INFORMATION TECHNOLOGY GOVERNANCE PRACTICES AND INHIBITORS IN SOUTH AFRICAN PRIVATE AND PUBLIC HEALTH CARE

JOHN MANGUNDU

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Peer-review declaration

The publisher (AOSIS) endorses the South African 'National Scholarly Book Publishers Forum Best Practice for Peer-Review of Scholarly Books'. The book proposal form was evaluated by our Social Sciences, Humanities, Education and Business Management editorial board. The manuscript underwent an evaluation to compare the level of originality with other published works and was subjected to rigorous two-step peer-review before publication by two technical expert reviewers who did not include the author and were independent of the author, with the identities of the reviewers not revealed to the author. The reviewers were independent of the publisher and author. The publisher shared feedback on the similarity report and the reviewers' inputs with the manuscript's author to improve the manuscript. Where the reviewers recommended revision and improvements, the author responded adequately to such recommendations. The reviewers commented positively on the scholarly merits of the manuscript and recommended that the book be published.

Research justification

This scholarly publication focuses on information technology (IT) investments within both private and public health care sectors. It addresses the intricate challenges associated with aligning IT initiatives, delivering value and ultimately realising returns on IT investments. The book sheds light on the pressing necessity for rigorous scientific inquiry into the role of IT governance in enhancing health care service delivery in South Africa. The current research holds relevance across the dimensions of technological innovation, health care provisioning and governance. The central aim of this work is to comprehensively examine the hurdles faced during the implementation of IT governance. By examining IT governance practices through the perspectives of both IT and business decision-makers within the private and public health care domains, the book makes a noteworthy contribution to discussions on technological innovation in service delivery, encompassing both private and public sector viewpoints. Throughout its analysis, the book considers contextual factors such as the environment, organisational dynamics and IT governance, all of which can potentially impede effective governance processes. This book emphasises the substantial influence of organisational factors as impediments to successful IT governance. It demonstrates how health care organisations' perceptions and approaches to IT governance significantly shape the trajectory of IT governance endeavours. This interdisciplinary research offers fresh insights into the implementation of IT governance, particularly within the context of developing economies characterised by resource limitations. The target audience of this scholarly work is researchers and academics in the field of IT governance applied to business and health care management, especially from a societal vantage point. The research methodology employs an exploratory sequential mixed-methods approach, commencing with the analysis of qualitative data and subsequently building upon these findings in the ensuing quantitative phase. This research book represents a substantial, more than 50% reworking of Mangundu, J 2017, 'An evaluation of the inhibitors of IT governance: Implementation in private and public health care in South Africa', PhD thesis, University of KwaZulu-Natal, Durban, South Africa, submitted in fulfilment of the requirements for the degree Doctor of Philosophy in Information Systems & Technology, University of KwaZulu-Natal, South Africa, under the supervision of Prof. Dr R Klopper and Mr K Naidoo. The author declares that this book constitutes original knowledge, is not published elsewhere and is not plagiarised.

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Contents

Abbreviations and acronyms, figures and tables appearing in the text and notes

List of abbreviations and acronyms

CAQDAS	computer-aided qualitative data analysis system
CD	compact disc
CFO	chief financial officer
CIO	chief information officer
COBIT	Control Objectives for Information and Related Technologies
COO	chief operations officer
DoI	Diffusion of Innovations
FDI	foreign direct investment
GEIT	governance of enterprise information technology
HISs	health information systems
ICTs	information and communication technologies
IP	intellectual property
IS	information system
ISACA	Information Systems Audit and Control Association
IT	Information technology
ITG	information technology governance
ITGI	Information Technology Governance Institute
ITIL	Information Technology Infrastructure Library
ITO	information technology outsourcing
NSDA	Negotiated Service Delivery Agreement
OPEE	Optics, Photonics and Energy Engineering
PoPIA	*Protection of Personal Information Act 4 of 2013*
PWC	PricewaterhouseCoopers
RACI	responsible, accountable, consulted, informed
ROI	return on investment
TAM	Technology Acceptance Model
TOE	technology-organisation-environment
UKZN	University of KwaZulu-Natal

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Biographical note

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John Mangundu has a Doctor of Philosophy (PhD) in Information Systems and Technology. His defined areas of specialisation are information technology (IT) governance, cybersecurity and information and communication technologies (ICTs) in education. Mangundu has published various peer-reviewed papers in his areas of specialisation. Among these titles is another publication regarding IT governance, 'Information communication technology governance practices in universities: A case study of a university of technology in Durban, South Africa'. In addition, Mangundu has published research on technological innovations in higher education and how they impact different stakeholders. His peer-reviewed journal publications report on social media use in teaching and learning, challenges to e-academic advising, readiness for online multimodal teaching and academic integrity violation in e-assessments. In addition, John Mangundu has presented various research papers at national, regional and international research conferences. Mangundu has thirteen years of lecturing experience gained between Zimbabwe and South Africa. Mangundu was lecturing at the University of the Witwatersrand (Wits) at the time of publication.

Preface

The South African health care sector is antagonised by a multitude of challenges, notably fragmentation and lack of coordination among health care information systems, the preponderance of manual systems, the absence of automation and the lack of interoperability across various health care information systems where automation exists. Additionally, significant capital was spent on health information systems that ultimately failed to yield the anticipated business benefits. As the prosperity of every economy depends on the health of its workforce, the main objective is to deploy information systems that add value to the delivery of health care services.

This multidisciplinary study explores and focuses on information technology (IT) governance implementation drivers, implementation strategies, implementation challenges and IT governance performance. An interpretive exploratory sequential mixed-methods approach was adopted, characterised by mixing qualitative and quantitative techniques, methods and approaches. Research instruments included semi-structured interview guide and a closed-ended survey questionnaire. Data were collected from business and IT decision-makers within private and public health care, including chief information officers (CEOs); IT governance officers; IT decision-makers; business decision-makers; board members; IT and IT governance committee members; governance, risk and compliance committee members; hospital CEOs; finance managers; human resources managers; nursing managers; and medical managers. Semi-structured interviews and the closed-ended questionnaire probed for participants' experiences of IT governance implementation in health care in South Africa. Qualitative and quantitative data were separately analysed using the ATLAS.ti (version 8) and Statistical Software Package for the Social Sciences (SPSS; version 25), respectively. Results from the qualitative phase enabled the refinement of the survey questionnaire. In addition, results from each strand were combined at the data collection and at the data analysis and interpretation points. Conclusions and recommendations were made for respective stakeholders in line with the study findings.

The exclusive addition to the body of knowledge was the uncovering of hidden sentiments of health care business and IT decision-makers on IT governance practices in private and public health care in South Africa. The study findings are expressed as an integrated final refined theoretical

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framework comprised of key constructs and their correlations. Participants emphasised that, certainly, internal organisational imperatives and pressure points drove IT governance implementation. They explained that the external environment had little or nothing to do with enforcing IT governance implementation in health care. Quantitative results reveal that despite the qualitative findings demonstrating that IT governance is implemented through structures, processes and relational mechanisms (Mangundu 2017), studied organisations are currently implementing IT governance through structures and processes only. Relational mechanisms are not part of IT governance initiatives in the organisations studied. Participants alluded to the fact that relational mechanisms are not of a higher order in IT governance initiatives and are given attention after structures and processes have been fulfilled. A composite category was supported that the inhibitors are purely organisational context factors. Results further proved that there is no correlation between external inhibitors and organisational inhibitors, proving the fact that organisations independently hold strong forces against IT governance implementation, that is, independently from the business environment in which they operate. Despite IT governance performance being measured in private health care, public health care does not measure IT governance, and clearly, IT is far from meeting intended business objectives in public health care. In addition, private health care showed a strong appreciation of their intended IT governance outcomes, together with the influence that IT governance has had on the outcomes. However, results reveal that IT governance is far from reaching intended performance.

It is therefore crucial that IT decision-makers and IT governance practitioners understand the problem contexts before they embark on IT governance initiatives. Knowledge of the organisation's position and needs reduces the complexity of the implementation of IT governance in that they would focus on the most important implementations in line with their organisations. In addition, IT governance as an innovation does not bring with it inhibiting factors. A pragmatic, realistic approach to IT governance is needed for successful implementation. In addition, there is no 'one size fits all' when it comes to IT governance, as the contexts are different. Thus, organisations should analyse and select the best controls for the organisation and not mainly target the highest IT governance maturity. Pragmatism reduces the complexity and the associated costs, enabling organisations to smoothly promote IT governance.

Chapter 1

Overview and background of the study

Introduction

This study is multidisciplinary as it cuts across the fields of information technology (IT), governance and health care. The book aims to explore IT governance practices and associated implementation inhibitors in private and public health care. The scholarly contribution from this inquiry affords new insights for advancing IT governance implementation and associated maturity in South Africa, especially in the private and public health care sectors. This chapter begins with an overview and the background that informs the study, the problem statement, the research questions and objectives. In addition, it includes the study's aims, the study's justification and the study's relevance.

Background and context

The delivery of health care services to individuals and the creation of jobs are important functions of health care organisations in any economy. Well (2007, p. 2) contends that excellent health care plays a crucial role in promoting economic growth, wealth and advancement. These research findings support investing in a nation's health care industry. Adopting information and communication technologies (ICTs) is the main tactic used by businesses in South Africa to promote growth and accelerate

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economic development, regardless of their economic category. Information technology is seen as a significant 21st-century economic development accelerator, according to the Information Technology Governance Institute (ITGI 2001, p. 1). The development of a nation's productive capacity across all economic sectors depends on ICT, which also links a nation to the global economy and promotes competitiveness. Scholars have linked economic performance to foreign direct investment (FDI), the level of IT investments and various other factors, and they have particularly documented them to have a direct impact on economic growth in developing economies such as South Africa (Dunne & Masiyandima 2017, p. 403; Hassan 2005, p. 1). Information and communication technology is fundamental to creativity, wealth development and invention (Hassan 2005, p. 1). Furthermore, ICT offers opportunities for global integration while maintaining the identity of traditional societies, and it improves the effectiveness, efficiency and transparency of the private and the public sectors, all of which help to reduce poverty, increase productivity and provide new economic opportunities.

To gain or maintain a competitive edge, organisations, regardless of the economic sector they fall into, are investing a significant amount of money in ICT. According to Gartner (2022, p. 1), spending on corporate IT worldwide was expected to exceed US$4.8 trillion in 2023. In 2022, the total IT spending in South Africa was recorded at US$14.59 billion, an increase of 6.3% from the previous year (2021). As ICT is seen as a crucial component in advancing corporate strategy and achieving organisational goals, substantial funding has been directed towards IT investments and is estimated to reach US$3.2tn by 2025 (UN 2021, p. 4). Information technology evolved from merely serving as a support role to serving as a strategic tool for enhancing business competitiveness (Lee & Setiawan 2013, p. 118). The increase in IT investment demonstrates how seriously businesses are investing in ICT.

In view of the above, health care organisations, like other modern organisations, are progressively utilising IT and have grown to rely entirely on it for success. They also recognise that IT has evolved into a crucial strategic instrument (Lazic, Heinzl & Neff 2011, p. 1; Lee & Setiawan 2013, p. 1). Health care organisations are being forced to establish strategic information systems in their drive to deliver better and more efficient health care services because IT has shown to be a crucial benefit and tool in implementing business strategies (Jiandong & Hongjun 2010, p. 48). Health care information systems have measurable financial returns and advantages (AbuKhousa & Al-Qirim 2012, p. 1) which lead to improved service quality and cost reductions (Tsiknakis & Kouroubali 2009, p. 40). PricewaterhouseCoopers (2012, p. 8) confirmed earlier proponents by

highlighting how increased IT spending has led to more functional and enhanced health care services through artificial intelligence and virtual health care systems.

For the delivery of health care services, both public and private sector health care organisations are becoming more reliant on IT (Van Grembergen & De Haes 2018, p. 4877; UN 2021, p. 4). Resultantly, the health care sector is one of the top industries for IT capital spending because of the continued investment in IT (AbuKhousa & Al-Qirim 2012, p. 1). The use of IT, however, has also exposed health care organisations to new risks in addition to the financial advantages it has provided. The postulation that IT benefits are incontrovertible post-adoption of a certain innovation is the litmus test for the concerned organisations (Baker 2012, p. 3; Jokonya 2014, p. 2). Kurkinen (2013, p. 468) maintains that it is still difficult for many organisations to get the desired benefits from IT, which is characterised by complicated decision-making pertaining to the procurement and use of such IT systems. After making significant financial commitments, many IT efforts have reportedly failed. The public and the private sectors continue to invest in IT despite the high rate of IT projects and investment failures (McManus & Wood-Harper 2007, p. 1). As a result, numerous IT governance frameworks, standards and solutions have been developed. Recently, IT governance practices have been cited as the remedies to IT initiative failures. Although these frameworks are available, low IT governance implementation rates are still acknowledged, which prevents many organisations from realising the benefits that they could.

Although organisations spend a significant portion of their capital budgets on IT (Bloem, Van Doorn & Mittal 2005, p. 16; Maizlish & Handler 2005, p. 6), achieving value and improving business performance have been highly challenging. McAfee (2004, p. 18) reported that IT adoption, implementation and management decisions are still difficult and complicated, which leads to the waste of enormous amounts of money on poor IT investments. The health care industry is frequently accused of having difficulty making IT decisions, which leads to impulsive and careless technology purchases. (Rothenberg & Korn 2005, p. 1). For the bulk of health care organisations, achieving actual benefits, value and returns that justify IT capital commitments remains a pipe dream (AbuKhousa & Al-Qirim 2012, p. 1). Few health care organisations are reported to be aware of how dependent their operations are on IT resources or how much IT influences the creation and accomplishment of organisational goals and objectives. For example, Maizlish and Handler (2005, p. 41) empirically argued that of the 28% of IT projects that were successful, more than 45% were over budget and 68% were completed in overtime. More than 70% of these initiatives failed to work as intended, ran over budget or failed to meet deadlines. The Standish Group's (2004,

p. 2) report echoed the same sentiments as Maizlish and Handler (2005, p. 41) and reported that all IT initiatives that had a success rate of 29% lend credence to this.

In line with the aforementioned problems, Trudel, Paré and Laflamme (2012, p. 2) attributed IT project failures to ill-informed IT acquisition decisions and the rising complexity of IT systems. Haux (2006, p. 268) confirmed that in the health care industry, issues such as a lack of experienced workers, poor project management techniques, uneven IT budget distribution, shaky IT operational management, a lack of data protection and security management, and a lack of IT strategy and leadership were frequently noted. As a result, most IT initiatives in this industry were reported as either struggling or being completely unable to deliver expected business value (Larsen 2008, p. 9). Heeks (2006, p. 127) further estimated that 33% to 66% of IT initiatives in health care were relatively producing the desired results and that 20% to 25% of IT initiatives were completely failing. Attending to the real root cause, besides the characteristics of these shortcomings, one may note that the main stumbling blocks to successful health care information systems development and implementation are closely linked and attributed to complications of IT decision-making, uninformed IT decision-making and weak IT governance practices (Van Grembergen & De Haes 2009, p. 123).

Effective IT governance is essential to ensure that IT investments lead to the fulfilment of organisational objectives and the delivery of the anticipated value because of the complexity in making IT decisions and the significant portion of capital investment consumed by IT efforts (McKay, Marshall & Smith 2003, p. 956). According to Jacobson (2009, p. 1), businesses with mature, efficient IT governance enjoy greater economic value and benefits from their IT investments than their competitors. Even when they employed the same business strategy, organisations employing effective IT governance witnessed returns on their investments that were 20% greater than those with poor IT governance (Weill & Ross 2004a, p. 14). Lingyu et al. (2010, p. 431) further assert that businesses with average IT governance performance may witness a 20% increase in returns on their IT investments. Superior IT governance procedures lead to improved IT outcomes, according to Wu, Straub and Liang (2015, p. 498). In another study, Simonsson (2008, p. 11) emphasised that credible IT governance supports making sure IT improves business strategy and goals, maximises business investments in IT and makes sure IT risks and opportunities are managed effectively. Resultantly, greater IT performance contributes to improved organisational performance (Tonelli et al. 2017, p. 1; Zhang, Zhao & Kumar 2016, p. 357). The aforementioned scholarly arguments scientifically show the crucial function that IT governance has in contemporary organisations.

High IT investment costs, high IT initiative failure rates, especially in the health care industry, and the significant impact that IT investments and decision-making activities have on organisational prosperity (Devaraj & Kohli 2003, p. 274) – in addition to increased external pressure from stakeholders to manage and keep track of costs – make it clear why effective IT governance is proposed as a key course of action to ensure that IT investments provide expected returns (Jacobson 2009, p. 2). As a result of the need to govern IT investments, significant effort has gone into designing and formalising of different IT governance standards, frameworks, and solutions. Globally, various frameworks have been proposed, including Control Objectives for Information and Related Technologies (COBIT), Information Technology Infrastructure Library (ITIL), ISO/IEC 20000, and ISO/IEC 27001. In South Africa, the King III Report addressed the topic of IT governance for the first time in 2009, and it is advised that most South African organisations follow the report's recommendations. Nevertheless, studies demonstrate that only a relatively small number of organisations have embraced such well-designed IT governance principles, frameworks and solutions (ITGI 2011, p. 3). There have also been reports of low IT governance implementation across the globe and difficulties with the effective application of IT governance have also been found in developed nations (Fairchild 2004, p. 1; Fox, Ward & O'Rourke 2006, p. 316; Weill & Woodham 2002, p. 2). Observations have been made and reported that effective IT governance frameworks and solutions are being adopted at even lower rates in developing economies (ITGI 2008a, p. 5).

Research problem

Concerns regarding IT governance issues have been raised during telephonic conversations with some IT decision-makers and leaders in South African private and public health care sectors. Problems of high IT project failure rates, high IT investment costs and IT investments that either partially or completely achieve desired business objectives are only a few of the concerns identified. Some IT decision-makers claimed that the complexity of IT decision-making procedures was the root cause of these issues (IT governance). For example, the then-Minister of Health, Dr Aaron Motsoaledi, stated in a speech in 2012 that (National eHealth Strategy South Africa 2012):

> [*T*]he health information systems in South Africa have been characterised by fragmentation and lack of coordination, prevalence of manual systems and lack of automation, and where automation existed, there was a lack of interoperability between different systems. (p. 9)

Furthermore, the minister alluded that 'Significant financially backed resources were also invested in these systems, which ultimately did not

yield the anticipated returns on investment' (National eHealth Strategy South Africa 2012, p. 9). The problems of interoperability of the eHealth care systems are further highlighted in the National Digital Health Strategy for South Africa (Department of Health 2019–2024, p. 14).

Despite significant investments over the years in the purchase of health information systems (HIS) in South Africa, according to the Negotiated Service Delivery Agreement (NSDA) (2010–2014), ICTs and the HIS within the health care system were not living up to expectations of improving business processes within the health care sector. The health care system was unable to produce sufficient data and information to management for performance monitoring for the evaluation of the national health care system, according to the NSDA's study (National eHealth Strategy South Africa 2012). The absence of technological rules and regulatory frameworks in the implementation of ICT infrastructure (IT governance) has been blamed for these issues.

Regardless of a multitude of such IT governance problems, there is a dearth of studies that investigate and provide reports on IT governance in the health care industry (AbuKhousa & Al-Qirim 2012, p. 2). This circumstance necessitates research on the issues inhibiting the adoption of IT governance frameworks and standards. Given the aforementioned IT and IT governance problems, it became essential to undertake a study to ascertain the existing state of IT governance implementations in South African private and public health care sectors, as well as the challenges they are facing and how effective IT governance may be promoted in South Africa. Scholarly enquiry and comprehension of the implementation challenges that the health care industry is facing become essential to recommend strategies for improved IT governance. The goal of this study is to determine the drivers for IT governance in the South African health care industry and implementation strategies, with special attention to the implementation inhibitors.

Aims and objectives of the book

The aim of the book is to determine IT governance practices and inhibitors to their implementation in private and public health care in South Africa.

The objectives of the book are:

- To determine the drivers of IT governance in South African private and public health care sectors.
- To determine IT governance practices being implemented by South African private and public health care sectors.
- To establish the inhibiting factors to the successful implementation of IT governance in private and public health care sectors in South Africa.

- To determine IT governance performance in South African private and public health care sectors.

Research questions

The research questions are:

- What are the drivers for IT governance implementation in South African private and public health care sectors?
- How is IT governance being implemented in South African private and public health care sectors?
- What are the inhibiting factors to the successful implementation of IT governance in the private and public health care sectors in South Africa?
- How is IT governance performing in South African private and public health care sectors?

Study justification

The study assists South African health care sectors in implementing IT governance more effectively, allowing them to get more value out of their IT projects and investments. The study of inhibitors is essential because, once they are recognised, their effects can be understood and remedied. The South African Department of Health will have the ability to create new regulations or change existing ones to support improved IT value delivery and reduce IT risks. Without conducting the analysis, organisations might keep making poor IT investment decisions that can result in governance scandals, adversely affect health care service delivery and hamper economic growth.

The importance of the study

In many organisations, achieving sustainable IT benefits is still a difficult task, and there are not many in-depth studies on IT governance (Jokonya 2014, p. 6). The body of literature reveals some knowledge gaps and inequities in relation to the organisational barriers to IT governance. Therefore, it is crucial to comprehend the barriers to enhance intervention strategies in the field of IT governance. To the best of the researcher's knowledge, this book will be the first to identify obstacles to IT governance implementation as well as to suggest and advocate solutions to these inhibitors in the South African health care industry. Given that IT governance is still a relatively new concept in the health care industry, it is to be expected that health care organisations have little expertise on this phenomenon. This book aims to add to the limited knowledge among academics and practitioners by extending this knowledge by supplying insights into drivers of IT governance and its implementation barriers using the technology-organisation-environment

(TOE) framework. Additionally, academics and researchers will have access to literature for future studies in the field of IT governance, particularly in the health care industry of a developing nation.

Study limitations

The study's principal limitations related to the study's participants, who were decision-makers in business and IT who held strategic positions. These participants struggled to be available for participation because they were under pressure from their organisational businesses. Even if their opinions might not accurately represent those of the initially targeted respondents, the solution was to identify and solicit input from those second in line of power. The fact that only two of the nine South African provinces were used to choose the study organisations and their associated hospitals meant that they could not be taken to represent South Africa as a whole. However, study findings are applicable to comparable settings within southern Africa and beyond.

