

Interview question	Purpose of the question	Linked research question
What type of services does organisation offer?	This question aims to understand the main services the organisation provides and how they connect to digital initiatives.	RQ1
What is your role and responsibilities in the organisation or what tasks do you perform?	This question aims to identify the interviewee's job and duties currently performed.	RQ1
Do you currently use a computer to conduct your daily tasks ?	The purpose of this question is to measure how much technology part of the respondent's daily work Looking at computer usage reveals the organisation's digital age and shows where tools could improve productivity.	RQ1
What type of IT systems or technologies do you currently use in your organisation ?	This question aims to gather details about the specific technologies and software the organisation currently uses. Recognising these tools helps in supporting business tasks, finding gaps, and improving performance.	RQ2
Do you know of any challenges your organisation is facing in digitalisation or adopting new technologies?	The goal of this question is to Identify obstacles to digitilisation, such as resistance to change, budget issues, lack of skilled workers, or infrastructure problems. Recognising these challenges helps target areas that need support for successful adoption.	RQ3
How did you complete your daily tasks before the implementation of these systems or technologies ?	This question seeks to understand how business processes worked before digitalisation, allowing a comparison with current digital systems. This shows progress made and areas where digital tools have helped or have not met expectations.	RQ1

How are these systems or technologies helping you complete your daily tasks ?	This question aims to evaluate the concrete benefits that digital systems provide, such as improving task efficiency, reducing errors, and saving time. Evaluate how well current technologies meet employee and operational needs.	RQ1
Do you feel that you are more productive or are there improvements on your daily output?	The purpose is to measure how digital tools affect individual and team productivity. Investigate whether digitalisation leads to better results, higher efficiency, or areas where tools could be improved.	RQ1
What changes have you seen in your business processes because of digitalisation ?	This question aims to understand how digitalisation has changed workflows, decision making, and overall business operations. Emphasise improvements such as speed, accuracy, and scalability, along with any unexpected challenges.	RQ1
How are you taking advantage of the use of moder technologies in the organisation?	This question explores how employees and teams use available technologies to improve work. Identify best practices, innovative uses, or other options within the organisation.	RQ2
What technologies do you believe have the most significant impact on your daily duties or the company ?	The purpose here is to identify which technologies are most helpful in improving operations and reaching business goals. This information helps prioritise investments in tools that make the most difference.	RQ2
Have you experienced any challenges with the use of new technologies ?	This question looks to find the problems that arise when using or adopting digital technologies, such as usability issues, lack of training, or t limitations. Identifying these problems can help create strategies to improve technology acceptance and efficiency.	RQ3
Do you feel that there is enough communication and emphasis around the adoption and use of digital technologies and impact on processes	The aim is to review the company's internal communication and how well staff members are informed, engaged, and supported in using digital tools and processes.	RQ3
How are you prepared when new technology or systems are introduced in your organisation ?	This question examines how the organisation manages change and helps new employees when introducing new systems. It focuses on whether employees get enough preparation, training, and support.	RQ3
Are you trained and educated for the changes brought about by digitalisation in your company or are any system changes made?	The purpose is to find out if the company invests in training programs to equip employees with the skills needed for digitalisation, ensuring smooth transitions and effective system use.	RQ3