Ethics-related matters

A two-step ethical approval process was followed before and during the data collection phase of the study to ensure informed consent, confidentiality, and anonymity were upheld. The University of KwaZulu-Natal approved the study, which required and received ethical approval and was permitted by a clearance certificate (HSS/0102/015D). The researcher then applied to the Department of Health and the private health care organisation research committees for ethical clearance letters, which were successfully obtained. The submission of the research proposal, university ethical approval and letters from the research leaders all helped to speed up the procedure. The researcher then went on to ask gatekeepers for permission to collect data after getting the organisations' ethical clearance letters. As a result, consent letters were signed to demonstrate informed consent for the study. The researcher had to get permission from the interviewees in order to record the interviews. The data were exclusively utilised for research purposes, and all essential security precautions were taken to keep it safe and prevent it from falling into the wrong hands. The organisations are identified by pseudonyms in accordance with the request for anonymity made by the participating organisations.

The structure of the book

The book is divided into logically interconnected chapters to strategically address the research issues and realise the targeted study objectives. As such, the book is organised into eight chapters as follows:

Chapter 1: Problem formulation and research plan

The book's introduction is discussed in Chapter 1, along with the research problem that gave rise to the need for the scholarly work. In addition, the research objectives, research questions, the research topic and its subproblems are discussed.

Chapter 2: Literature review

The literature discussion provides an evaluation of prior scholarly work in the field of IT governance as well as relevant prior research on the various IT governance topics under discussion. The literature review begins with a broad overview before focusing more closely on the fundamental issues raised by the most recent research. The first section examines enterprise governance before funnelling down to its branch of corporate governance and finally to IT governance. The second section reviews the drivers that influence IT governance, IT governance implementation, the implementation inhibitors and IT governance performance, through scanning and discussion of related prior studies. The chapter also provides a detailed explanation of the book's theoretical underpinnings. Accordingly, different theories are unpacked, and the pertinent theories deemed most suitable to guide the scholarly discussion of the phenomenon in the book are provided together with their reasoning. The pertinent theories are applied to construct an initial conceptual framework that directs this scholarly inquiry while providing alignment of the steps in this scientific enquiry.

Chapter 3: Philosophical grounding and philosophical assumptions

The theoretical grounding chapter discusses the fundamental moulds that give rise to a valid research and suitable research methods.

Chapter 4: Research methodology

The scientific study design and methodology used to answer the research questions are discussed in the research methodology, along with the justification of the methodology used. The steps for data-gathering and analysis are also specified and discussed.

Chapter 5: Coding qualitative data and qualitative findings

Data have little to no value if they are not meaningfully extracted, necessitating the use of scientific methodologies to address the study questions. Primary codes from the problem statement and the research

questions were used to code the data. Ideas and themes derived from the data were coded using inductive and deductive methods, and other findings from the literature review supported those findings. This chapter presents qualitative findings.

Chapter 6: Analysis of quantitative data and quantitative findings

Phase 2 of the research's data collection involved an online survey. To derive significance from the responses, statistical inferences were made on the data. This chapter discusses the quantitative data analysis and quantitative findings.

Chapter 7: Integrated results

To derive meanings and scholarship from the research, both qualitative and quantitative findings are examined in this chapter. Discussions are held and useful ideas are found that can enlighten organisations about the IT governance phenomenon and make contributions to the field. Based on the empirical data gathered and analysed, the research framework is refined.

Chapter 8: Conclusions and recommendations

The chapter presents the researcher's findings, which were derived from those found in Chapters 5, 6 and 7. The results' ramifications for the Department of Health and the private health care industry are outlined to help them promote IT governance and derive maximum benefits from their IT investments. In addition, limitations on the current research, recommendations and prospects for future research are discussed.

Book input

The book's main contribution is to examine implementation inhibitors to IT governance to create and validate recommendations to overcome the associated barriers and promote improved IT governance in private and public health care sectors.

Conclusion

This chapter emphasises the value of IT to organisations. The chapter goes on to discuss the difficulties that come with IT projects in health care and the need for IT governance to get the most out of such IT investments.

Regardless of the availability of frameworks, standards and solutions for IT governance implementation, the chapter observes that its uptake is still limited. The low implementation status of IT governance made it imperative to investigate the causes of this to make suggestions for change, which is the aim of this book. The chapter also supports the approach for validating the inhibitors to assist organisations in solving them and enhancing IT governance. A survey of the literature on IT governance implementation is presented in the following chapter.

Chapter 2

Theoretical Perspectives

Introduction

The research problem, research questions and study strategy were discussed in the previous chapter. As a starting point, this chapter offers a thorough and insightful survey and discussion of IT governance and related literature. Through investigation of the implementation of IT governance domain, the procedure makes it easier to refine the research questions. The literature review gives the researcher the opportunity to study and identify problems and the research gap in the domain of IT governance implementation. By using WORDLE to extract essential ideas from the problem statement, the literature review is facilitated.

The literature discussion is crucial for comprehending the IT governance issue from a wider perspective, including various countries, economic sectors and business environments. A wider perspective is essential to fully comprehend the drivers for IT governance, implementation strategies, inhibitors and performance. The literature review is organised thematically, with each theme within the subject matter being methodically examined separately before being addressed together. Firstly, by examining the conceptual ideas relevant to corporate governance and enterprise governance, an assessment of the major challenges surrounding the governance phenomenon under research is conducted. Secondly, the research questions are used to direct a focus-limiting process to address

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studies that relate to this study, with an emphasis on IT governance, IT governance drivers, IT governance implementation strategies, IT governance inhibitors and IT governance performance.

The literature review serves several purposes. Firstly, readers are informed of the findings of earlier investigations that are relevant. Secondly, the literature review process links the present research to an ongoing discussion around the phenomenon and identifies and contributes to the gap by building upon and expanding earlier findings (Marshall & Rossman 2014, p. 86). The study's relevance is established, and a standard for findings' discussion in relation to relevant earlier findings is made possible. The literature review achieves several goals, including incorporating what other scholars have said and done, criticising prior work, building connections between related topics and identifying key challenges in the study field (Okoli & Schabram 2010, p. 1).

The organisation of this chapter is as follows: The method of a literature review is covered in the first section. The sections that follow examine additional topics connected to IT governance, such as enterprise governance, business governance, corporate governance, the connection between corporate governance and IT governance, and finally, a discussion of previous scholarly work related to this study.

Process of a literature review

Utilising ATLAS.ti, a computer-aided qualitative data analysis system (CAQDAS), the researcher carried out the literature review. To understand the articles' relevance to this study, codes were initially established by analysing numerous abstracts and introductions of various IT governance research studies. Following the first analysis of the papers' abstracts, the researcher created codes for the literature reviews, research methodology and results portions of the publications that were determined to be pertinent.

It took organising, reading and analysing previous research papers and materials to get a full picture of the literature relevant to the IT governance sector. According to the location of the research study, research papers and documents were categorised, such as local, regional and international scholarly publications. Additional classifications were formed based on the locations of the prior studies, such as developed or developing nations. By identifying research gaps around IT governance, the research question was refined and further developed. A preliminary list of IT governance structures, processes and relational mechanisms,

and an initial list of IT governance facilitators and inhibitors were all revealed. Renner, Müller and Theissler (2022, p. 1896) outlined the following procedures for finding and conducting a review of the literature: (1) identify important terms to employ in the research; (2) locate literature about a topic by reviewing multiple forms of material and databases; (3) select and critically assess the literature for review; (4) sort the chosen literature; and (5) compose a literature review that presents literature summaries.

Additionally, studies that are pertinent to the current investigation and are directly related to it were reviewed. Results from studies conducted internationally, regionally and nationally that covered the domains were critically analysed and arranged in accordance with the goals of the study. To examine and contrast the approaches, shortcomings and strengths in their study techniques and conclusions, comparable studies were grouped together by topics. A justification for the current investigation was finally provided by the identification of the gap in the literature and connections between earlier studies on the phenomenon.

Enterprise governance

Enterprise governance, according to the Information Systems Audit and Control Association (ISACA 2014, p. 7), is a series of responsibilities and procedures carried out by the board and executive management with the objectives of giving strategic direction, ensuring that objectives are met, ensuring that risks are handled effectively and confirming that the company's resources are used responsibly. Corporate governance and company governance fall under the broad category of enterprise governance. Business governance focuses on performance, whereas corporate governance primarily focuses on conformity, which takes a historical perspective. Enterprise governance concerns cannot be understood without taking IT into account because businesses heavily rely on it. Information technology governance is further driven by enterprise governance (ISACA 2014, p. 2). As a result, IT governance is an essential component of the larger organisational governance rather than existing as a separate endeavour.

Business governance

The performance aspect of the organisation is the main emphasis of business governance. Business governance places a strong emphasis on strategy and value creation, as well as on assisting the

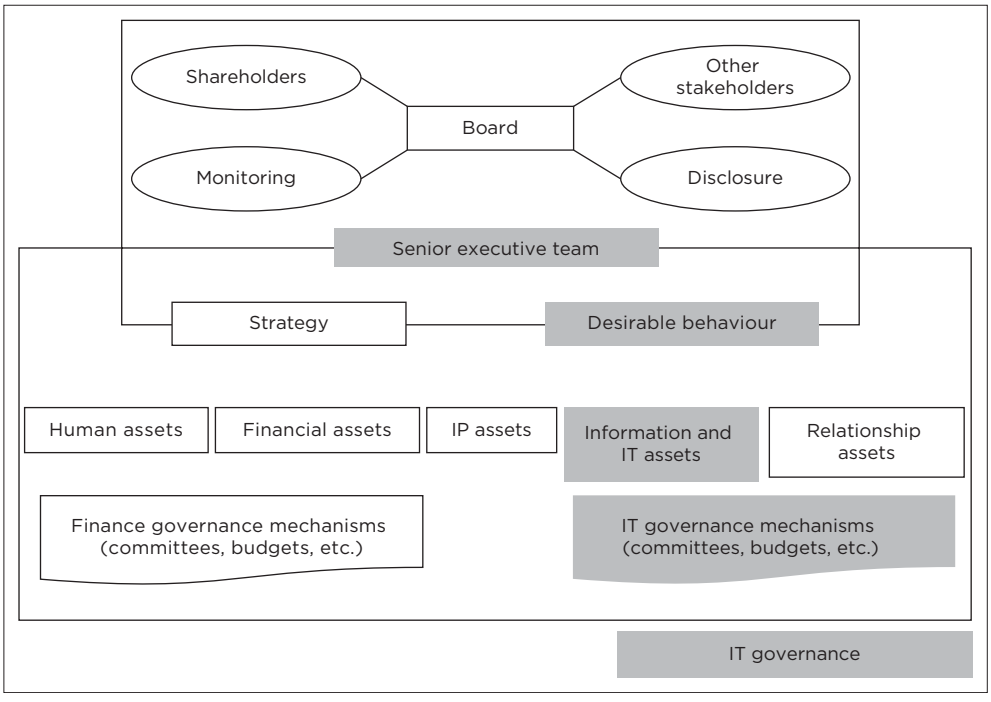
board in making strategic decisions, comprehending its risk appetite and key performance drivers, and identifying its key decision-making points, according to ISACA (2014, p. 7). Business governance, unlike corporate governance, lacks specific oversight structures like audit committees.

Corporate governance

The connections and mechanisms that influence a company's performance and direction are referred to as corporate governance (Goosen & Rudman 2013, p. 835). It is described as a situation where others can successfully perform their jobs by Sohal and Fitzpatrick (2002, p. 97). Organisational policies, structures and management procedures are included in this (Schwarz & Hirschheim 2003, p. 130). Corporate governance, also known as compliance, according to ISACA (2014, p. 7), deals with matters pertaining to the structure and makeup of the board, as well as its tasks and obligations, as well as executive compensation. Well-established supervision procedures for the corporation can help to foster good corporate governance. The challenge of developing mechanisms and frameworks to enable effective and efficient use of organisational resources for generating stakeholder value is central to all definitions of corporate governance. The definitions place a strong focus on accountability, authority and the decision-making processes.

Relationship between corporate governance and information technology governance

The focus of IT governance is on the corporate governance framework's parts that are related to IT (Kan 2003, p. 2). Young, Ridley and Carroll (2014, p. 239) suggest that IT governance is merely one aspect of corporate governance, which supports Kan's (2003) claim. The idea that IT governance cannot be administered independently from corporate governance was alluded to by Wu, Straub and Liang (2015, p. 498) and Exler (2003, p. 1), who emphasised that the outcomes may be disastrous when IT and corporate governance go awry. This study demonstrates how relevant an element of overall corporate governance and IT governance is. Weill and Ross (2004a, p. 5) strengthened earlier claims in their study by creating a framework to provide evidence of the connection between corporate and IT governance. This relationship is shown in Figure 2.1, which was taken from Weill and Ross (2004, p. 5) and mentioned by ISACA (2014, p. 8).



Source: Weill and Ross (2004, p. 5).
Key: IP, intellectual property; IT, information technology.

FIGURE 2.1: Relationship concerning corporate and information technology governance.

Governance of information technology

Over the past ten years, a variety of arguments have been made on IT governance. For example, Van Grembergen (2004, p. 4) defines IT governance as the organisational power used by the board, executive management and IT management to oversee the development and execution of IT strategy and, in so doing, guarantee the alignment of business and IT. Under the same token, Weill and Ross (2004, p. 2) argue that IT governance is defining the framework for responsible decision-making and accountability to promote desired IT use behaviour. The propositions made by ITGI (2003, p. 10), Van Grembergen (2004, p. 4) and De Haes and Van Grembergen (2015, p. 2) that IT governance, which is a crucial component of enterprise governance, consists of organisational and leadership structures and procedures that guarantee the organisation's IT sustain and support its strategy and goals converge and are generally accepted.

Lee and Lee (2008, p. 47) comprehensively divided the three views that they used to summarise their literature review study on IT governance into decision-making authority and accountability, business and IT strategic

alignment, and organisational relationships. The initial perspective emphasises IT governance as a focal point for decision-making in organisations, outlining the roles and responsibilities of various stakeholders in IT-related choices. The arguments of ITGI (2003, p. 10), Peterson (2003, p. 37), Simonsson and Ekstedt (2006, p. 18) and Weill and Woodham (2002, p. 1) are in alignment and support Lee and Lee's first assertion. The succeeding perspective that focuses on the objective of realising strategic alignment concerning business and IT is supported by Van Grembergen (2004, p. 7) and De Haes and Van Grembergen (2015, p. 4). The ITGI (2003, p. 10) definition of IT governance as the duty of executives and the board of directors to provide direction, establish organisational frameworks and implement procedures that guarantee the organisation's IT supports and advances its strategy and goals lends support to Lee and Lee's third perspective.

There exists acknowledgement of various definitions of IT governance in the literature. However, they frequently focus on and converge on the location of IT-related decision-making rights and duties and emphasise on the need to achieve a strategic alignment between IT and business. The board of directors and management, who are solely responsible for its adoption and implementation, enable IT governance, which attempts to create a link between business and IT. Additionally, IT governance aims to guarantee the delivery of IT value (De Haes & Van Grembergen 2015, p. 6). Emphasis is given by Kan (2003, p. 2), who argues that IT governance enables the delivery of desired IT value for the long-term performance of the organisation, which is in line with previous propositions.

On a similar note, Symons (2005, p. 6) emphasises that risk connected with business is the same as risk related to the usage of IT and that it needs to be addressed, and risk mitigation is another crucial component of IT governance. As such, IT governance also encourages accountability. Peterson (2003, p. 41) promotes that IT governance is centred around IT decision-making rights and duties and supports the aspect of accountability. These sections discussed the background of IT governance in comparison to other forms of governance. The literature discussion provided evidence that no consensus exists on the definition of IT governance (Jokonya 2014, p. 21; Pereira, Almeida & Da Silva 2014, p. 4386). The following section presents and discusses some of the frameworks used by organisations in implementing IT governance as an innovation.

Standards and frameworks for information technology governance

To help organisations with their IT governance, management and accountability, several industry-specific IT governance frameworks and

standards have been created and are advised for use by organisations. Establishing and enhancing procedures and practices for efficient IT governance require a fundamental understanding of the frameworks, standards and practices, as well as the guiding ideas behind them (ISACA 2014, p. 9). The most popular framework for implementing IT governance is COBIT.

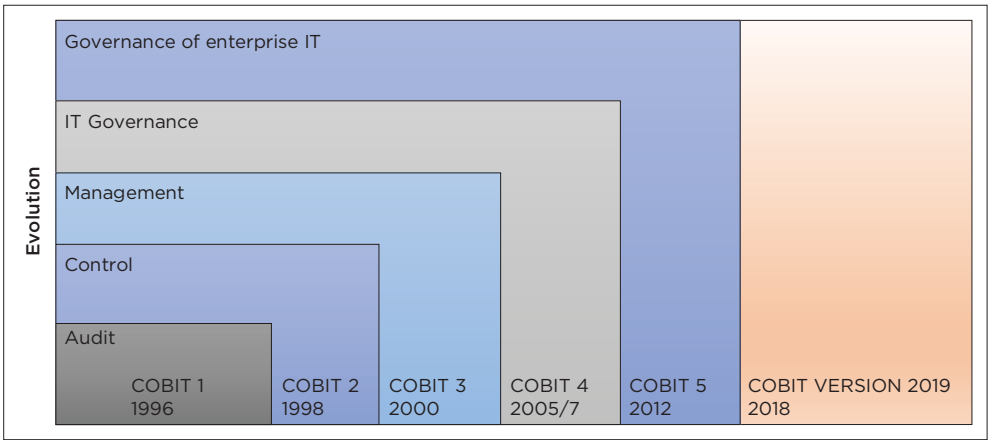
Control Objectives for Information and Related Technology

Developed by ISACA, COBIT is a comprehensive IT governance framework that aids organisations in achieving their IT governance objectives. Organisations may derive the most value from IT by maintaining a balance between benefits, risks and resource usage. The framework can be integrated with a variety of IT governance programmes, including ITIL. According to COBIT, corporate governance is a necessary component that guarantees that the needs, circumstances and options of stakeholders are assessed to determine the balanced, predetermined corporate objectives to be met, establishing direction through decision-making and prioritisation and keeping track of performance and adherence to the predetermined path and goals (ISACA 2012, p. 14).

The COBIT framework suggests 34 IT procedures in four categories, including organising and planning, purchasing and implementing, delivering and supporting, and monitoring (ITGI 2005, p. 2). Planning and organising address difficulties at the strategic level of the organisation, primarily concentrating on how IT can effectively and efficiently improve the accomplishment of strategic corporate objectives and goals. Acquisition and implementation largely address challenges related to the purchase, setup and integration of various IT systems and solutions with business operations. The scope of delivery and support includes concerns with service provision, IT system security, user onboarding training; and monitoring calls for independent audits of IT systems to find aberrations and offer ideas for improvement. It also entails managerial oversight of the organisation's control mechanisms. The COBIT framework is undergoing improvements and has iterated since its inception, as demonstrated in the following section.

Control Objectives for Information and Related Technology development

The COBIT framework was initially created in 1996, and the sixth edition of COBIT has subsequently been released. The sixth edition is an improvement over earlier iterations of the framework, and the evolution is depicted in Figure 2.2.



Source: Adapted from De Haes et al. (2020, p. 131).
Key: IT, information technology; COBIT, Control Objectives for Information and Related Technology.

FIGURE 2.2: Control Objectives for Information and Related Technology evolution.

Control Objectives for Information and Related Technology 5, released by ISACA in 2012, is one of many best practice frameworks that have been created and advocated for use by management in establishing IT governance. Control Objectives for Information and Related Technology affords a comprehensive framework that aids organisations in realising their goals for IT governance and management. By preserving a balance between paybacks, risk levels and resource utilisation, COBIT helps organisations get the most value out of their IT (ISACA 2014, p. 8). Control Objectives for Information and Related Technology is complemented by a wide range of other industry frameworks, standards and procedures. These include the Committee of Sponsoring Organizations of the Treadway Commission (COSO), ITIL and the International Organization for Standardization (ISO) 38500. The motivations behind organisations implementing IT governance are covered in the section that follows.

Although the aforementioned IT governance frameworks are available in the market, most of them have difficulties in their implementations (Teo, Wei & Benbasat 2013, p. 2). Prior to this, ITGI (2011, p. 2) and Zhang and Le Fever (2013, p. 391) noted that organisations continue to experience IT challenges despite the literature on IT frameworks being available as supported by Jokonya (2014, p. 20). Despite the usefulness of good IT governance standards, frameworks and solutions, studies show that just a small fraction of organisations really use such IT governance frameworks (ITGI 2011, p. 2). As expected, effective IT governance frameworks and solutions adoption has been shown to be even less prevalent in emerging nations (ITGI 2008b, p. 1). The motivations behind IT governance in organisations are covered in the section that follows.

Information technology governance drivers

Information technology governance drivers are factors that encourage businesses to implement IT governance. This is mandated by several IT governance drivers in the shape of numerous difficulties and opportunities (Hoving 2007, p. 147; Luftman & Kempaiah 2007, p. 129). Recognising IT governance drivers in the internal and external environment is essential given the constantly shifting business and economic situations (ISACA 2014, p. 10). The requirement for new and updated IT governance policies is determined by drivers, which are often known as pain points or trigger events. In their assertion that one model of IT governance is IT adaptation to tactical and environmental constraints, Schwarz and Hirschheim (2003, p. 131) reinforced this notion.

To aid organisations in adopting and implementing IT, several frameworks, standards, practices and solutions have been proposed. However, these frameworks and practices emphasise that how a practice is implemented will depend totally on the circumstances of the organisation. Numerous reasons may indicate the need for updated or new IT governance practices. However, given the heterogeneity of operating environments, no recommendation is made as to why, which and how practices should be chosen and implemented by concerned organisations (Lunardi, Becker & Maçada 2009, p. 2; Pereira & Mira Da Silva 2012, p. 343).

The need for new or updated IT governance procedures may arise as a result of pain points or trigger events, according to ISACA (2014, p. 10). Pain points are instances where a company suffers financial losses as a result of poor IT governance procedures. A pain point, for instance, is when a company is growing its IT spending but the benefits of that spending and the performance of that spending are not carefully considered or fully acknowledged. In a situation like this, where business and IT do not share the same perspective, it may be an indication that IT governance concerns are not being adequately addressed. When it comes to implementing IT governance, pain points are literally signs of bad IT governance practices.

Along with the pain points, other aspects of the internal and external environments of the organisation can draw attention to IT governance and motivate its implementation. The introduction of a new regulatory or compliance mandate, a merger, acquisition or divestiture are a few examples of what ISACA refers to as trigger events. An organisation might adopt a new business strategy, which might then affect how IT decisions are made. The claims made by ISACA are consistent with literature, which asserts that both external and internal challenges make the implementation of IT governance necessary (Xue, Liang & Boulton 2008, p. 70). Hoving (2007, p. 153) contends that numerous IT governance drivers in the form of varied difficulties and expectations demand IT governance adoption. Schwarz

and Hirschheim (2003, p. 131), however, reiterate that the IT response to strategic and environmental imperatives is one construct of IT governance.