Do you know of any of strategic initiatives management undertaken to ensure successfully ensuring a digitilisation culture within your organisation?	This question looks at management efforts and programs that encourage a culture of digitilisation. It helps determine if leaders prioritise and promote a digital mindset.	RQ3
How does your organisation make sure that the digital digitalisation culture is sustainable and remains relevant within the company?	The purpose is to identify ways to maintain an innovative culture that supports ongoing digitilisation efforts.	RQ3
Do you think the organisation enforces a digitalisation focused mindset and culture?	This question looks at how the organisation includes digitilisation in its values, operations, and decision making.	RQ3
What challenges have you experienced in ensuring a culture of digitalisation in your organisation?	The goal is to uncover barriers that prevent adopting a digital first mindset, such as resistance to change, lack of leadership support, or inadequate resources.	RQ3
How would you describe the perceptions and attitudes of people within your organisation towards digitalisation?	This question tries to measure employee feelings and openness towards digitalisation, which can affect the success of digitilisation projects.	RQ3
How does leadership ensure that employees at the company embrace digitalisation ?	The purpose is to examine how leadership drives digital adoption, including ways to motivate and engage employees in digitilisation efforts.	RQ3
What digitalisation strategies has your organisation adopted or is it planning to adopt?	The purpose is to understand the organisation's current and future digitilisation strategies. This helps determine if these strategies aim to improve operational efficiency and stay competitive in the insurance industry.	RQ2
How are you prioritising initiatives or projects in your company ?	This question aims to understand how the organisation shares resources and attention across different projects, including digitalisation. It highlights how the organisation decides which projects are most important for reaching strategic goals.	RQ3
What role does customer experience play in your digitalisation strategies and plans?	The purpose is to explore how the organisation focuses on customer needs in its digitilisation efforts. This gives insights into whether digital initiatives are designed to boost customer satisfaction, engagement, and loyalty.	RQ1
What role does increase productivity and efficiency play in your digitalisation strategies and plans?	This question looks at how important improving productivity and making operations more efficient are to the company's digitilisation efforts. The organisation aims for clear, measurable results through technology use.	RQ1

Do you know of any risks if the company does not digitalise?	The purpose is to understand the risks of not adopting modern technologies, such as losing competitiveness, experiencing inefficiency, or disappointing customers.	RQ3
What do you think will be the impact on the company if it does not adopt modem technologies ?	This question aims to identify specific effects, such as poor operations, loss of market position, or sluggishness, stressing the importance of digital progress.	RQ3
Are you using data analytics and insights to drive your digitilisation efforts and how?	The objective is to see if the organisation uses data analytics to help make decisions and shape its digitilisation plans. It shows how data can improve processes and predict trends.	RQ2
What challenges are you facing in managing and using data effectively ?	This question aims to find challenges in using data, such as data quality issues, difficulties with integration, or lack of expertise. Addressing these challenges is key to getting the most out of data driven projects.	RQ3
How do regulatory requirements influence your digitalisation strategies?	The goal is to explore how following legal and regulatory rules impacts the organisation's digitilisation strategy.	RQ3
What steps are you taking to ensure compliance while innovating digitally?	This question examines how the organisation balances innovation with regulatory compliance to avoid exposing the company to unnecessary risks during digitilisation efforts.	RQ3
Do you know of any risk management measures undertaken to ensure compliance ?	The purpose is to understand the strategies and tools used to reduce the risks of non-compliance, especially when adopting new technologies.	RQ3
Do you know of the organisation's long term goals related to digitalisation?	The purpose is to understand the organisation's long term vision for digitilisation and how it plans to sustain these efforts, linking strategic goals with digital initiatives.	RQ3
Where do you see the future of digitilisation heading in the insurance industry?	This question asks for insights on new trends and the expected development of digitilisation in the insurance industry.	RQ2

Appendix B: Ethical Clearence

The researcher will ensure that ethical agreements are carefully maintained in the use of all data for this study.

The researcher will respect the wishes, viewpoints, rights, and values of the participants. All participants have the option to join or opt out of the study. To ensure adherence to established ethical guidelines, the researcher will comply with the stipulated requirements as outlined (below):

1. Each participant will receive a description of the research objectives and will have the opportunity to withdraw at any point.
2. Consent will be obtained to record the interviews.
3. Each participant interview will last between 30 to 45 minutes, and the questions will be open ended.
4. Interviews will be conducted via online platforms and scheduled at a time that is convenient for the participants.
5. Transcriptions will be anonymised.
6. No personal or company information will be collected.
7. Data gathered will remain confidential.
8. Data will be stored securely.
9. All parties involved will be informed about the results and publications of the research.
10. Data will be anonymised.
11. Participants who choose not to take part will not face any penalties or repercussions.