ISACA (2014, p. 12) continue by stating once more that organisations should start by identifying the present IT governance pain spots or trigger events. The requirement for bettering or adopting new IT governance procedures is driven by these pain points and trigger events, which serve as IT governance drivers. The findings of earlier studies about the motivations for IT governance are discussed in the section that follows.

Prior research on drivers for information technology governance

For writing this book, several earlier works in the field of IT governance were evaluated. These studies were categorised in terms of international, regional and local scholarly work. In their governance survey of 168 different organisations in the public and private sectors, Guldentops, Van Grembergen and De Haes (2002, p. 34) claim that these organisations are driven by various factors such as reputation and conviction, regulatory compliance, performance enhancement, risk reduction, cost cutting, mission and goals, corporate values, competitive environment and external political or economic environment. They found that the fulfilment of higher-order needs, which decide the strategic direction of the organisations, is a driver for IT governance in their research organisations. According to other separate studies, organisations' deployment of IT governance is mostly motivated by the desire to comply with laws and regulations (De Haes & Van Grembergen 2006a, p. 3). De Haes and Van Grembergen highlighted several factors for IT governance in their pilot case research study on IT best practices in Belgian organisations. The most crucial one was that Belgian organisations must abide by Sarbanes-Oxley regulations.

The most important factor influencing the governance of enterprise information technology (GEIT) projects, according to a poll by ITGI (2011, p. 4), in *The Global Status Report on the Governance of Enterprise IT*, is making sure that the present IT functionality aligns with current business needs. Cost management was the second most mentioned driver. Following mergers and acquisitions, economic pressures and the urge to achieve economies of scale were additional significant drivers. The avoidance of unfavourable incidents, striking a balance between innovation and risk avoidance to further returns on IT investments, and, finally, compliance with industry and governmental rules were some other motivations that were noted. Both ITGI (2011, p. 4) and De Haes and Van Grembergen (2006, p. 3) concurred that the demand for IT governance is driven by regulatory compliance. However, the ITGI poll used a closed questionnaire, which does not allow for fresh perspectives. Respondents were only allowed to select

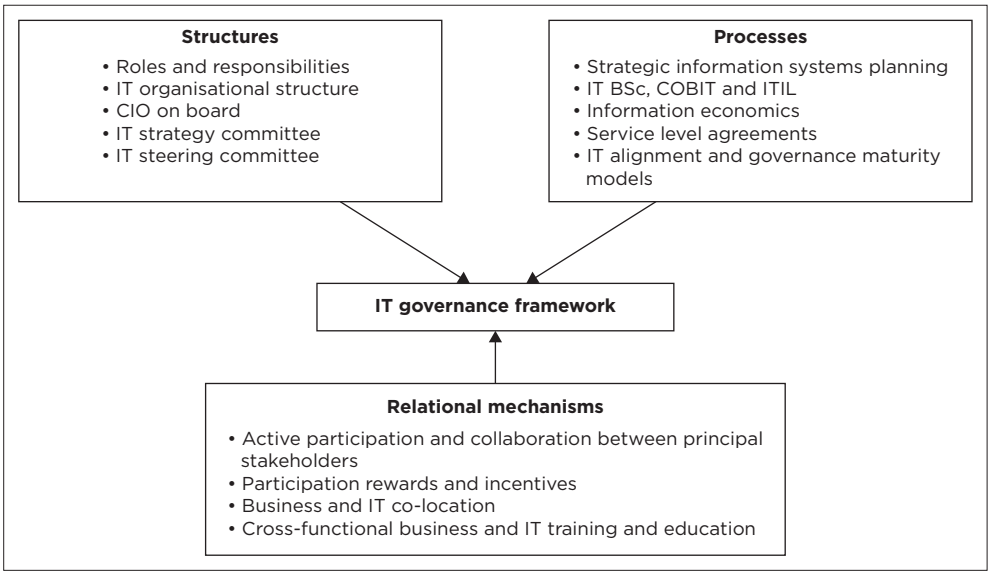
from the available alternatives. The survey's strength was that ITGI studied both government-owned and privately-owned businesses, as well as small and large businesses.

Additionally, an exploratory study by Wibowo and Yuwono (2008, p. 1), based on eighteen instances in Indonesia, shows that there are a number of variables that motivate Indonesian organisations to better manage their IT. Wibowo and Yuwono (2008, p. 6), while agreeing with De Haes and Van Grembergen (2006, p. 3), assert that the forces influencing IT governance include the free market and competition, shareholder and director pressure regarding accountability for significant IT investments, strict regulations, the need for accountability and transparency, pressure from business partners, and mergers and acquisitions. Despite the study being primarily qualitative, competition and market constraints seemed to provide a crucial urgency and motivation for stronger IT governance.

It is clear from an analysis of the studies on the factors influencing IT governance that adherence to external legal and contractual requirements predominates the research results. However, most of the research was conducted in developed economies, which can have different corporate operating settings than a developing nation like South Africa. Furthermore, literature, paradigms and methods fail to provide a straightforward and succinct documentation of these drivers. Each organisation operates in a context that is distinct from another; this context is determined by internal and external factors, including organisational culture, risk appetite and changing business strategies. As a result, each organisation needs its own governance framework (ISACA 2014, p. 45). The need for an investigation and formalisation of these driving forces (drivers) for IT governance implementation in private and public health care sectors in South Africa is pushed by the heterogeneity of organisational needs, such as the expectation that not all organisations implement IT governance for the same reasons. Following this explanation of the motivations behind IT governance, the following section discusses how organisations might put IT governance into practice.

Implementing information technology governance

Information technology governance implementation comprised of a variety of different structures, processes and relational mechanisms, as theorised in the literature by Peterson et al. (2002, p. 563), Peterson (2003, p. 37), Van Grembergen, De Haes and Guldentops (2004, p. 7), Weill and Ross (2004, p. 8) and De Haes and Van Grembergen (2015, p. 11). Figure 2.3 displays the framework. The development and position of the IT function, the presence of well-defined roles and tasks, and the variety of IT and



Source: De Haes and Van Grembergen (2015, p. 12).
Key: IT, information technology; CIO, chief information officer; BSc, Bachelor of Sciences degree; COBIT, Control Objectives for Information and Related Technology; ITIL, Information Technology Infrastructure Library.

FIGURE 2.3: Elements of information technology governance framework.

business committees are all examples of structures. The phrase structural (formal) devices and processes for linking and permitting horizontal, or liaison, interactions between business and IT management (decision-making) functions is used by Peterson (2003, p. 37) to describe IT governance structures. Structures such as the IT organisational structure and IT committees are concerned with who makes the IT decisions (De Haes and Van Grembergen 2015, p. 11).

On the other hand, processes entail tactical decision-making and the application of several IT governance and management standards (such as COBIT and ITIL), giving organisations a means of gauging the value that IT adds to the process (De Haes and Van Grembergen 2015, p. 11). The implementation and institutionalisation of strategic IT decision-making or monitoring techniques, such as the IT balanced scorecard, COBIT and ITIL, according to Peterson (2003, p. 38), constitute the IT governance process. Finally, relational mechanisms are the dynamic affiliations between company leaders, IT management and business management (Peterson 2003, p. 39). Relational mechanisms support strategic dialogue between business and IT as well as group learning. Training, job rotation and co-location are a few examples of relational mechanisms. These procedures make sure that the organisation as a whole and IT are effectively communicating and achieving business–IT alignment. An illustration of the components of an IT governance framework may be found in Figure 2.3.

Figure 2.3, taken from De Haes and Van Grembergen (2015, p. 12), illustrates how a framework can contain structures, processes and relationship mechanisms. The components of a framework are further discussed in the sections that follow.

Information technology governance structures

Organisational entities and the roles involved in making IT decisions – that include approving contracts between business and IT – are included in IT governance structures. The steering committee is one such ISACA (2014, p. 12). The organisation of the governance framework is laid out in the structures. In addition, the organisation of the IT department, its roles in decision-making and its relationships with other organisational departments are all included in IT governance frameworks. The IT department is segregated from other organisational departments in the most widely used and traditional IT structure. In this model, the IT department serves as the primary processing location for all IT-related issues that affect the entire organisation. In contrast, organisations can use a decentralised strategy. Each organisational department must have its own IT staff in order to do this. Some businesses combine centralised and decentralised IT structures. This is a scenario when the company has a centralised IT department, and IT staff simultaneously support other departments. Another method by which businesses are organising their IT departments is by outsourcing non-essential IT services while maintaining core IT services. There is no required IT structure, and the option will largely depend on the skills, aims and goals of the organisation.

Roles and responsibilities

The board and management are responsible for disseminating information about the duties and responsibilities so that the involved organisations can comprehend them clearly. Roles and responsibilities should be clearly defined.

Organisational structure for information technology

The effectiveness of IT governance depends on how the IT function is organised within a company.

Chief Information Officer on board

The chief information officer (CIO), among other stakeholders, plays a significant role in ensuring IT governance and frequently updates the board.

Committee for information technology strategy

To provide direction, review and amendment of business and IT strategies, the IT strategy committee collaborates closely with other board committees and management committees. Operating at the board level is the IT strategy committee.

Information technology steering committee(s)

The IT steering committee is in control of overseeing major initiatives, IT priorities, budgets and resource distribution. The executive management level is where the IT steering committee operates.

Information technology governance processes

To guarantee that regular behaviour is harmonised with policies and influences the decisions, IT governance processes solemnise and institutionalise strategic IT decision-making and monitoring processes (ISACA 2015, p. 12). Processes such as the balanced scorecards and service level agreements use a variety of frameworks and technologies as discussed below.

Strategic information systems planning

One of the most crucial aspects of IT governance, strategic information systems planning harmonises IT and business. It makes the connections between business and IT very evident.

Service level contracts

Service level agreements define the level of service that users are expected to receive from the service provider, together with the degree of service that the provider can provide. The mutual agreement covers the monitoring of delivered services, difficulties encountered during delivery and the creation of improvement plans.

Information technology governance relational mechanisms

Relational mechanisms, which include publications, campaigns and awareness initiatives, are solely about corporate executives, IT management and business management, claims ISACA (2014, p. 12). However, research shows that the implementation of IT governance is contingent on a variety of different interior and peripheral elements. In this context, Ribbers, Peterson

and Parker (2002, p. 1) and Patel (2004, p. 82) contend that identifying the combination of implementation methods is a complex process that depends on several organisational aspects. These scholars also contend that despite being in the same industry, the ideal combination will differ from organisation to organisation. Even though they are in the same industry or sector, what benefits one organisation may not necessarily benefit another (Patel 2004, p. 82; Ribbers et al. 2002, p. 1). This suggests that various organisations may require a distinct mix, or dissimilar set, of structures, procedures and social mechanisms to meet their needs (Patel 2004, p. 82). This part covered the components of an IT governance framework, while the section that follows concentrates on earlier relevant studies on IT governance.

Active participation by principal stakeholders

Having a comprehensive grasp of how IT fits into the business, all stakeholders engage in making IT decisions.

Partnership incentives and rewards

The procedures examine the amount of business perception of IT value as well as the percentage of senior management IT literacy and senior IT managers' business understanding.

Information technology and business co-location

Co-location helps to close the gap between business and IT by ensuring that IT staff members are seated next to their business counterparts, giving them a better understanding of the organisation.

Cross-functional business and information technology training job rotation

Employees from the business are frequently transferred to the IT department to have an improved comprehension of the IT side of the company. Additionally, to help IT staff members better understand the operational side of the company, they are temporarily transferred to other business areas.

Previous scholarship on the implementation of information technology governance

The previous sections discussed elements of IT governance. This section discusses previous studies on IT governance implementation. One example

is a case study titled *IT Governance Structures, Processes and Relational Mechanisms* by De Haes and Van Grembergen from 2005. The study, *Achieving IT and Business Alignment in a Major Belgian Financial Group*, covered a single case and used in-depth interviews with IT and business representatives to collect data. Reports and other secondary data sources were also used to acquire data. The research organisation employed IT governance using a mix of structures, processes and relational mechanisms, according to their findings.

The Malaysian Ministry of Education employed particular attributes of IT governance through a mixture of processes, structures and relational mechanisms, according to Ismail, Alias and Rahman (2008, p. 2) in their study on *IT Governance Implementation in the Malaysian Ministry of Education*. Their findings converge with the findings reported by De Haes and Van Grembergen (2004, p. 7) in their earlier study. However, the research organisation in Malaysia did not completely comprehend IT governance. This Malaysian study is important to this study because it was carried out in Malaysia, a developing economy like South Africa, and it examined the phenomenon from the public sector's perspective, which is distinct from the financial services sector examined in the Belgian study that was previously mentioned.

An Exploratory Study into IT Governance Implementations and Its Impact on Business and IT Alignment was another study by De Haes and Van Grembergen (2009, p. 2) that began with a literature review on IT governance and business and IT alignment and was supported by numerous interviews with business and IT decision-makers. Their research is pertinent because it addressed a query that was closely connected to one of the sub-questions that this study aims to address. However, their analysis was primarily focused on the Belgian financial services industry, which differs from the South African health care industry in several ways. Their research shows that businesses use structures, processes and relational mechanisms to establish IT governance. Information technology steering committees, CIO or executive committees, portfolio management, IT budget control and reporting, and IT strategy committees at the level of the board of directors were the top five practices for IT governance highlighted in the survey. The results concur with those of their earlier study (De Haes & Van Grembergen 2015, p. 4).

The South African public health care sector is having difficulty in implementing the IT governance best practices, as stated in the problem statement in Chapter 1, even though IT governance may be implemented in a diversity of approaches that are obvious in the literature. Researchers' failure to thoroughly investigate IT governance concerns in the health care industry is cause for concern. There are publications in the literature that primarily analyse IT governance in organisations that provide financial

services, but it seems that little research has reached the business level in the health care industry. Indeed, research has demonstrated that there is no predetermined ideal IT governance structure, and this is because a problem-solving strategy for an organisation is required by driving factors (Brown & Grant 2005, p. 707; Weill & Ross 2004, p. 9). Even though they may be in the same industry, what is the best plan for one company may not be the best strategy for another (Patel 2004, p. 82; Ribbers et al. 2002, p. 3152). Suomi and Tähkäpää (2004, p. 369) made a strong case for the idea that differences between public and private health care sectors impact on the applicable IT governance structure. Therefore, organisations use IT governance in different ways accordingly. This study affords a solution to the research question about IT governance in South African health care.

Reviewing some of the inhibitors, also known as challenges or barriers, that some organisations have run into when establishing IT governance is crucial. Even though the focus of this study is mostly on IT governance inhibitors, understanding IT governance enablers is essential because some claim that the absence of enablers leads to inhibitors. The section that follows offers an overview of the IT governance barriers and opportunities mentioned by earlier academics from various organisations, businesses and nations.

Inhibitors to information technology governance

The obstacles that could impede the implementation of IT governance or render it unsuitable for the organisation can delay, postpone or otherwise affect the process. The establishment of a comprehensive IT governance system faces obstacles from inhibitors. They can be regarded as anything that could prevent an organisation from achieving its goals. Enablers, on the contrary, are the elements that make it simple for organisations to embrace and use IT governance. Regarding the factors influencing the implementation of IT governance, several research studies have been published. Some of these studies have explicitly examined the phenomenon of inhibitors and facilitators, barriers, problems and from the point of view of the essential elements. Results from earlier studies on IT governance inhibitors are discussed in the section that follows.

Previous research on the inhibitors to information technology governance

A study on the barriers to and facilitators of business and IT alignment was conducted by Luftman, Papp and Brier (1999, p. 2). Their work is significant and pertinent to the current investigation because it examines the variables

that influence and prevent strategic alignment, one of the goals of IT governance. According to their research, social and management problems rather than technological ones are the main hindrances to business and IT strategy alignment. There appears to be widespread consensus that managerial-focused factors hinder IT governance (Weill & Broadbent 1998, p. 4). Further, according to Luftman et al. (1999, p. 23), if the effects of enablers are maximised and those of inhibitors are minimised, organisations can better align IT with other business processes. Teo and Ang (1999, p. 178) examined 168 organisations in various sectors for information system (IS) planning alignment over the same year. They discovered that the most crucial element in ensuring business–IT planning alignment is managerial commitment. Their emphasis on management commitment and support as the most important component for business–IT alignment aligns their findings with those of Luftman et al. (1999, p. 16). Luftman et al. (1999, p. 16) emphasise that managerial commitment and support are seen as enablers, whereas their absence is seen as an inhibitor. According to their analysis, business and IT cooperation is crucial for fostering IT governance and strategic alignment.

An international survey of CIOs was done by PricewaterhouseCoopers (PWC) on behalf of ITGI in 2008. Their research identifies a number of variables that may prevent or facilitate the establishment of IT governance. The ITGI's study findings show that organisations have powerful forces that can prevent the implementation of IT governance. For IT governance to be facilitated, these forces must be recognised and addressed. According to their analysis, IT governance is hindered by culture, resistance to change, lack of effective communication, internal politics, resistance to acceptance of standards and unwillingness to accept accountability (ITGI 2008b, p. 17).

In their governance survey of 168 diverse establishments in the public and private sectors, Guldentops et al. (2002, p. 35) agreed with the findings of ITGI (2008b, p. 17). For instance, in the Guldentops et al. (2002, p. 33) study, a lack of ownership was closely linked to a lack of accountability acceptance. Numerous results continue to mention management commitment and involvement as potential enablers or inhibitors of the implementation of IT governance. Bowen, Cheung and Rohde (2007, p. 203) conducted an empirical in-depth investigation of the factors affecting IT governance structures, processes and outcomes. Their findings show a correlation between IT governance performance outcomes and shared business and IT objectives, active steering committee participation, a balance between IT and business representatives in IT decision-making, and well-communicated IT strategies and policies.

Furthermore, Wibowo and Yuwono (2008, p. 6) identified various IT governance enabling and inhibiting elements based on an exploratory investigation of eighteen examples in Indonesia. The supporting and

understanding of executive management, the implementation of objective and performance-based management systems, and a thorough grasp of risk management are among the enabling aspects. Lack of IT leadership and the absence of defined procedures for establishing IT investment priorities are among the barriers.

In their study on *Challenges in Adopting and Integrating ITIL and CMMi in ICT Division of a Public Utility Company*, Latif, Din and Ismail (2010, p. 84) identified several challenges specific to Malaysia. Absence of understanding, deficiency in standard terminology and absence of clearly defined roles and responsibilities were some of the difficulties. While this is going on, Jaafar and Jordan (2009, p. 43), whose analysis is likewise based on a case study of a government-affiliated corporation in Malaysia, show a lack of IT governance enforcement as a pertinent matter.

This book can learn from another study by Othman et al. (2011, p. 1771) on *Barriers to Information Technology Governance Adoption: A Preliminary Empirical Investigation*, which was based on semi-structured interviews and examined a phenomenon in the setting of Malaysia, a developing nation. Additionally, this research made use of hypotheses that were utilised in this study. It demonstrates that most of the obstacles were in line with earlier research, which found that the majority of the crucial elements in rich countries were also supported as crucial elements in developing countries. The study went on to classify environmental context, organisational context, national context and practice context for IT governance as impediments to IT governance (Othman et al. 2011, p. 1775). Absence of senior management support, reluctance to change, insufficient awareness and training, and expertise were the main issues found (Othman et al. 2011, p. 1773). These elements, which were previously noted in earlier studies, are still seen as impediments to the adoption of IT governance.

The study by Lee et al. (2008) on the causal relationship between IT governance inhibitors and its success in Korean enterprises is significant for this study because its subject and research design are nearly identical. The use of sequential mixed techniques, where the literature review serves as the foundation and the survey enters to support the findings from the literature, is described. They discovered five factors as the leading IT governance inhibitors through a combination of a literature review and a survey of 96 top companies in Korea, namely, poor communication, inadequate stakeholder involvement, lack of clear IT governance principles or policy, lack of clear IT governance processes and inadequate support of financial resources (Lee et al. 2008, p. 3). All these elements, according to Lee et al. (2008, p. 3), are thought to have a detrimental impact on the success of IT governance. A lack of clearly articulated policy has the greatest negative influence on the accomplishment of IT governance, according to the data gathered from various organisations in various

industries in Korea using a 5-point Likert scale questionnaire survey. It has been established that other impediments, including a lack of transparent IT governance procedures, poor stakeholder involvement and a lack of communication, also affect the success of IT governance in Korea. Their findings, however, indicate that a lack of funding had a less substantial impact on IT governance.

The global status report on the GEIT by ITGI (2011) found that the most often cited obstacles (inhibitors) to the implementation of IT governance were communication, management change and attempting to accomplish too much at once (p. 2). Othman and Chan (2013) conducted a recent qualitative study titled *Barriers to Formal IT Governance Practice: Insights from a Qualitative Study*. Their findings show that public sector organisations exhibit more hurdles than private sector organisations, according to interviews with six public and three private organisations in Malaysia (Othman & Chan 2013, p. 4421). Their study has relevance to this study because it examined the same issue and was conducted in a developing nation. According to Othman and Chan, poor resourcing, insufficient expertise and skills, and lack of awareness were the biggest obstacles to IT governance (2013, p. 4421). The most important factors across all the organisations investigated were also shown to be a lack of time, human and financial resources. Additionally, organisations in the public sector were more blatantly lacking in knowledge and abilities. Their study discovered novel elements that were not discussed in the literature on IT governance.

Nfuka and Rusu performed research in Tanzania within the context of southern Africa (2010). They identified eleven crucial success elements for efficient IT governance in Tanzanian public sector organisations through a literature review and case study of five organisations. The elements were clear IT goals and procedures, benefit definition and tracking and stakeholder involvement (Nfuka & Rusu 2010, p. 8).

Letsoalo, Brown and Njenga (2006) did a case study on *An Investigation of Enablers and Inhibitors of IT Governance Implementation: A Case Study of a South African Enterprise in the South African Environment*. The study identifies critical enablers as senior management support, a project champion and external support based on the case study organisation and COBIT framework implementation. Lack of clearly defined IT procedures, improper budget allocation and poor stakeholder involvement were shown to be three major bottlenecks (Letsoalo, Brown & Njenga 2006, p. 32). Because the phenomenon under discussion in this study is the same as that in the research, it provides a solid foundation. However, because their analysis was focused on a single organisation, it is challenging to draw generalisations about the South African economy as a whole.

The research confirms once more that effective execution of the relevant change is a prerequisite for IT governance (ISACA 2016, p. 4). The adoption of IT governance has been identified as being dependent on change facilitation. This includes convincing the appropriate stakeholders to support the change and effectively managing the human, behavioural and cultural components of it (ISACA 2016, p. 6). Information Systems Audit and Control Association emphasises that in order to execute IT governance, the right environment and culture must be in place. The components of human behaviour need to receive enough consideration. Additionally, research shows that IT governance projects fail because of a lack of management oversight, support and direction, as well as an inappropriate cultural backdrop. When IT governance activities result in rules, processes and controls that lack adequate ownership, a lack of support and guidance from management and concerned stakeholders may result. Without ownership and a management structure that gives roles and duties, procedures are prone to develop into standard company practices with no roles and responsibilities.

Performance in information technology governance

Information technology governance success is related to how well it promotes expected behaviour and, ultimately, the achievement of performance objectives inside the organisation (Nfuka & Rusu 2010, p. 2). Weill & Ross (2004, p. 3) define IT governance performance measures as the efficiency of IT governance in producing four results that are weighted according to their significance to the organisation: using IT in a cost-effective manner, utilising IT effectively for asset utilisation, effective use of IT for growth and using IT effectively for business flexibility. The next section discusses the theoretical frameworks that inform and direct the investigation.

Theoretical foundations and research plan

The previous section covered a few topics related to IT governance and earlier studies in the field. The theoretical background is to assemble theoretical viewpoints on the theories surrounding the acceptance of innovations. The following section affords information on a discussion of the literature to find pertinent theories in the dissemination of innovation in information systems that can serve as starting points for future study. To guide the creation of the research framework for the examination of the current research problems, a case is made in favour of the theory that was chosen.

The literature on innovation diffusion reveals how ideas have been used by scholars to examine how technologies and technological advances are adopted. There are several frameworks in the literature that can be applied to help respond to the research questions. Some theories are at the individual level and so consider how decisions are adopted by an individual, while other theories concentrate on how innovations are adopted by organisations. The implementation issues in health care are the main topic of this study. Therefore, theories at the individual level are inappropriate. As a result, organisational-level theories are applicable. The application of theory is driven by the quest to develop a preliminary framework that recognises prior understanding and formulates a meaningful theoretical foundation to illuminate the themes and methodologies of early empirical studies.

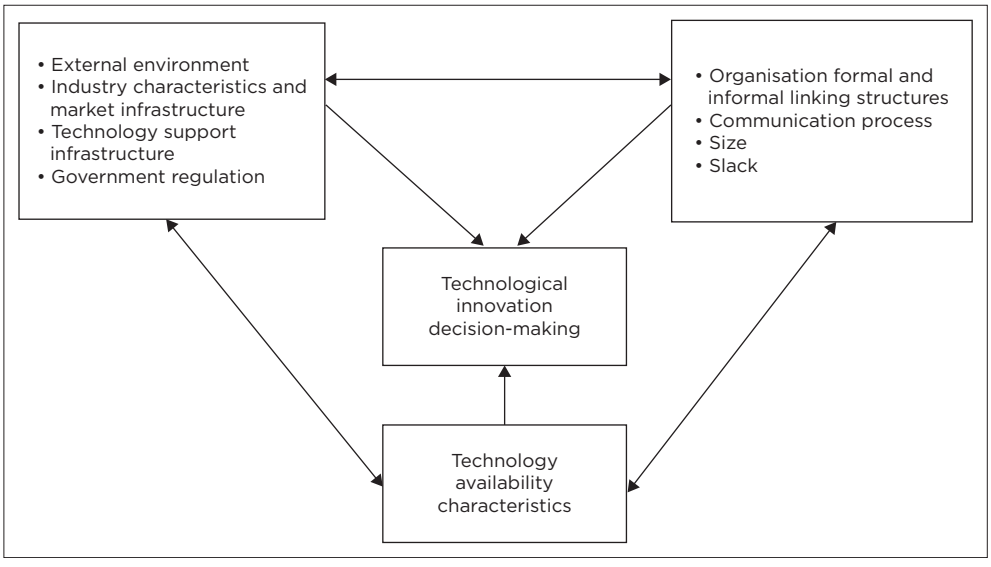
Innovation frameworks for information technology

Information technology governance is viewed by the adopting organisation as a fresh innovation (Damanpour & Evan 1984, p. 392). Othman et al. (2011, p. 1772), who view IT governance as an administrative innovation, place special emphasis on the character of the practice. To assess the IT governance barriers, the study first considered different IS paradigms for the acceptance and application of innovations in the literature. Their shortcomings and advantages were examined to determine whether they might be applied to the viewpoint of the current investigation.

Technology-organisation-environment framework

The TOE framework by Tornatzky and Fleisher (1990) offers a very analytical platform for examining how different IT advances have been adopted at the organisational level. The Diffusion of Innovations (DOI) theory (Rogers 1995b, p. 27), which placed focus on how personal qualities, along with internal and external organisation variables, influence and affect an organisation's capacity for innovation, is in line with the TOE framework. According to the TOE framework, innovation in organisations is built around three contexts: the organisational context, the technological context and the environmental context (Bose & Luo 2011, p. 39; Jokonya, Kroeze & Van Der Poll 2014, p. 1008; Tornatzky & Fleisher 1990, p. 150).

Elements of the TOE framework are shown in Figure 2.4, which was taken from Tornatzky and Fleisher (1990, p. 152). The technological background gives an overview of both internal and external technologies that are significant to business, which include the company's existing fundamental practices together with technologies that are available but not owned by the company.



Source: Tornatzky and Fleisher (1990, p. 152).

FIGURE 2.4: The technology-organisation-environment framework.

Organisational context denotes the elements that characterise an organisation, such as its size, breadth and managerial culture. These are the characteristics that describe an organisation, and they also consist of the poor quality of the human resources available within an organisation. The organisation is a wealth of formal and informal structures, procedures and cultural characteristics that direct the adoption of innovations (Tornatzky & Fleischer 1990, pp. 181–182). The term 'environmental context' denotes the surroundings in which an organisation operates and encompasses, including competition, resource availability and governmental, legal and regulatory influence (Haag & Eckhardt 2014, p. 423; Tornatzky & Fleischer 1990, pp. 154–154). This is the broad environment in which the company operates.

Even though the framework's premises change between research projects, it nonetheless offers a solid theoretical foundation and broad applicability to other IS innovation domains. Similar justifications are given for the DOIs theory. Despite the TOE framework encompassing the environmental context as a developing component, imposing both restrictions and potential for organisational innovation, the two theories contend both internal and external influences act as impediments to that innovation. The fact that the TOE framework is at the organisational level and allows for the simple insertion of additional components gives it an edge in the current research.

Although it is a theory that can be used to analyse the implementation barriers to IT governance, using it as a stand-alone theory gives an

incomplete picture of the barriers to IT governance as a technological innovation. The TOE framework has been criticised for failing to adequately address matters that affect IT governance in organisations (Jokonya 2014, p. 19). As a result, this study considered and adopted the theoretical framework and extended it to the IT governance implementation domain. A discussion of the DOI theory is given in the section that follows.

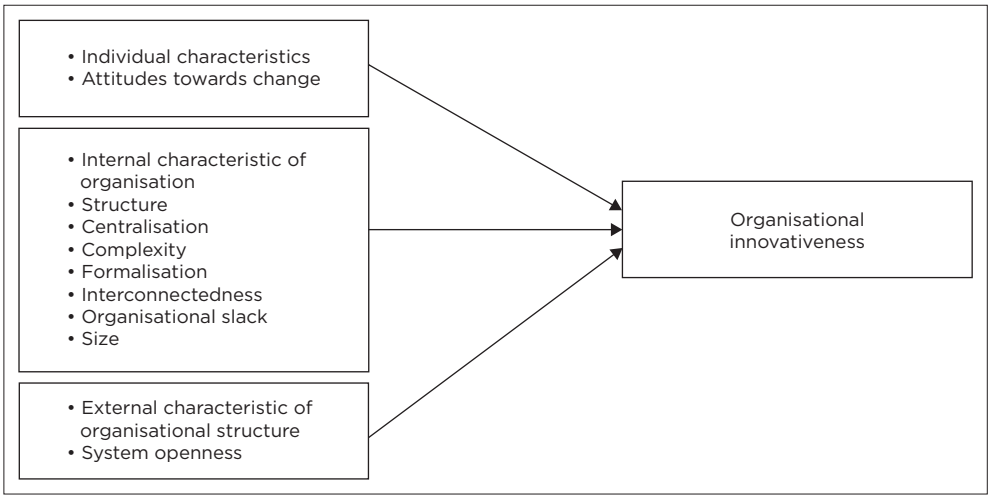
Diffusion of innovations theory

The prior section deliberated on the TOE framework with respect to IT governance implementation in organisations. The DOI hypothesis, created by Rogers in 1995, is covered in this section. The DOI is one of the theories that is frequently used in research on the adoption of innovations. Several previous studies on innovation adopted the theory (Othman et al. 2011, p. 1775). Organisational innovativeness, according to the DOI theory, depends on a variety of elements, including qualities of the organisation's leaders, internal organisational structures and external characteristics. According to Rogers' (2003, p. 14) DOI theory, external and technological factors can have just as much of an impact on the acceptance of new technologies as organisational ones. Teo et al.'s (2003, p. 21) institutional theory, which emphasises the significance of outside forces on technology, supports this argument.

By emphasising technology-specific characteristics such as the complexity of the IS innovation itself, which plays a crucial role, Basaglia et al. (2009, p. 1) add to scholarly discussions on the adoption of IS innovations. The DOI is crucial for understanding the propagation of innovations from both the perspectives of individuals and the organisation (Jokonya 2014, p. 17; Oliveira & Martins 2011, p. 111). The DOI is pivotal for understanding the organisational environment of innovation. Figure 2.5, which was adapted from Rogers (1995, p. 26), displays the diagrammatic presentation of the DOI.

This application of the DOI has been criticised for not being able to forecast the acceptance of complicated inventions when used as a stand-alone theory (Othman et al. 2011, p. 1775). The theory has been criticised for not giving enough thought to technological component of the innovation process (Jokonya 2014, p. 16). The critique is that organisational IT innovation goes beyond technical factors to consider the social, economic and political variables (Jokonya 2014, p. 16). Having learned from the arguments, it might be claimed that DOI theory needs to be blended with other theories to include more imperative factors.

It was crucial for the researcher to combine the two theories, which led to the addition of DOI constructs to the TOE framework components. Combining some of its components with the TOE framework results in two thorough lenses to analyse the barriers to implementing IT governance. Although the TOE framework and the DOI are identical, the TOE framework goes beyond



Source: Rogers (1995, p. 26).

FIGURE 2.5: Diffusion of innovations theory.

the DOI in that it also considers the environmental context, which presents opportunities and barriers for technological growth. The prior IS or IT adoption and implementation literature at the organisational level provided guidance for the collection of theories used in this study. The theories and subsequent mapping implementation of IT or IT innovations and systems were carefully considered when choosing the constructs.

Frameworks in the context of information technology governance inhibitors

This study applies the TOE framework and the DOI theory as lenses to analyse the barriers to IT governance. The technological context, organisational context and environmental context are the three components that come from the application of the DOI theory and the TOE theory, and they are all influential in how the firm applies technology breakthroughs. The researcher characterised the IT governance context to represent the technological context in order to conceptualise and operationalise the TOE framework. The resulting three contexts, namely, the IT governance context, organisational context and environmental context, represent the framework in this study. The three contexts are further discussed in the sections below.

Information technology governance context

A key factor in determining how an IT governance framework or standard is implemented is its quality and characteristics, which are defined in this

study within the context of IT governance practice. These characteristics include their complexity, implementation expense and accessibility. Complexity is the difficulty in comprehending how an innovation is implemented (Rogers 1995, p. 25, cited by Othman et al. 2011, p. 1777). It may be ingrained in how users perceive an invention and their openness to accepting it. The likelihood that an idea will be accepted, adopted and put into practice decreases as it becomes more complex. Cooper and Zmud (1990, p. 128) discovered that more complex information systems may prevent their acceptance and spread. In their study, ITGI (2008, p. 2) demonstrated how complexity directly affects whether IT governance techniques are adopted. It becomes challenging to integrate innovation considerations with other organisational components.

The degree to which the organisation understands the complexity of the IT governance phenomenon, together with the standards and frameworks for IT governance, makes it vital to determine whether this may be affecting their implementation of IT governance through this study. The literature also shows that decisions to accept innovations are influenced by the associated costs of adoption and implementation. The same complaint has been made regarding the application of IT governance practices (Winniford, Conger & Erickson-Harris 2009, p. 158, cited by Othman et al. 2011, p. 1772).

Organisational context

The elements that can be directly linked to the organisation itself are referred to as organisational context factors. These elements include formal and informal structures, communication procedures, organisational scale, the availability of spare resources for the implementation of innovations, decision-making processes, the quality of human resources and the complexity of managerial structures. Processes for making IT decisions are influenced by organisational traits and internal IT function organisation (Xue et al. 2008, p. 68). According to information system literature, organisations with decentralised organisational structures have decentralised IT governance structures, while those with centralised organisational structures have central IT decision-making structures (Xue et al. 2008, p. 72).

The literature has shown that resources, such as time and human resources, have a crucial impact on the implementation of innovations. A direct correlation exists between the capability of human resources and the practice of IT governance, according to Spremić (2009, p. 908). Time has been shown to be a barrier to the implementation of IT governance (Lee et al. 2008, p. 10, cited by Othman et al. 2011, p. 1781). This study will determine whether a lack of resources is impeding the adoption of IT governance in the health care industry. For an IT governance standard or

new practice to be implemented successfully, communication is crucial both within and across departments, units and the organisation.

For an organisation to avoid problems with IT governance implementation, having a shared, comprehensive understanding of the practice or innovation and taking ownership of it becomes essential. The organisation's many divisions and levels must continue to communicate with one another. Literature reveals that effective communication is necessary for the adoption of IT governance to be successful (Bernanda & Michelle 2021, pp. 90–92; ISACA 2014, p. 2; ITGI 2008, p. 94; Joshi, Bollen & Hassink 2013, p. 116; Wilkin & Riddett 2009, p. 353). It has been demonstrated that formalisation, particularly administrative innovation, has a favourable impact on the adoption of innovations (Zmud 1982, p. 1424, cited by Othman et al. 2011, p. 1778). Innovation implementation has fewer difficulties for more formalised organisations. Furthermore, it has been noted that an essential factor in determining an organisation's capacity for innovation is its size. It is argued that larger organisations, which have access to more financial and human resources, are more capable of innovating than smaller businesses.

Processes and employee routines in organisations alter as a result of innovation. The adoption of such ideas unquestionably necessitates a willingness to challenge deeply ingrained norms. Implementing IT governance may result in new structures and altered business procedures, both of which need adaptable attitudes. The governance of IT is hampered by a lack of change.

Environmental context

Clients, competitors, business partners, the government and other external stakeholders that have an impact on an organisation's decision-making procedures and internal business operations are included in the organisation's external environment. Government regulations, industry and market characteristics, competitors, outside support from IT governance specialists and consultants, as well as the overall infrastructure supporting IT governance all have a significant role in aiding or impeding the adoption of IT governance. The way that IT processes are managed within organisations is directly impacted by the rapidly evolving IT environment (Benamati & Lederer 2001, p. 2, cited by Xue et al. 2008, p. 71). This study limits the external environment to only include government regulation, industry market characteristics, IT experts and consultants, and IT governance infrastructure, which is in line with the TOE framework.

Technology developments and standards are implemented in large part as a result of laws and regulations. Because of the strong government regulations on governance, particularly in developed economies,

IT governance has been put into place. Previous studies have shown that market and industry characteristics also influence how standards are implemented. Some studies show a direct link between the application of standards and the sector or industry that derives maximum utility from them (Othman et al. 2011, p. 1782). This is emphasised by Campbell et al. (2010, p. 5), who contend that the implementation of IT governance differs across private and public organisations. Support from outside groups that provide standards is essential. Support may take the form of providing skills, knowledge, hardware and software required for the implementation of IT governance. It has been noted that in order for organisations to adhere to their own IT governance principles, vendor and consultant commitment is essential (Othman et al. 2011, p. 1781).

Previous studies exploiting the technology-organisation-environment framework

Researchers like Oliveira and Martins (2011, p. 112) in their study on e-business used the TOE in a number of prior IS innovation adoption and implementation studies. In order to provide comprehensive lenses for the phenomenon under study, some researchers took advantage of the TOE framework in combination with other frameworks. Some research applied the framework, nonetheless, without combining it with any additional frameworks. The following reasons support the case for employing the TOE in addition to the DOI. Firstly, the two frameworks are frequently and extensively used in studies on the adoption and implementation of IT or IS and other technological innovations. Secondly, in the organisational views that are included, the frameworks use organisations as their unit of analysis. Finally, they offer a powerful additional perspective for studying organisational innovation. In this regard, the researcher combined the two frameworks to develop a thorough lens for investigating the challenges to the implementation of IT governance.

Framework for information technology governance performance

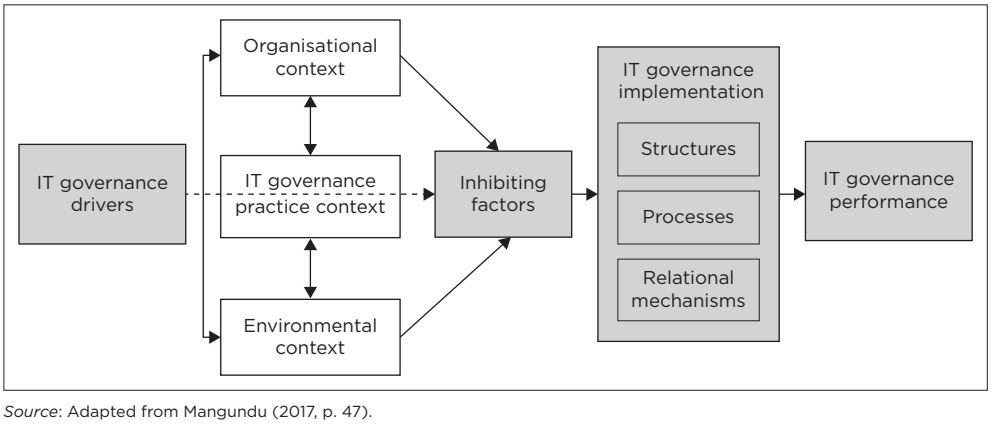
Weill and Ross (2004, p. 2) defined IT governance performance as the usefulness of IT governance in achieving four objectives: (1) Cost-effective use of IT; (2) effective use of IT for asset utilisation; (3) effective use of IT for growth; and (4) effective use of IT for business flexibility. This uncomplicated method of measuring performance was proposed in the study by Weill and Ross on *IT Governance: How Top Performers Manage*

IT Decision Rights for Superior Results, which may be the most cited book in the area of IT governance. The four objectives are given weight in accordance with their importance to the organisation. The definition has been used in previous studies for benchmarking purposes by both researchers and practitioners (Simonsson, Johnson & Ekstedt 2010, p. 10; Van Grembergen 2004, p. 52).

Integrated framework for this study

Based on the previous sections that describe and discuss the constructs and the contexts that make up the entire research, below is a comprehensive pictorial representation of the constructs. The result is that organisations are motivated in different ways to establish IT governance. In addition, organisations encounter a variety of obstacles, problems and hurdles that must be overcome in order to successfully implement IT governance. These barriers can arise from a variety of sources, including the organisational context, the external environment and the IT governance context. As a result, organisations will be able to adopt IT governance through a variety of procedures, structures and relational mechanisms if the obstacles are recognised and overcome. The pictorial representation of the unified framework for the research is depicted in Figure 2.6.

The alignment of the constructs that guide the study is provided by the suggested framework in Figure 2.6. All the elements of the research are represented in the framework for interrogation, as well as provide a guide on which data the analysis was based on, to answer the research questions. The study framework is offered in this section, together with a discussion of the literature review provided in the section that follows.



Source: Adapted from Mangundu (2017, p. 47).
Key: IT, information technology.

FIGURE 2.6: Proposed research framework.

Discussion

The investigation's goals were to identify obstacles to IT governance implementation and then recommend solutions to assist organisations in implementing IT governance. The chapter on the literature review gave this study a thorough platform upon which to build. The research shows a convergence of opinion on the inhibitors to implementing IT governance, and most studies discuss these challenges as being primarily related to resistance to change, a lack of management support, a shortage of resources and insufficient stakeholder involvement. However, most of the research was carried out in the financial services industry and in developed economies. Few studies have been conducted discussing IT governance implementation in relation to, and specifically in, the setting of a developing country, according to Othman et al. (2011, p. 1773) and other sources. There is also little thought given to the challenges to IT governance in the context of health care, which might include a variety of difficulties because of its unique characteristics, such as the nature of the business and the predominance of health care practitioners in executive roles. There are also discrepancies, with some research showing managerial-oriented inhibitors of IT governance (Luftman et al. 1999, p. 11) and others showing people-oriented inhibitors of IT governance (ITGI 2014, p. 2). It is essential that the health care industry's context is used to study the barriers to IT governance.

Although the research offers some preliminary intuitions about the implementation challenges of IT governance, several divergent findings were found in the research on barriers to innovation adoption. Barriers are seen by some researchers as inhibitors, whereas others see inhibitors as the lack of facilitators (King & Teo 1996, p. 35, cited by Othman & Chan 2013, p. 4416). According to several studies, inhibitors completely differ from enablers or facilitators (Cenfetelli 2004, p. 159). The South African health care industry needs research that makes use of several case studies to pinpoint the most significant and well-known set of obstacles to the implementation of IT governance.

Previous academic studies on IT governance in South Africa have mostly focused on the implementation of IT governance, maturity levels of IT governance and the drivers for IT governance. Even while earlier study in South Africa has shown that IT governance implementation is still in its infancy, the causes of this lack of maturity have not been investigated (Chitambala 2010, p. 10; Gomes 2007, p. 68). Finding the causes of poor IT governance maturity levels, or IT governance inhibitors, has not received much attention. To the researcher's knowledge, no study has been conducted to try and pinpoint specific elements that hinder IT governance in the South African health care industry. Thus, a

conclusion can be drawn that in-depth knowledge about the factors preventing the implementation of IT governance in South Africa is limited and must be researched with special attention to the health care industry.

Importantly, the study of IT governance in health care may offer intriguing results and fresh perspectives because management, which oversees IT governance in health care sector organisations, is made up mostly of experts and professionals, particularly in the medical industry. In addition, neither the public nor private sectors are generally represented in the papers we analysed. As both health care sectors are integrated within the Department of Health, which oversees the South African health care industry, they are both included in this study. Although the commercial sector is return-motivated and the public sector is service-compelled, both sectors can benefit from the study's conclusions.

The study represents an initial attempt to justify and substantiate by building on from the literature review. Therefore, semi-structured interviews, document analysis and data collection through an online survey questionnaire were conducted in the private and public health care sectors in South Africa. The literature review findings in this chapter assisted in enlightening the initial responses to the research questions. Having discussed the relevance of the literature review in the succeeding section, a conclusion to the literature review chapter is given.

Conclusion

The chapter discussed several points related to the adoption of IT governance and its challenges. As a result of how IT responds to strategic and environmental imperatives, it was shown that organisations are motivated to implement IT governance. Additionally, organisations implement IT governance in various ways depending on their requirements. The study is largely steered by the following proposition: IT governance is based on different and varying internal and external factors. Shaping the mix of implementation strategies is a multifaceted process that depends on multiple organisational factors, with the optimal mix varying from organisation to organisation, even when organisations are in the same line of business or even the same industry sector. In that regard, the drivers, inhibitors, implementation and performance of IT governance are dependent on organisations.

Accordingly, the study endeavours to address the existing gap in the research by evaluating the inhibitors of IT governance in the health care context. The literature review chapter provided a justification for a study of

this nature. In summary, the chapter is crucial in providing an initial understanding of, and answers for, the research questions. Furthermore, the chapter provided theories that are used in IT innovation. The following chapter discusses the philosophical grounding and philosophical assumptions underpinning the study.

Chapter 3

Research philosophical grounding and assumptions

Introduction

The research topic and the research questions stated in Chapter 1 guided the review of pertinent literature in Chapter 2. The main ideas surrounding the research challenge were reviewed, along with pertinent prior research on IT governance, how those studies relate to one another and how those studies relate to this study. Furthermore, depending on the important terms in the study questions, prior studies were also critically examined and categorised. The literature research found that a combination of structures, procedures and relational mechanisms can be applied to initiate IT governance. Through a literature review, the research framework was created. The research further revealed that there are many issues that can make it difficult to establish IT governance; however, these are organisational factors that vary depending on the industry.

Additionally, the study issues were examined in reference to past studies by other IT governance researchers in the literature review chapter (ch. 2). To broaden early literature findings and validate the responses to the study questions addressing IT governance in health care, this chapter explores the philosophical underpinnings and theoretical modelling. The research

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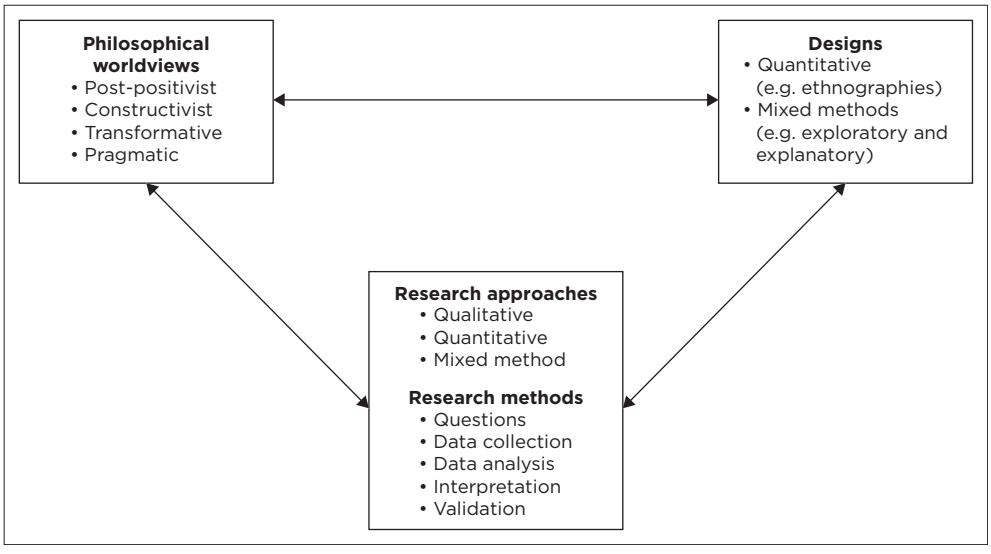
problem and the research methods are connected, making it easier to produce a legitimate response to the research questions (Yin 2009, p. 63). This entails using data-gathering tools and procedures, philosophical research assumptions driving the methodology, and data inspection and presentation methodologies. The study's methodology is heavily biased by the researcher's philosophical presumptions (Coates 2021, p. 1; Creswell 2021, p. 34).

The chapter is structured as follows: The research approach is presented in the first section, which also includes philosophical presumptions. The study design and research techniques are then discussed in the following sections, together with the research philosophy, which serves as the foundation for the presumptions guiding the research.

Research philosophical worldviews

Philosophical ideas endure while being hidden within the research; they provide direction for conducting research and should be recognised (Mertens 2010, p. 9). According to Creswell (2014, p. 35), worldviews are the scholar's perspective on the world and the scope of their research. He contended that worldviews are informed by discipline orientation, the researcher's or supervisor's preference and prior research experience, which influences whether they choose to conduct their research using qualitative, quantitative or hybrid methodologies.

Post-positivists adhere to sound quantitative research principles. They comprehend a deterministic philosophy in which causes influence outcomes. Studies by positivists demonstrate the necessity to discover and consider the causes that impact the results, for instance, those demonstrated in empirical experiments (Creswell 2014, p. 36). Social constructivists, in contrast, acknowledge that people seek to understand the world through unique interpretations of their engagement with it. In this instance, the researcher's aim is to consider, to the greatest extent feasible, the research subjects' perceptions of the status quo under study. The transformative worldview contends that the study's focus is on politics and a plan for political change that will lead to social enslavement at every level on which it occurs (Mertens 2010, p. 11). One such worldview locus comes from pragmatists who, rather than focusing on the research method, focus on the research topic, using a combination of ways to comprehend the phenomenon, such as qualitative and quantitative methods (Creswell 2014, p. 39; Tashakkori & Teddlie 2009, p. 284). Because of this, pragmatism is in favour of mixed-methods research (Creswell 2014, p. 39; Teddlie & Tashakkori 2010, p. 15). The relationship between these worldviews, designs and research methodologies is shown in Figure 3.1 (Creswell 2014, p. 35).



Source: Creswell (2014, p. 35).

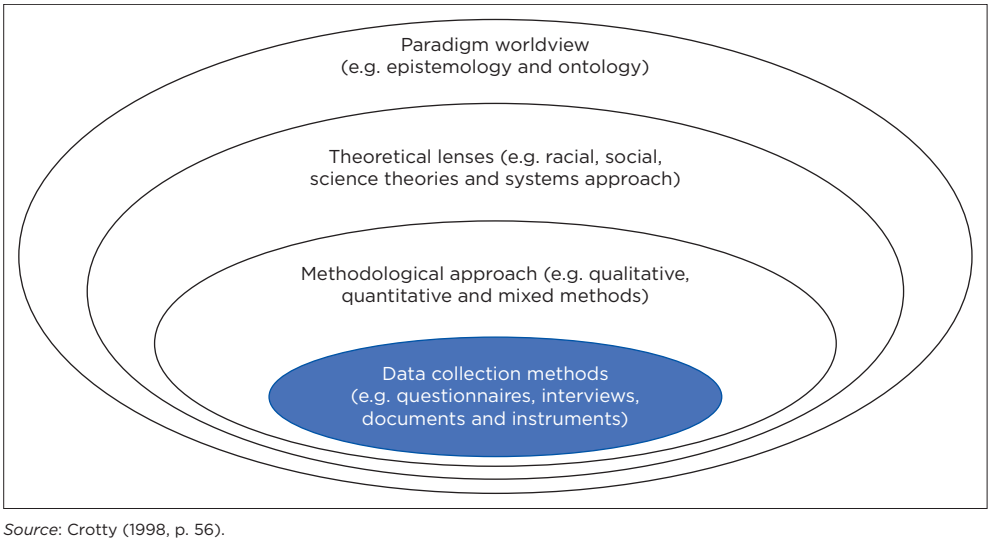
FIGURE 3.1: The interconnection of worldviews, designs and research methods.

Philosophical presumptions in research

Considering the four worldviews previously mentioned, all research, regardless of its subject matter, is tied to the core conventions of what constitutes a legitimate study and effective research methodologies. It is essential to identify and understand the research's philosophical assumptions (Creswell 2011, p. 271). According to Creswell (2011), philosophical frameworks influence how well a design fits the research. Thus, philosophical principles serve as a framework for conducting research and must essentially be acknowledged (Creswell 2011, p. 271). The paradigms that guide the investigation are provided by these philosophical presuppositions or notions. Research paradigms are recognised as authoritative research traditions in a certain research community (Creswell 2011, p. 275). The components of the paradigms include ontology, epistemology, methodology and methodologies (Scotland 2012, p. 9). Ontological presumptions concern what constitutes reality. Ontology, according to Creswell and Clark (2017, p. 38), is the study of existence and informs the theoretical perspective alongside epistemology. The researcher must have a confident viewpoint regarding how things are and how they function (Scotland 2012, p. 12), and they must be persuasive when describing how the paradigms are to be employed in presenting the research topic (Jokonya 2014, p. 6). These conceptions of reality (ontology) are contained in philosophical stances known as epistemology.

Epistemology describes how a researcher comes to know what they know (Cohen, Manion & Morrison 2007, p. 7; Creswell & Clark 2017, p. 38).

The presumptions of epistemology concern the production, acquisition and dissemination of knowledge (Scotland 2012, p. 9). Different paradigms are based on various philosophical underpinnings and views of reality in study (Rehman & Alharthi 2016, p. 53). Individual methodological strategies drive each paradigm, and the methodology guides the approaches, data-gathering techniques, analysis and interpretation. Methodology governs how scholars go about learning what they think is known (Scotland 2012, p. 9). According to Crotty (1998, p. 3), a methodology is a strategic plan of action that justifies the selection of usage of specific approaches. Methods refer to certain processes and procedures for data collection and analysis. Through methodology and epistemology, these techniques can be traced back directly to an ontological viewpoint. It becomes impossible to engage in any research process without outlining the epistemological and ontological stances. Different viewpoints influence the research methods used to study-related phenomena (Grix 2018, p. 129; Scotland 2012, p. 9). Creswell and Clark (2017, p. 13) state the following: 'The choice of method to adopt when studying a subject should be based on the researcher's philosophical presuppositions, the research design, and the specific data collecting, analysis, and interpretation techniques used in the study'. The type of research topic or issue being addressed, the researchers' individual experiences and the study's target audiences are all taken into consideration when choosing a research approach. Additionally, Crotty (1998, p. 56) suggests that every research project should adhere to four stages. The research process is directed by these stages. As shown in Figure 3.2, the researcher's design of the research methodology for this study was informed by Crotty's arguments.



Source: Crotty (1998, p. 56).

FIGURE 3.2: Research study levels.

Critical paradigm

Historical realism serves as the critical paradigm's ontological viewpoint (Scotland 2012, p. 13). It highlights the certainty that exists inside communities and is created by common political, cultural, economic, ethnic and gender norms. It also highlights how societies are continually influenced from within. A society establishes social reality, which is then created and replicated. According to Cohen et al. (2007, p. 27), who contend that the social and positional influences of activists of that information determine reality, this is supported. However, because critical approaches are closely related to politics, they challenge conventional social institutions and take part in social action with the goal of emancipating the poor. They also investigate values and assumptions. Critical researchers typically begin with preconceived notions and have change as their end goal. Examining facts from a cultural, historical and political perspective is made easier by critical techniques. Cohen et al. (2007, p. 139) assert that the research produces change or reform, enhancing the participants' existence.

The critical paradigm has a weakness in that freedom is not immediately apparent. According to Scotland (2012, p. 13), there is not much proof that participants' lives have changed; if they have, it may be negligible or non-existent. Critical researchers also stereotype individuals as members of a specific marginalised group, placing them in a category of homogeneous superimposed identities. The positivist paradigm is discussed in the section that follows.

Positivist paradigm

Positivism's ontological stance is the conviction that things have a being separate from the knower (Cohen et al. 2007, p. 7; Myers 2019, p. 43; Scotland 2012, p. 10). As advanced by Myers (2019, p. 43), positivists typically hold that truth is objectively discernible and expressed through quantitative attributes, independent of the researcher and the research tools employed. The positivist paradigm places a strong focus on the fact that knowledge is unambiguously objective, that there is a distinct objective truth that exists outside of society and that knowledge is obtained through experiments. According to positivism, research should be focused on the truth as it exists, and its findings should be repeatable by other researchers. This entails putting theories to the test and making efforts to boost our understanding of the phenomenon. The positivist ontological perspective leads to a methodology that aims to explain relationships like cause and effect (Creswell 2009; Myers 2019, p. 43). The goal is to establish laws that serve as a foundation for generalisation and prediction (Scotland 2012, p. 11). As knowledge is speculative, hypotheses are neither confirmed nor disproved (Creswell & Clark 2017, p. 160). Descriptive and inferential

statistics are used in the analysis, allowing sample results to be extrapolated to larger populations and used for forecasting.

The positivist technique, however, has drawbacks in that some variables can be concealed from the researcher and be exposed once their consequences are understood (Scotland 2012, p. 11). Additionally, results are frequently misinterpreted, and inferential statistics are frequently corrupted (Scotland 2012, p. 11). As a result, one cannot simply accept the results of inferential tests. The interpretivist paradigm is discussed in the section that follows.

Interpretivist paradigm

Interpretive scholarship primarily aims to comprehend phenomena through the meanings that individuals attach to them. For instance, understanding the information system's context and the mechanisms by which it influences and is influenced by that context is the goal of interpretative meanings (Walsham 1995, p. 4, cited by Myers 2009, p. 2). Interpretive research, as described by Myers (2019, p. 45), concentrates on the entire richness of human sense-making as the circumstance demands, with no preconceived dependent and independent variables. The views of the participants and their own upbringing and experiences are used by interpretivists to determine reality (Myers 2019, p. 45).

The importance of interpretive research in information systems research has grown (Riemer & Johnston 2019, p. 1; Vannoy & Salam 2010, p. 1). According to Myers (2019, p. 46), interpretive research helps IS researchers better understand human reasoning and achievement from a social and organisational perspective. The information system domain can be deeply understood through interpretive study. To put it another way, people's interpretations of things help us to understand them.

According to Reeves (2000, p. 23), interpretive goals influence how objects function by describing and interpreting the phenomena in terms of domain process, performance and innovation. Through qualitative methodologies like case studies and ethnography, the phenomenon is better understood (Daly et al. 2007, p. 45). To properly evaluate the data collected, Daly et al. (2007, p. 48) state that knowing the environment in which any sort of study is conducted is crucial. Instead of relying solely on statistics, the interpretivist paradigm and qualitative methodologies frequently seek experiences and insights from persons about their issues (Thanh & Thanh 2015, p. 24). Scholars are aware of the challenges in understanding intricate social and procedural phenomena in the field of information systems to quantifiable facts (Goldkuhl 2012, p. 1), which has led to the need for more exposed and knowledgeable

methods to investigate and analyse IS complexities. In complex environments, human performances, innovations and occurrences of domain processes are all addressed and interpreted by interpretive IS research. An understanding that is reached through the process of interpretation is the fundamental component of IS research knowledge (Goldkuhl 2012, p. 3).

Researchers that base their arguments on a comparison to the positivist approach or the potential for combining them in IS research, however, have criticised the interpretivist approach. Because research typically yields highly contextualised research data, generalisations that are considered by policy-makers are missing. Furthermore, participants' privacy can be respected because interpretive research processes are more well-known and flexible than positivist research methods. The pragmatist strategy is covered in the section that follows.

Pragmatist paradigm

Pragmatism blends several frameworks and techniques (Creswell 2021, p. 16). In conducting this type of research, there is meaningful synchrony between the various approaches and mindsets (Tashakkori & Teddlie 2009, p. 293). Instead of focusing on methodologies, the researcher centres on the research problem and employs every available approach to comprehend the phenomena. Pragmatism is important in connecting many factors to the study problem by means of various slants to acquire information about the subject (Creswell 2021, p. 16; Teddlie & Tashakkori 2010, p. 15). As academics make significant quantitative and qualitative assumptions in their research, pragmatism does not devote itself to any one philosophy (Creswell 2021, p. 15). According to Creswell, researchers are free to choose the methodologies, procedures and methods that best suit their needs and goals. As a result, pragmatism for a mixed-methods research unlocks a variety of methodologies, different data collection and analysis, as well as diverse worldviews and norms. According to many researchers, method triangulation is necessary to deepen our understanding of the phenomena we are studying (Venkatesh, Brown & Bala 2013, p. 1). For mixed-methods research, scholars have adopted pragmatism (Creswell 2021, p. 16). The discussion of pragmatism's rationale is in the section below.

Justification of the pragmatist paradigm

According to pragmatism, there is no one method that can fully grasp reality and advance knowledge (Creswell 2021, p. 16). A mix of subjective experiences and insights into their phenomenon (qualitative) and the

accuracy of the observed measures (quantitative) become essential for better understanding phenomena. A compound interpretation of mixed-methods research, which contends that compound paradigms can be used, however, be used explicitly (Ågerfalk 2010, p. 253; Creswell 2021, p. 17), supports pragmatism. According to Tashakkori and Teddlie (2009, p. 294), pragmatism combines inductive and deductive ways to address the research topic and was deemed appropriate to serve as the foundation for a mixture of mixed-method approaches (Ågerfalk 2013, p. 253).

The idea that the difficulty of integrating methodologies stems from the many paradigms has, however, cast doubt on pragmatism. Despite the assertions, several academics have supported the viability of incorporating research methodologies from other paradigms (Tashakkori & Teddlie 2009, p. 315). The need to separate the many components while utilising their advantages has been stated by various academics to be sustainable (Tashakkori & Teddlie 2009, p. 314).

The philosophical conventions that are most crucial to this study are those that are closely related to the main epistemology, which guides the investigation (Creswell 2021, p. 16). As a result, the philosophical presumptions drawn from a certain theory serve as the foundation for the research theoretical position that a researcher adopts. It is clear from the discussions in the aforementioned sections that the interpretive paradigm pursues to comprehend, the critical paradigm aims at emancipation and the positivist paradigm intends to generalise. The debate and conclusion on the examination of the barriers to IT governance in private and public health care in South Africa used the pragmatic philosophy, which is a synthesis of many paradigms (including the interpretive paradigm). Methodologies and processes for data collection, analysis and interpretation are further informed by the methodology. The research plan is covered in the section that follows.

Research strategy

The research strategy emerges from the conceptual foundations that guide the investigation. A research tactic is an investigational strategy that starts with philosophical presumptions and progresses to research design and data collection. The data-gathering techniques, such as ethnography, action research, grounded theory and case study research, are inspired by the research methodology.

Discussion

To support the philosophical justification for the study, this chapter explored various philosophical presuppositions and the underlying paradigms. To completely address the research questions, the case study research approach is selected under the pragmatist research paradigm, along with its justification. The study methodology used, the design, the tools used to gather data and the techniques used to collect and analyse that data are all covered in further detail in Chapter 4.

Chapter 4

Materials and methods

Introduction

The philosophical foundation and theoretical modelling were covered in Chapter 3. It emphasised the theoretical underpinnings, the research strategy and the study design. In accordance with Yin (2011, p. 7), who claims that the research design connects the research problem, methodology, data collection procedure and data analysis to answer the research question in a valid manner, this chapter aims to build upon and extend the previous chapter and provide the pattern that the research follows to respond to research questions.

The organisation of this chapter is as follows: The first section evaluates prior IT governance research methods in relation to the current research to catch a glimpse of pertinent scientific methods for addressing queries about the phenomenon under examination. The research method is covered in the second section after the research strategy. The importance of the problems and the level of concern shown by the literature evaluation guided the formulation of the study questions.

The following is the primary research question: What are the practices and inhibitors to IT governance implementation in South African private and public health care sectors?

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The following sub-questions, in addition to the main research problem, need to be addressed:

1. What are the motivations behind the adoption of IT governance in South Africa's private and public health care sectors?
2. How is IT governance being implemented in South Africa's private and public health care systems?
3. How well is IT governance working in South Africa's private and public health care systems?

Evaluation of earlier information technology governance research methodologies

It was essential to analyse prior studies in the field of IT governance in order to be informed and to adhere to a pertinent scientific research approach in the study. According to the chapter on the literature review, CAQDAS, namely ATLAS.ti, was used to carry out the analysis. Based on the study topics and research techniques, prior studies were analysed. The research that has been analysed and used to guide the current investigation is shown.

Bhattacharjya and Chang (2009, p. 82) conducted a study titled *Adoption and Implementation of IT Governance: Cases from Australian Higher Education*. They used a multiple case study research approach of two well-known institutions of higher education in Australia to address their research question. Their study only used qualitative data, which was gathered through semi-structured interviews and documents gathered from respondents and institution websites. The documents gathered served as secondary data sources and included general strategic plans, IT plans, disaster recovery plans, organisational charts, committee structures, and security rules and procedures.

A critical literature analysis served as the foundation for a different study by Lee et al. (2008), titled *A Casual Relationship between IT Governance Inhibitors and Its Success in Korean Enterprises*. The status of IT governance practices in 96 top organisations in Korea was the subject of a survey that Lee et al. (2008, p. 5) conducted to gather data that were quantitatively analysed.

Nfuka and Rusu (2010, p. 5) did a study on Tanzania as the case study for the *Critical Success Factors for Effective IT Governance in the Public Sector Organisations in a Developing Country*. They used a multiple case study methodology for their study, and five organisations provided information through interviews, with much of the data being qualitative in nature.

Barriers to Information Technology Governance Adoption: A Preliminary Empirical Investigation was the title of a study conducted by Othman et al. (2011, p. 9). The study used a multiple case study technique and included seven organisations from 63 different Malaysian industries. Semi-structured interviews were used to acquire the study's only qualitative data.

Another study, *Health Information Technology Governance: A Perspective on Investment Decision Process*, was carried out by AbuKhousa and Al-Qirim (2012, p. 5). Their study used two hospitals – one from Egypt and another from the United Arab Emirates – in a qualitative multiple case study approach. The CIOs of the two hospitals were interviewed in semi-structured interviews, and secondary data sources included documents.

A multiple case study research methodology was used in a study by Ismail, Alias and Rahman (2008, p. 5) on *IT Governance Implementation in the Malaysian Ministry of Education*. Semi-structured interviews and document gathering from four organisations were used in their qualitative data collection and analysis process. They gathered website content, organisational charts, strategic plans and circulars for their investigation.

Barriers to Formal IT Governance Practice: Insight from a Qualitative Study, another study by Othman and Chan (2013, p. 4417), uses a multiple case study methodology that includes qualitative data collection and analysis from nine organisations made up of six publicly traded and three privately held businesses. Semi-structured interviews were used to gather primary data, and document collection was used to get secondary data. Annual reports, bulletins and official organisation websites were among the papers.

■ Discussion

The facilitation of an in-depth appreciating, qualitative research methodology, in the form of a case study research approach, is seen to be essential to understanding the complex IS phenomenon, as evidenced by the analysis of past IT governance research methodologies. The analysis was considered and used as background information for this study's research strategy. To reinforce and increase the credibility of the findings, the researcher in this study expands on the aforementioned research techniques by incorporating a quantitative research component. Therefore, it is believed that a mixed-methodologies case study research strategy is essential to comprehending the intricate IT governance phenomena. The research plan used is covered in the section that follows.

Research approach

It is crucial for the researcher to define the term case study in this context because there are several definitions of what it is. Case study research is a diverse activity comprising a range of research procedures and techniques, coverage (from a single case study to carefully matched pairs up to multiple cases), levels of analysis (individuals, groups, organisations, organisational fields or social policies) and extents and degree of participation in organisational functioning (Hartley 2004, p. 332).

It is imperative to make it clear that in this study, the case study technique is not being used as a research method but rather as a research strategy. It is not a methodological approach but rather a choice of the subjects to be investigated. This supports Hartley's reiteration (2004, p. 324) that case study research's theoretical direction and significance are in discrete cases rather than being sufficiently concluded by the research methodologies used.

Analysis of earlier studies also served as the basis for the research approach in this study, which is heavily informed by the research question and its sub-questions. The decision regarding the organisations chosen for this study also considered additional restrictions and limits, such as the need for ethical approval and research restrictions.

The kind of case study that will be undertaken must be decided. Case studies can be categorised as explanatory, exploratory, descriptive, solitary, holistic and numerous, according to Yin (2011, p. 49). This study is built around several case studies, which allows for an examination of the variations within and among the study organisations as well as the replication of findings among them. With the use of several data sources and a deeper understanding of the phenomenon, this method aids in the consideration of a contextual phenomenon.

When thinking about the case study technique, a few things need to be considered in their proper context. Case studies, according to Yin (2009, p. 11), are pertinent when addressing the 'how' and 'what' issues, when the behaviour of people involved cannot be controlled and when there are no distinct lines separating phenomena from context. The major goal of this research is to identify the barriers to IT governance in health care. Without the background of commercial and public health care, the study's conclusions could not be made. The problem statement is specifically related to and directed at these contexts, and it is these contexts that the research aims to address.

Researchers in information systems have embraced empirical methods that emphasise human interpretations and meanings (Walsham 1995, p. 74). Case studies, in which the researcher analyses

the phenomenon over time, are frequently the inspiration for such empirical interpretive studies. This is consistent with the claim made by Mertens and Hesse-Biber (2012, p. 77) that qualitative research is a naturalistic, interpretive, multimethod science that uses interviews, observations and textual analysis to shed light on organisational practices and interpersonal relationships. Cavaye (1996, p. 227), who made the following arguments, provided support that a positivist or interpretive approach, a deductive or an inductive method, qualitative and quantitative techniques, and the investigation of one or several cases can all be used in case research. According to Cavaye (1996, p. 227), case studies can be conducted in different ways, including highly structured, positivist, deductive investigations of several cases; unstructured, interpretive, inductive investigations of a single case; and nearly anything in between these two extremes.

Case study research is beneficial in emerging and understudied fields, particularly where the background and evolving features of the condition of affairs are important (Darke et al. 1998, p. 273). As case study research encompasses various understandings of the complicated IT governance in organisations, it was deemed to be suitable for this study. The case study, according to Yin (2003, p. 214), is a first-person investigation that looks at an existing phenomenon in its actual surroundings, particularly when the phenomenon and setting are not immediately evident. Case studies made it possible for the researcher to make multiple trips to the organisations to gather more data on the same phenomenon from various sources of evidence (Yin 2011, p. 13), ensuring the validity of the findings. Case study research is a well-respected empirical method that has been shown to be appropriate for IS in organisations (Oates 2005, p. 149; Oates, Griffiths & McLean 2022, p. 37; Yin 2009, p. 17). Case studies, according to Yin (2009, p. 2), help with ‘what’, ‘how’ and ‘why’ issues, which are pertinent to the ongoing research on IT governance in health care organisations. The focus of the discipline and this research is on information systems in organisations, and the spotlight has shifted from technical difficulties to organisational ones (Myers 2019, p. 46), making the case study technique clearly appropriate for information systems research.

Arguments in support of case study research

The representative studies examined in the previous section reveal that case studies or surveys are used in IT governance studies, and these studies are characterised using interview and questionnaire data-gathering techniques. To enable a thorough understanding of the topic of IT

governance, the literature reveals that it first emerged in the late 1990s (De Haes & Van Grembergen 2006b, p. 5), and it suggests that the case study research approach is the most suitable. Additionally, because the IT governance phenomenon exists in an organisational context, each organisation has a unique approach to the issue. Sturman (1999, p. 103, cited in Cohen et al. 2011, p. 289) asserts that because contexts are individual and unique, case studies must look at and take into consideration the actual, composite, dynamic and developing interaction of events and other factors in a particular instance.

The peculiarities of the organisations under investigation and the dynamic nature of IT governance significantly support the use of exploratory research to lay a solid groundwork for the investigation and the development of the questions. This study uses organisations as the analytical unit (Yin 2009, p. 32), and thus, a case study technique is acceptable and supported by the literature in that regard. This material emphasises how common case studies are in organisational studies and how they offer a full research strategy (Hartley 2004, p. 323). The normal need for case studies, according to Yin (2003, p. 2), increases because of the researchers' desire to understand complicated phenomena and because using case studies enables them to maintain the eloquent individualities of reality and events, such as organisational and managerial practices. In this sense, this research, which examines IT governance as processes in 67 organisations at the managerial level, is ideally suited for a case study methodology. Stake (2000, p. 435) concurs with the aforementioned discussions and claims that case studies are now one of the prominent ways to engage in qualitative investigations.

Case studies are particularly effective in providing 'how' and 'why' answers. The higher the case study's chances of keeping on course, according to Yin (2009, p. 29, cited in Cohen et al. 2011, p. 56), the more explicit the topics it should address. As a result, the research questions posed in the previous section can be satisfactorily addressed using a case study approach. Finding the impact and providing foundational data for future IT governance research, particularly in the health care industry, are made possible by the utilisation of several case studies on the phenomenon of IT governance. Case studies can explain, describe, demonstrate and educate, to paraphrase Yin once more (Yin 2009, p. 19, cited in Cohen et al. 2011, p. 60).

Additionally, De Haes and Van Grembergen (2006, p. 5) advocate for case study methodology as being suitable for information systems research because academics lag behind practitioners in the business world in terms of understanding new IT innovations.

The research technique was also impacted by the constraints and procedures for research ethical clearance. All participating organisations

must provide gatekeepers' letters for any study. The university and the study organisations both gave their ethical clearance and approval. This requires approval from higher-ups and committees within the targeted organisations, which takes a lot of time. The committees' annual meeting schedules for discussing research permission and support further prolonged the procedure. After receiving letters of acceptance from the study organisations, the researcher moved on to request university ethical clearance. The procedure can take months, and if final ethical approval is not obtained, there may be significant risks to the research or even a complete end to it.

The provincial Department of Health cooperated with the researcher and indicated their willingness to participate in the study. Additionally, the provincial government advised the researcher to ask for assistance from the hospitals he would be visiting. The researcher communicated with many South African private health care organisations. However, only one of the private health care organisations offered their help. Because of the aforementioned factors, as well as the logistical and time restrictions, the researcher chose to use the numerous case study research approach.

Case study knowledge generation

Case studies have been shown to be useful in generating new information through theory development or theory testing (Yin 2011, p. 171). According to Myers (2019, p. 14), every single research project should be able to contribute to the body of knowledge within the field. Information technology governance is a common organisational and managerial phenomenon in real life, which case study research is appropriate for, allowing the development of useful knowledge (Yin 2011, p. 171). The knowledge gained through case studies can be used in other circumstances that are comparable.

Discussion on case study research

Case study methodology has drawn criticism for the inability to generalise research findings, despite its legitimacy and appropriateness in this context. However, Yin (2009, p. 38) asserts that results from case studies add in the form of analytic generalisation rather than statistical generalisation, pointing out that case study research is not about statistical generalisation. According to Myers (2019, p. 93), the generalisability and validity of results are not increased by the number of cases. Results from case studies can be extrapolated to the theory but not to the population (Myers 2019, p. 90; Yin 2011, p. 171).

Case organisations

To better understand the IT governance phenomenon in both private and public health care organisations, the research organisations were specifically chosen (Creswell 2009). To select data collection units that would offer the most relevant and comprehensive range of opinions and information on the IT governance topic, organisations were purposefully sampled (Yin 2011, p. 32). Vigilant investigation was also conducted to lessen issues with misrepresentation and accessibility (Yin 2009, p. 32). The organisations were chosen based on the instances' variety, applicability and accessibility.

In South Africa, several provincial health departments and private health care organisations were initially contacted for participation in the study. Only one provincial Department of Health and one private health care organisation, however, supported the study and consented to participate in it. Several public hospitals in the chosen province were contacted, and they consented to take part in the study. Private hospitals encouraged and welcomed engagement within the private health care network. To provide reliable results, research organisations were chosen (Yin 2003, cited in Xue, Liang & Boulton 2008). The topic's nature was taken into consideration as the choice was made. The selection of the organisations was based on their features because the focus is organisational-level phenomena. Size, organisational structures, geographic reach, and public or private ownership were among these traits.

In accordance with the concerns, the research is based on one provincial Department of Health and government hospitals that are under the national department, representing the public health care sector. There are various levels of hospitals, including tertiary, regional, specialised and district hospitals. To ensure a legitimate and equitable representation of organisations in the study, the selection was based on location and government classification levels. Through the convenience of intracase and intercase analysis, the selection increases the usefulness of the results. Additionally, the choice of organisations within each of the several levels ensures variety among the internal environments of the hospitals. The usage of IT and IT governance is influenced by the hospitals' size, location, range of services and patient traffic. Hospitals from different levels were predicted to produce a richer data collection than hospitals from the same level. Convenience sampling (Myers 2019, p. 44) was used within the stratum, which implies that the researcher collected data from hospitals that were nearby and willing to contribute to the study. The study's private

TABLE 4.1: Study organisations' characteristics.

Organisation description	Private health care organisation	Public health care organisation
Characteristic	Private health care group of hospitals	Provincial Department of Health
Services	Private health care services	Public health care services
Background	An investment holding company operates through its subsidiaries with the largest private hospital network in southern Africa and the United Kingdom	A public health care organisation operates through its hospitals across the entire province in South Africa
Vision	Become a global, integrated health care organisation	Optimal health status for all persons in the province
Mission	Develop and implement successful solutions to provide quality, affordable health care to the people of South Africa and globally by inspiring people, creating new health care horizons and delivering value to all stakeholders	To develop a sustainable, co-ordinated, integrated and comprehensive health care system at all levels, based on the primary health care approach through the district health care system
Values	• Care • Truth • Dignity • Passion • Participation	• Trust built on truth, integrity and reconciliation • Open communication, transparency and consultation • Commitment to performance • Courage to learn, change and innovate
Selection reasons	The organisation has different subsidiaries that are highly reliant on Information Systems in their day-to-day operations	The provincial Department of Health is reliant on information systems in its daily operations in one of the biggest provinces in South Africa

Source: Adapted from Mangundu (2017, p. 70).

health care industry case study serves as its foundation. The study received additional support from private health care organisations and hospitals. Information on the examined organisations and their traits are provided in Table 4.1.

Research methods

In information systems research, quantitative and qualitative research approaches are frequently used (Oates et al. 2022, p. 37). Despite the limits in understanding organisational social environments, quantitative methods have been suggested to be appropriate for gathering large samples of data.

Additionally, it has been argued that qualitative methodologies are appropriate for information systems research despite being time-consuming and unable to disguise large numbers of participants (Peng, Nunes & Annansingh 2011, p. 1). Combinations, also known as mixed methods, were created because of the limitations of separate approaches. The discussion of mixed-methods research is provided below.

Mixed-methods research

The 'third methodological movement' (Venkatesh, Brown & Bala 2013, p. 22) of mixed-methods research was founded around the year 2000 (Lund 2012, p. 155). As a technique to supplement the shortcomings and constraints of both qualitative and quantitative study designs, mixed methods combine qualitative and quantitative tactics in a single study (Creswell 2014, p. 6). As mixed-methods research combines elements of both qualitative and quantitative slants, it resides between the continuum (Creswell 2014, p. 6). To understand research challenges, Creswell (2015, p. 2) describes mixed methods as a research strategy in which the investigator collects both quantitative and qualitative data, integrates it and then develops interpretations based on the strengths of both kinds of data.

Mixed-methods justification

In this study, the primary argument for using mixed methods is to complement qualitative data with quantitative data to tell a complete picture of the phenomenon being studied by integrating the individual strengths of each and to have a better knowledge of the research problem (Creswell 2014, p. 15). Combining approaches aims to capitalise on each approach's advantages while minimising the drawbacks of each design (Creswell 2012, p. 6; Venkatesh et al. 2013, p. 22). Comparatively to using just one of the approaches alone, the combination of qualitative and quantitative designs offers comprehensive and improved insight into the study problem(s) under consideration (Creswell et al. 2011, p. 8; Creswell 2012, p. 6; Frels & Onwuegbuzie 2013, p. 185). However, despite the benefits of the aforementioned hybrid approaches, they are time-consuming and labour-intensive (Creswell 2012, p. 6).

The combination of the research's approaches helped to better grasp the issue being looked at because the quantitative phase was able to complement the qualitative phase (Creswell et al. 2011, p.8). Creswell (2015, p. 14) asserts that the use of mixed methodologies is suitable when either quantitative or qualitative research is insufficient to fully comprehend the

issue at hand. The researchers were able to undertake an investigation with executive management to ensure that the study instrument, its measures and its interventions genuinely fit within the South African health care system by combining qualitative and quantitative research. Additionally, the qualitative phase allowed the researcher to link IT governance to the health care context and give more information about the health care environment to the quantitative research instrument. Additionally, by combining the methodologies, the researcher was able to gather data from all levels, including upper and lower management, which would have been challenging qualitatively.

Finally, Weill and Ross (2004b, p. 57, cited in ISACA 2014, p. 19) claim that there are various archetypes or styles in which IT governance can be applied, including the business monarchy, IT monarchy, feudal, federal, duopoly and anarchy. The IT governance mechanisms (decision rights) in these archetypes vary greatly. The researcher's understanding of the IT decision rights to be educated about the targeted study participants, particularly questionnaire responders, was made possible by combining the research methodologies. It subsequently became necessary for the researcher to carry out the qualitative phase through a review of the literature, semi-structured interviews and document analysis, which included committee compositions and organisational charts. The benefits of mixed-methods research are covered in the section that follows.

Mixed-methods strengths in information systems

Information system-related phenomena are fragmentary, inconclusive and context-based. From that standpoint, no one study technique can be adequate to focus on the depth and breadth of such intricate endeavours as IT governance. A mixed-methods approach has the advantage of offering a comprehensive and all-encompassing perspective of these difficult problems in organisations (Wooten et al. 2014, p. 40). The methodologies were informed by the perspective of the research question, the research aims and the research setting (Tashakkori & Teddlie 2009, p. 285).

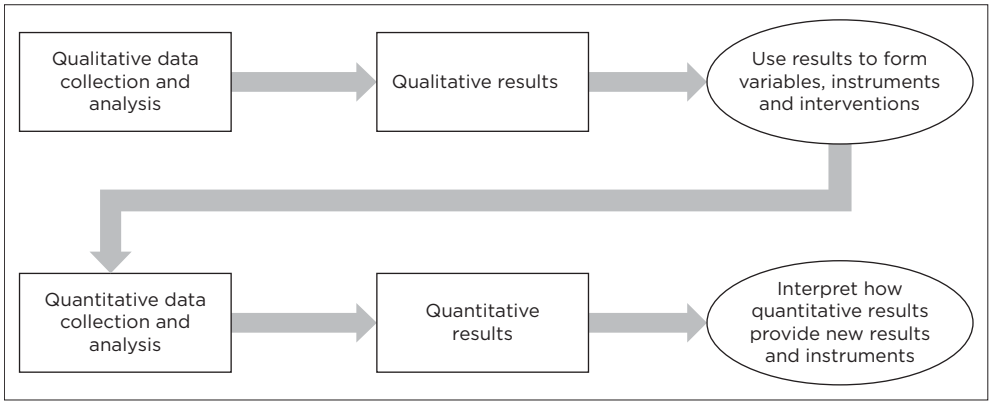
Sequential exploratory mixed-methods design

Three primary models can be used to classify mixed approaches (Creswell 2014, p. 6). The convergent model is the first model, in which the researcher gathers and provides a detailed overview of the study problem by combining quantitative and qualitative data. According to Creswell (2014, p. 94),

the researcher can combine many types of data almost simultaneously before joining the data to comprehend the full results. Secondly, using explanatory sequential mixed methods, the researcher first conducts quantitative research, examines the findings and then expands on them by adding more depth to the findings with qualitative research (Creswell 2014, p. 94). Finally, in the exploratory sequential mixed-methods paradigm, the researcher starts with a qualitative research phase to learn about the participants' perspectives (Creswell 2014, p. 95). After the data have been analysed, a second, quantitative phase is created using the information.

The researcher chose to perform an exploratory sequential mixed-method study to supplement and advance existing IT governance study techniques, identify barriers to IT governance in the health care industry and provide best practices for IT governance. There are two stages to the research. Phase 1 is primarily qualitative in nature and consists of data-gathering and analysis from semi-structured interviews as well as a critical study of the literature. Phase 2, which is largely quantitative and consists of the data-gathering and analysis for an online survey, is influenced by Phase 1.

Phase 2 of this study used quantitative data-gathering and analysis based on findings from the qualitative study; as a result, Phase 2's quantitative research questions, sampling and data collection were influenced by the qualitative study's conclusions. The qualitative and quantitative strands were combined at the interface of data collection as part of the researcher's sequential mixed-method strategy. The qualitative phase's findings improved the design of the quantitative phase's research tools, which in turn improved the identification of the most appropriate population for data collection. Figure 4.1, which was taken from Creswell (2015, p. 56), gives a brief overview of the path taken in this study.



Source: Creswell (2015, p. 56).

FIGURE 4.1: Exploratory sequential design.

Reasons for exploratory sequential mixed-methods design

The researcher was able to connect the study organisations to the research issue thanks to exploratory sequential mixed methodologies. The researcher learned more about the problems that were not previously anticipated thanks to face-to-face talks with participants who are participating in the daily IT governance tasks. Following that, these concerns were taken into consideration when creating the questionnaire. Additionally, the qualitative phase offered helpful direction for selecting questionnaire respondents for the study's second phase. In Phase 1 of the study, email addresses and other contact information of potential questionnaire responders were gathered. The qualitative research is covered in the section that follows.

Qualitative research phase

Despite the inherent variety within qualitative research, according to Denzin and Lincoln (2011, p. 3), it can be classified as a collection of interpretive, tangible practices that bring the world into focus. The world is changed by these methods. They transform reality into a collection of representations, including field notes, dialogues, interviews, recordings of photos and memos to self. Denzil and Lincoln further emphasised that by studying things in their natural environments, qualitative researchers try to understand or interpret events in terms of the meanings that people assign to them.

Therefore, research addressing intricate, context-based social phenomena linked to organisations, such as IT governance, has shown that qualitative methodologies are most useful. With participant perceptions and insights as the starting point, qualitative research enables the exploration of phenomena from the inside out (Flick 2022, p. 42). Most academics agree that qualitative research makes it easier to conduct in-depth analysis on several research issues (Yin 2011, p. 12). Yin (2011, p. 12) claims that this type of research offers flexibility in doing research, which leads to its acceptance in various research domains. Qualitative research also gets around issues like the lack of big samples and demographics for surveys (Yin 2011, p. 89). To explore and comprehend human experiences through what individuals say, the phenomenon can be examined in actual contexts (Yin 2011, p. 4). According to Ormston et al. (2014, p. 3), qualitative research is focused on providing answers to 'what', 'why' and 'how' questions rather than the 'how many' type of research inquiries. As a result, hypotheses are frequently developed after data analysis and not at the beginning of the research.

To gain a basic grasp of the IT governance phenomenon through what participants said in their organisational contexts, qualitative research proved to be a suitable method (Myers 2019, p. 228). The researcher was able to better understand the difficulties surrounding IT governance through conversations and questions from the participants in IT governance (Myers 2019, p. 5). Through qualitative investigation of the subject, perspectives and interpretations from the participants' perspectives were revealed; as a result, qualitative research focuses on the meaning participants make of their actual circumstances and is not just limited to the researcher's understandings (Yin 2011, p. 143). One of the key goals of qualitative research is to ultimately generate concepts based on the meanings that participants shared (Yin 2011, p. 143). The procedures used in qualitative research are described in the next section (Phase 1).

Qualitative research data collection

Data-gathering took place from May 2015 to December 2015 and was strongly correlated with study questions and goals. Purely qualitative data were gathered, allowing for a thorough analysis of the phenomenon (Yin 2011, p. 71). According to Yin (2011, p. 71), qualitative data make it possible to understand a phenomenon through the experiences and statements of individuals. The fundamental benefit of qualitative research, according to Myers (2009, p. 32), is that the method allows for the preservation of participant data in its original form; the phenomenon is comprehended through what participants say in their social context. As a result, concepts can be formed by speaking with those involved in and impacted by the IT governance issue (Myers 2009, p. 32). There are various interpretations, and the researcher must be aware of this when conducting the analysis (Yin 2011, p. 234). This presents an opportunity. As a result, Phase 1's data collection was exclusively qualitative. The processes used to collect the data are explained in the section that follows.

Qualitative data collection methods

Case studies recognise and agree to the existence of numerous variables acting in a particular case, and, therefore, to grasp the insinuations of such variables typically takes additional methods for data collection from numerous sources of evidence, according to Cohen et al. (2011, p. 289). The power of convergence from several data sources supports the outcomes of the investigation from the foundations of evidence, which comprises documentation, archival data, interviews, direct observations

and physical artefacts, as advised by Yin (2003, p. 85). According to these hypotheses, the literature research, semi-structured interviews and documentation from the organisations served as the primary methods for data-gathering in Phase 1. According to Myers (2009, p. 44), who asserts that although data can be acquired in a variety of methods, interviews are argued to be the best acceptable data collection approach. Thus, interviews were utilised as the primary data collection method. The sections that follow, including how they were conducted, describe triangulation and the sources of data used in the case organisations.

Triangulation in the qualitative phase

The researcher needed to carry out the qualitative study using a literature review, semi-structured interviews and document collection that included committee compositions and organisational charts (Creswell 2009, p. 106). As multiple approaches concentrate on various facets of the same problem under discussion, the triangulation enabled the researcher to comprehend the phenomenon richly and deeply (Mingers 2001, p. 244). In a single study, Yin (2011, p. 13) supports the use of several kinds of evidence for supplementary goals.

Complementary data sources

Other sources of data in case studies include documents, archival records, interviews, direct observation, participant observation and physical artefacts, according to Yin (2009, p. 101, cited in Cohen et al. 2011, p. 299). In accordance with Yin's advice, the researcher gathered information from the sources listed in Table 4.2 and Table 4.3. The gathering of data from several sources improves the rigour and credibility of the data (Yin 2009, p. 2). Furthermore, the researcher was informed by the responsible, accountable, consulted informed (RACI) table suggested by ISACA to improve validity in terms of gathering data from pertinent study participants (2014). Responsible, Accountable, Consulted and Informed is referred to as RACI. According to ISACA (2014, p. 19), Table 4.2 outlines who should oversee IT governance inside organisations and who should be held accountable. Information regarding IT governance participants in organisations is included in Table 4.2.

In addition, the researcher focused on the data sources, as stated in Table 4.3, in accordance with the suggestions made by Yin (2011, p. 13).

TABLE 4.2: RACI chart.

Key management practice	Board	CEO	CFO	COO	Business executives	Business process owners	Strategy Executive committee	Steering committee	Compliance	Audit	Head IT operations	Head IT administration	Chief information officer	Chief information security officer
Understand enterprise direction	-	*C*	*C*	*C*	*A*	*C*	*C*	-	-	-	*R*	-	*R*	*C*
Assess the current environment, capabilities and performance	-	*C*	*C*	*C*	*R*	*C*	*C*	-	*C*	-	*R*	*C*	*A*	-
Define target IT capabilities	-	*C*	*C*	*C*	*C*	*I*	*R*	-	*C*	-	*C*	*C*	*R*	-
Conduct gap analysis	-				*R*	*R*	*C*	-	*R*	-	*R*	*R*	*A*	-
Define strategic plan and road map	-	*C*	*C*	*C*	*C*	-	*C*	-	*C*	-	*C*	*C*	*A*	*C*
Communicate IT strategy and direction	I	*R*	*I*	*I*	*R*	*I*	*A*	*I*	*I*	-	*I*	*I*	*R*	*I*

Source: ISACA (2014, p. 19).
Key: IT, information technology; CEO, Chief Executive Officer; CFO, Chief Financial Officer; COO, Chief Operations Officer.

TABLE 4.3: Research data sources.

Health care sector	Organisation	Interviewees	Documentation	Online survey questionnaire respondents
Private health care providers	Private health care group head office	• IT governance officers • IT decision-makers • Business decision-makers	• Overall strategic plan • IT strategic plan • Organisational chart • Committee structures • IT policies and procedures • Memos • Website uploads • Agendas	• IT governance officers • IT decision-makers • Business decision-makers • Board members • IT and IT Governance Committee members • Governance, Risk and Compliance Committee members
	Private hospitals	• Hospital CEOs • Finance managers • Human resources managers • Nursing managers • Medical managers	• Overall strategic plan • IT strategic plan • Organisational chart • Committee structures • IT policies and procedures • Memos • Agendas	• Hospital CEOs • Finance managers • Human resources managers • Nursing managers • Medical managers
Public hospitals	Public health care provincial head office	• CIO • IT decision-makers • Business decision-makers	• Overall strategic plan and IT strategic plan • Organisational chart • Committee structures • IT policies and procedures • Website uploads • Memos • Agendas	• IT decision-makers • Business decision-makers • IT Committee members
	Public hospitals	• Hospital CEOs • Finance managers • Human resources managers • Nursing managers • Medical managers	• Overall strategic plan • IT strategic plan • Organisational chart • Committee structures • IT policies and procedures • Memos • Agendas	• Hospital CEOs • Finance managers • Human resources managers • Nursing managers • Medical managers

Source: Adapted from Mangundu (2017, p. 79).
Key: IT, information technology; CEO, chief executive officer; CIO, chief information officer.

Interview target population

To gather information, the researcher conducted semi-structured interviews with top management, IT and business decision-makers (CIOs, CFOs, hospital CEOs). The participants from these levels were the focus of the interviews because, as Table 4.3 illustrates, they are accountable, consultative, responsible and knowledgeable regarding developing and

sustaining IT governance (ISACA 2014, p. 6). The researcher has a contact person in each of the participating organisations who could give them access to these executives. The researcher identified the executives who were invited to the interview sessions and scheduled the data collecting session(s) in the organisations with the contact person.

Sampling of interviewees

According to the literature, the board and management are both responsible for IT governance (De Haes & Van Grembergen 2015, p. 11; Weill & Ross 2004, p. 8). The defined population served as the study's sample, or the primary participants, in accordance with the theories put forth in the literature. The sample was chosen to satisfy the research's objectives because it included management-level IT and business process owners. ITGI (2012, p. 3) emphasised that the board of directors and executive management are responsible for IT governance and the effective use of an IT governance framework. Purposive sampling (Myers 2019, p. 44) was used, and the study concentrated on the senior executive teams of private health care organisations, senior management teams of private hospitals, senior management teams of the provincial Department of Health and senior management teams of provincial hospitals. This was in accordance with the literature from the fields of IT governance and research methodology. The participants who gave useful information on the IT governance phenomenon under inquiry were chosen using purposeful sampling. Snowballing was utilised to interview more people as references to more valuable informants were made (Myers 2019, p. 44).

Sample size of interviewees

What constitutes an appropriate number of interviews in qualitative research has been widely discussed (Baker & Edwards 2017, p. 1). Data saturation, according to Baker and Edwards (2017, p. 2), is what determines how many interviews are conducted. Depending on the methodological and epistemological viewpoints used, there may be 12–60 interviewees. Creswell (2015, p. 77) defines saturation as a stage in the data collection process where the researcher collects data from several participants, but the addition of data from additional people does not significantly advance the development of the codes or themes. The quantity of interviewers or their presence cannot be predicted; therefore, it is essential to have access to persons who are knowledgeable about the phenomenon being studied (Baker & Edwards 2017, p. 4).

The number of interviews might be decided by considering the data saturation, the needs together with the theoretical foundations of the

study, demographics and the breadth and extent of the research questions. As a result, the sample size was considered as a function of the study's saturation point. The researcher ceased collecting data when it reached data saturation. The researcher did not pre-determine the number of interviewees, as suggested by earlier researchers. This number was established throughout the data-gathering procedure, and 20 interviews were ultimately conducted.

Semi-structured interviews

Interviews were done to add to the initial list of IT governance drivers, inhibitors, structures, procedures and relational mechanisms from the literature review. Schostak (2006, p. 54, cited in Alshenqeeti 2014, p. 40) asserts that an interview is a conversation between parties with the goal of generating in-depth knowledge about a certain topic and through which a phenomenon is interpreted through meanings given by interviewers. There are three types of interview data collection techniques: organised, semi-structured and unstructured. Rubin and Rubin (2011, p. 88) assert that semi-structured interviews are excellent for the depth of information that can be attained through them because they give the interviewer a chance to elicit more responses (Alshenqeeti 2014, p. 40). According to Myers (2009, p. 32), case study business research typically uses semi-structured interviews. In this study, semi-structured interviews with executives from the chosen health care organisations were conducted with the owners of both IT and business processes. These interviews provided the major data and document collection was used as a supplemental resource to gather more information.

The interview guide

The major data-gathering tool was an interview schedule. The researcher began each section of the interview with a succinct overview and relevant examples to ensure that the interviewees understood IT governance. The research topic and its sub-questions served as the basis for each section of the interview guide. In addition, the interview questions were aligned with the framework's components.

Interview guide design

To help develop the interview schedule, several industry-specific questionnaires were studied, as well as IT governance literature. To ease alignment and improve the research instrument's internal validity, the research questions and conceptual framework were also used to influence the interview design. Questions on demographics, IT governance drivers,

IT governance inhibitors, IT governance implementation and IT governance performance made up the schedule's five key sections.

The demographics questions addressed topics pertaining to the foundation of the organisation, such as the characteristics of staff members, years of IT expertise, and the significance and use of IT in regular business operations. The study by Jasim (2010) on the importance of IT governance in boosting the competitiveness of for-profit private schools in Dubai served as the inspiration for the drivers of the IT governance elements. Additionally, the questions were developed in accordance with the research question and the literature review on IT governance.

Several previous studies, including *Enablers and Inhibitors of Business–IT Alignment* (Luftman, Papp & Brier 1999), *Barriers to Formal IT Governance Practice* (Othman & Chan 2013) and *Barriers to Information Technology Governance Adoption: A Preliminary Empirical Investigation*, were reviewed to develop questions for investigation on the inhibitors of IT governance implementation (Othman et al. 2011). Themes from Phase 1 were merged with themes already present in the literature. Using the TOE, which the study modifies for the conceptual framework, the inhibitors of IT governance were then classified into the organisational context, IT governance context and environmental context.

Weill and Ross' IT governance performance questions were modified (2004, p. 2). Respondents evaluated their organisations in the IT governance performance question. The interview schedule was thoughtfully created, taking the health care environment into consideration. The component that assesses the effectiveness of IT governance initially modified Weill and Ross' measures and variables (2004, p. 2). Adjustments were made in response to the results of significant tests of the effectiveness of IT governance in health care:

1. Using IT to improve the delivery of clinical services.
2. Successful application of IT to advance clinical research.
3. The economical use of IT.
4. Use of IT to improve administrative procedures effectively.

Interview development matrix

The researcher created the interview schedule in combination with the interview development matrix to maintain the research's coherence and alignment. The research questions are broken down into interview questions through the interview development matrix. It guarantees that the main research problem and its subproblems are aligned with the interview questions. Additionally, it makes it easy to decide on suitable answers to each interview question.

Interview schedule validity

Validity might come from the inside or the outside. Internal validity assures that the researcher is indeed looking at the phenomenon they claim to be. A precise sampling strategy was established and closely followed. Onwuegbuze and Leech (2007, p. 234) described internal validity as the certainty value, pertinency, consistency, objectivity, reliability and trustworthiness of interpretations and inferences within the inherent establishment or group. All the interview questions are closely tied to the research questions and objectives, and all subject facets were covered to help increase internal validity. The extent to which research conclusions are generalisable to a wider environment is known as external validity.

Preparing for the interviews

By creating interview questions and practising the interview, the interview preparation process was completed. The researcher was able to familiarise themselves with essential subjects, prompts and probes thanks to the interview preparation. Interview flow and emphasis on the research topics to be addressed are improved by interview preparation. The researcher chose important questions to ask and followed up with enquiries to learn more. The interview guide was pre-tested and sent to the candidates in advance so they could have a look and get ready for the interviews. To increase the chances of cooperation and, at the same time, address time constraints, the researcher informed the interviewees of the interview's length in advance.

Conducting the field research

Principal informants who were informed about the concept of IT governance at the study organisations had to be sought out by the researcher. The CEOs were the organisations' gatekeepers, who provided access to and support for the research. The CEOs were in a position of authority to open the doors and provide the research senior backing. The researcher gave the gatekeepers and participants more details about the significance and shared advantages of the research. Additionally, descriptions of the types of interview subjects and the documents that would be collected for examination were provided.

Conducting interviews

The researcher considered variables like the layout of the interview location before performing the interviews. These elements included background noise and additional potential interview process disruptions. Pre-testing

improved and ensured the recording equipment's quality. The atmosphere should be conducive to hearing the interviews clearly, with little to no noise.

Information technology and business decision-makers in the organisations under investigation participated in the qualitative interviews in person. All the interviews started off by thanking the subjects for taking part in the study. The researcher gave a brief outline of the subject under investigation and its possible advantages. To create a shared understanding and address the same topic in accordance with the research's objectives and maintain content validity, the researcher next asked the interviewees what they understood about IT governance. To obtain consent to digitally record the conversations, the interviewees were also instructed on the ethical realms of anonymity and confidentiality. The participant information letters and consent forms utilised for the study were also provided to interview subjects. Before taking part in the research, all interview subjects were required to sign consent forms.

An interview guide with questions that were directly drawn from and aligned with the research topics supported the interview progression. However, by closely following the interview protocol, the researcher was able to avoid dominating and directing the interview. In other cases, interviewees discussed topics that were scheduled to be covered later in the interview guide. In these situations, the researcher would merely use a follow-up method on already-stated problems. Interviews were conducted in boardrooms, conference rooms and occasionally in the offices of interview subjects. Noise and other disturbances barely affected most of the rooms. Most of the interviews lasted 45 min to an hour on average.

The interviews were suitably spaced out, averaging two per day, two per week or two per month. This allowed the researcher to have adequate time between data collection sessions to conduct a preliminary analysis of the recorded interviews and field notes (Yin 2011, p. 166). The collection of qualitative data took place during a five-month period (from May to September 2015).

Recording of interviews

The interviews for the study were recorded using a digital voice recorder. Yin (2011, p. 171) asserts that recording aids in capturing the interviewee's statements while they are being spoken. To ensure clear recordings of the interviews, the recorder was carefully positioned between the interviewer and the interviewees. The interviewees gave their consent for this to be done. As a backup plan, recordings were also made using an Android smartphone. Depending on whether the interview took place in a private health care organisation or a public health care organisation, the files from

each interview were given the proper names. The researcher then downloaded the interviews to her computer for backup and later transcription and analysis.

Document collection

Researchers have been warned not to rely too heavily on key informants as they can be biased (Yin 2011, p. 81). Secondary sources were gathered for analysis to provide research data provided by the study organisations, which complemented and validated the semi-structured interview data. As a result, following the interviews, documents were gathered. Strategic plans, strategic IS plans, committee structures, IT security policies and procedures, organisational charts, IT governance terminology and references, circulars and corporate websites are just a few examples of secondary data sources.

Chain of evidence

According to Yin (2009, p. 118), the researcher should put together a chain of evidence that includes two basic types of collection, namely, the definite data acquired, recorded and organised by entry, and the researcher's continuing analysis of the data. Before doing data analysis, the researcher created a database of evidence in accordance with Yin's hypothesis. Drawing a database of evidence, according to Yin (2009, p. 122), also provides the evidentiary chain of evidence that lends credibility, dependability and validity to the conclusions in addition to the evidence needed for the researcher to draw deductions. Building a database also has the benefit of making raw data accessible for independent review.

The study utilised primary and secondary data. The primary sources of data were interviews. Plans and policies for IT, strategic plans, and terms and definitions for IT governance made up the secondary sources of data. The interviews aided in understanding the participants' perspectives on the IT governance issue as well as their experiences, meanings and motivations. Using the ATLAS.ti software suite, the evidence database was created. The researcher then moved on to analyse the data to extract meanings and make sense of them, which is merely one stage of the research process.

Qualitative research validation

Valid research is essential to its effectiveness; otherwise, it is worthless. Data validity in qualitative research can be attained by the individuals addressed, the scale of triangulation, the depth, richness and scope of the

data realised, and the objectivity or neutrality of the researcher (Winter 2000, p. 9). The partiality of respondents, together with their moods, attitudes and opinions, all work together to introduce some bias into qualitative research (Cohen et al. 2011, p. 179).

The researcher employed several techniques to verify the findings. These include participant verification, disclosure of the researcher's bias and lengthier stays in research organisations. To establish reliability and credibility, all processes conducted during the research are explicitly documented for examination by other researchers. As proposed by Yin (2011, p. 41), a study is considered valid if the conclusions drawn from the data interpretations are accurate representations of the situation being researched. To allow for impartial assessment by other academics, the researcher documented every step of the process. Writing a proposal and getting it approved by a variety of parties, including university committees and committees of the organisations being examined, are the first steps in the process. According to Yin's theories, all study processes are thoroughly discussed, together with the restrictions placed on the research and how the researcher attempted to overcome them.

Additionally, conclusions from the research are formed using data from various viewpoints within the organisations under study. Multiple data sources were used in the study to strengthen the validity of the data collected in line with Yin (2011, p. 81). According to Cohen et al.'s (2011) assertions, this study attained research rigour through meticulous audit trails of the evidence, member verification, peer debriefing and respondent validation when coding or categorising the results. Using ATLAS.ti, all data was rationally organised into a database of evidence. The database can be reviewed by unaffiliated researchers to increase internal validity (Yin 2011, p. 82). The researcher then used ATLAS.ti, a widely used data analysis tool in the scientific community, to analyse research data.

Generalisation

The benefit of multiple case studies is that they can help make the findings more generalisable. The claim that case studies give analytical rather than statistical generalisation is made by Robson (2002, p. 183) and Yin (2009, p. 15). Case studies can help a researcher understand other similar events, phenomena or circumstances by contributing to the extension and generalisation of the theory (Cohen et al. 2011, p. 294; Myers 2019, p. 90). In this sense, choosing a province that offered health care services at all four levels – tertiary, regional, district and specialised – made it possible to generalise the research to a larger South African environment. Verschuren

(2003, p. 137) supports this claim by stating that the researcher can draw general conclusions from a limited number of case studies that are representative of complicated topics in general. Only after the researcher has determined the organisations that encompass the range of variability can external validity and generalisability be proven.

The qualitative data's capacity to be generalised depends on its theoretical contribution. Adhering to qualitative findings has limitations when attempting to generalise them to the entire community, as surveys do. In other words, it switches from statistical generalisation to analytical generalisation. According to Yin (2011, p. 79), qualitative research, which is not dependent on statistical methods like surveys, needs other strategies to generalise its findings. The results are extrapolated from a theory rather than from populations (Yin 2011, p. 45). In addition, Oates et al. (2022, p. 151) contend that analytical generalisations can lead to broader findings, whereas Myers (2009, p. 23) proposes that case study research can lead to four main generalisations, including notions, theory, consequences and rich insights or a combination of these. As a result, the researcher achieved both analytical generalisation and statistical generalisation through engaging in Phase 2 to increase the trustworthiness of the research results (quantitative phase). How the phases were incorporated into the study is shown in the following section.

Integration of phases

There are three fundamental mixed-technique forms of data set integration, according to Creswell (2015, p. 6). The three approaches all use convergent design, which analyses quantitative and qualitative data separately to produce comparison findings. Explanatory sequence design is a different type of layout where qualitative information is used to aid in the explanation of quantitative outcomes. The third design is an exploratory sequential one, in which the problem is initially studied qualitatively before moving on to the quantitative phase to assess the study's variables. According to Creswell (2014, p. 82), research data integration can take place in a variety of settings, including the study's discussion section, the data-gathering phase, the data analysis phase and the presentation in tables and graphs.

Exploratory mixed-methods research was used by the researcher (Creswell et al. 2011, p.10). The study implied that Phase 2 quantitative data collection and analysis would be based on findings from the qualitative study. Thus, qualitative findings help to improve the quantitative research tool and provide information to Phase 2 questionnaire respondents. At the interface for data-gathering, the two strands were combined. The quantitative phase was strengthened using the qualitative data (Creswell 2015, p. 83).

Representation of integration in the mixed-methods study

There are several ways to portray integration in a study, according to Creswell (2015, p. 84), who names them as data collection, data analysis, or the discussion and conclusion. In this regard, the researcher tabulated and presented the exploratory qualitative results in the opening column, the measures or variables resulting from the qualitative results in the subsequent column, and the process by which the measures and variables shaped new scales or instruments in the ultimate column. If the representation is constructed in this way, it is simple to grasp how the original qualitative phase built on to the quantitative phase, according to Creswell (2015, p. 85).

Quantitative research phase

In addition to other factors that have already been mentioned, the initial qualitative phase made it easier to comprehend the respondents' terminology. The questionnaire items can be made clear and simple to comprehend with the help of the respondents' language and terminology, which makes the collection of quantitative data more useful. Then, the qualitative stage's findings, including the claims made in the literature, were confirmed and quantified during the quantitative phase, which was primarily deductive in character. Details on how the quantitative phase was conducted are provided in the sections below.

Questionnaire development matrix

The researcher created the questionnaire in collaboration with the questionnaire development matrix to maintain the research's coherence and alignment. The research questions are divided up into sections by the questionnaire development matrix. It guarantees that the main study problem and its subproblems are in line with the questions on the questionnaire. Additionally, it makes it possible to choose suitable quantification scales for each questionnaire topic. Choosing the right statistical tests for data kinds, data measures and data types for answer options is also helpful.

The questionnaire

A questionnaire is described in the literature as a tool for gathering and organising data regarding a certain area of interest. It is essential to consider factors for effective questionnaire design (McGuirk & O'Neill 2016, p. 4). The wording, order, duration and output of survey items are some examples.

According to the literature, a questionnaire should also clearly relate to the study objectives, and it is important to explain how the results will be interpreted and applied. To convey the study findings back to the respondents, the instrument also needs to tell them about the research's purpose and ethical considerations.

Considering the foregoing, the questionnaire was created during the first stage of the study process through a review of the literature and validation of the qualitative findings. The goal of the research was explained in an introductory section of the questionnaire, assuring respondents that all data were gathered in accordance with research ethics principles. Variables from Phase 1 of the research were identified, and listing helped identify key components of the study. To create the questionnaire, the variables were arranged in a purposeful progressive style that covered the conceptual framework. The questionnaire items were logically numbered and ordered, with similar items covering the same research objectives grouped together. Respondents were able to complete the questionnaire in its whole thanks to the logical order in which the questions were asked (Sarantakos 2017, p. 262; Bird 2009, p. 1310; McGuirk & O'Neill 2016, p. 11).

Additionally, the questionnaire's design was in line with how the data analysis was supposed to be done. In terms of the constructs and variables used in the form of the questions, the questionnaire's design was influenced by the research aims. Bird (2009, p. 1310) asserted that open questions are simple to generate but complex to analyse, in contrast to closed questions, which are frequently utilised in quantitative studies. The survey was completely closed, making it simple to administer it online and do quick coding, analysis, comparison and quantification. Closing the questionnaire increased response completeness while preventing irrelevant responses (Sarantakos 2017, p. 255; Bird 2009, p. 1311).

In this regard, the closed questions in the questionnaire measured the degrees of differences using nominal, ordinal, interval and ratio levels. A 5-point Likert scale measure was mostly used in the survey questionnaire to provide a range of responses to specified questions or comments. To get around response option restrictions, the probable range of responses was defined, along with additional possibilities. The questionnaire was divided into Section A (demographic data), which included nominal, ordinal and scalar data types as well as discrete, continuous and dichotomous data types as relevant data measures. Additionally, only continuum data types – scalar as the data type – were used in Section B (IT governance drivers). Additionally, dichotomous data types and nominal data types characterised Section C (the establishment of IT governance). The continuum scalar data type made up Section D (IT governance inhibitors). Finally, the data type for Section E (IT governance performance) was continuum scalar.

Respondents had to mark the relevant option on a scale that ranged from strongly agree to strongly disagree for the drivers of IT governance objectives. Information technology governance performance objectives had grades from not important to very important as well as from not influential to extremely influential. Information technology governance implementation objectives ranged from not contemplating implementation to fully implemented.

Questionnaire validity and reliability

Validity might come from the inside or the outside. Internal validity assures that the researcher is indeed looking at the phenomenon they claim to be. The extent to which study findings are extrapolated to a wider context is referred to as external validity. External validity was supported by the data collection from many private and public hospitals located throughout the province of KwaZulu-Natal. A precise sampling strategy was established and closely followed. All the questions in the questionnaire and interview guide were directly related to the research questions and objectives, and all facets of the subject under examination were covered to help increase internal validity. The statistician also examined and approved the questionnaire's content validity. The statistician went over the questionnaire more than five times to make sure that it could be easily understood by responders and that redundant questions had been removed. Construct validity testing was done during the process to make sure the instrument measured the things it was intended to assess.

The researcher used a respondent-friendly design for the questionnaire in addition to taking into account the burden of the responses. The phrasing of the survey items was clear and unambiguous to allow respondents to easily and accurately comprehend the content of the questions. To increase the questionnaire's value even further, it was pre-tested within the researcher's organisation. Three senior lecturers and two IT administrators were given access to the questionnaire so they could review it, assess its quality and offer their opinions. In order to enhance the instrument, considerations were made and modifications were implemented. As a result, the questionnaire was developed iteratively until a consensus was reached on the final version. The data were subjected to Cronbach's alpha reliability test in order to evaluate the research instrument's internal consistency. Additionally, the researcher scrupulously followed a sequential mixed-methods strategy and conducted the data-gathering and analysis in accordance with the criteria outlined in the data collection in an ethical manner. This increased the likelihood of getting the same answers and measuring what was intended by improving the reliability and validity of the questions.

Questionnaire administration

A survey questionnaire can be delivered in several different methods, including physically and electronically (Creswell 2014, p. 76). These modalities of administration include self, email, telephone and face-to-face interactions. Each approach has pros and cons that vary depending on a number of variables. The way a questionnaire is distributed depends on the study's applicability, the resources available, the sample size, the sorts of questions, the makeup of the population and the amount of time available (Bird 2009, p. 1312). The researcher conveniently reached the intended respondents by administering the questionnaire online in order to reach respondents from the two provinces. The final text of the questionnaire was transformed into an online questionnaire using SurveyMonkey with the approval of the statistician and supervisors. From survey design to making the questionnaire available for respondents to complete, SurveyMonkey offered robust and practical survey tools. Respondents whose email addresses had been gathered in Phase 1 of the study procedure were emailed links to the online questionnaire. The researcher was able to monitor progress during response collection as the respondents completed the questions thanks to SurveyMonkey tools' quick alert messages.

Phase 1 of the study involved making initial contact with the organisations and respondents, which helped to build much-needed rapport and provided inspiration for Phase 2's online distribution. As a result, gatekeepers identified in Phase 1 greatly aided in obtaining higher questionnaire response rates in Phase 2. Gatekeepers followed up and sent out reminders on the researcher's behalf, which led to admirable response rates during the quantitative data-gathering stage. The majority of the questionnaire respondents were members of the IT and IT governance committees, who occasionally received reminders to complete the online form during most committee meetings. Because of the huge response rates, quantitative data collection was successful.

Questionnaire target population

The board, strategic management level, executive management level and operational level were all included in the research population. Board members, CEOs, members of the IT and IT governance committees, and senior business and IT decision-makers were among the research respondents. Based on the qualitative findings, 150 respondents, including those who participated in the Phase 1 interviews, were the target population. A total of 121 completed replies were received for the study or an 80% response rate. Three months were spent collecting quantitative data (01 June 2016 to 31 August 2016). The results of an analysis that followed were quantitative.

Sampling of questionnaire respondents

As in Phase 1, the research employs a non-probability purposive sampling (Myers 2019, p. 44) technique inside the sample organisations. The only respondents who were expected to provide useful and accurate information to answer the research questions were those who were involved in IT and IT governance. The King III Report recommends that the board assign management the duty of putting IT governance frameworks into action. The questionnaire was delivered to management, who oversee putting IT governance into place in accordance with the recommendations made in this study. Although they came from the same population – management – the qualitative and quantitative samples had varying degrees of management. The population mentioned in the previous section about the questionnaire's target population was the focus of the survey.

The body of research advises using discretion when choosing instances that answer the study's goals and queries. The researcher should also choose informants who are eager to communicate, educated about the topics being studied and representative of a variety of viewpoints. Accordingly, respondents were chosen based on their familiarity with and participation in IT governance within the research organisations.

Research ethics considerations

Research ethics approval is one of the most important components of research. For every human subjects study, various precautions were taken to safeguard participants from damage. Prior to the study's data collection, the ethical principles of informed permission, privacy, confidentiality and anonymity were upheld. The parts below include the conversation.

University ethics committee approval

The application and receipt of ethics clearance from the university marked the beginning of the ethical clearance procedure. Members of the University of KwaZulu-Natal's Humanities and Social Sciences Research Ethics Committee reviewed the work. On 27 March 2015, the ethics approval was granted.

Study organisations' ethics approval

The researcher then applied for and received ethics clearance from the appropriate authorities of the study organisations, namely, the Department of Health and the private health care group research committees, in addition to receiving ethical approval from the University

of KwaZulu-Natal's (UKZN) Ethics Committee. The submission of the research proposal, university ethical approval and letters from the research leaders all helped to speed up the procedure (supervisors). The organisations' ethical committees were ultimately satisfied, and approval was given.

Gatekeepers' approval

The researcher then sought gatekeepers' agreement for data collection after receiving the organisations' ethical clearance letters. The organisations under study included a variety of departments and hospitals. Even if permission was given at the organisational level, the researcher still needed permission from the administrators of the participating hospitals and divisions. Different divisions and sub-units received submissions, and some of them verbally as well as in writing accepted the research.

Voluntary participation and consent

Finally, the researcher had to ask the respondents for their voluntary participation after obtaining permission at several levels, from the university to the divisions of the organisations. To comply with the requirements of informed consent (Myers 2019, p. 60), it was made clear to study participants that their participation was optional and that they might revoke their consent at any point during the investigation. The researcher had to get permission from the subjects before recording the interviews or having them fill out the questionnaire. Informed permission letters were signed by participants and the researcher in this process, with one copy being kept by the participant and the other by the researcher.

Anonymity, privacy and confidentiality

Cohen, Manion and Morrison (2017, p. 644) emphasised the need for participant characteristics to be kept confidential and stated that any infringements on this must have the consent of the participants. Cooper and Schindler (2001, p. 117) advised that confidentiality can be attained by acquiring signed agreements denoting non-disclosure of the research, containing access to data which ascertain respondents and requesting the consent of the respondents' beforehand release of information about respondents. The organisations and participants were given aliases and pseudonyms in accordance with the request for anonymity made by the participating organisations. Additionally, significant measures were taken to maintain the privacy and confidentiality of all study data, such as password-protecting the interview files.

Risk and benefit

The data were exclusively utilised for research purposes, and all essential security precautions were taken to keep it safe and prevent it from falling into the wrong hands. In case participants had questions about the research, the researcher gave their contact information as well as that of the research supervisors. The researcher also disclosed to the participants that there were no prizes or financial incentives associated with the process; rather, participation was entirely voluntary.

Research data security

The researcher and the service providers, especially the statistician and the transcriber, stored data, work products and research-related materials in a safe and secure location. The researcher and the service providers came to an agreement outlining the terms of the services, including the safe and secure keeping of the study materials. The researcher preserved all the research materials for as long as the UKZN required them to be kept for ethical audit procedures. Additionally, all electronic files comprising study-related paperwork and output were retained for as long as the institution needs them for ethical audit purposes, either on the researcher's highly secured computer or in online or offline backup storage. After being kept safe in accordance with the aforementioned university standards, the research material will be disposed of in a way that prevents data from being recovered or ending up in the hands of uninvited parties, whether on purpose or accidentally. The researcher will then utilise specialised wiping applications to delete 97 electronic records. The procedure entails deleting from the storage discs and then erasing all computer drives as a second step. Supervisor and study organisation emails will be erased, and the deleted items folder will thereafter be cleared. The best technique to get rid of the information contained in portable media like a compact disc (CD) is to destroy the relevant media items, and therefore, CDs will be shattered. The researcher's software would also 'delete' any data stored on a computer's hard disc. If the text records do not include any sensitive information, they will be disposed of using standard waste disposal procedures, including recycling. The red confidential waste bags will be used to shred and discard sensitive paper records. Sensitive research material will be destroyed locally so that the researcher may be sure the records have been destroyed.

In accordance with UKZN's ethical guidelines and after consulting with research supervisors, the storage and disposal standards and procedures will be properly followed.

Feedback on research results

The standard of respect for people is the foundation for communicating study findings to participants. In exchange for the time and effort participants invest in the study, this is an ethical consideration. By presenting concise research reports to the study organisations, the researcher will give input in that regard. Publications will be forwarded to the private health care organisation and the Department of Health in copy form. If the researcher needs to physically present the research findings orally to host institutions, depending on the time limits of the study organisations, Microsoft PowerPoint presentations will be made upon request. As mentioned in the previous paragraph, copies of the research will also be distributed to the organisations.

Fieldwork challenges

The processing of the ethical clearance presented the first difficulty. The procedure entailed the researcher requesting free participation in the research from all of the targeted organisations in writing and receiving their approval. This required the filing of pertinent paperwork, such as the study proposal, research tools, supervisor support letters and documentation of enrolment at the university. The researcher had to submit to the university for final research ethics clearance after receiving approval from the targeted organisations. However, the procedure for the ethics applications ultimately involved the back-and-forth sending of papers. Data collection was delayed by more than three months because of errors that were found on the initial ethical clearance letters that had to be corrected. The letter of ethical clearance was finally published.

The next problem was contacting participants to set up interview times after the final ethical clearance letter was issued. It was difficult to schedule interviews with the intended participants as they were managers with obligations, making it difficult to complete the questionnaire. Most of the time, the intended audience members were either attending significant meetings or had full schedules. However, it took a lot of persistent follow-up on the part of the researcher to eventually obtain them for the questionnaire and interviews. Some interviewees were reticent during the interviews, which caused them to give brief answers to the questions. The researcher had to reassure the participants that the research was just being done for academic objectives and that the participants would not be harmed in any way to ease the talks and allow for further exploration.

Conclusion

Following the established research approach, Chapter 4 went over the primary research topic and the sub-questions that needed to be answered. For this study, methodologies from earlier studies on IT governance were assessed. Methodological triangulation was used to acquire an intense insight of the phenomenon under study and to improve and expand upon earlier IT governance studies. Finally, a thorough discussion of ethical domain concerns was conducted. These topics included ethics clearance, gatekeepers' consent, voluntary participation, privacy and confidentiality, protection of research data and reporting of findings. The coding of qualitative data is covered in the following chapter.

Chapter 5

Presentation, interpretation and analysis of qualitative data

Introduction

The most crucial step in addressing the research questions is to extract meaning and make sense of the data through data analysis after the research data have been gathered. According to Leedy and Ormond (2005, p. 4), who were quoted by Motloutsi (2010, p. 53), data are of little or no use only by themselves, and data should be relevant to the research question. Extraction of meaning is crucial and necessitates the application of pertinent scientific methodologies to adequately address the research concerns. The backdrop of the study is given in Chapter 1, along with the statement of the research problem that justified the need for the study. Additionally, the necessary study goals and the research questions were offered.

The literature study in Chapter 2 showed how important IT governance has become to business. According to the literature, IT governance can be achieved through a combination of relational mechanisms, structures and processes. The literature also showed that a number of obstacles prevent the implementation of IT governance. Additionally, Chapter 2 provides the

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theoretical foundation that guides the examination of the research issues. The various theories of innovation are explored, and those that offer a comprehensive lens through which to approach the research issues are chosen. To frame the examination of the research topics, the researcher combined the TOE and the DOI theories.

The philosophical foundation and theoretical modelling are covered in Chapter 3. To provide a meaningful response to the research questions, philosophical assumptions provide a relationship between the research topic and the research methodology. This entails the philosophical presumptions underlying the study's methodology, methods for gathering data and methods for data processing and presentation.

The research was conducted using a sequential mixed-methods methodology, which is described in Chapter 4. Through chosen private and public health care organisations in South Africa, an exploratory study is being conducted. Semi-structured interviews with business and IT decision-makers were used to gather primary data, which were supplemented by secondary data from the document-collecting in Phase 1 process. Phase 2 involved collecting additional data via an online survey form. Using the ATLAS.ti programme, qualitative data were thematically analysed. Following the development of codes and code categorisations, qualitative data analysis is conducted with the primary goal of identifying the barriers to IT governance implementation in organisations, along with other research goals, all within the context of the research conceptual framework described in Chapter 3 of this book.

In accordance with the study framework established in Chapter 3, qualitative data coding, data analysis and qualitative outcomes are provided in this chapter. The conclusions are supported by information gathered from the Department of Health and commercial health care organisation business and IT decision-makers. Each section of the study framework is followed by a variety of conclusions that are announced.

Deductive and inductive analysis

While Blaikie (2007, p. 79) contends that there is no such thing as pure deduction and that inductive researchers do not produce or interpret data with a blank mind, their data analysis is influenced by deductive assumptions deriving from earlier research in the topic. Given that data were gathered through semi-structured interviews, the researcher used both deductive and inductive approaches to data analysis. Using ATLAS.ti as the computer-assisted software tool, concepts, ideas and themes

emerged from the data, while other themes supported themselves in the literature review.

Data analysis procedures

The researcher started by inserting all the research data into ATLAS.ti to create a hermeneutic unit. Thematic analysis was used to analyse the transcriptions of the interviews once they had been entered into the database. The database was filled with all the study organisations' IT decision-related documents. The steps taken by the researcher to derive meaning from the data gathered are described in depth in the sections that follow.

Reasons for using ATLAS.ti

NVivo, ATLAS.ti, SPSS, MAXqda, NUD*IST and Ethnograph are a few examples of computer-assisted software applications that can process data ready for analysis. The researcher must first upload the transcripts into the computer before using the software. Single and many data sets are grouped, located, organised and searched by the software, which then returns the results prepared for analysis and display. As a result, the researcher conducted systematic, transparent and cohesive data analysis using ATLAS.ti. The user-friendly software package ATLAS.ti allowed codes to be applied consistently, excluding no data.

Interview coding

According to Gibbs (2018, p. 53) and Flick (2018, p. 482), one of the key components of qualitative research is coding. A code is a term or label given to a text that represents an idea or piece of information. Coding is the process of turning survey replies and respondent data into accurate classifications for analytical purposes.

The researcher began by generating key codes from the research questions in this regard. The study questions served as the prototype codes, master codes and those deriving from them that were incorporated into the interview schedule. Secondary codes were then used to record different ways that respondents expressed themselves about the subjects of each interview question. Identification of related information and retrieval of objects with the same codes were made easier and more efficient by coding. A list of codes was developed, focused on contexts, practices and meanings and is stored together with what the codes mean, according to Gibbs (2018, p. 53).

As advised by Miles, Huberman and Saldaña (2018, p. 10), the researcher used an iterative coding procedure, beginning the procedure as soon as feasible following the initial round of data-gathering. According to Miles et al. (2018, p. 10), coding should include a restatement and reiteration process, where some codes used in the initial phases of coding might be altered, allowing the researcher to work on the research data more than once to facilitate consistency and exhaustion of codes. Coding was used to find patterns and frequencies in the research data. Data from interviews can be analysed using thematic analysis. This entails locating and analysing data topics (Braun & Clarke 2012, p. 58). All the interview scripts were entered into ATLAS.ti, the programme used in the study to analyse qualitative data, after being transcribed. The researcher was able to go over each interview transcript using ATLAS.ti and code new ideas as well as recurring patterns.

Open coding procedures

As part of the formatting procedure, the researcher divided the interviews into distinct data chunks based on the interview questions. This is corroborated by Crabtree and Miller (2022, p. 54), who state that organising the data for later analysis and interpretation can be accomplished by considering the research questions as discrete codes at the beginning of the data analysis. The research questions' codes served as the basis for the qualitative analysis.

After deciding on the study questions as codes, an encoding procedure was started, as discussed by Boyatzis (1998, p. 4). Boyatzis views the encoding process as an evolution of data organisation for the development of themes from codes. Themes provide the organisation of the possible observations that describe and interpret the qualities of the phenomenon in this context (i.e. codes). The researcher used line-by-line analysis of the interview transcripts to find these themes, providing concise word summaries for each pertinent line of data and precisely summarising the meaning of the text segment, also known as labels (Cohen, Manion & Morrison 2017, p. 652). The words from the coded sentences were occasionally employed by the researcher when creating the codes. Following the completion of the interviews' coding, the code manager's list of all codes generated immediately emerged.

The researcher next engaged in an iterative process of constant comparison to reduce the large list of codes into a smaller, more manageable number of codes to ensure that each participant's viewpoint was coded. According to Cohen et al. (2017, p. 653), coding should not be viewed as a one-time task. Cohen et al. (2017) claim that to achieve consistency and

code coverage, the researcher must go back and forth multiple times while reading and rereading, assigning and reassigning codes, placing and replacing codes, and refining codes.

After the initial coding was finished, the open codes needed to be organised into code families using overarching themes or categories. The categories made sure that all notions were more abstract and could be grouped consistently. A variety of themes arose, offering a reflection on the study's goal. Additionally, the themes were thorough and sensitive to the information in the data. These comprised common themes that the researcher anticipated, unexpected themes that shocked the researcher, difficult to categorise themes that contained thoughts that did not fit into one theme, and finally, major and sub-themes that represented the key ideas.

The researcher looked at the concepts that comprised the themes and sub-themes, paying close attention to how they interacted with one another. To establish evidence of connections between the overarching themes, it was necessary to fit quotes that were originally difficult to categorise into a number of topics. The researcher followed the procedure as described on the first set of interview transcripts before doing it again on the other transcripts. As the coding process continued, some new themes appeared. The researcher went back to the earlier interview transcripts and compared the new themes to the old ones to see if any ideas needed to be adjusted. This process of comparison is ongoing. Using the interview data as the starting point, the coding procedure produced a classification tree that moved from the specific to the general, moving from the codes to the sub-themes to the themes that led to theoretical generalisations.

The main characteristics of the situation under study were summarised by the researcher. Key ideas and challenges raised by the data were identified in the summary (Cohen et al. 2017, p. 658). Additionally, the researcher worked on the report. The story was built during this process using the themes, sub-themes and codes. It also included defining the concepts, providing quotes from the interviewees to bolster the ideas and talking about how the sub-themes and the main themes interacted.

Document analysis

The ATLAS.ti programme received the documents to be analysed. The documents that were gathered were coded for content. The researcher first coded the data, then categorised the coded remarks into different

groups to thematically organise the data. Analysing documents followed a similar procedure to interview analysis. The categories of topics found in the interview analysis were used to organise the documents 104 that were gathered from the organisations. Themes acknowledged in the interviews were backed by statements and pictures, which were classified. Other materials that had no bearing on the study's findings were not coded. The records served as support for the interviews, and new insights also came from them.

Summary of coding procedures

In conclusion, the researcher used a methodical process that included four consecutive steps. The research questions were used to create primary codes in Stage 1. The second stage entailed listing each code that originated from the coded data under a certain primary code. The researcher then reviewed the list of codes generated in Stage 2 and categorised the difficulties in Stage 3. In Stage 4, the researcher analysed the messages from the groups from Stage 3 and made comments on them.

Coding reliability and validity

Inter-coding made it easier to trust content analysis, which improved validity. According to Hartley's (2004, p. 330) advice, an essential component of increasing validity was reviewing the findings with study participants. Additionally, data analysis was carried out using references from the literature to ensure that the research findings were consistent with those of other studies. The study's results are discussed in the sections that follow.

Qualitative findings

The systematic process used for data coding and data analysis was described in the parts prior to this one. The parts below contain the findings from the qualitative data analysis, which revolve on the Chapter 1 research topics. The research topics focused on the drivers of IT governance, the implementation of IT governance, the barriers to IT governance implementation and, finally, the performance of IT governance in both private and public health care sectors.

Information technology and information technology governance in health care sector

The researcher includes biographical details, covering IT and its significance to the organisations, to help readers understand how IT is used in the

organisations under study. The private health care group's affiliated facilities and corporate headquarters provided the data collection. Additionally, information was gathered from the department's affiliated hospitals and the provincial head office. The designations of the interviewees, all of whom had extensive knowledge and expertise in the field of IT and IT governance, comprised IT managers, IT governance officers, chief information officers and members of the Governance Risk and Compliance team.

The majority of participants emphasised how IT has developed into a strategic instrument for managing daily operations in the health care industry. The strategic importance of IT to health care business and operations is emphasised in the statements made by interviewees.

Information technology became a hot topic of discussion as the importance of IT in organisations became clear. Information technology challenges and how IT may enhance corporate operations and meet objectives are frequently brought up in meetings. The reasons for IT governance gave rise to attempts to utilise IT and its advantages. The motivators are the widely acknowledged explanations for the support of IT governance projects. Understanding the motivations behind IT governance deployment was important for achieving the goal of giving the company an IT edge. The following section discusses these so-called push factors.

Information technology governance driver results

The field research's drivers are considered in this section, which also declares why commercial and public health care organisations should apply IT governance. Most of the interviewees emphasised that the deployment of IT governance was driven by the need for better IT decision-making that was in line with business objectives. Information technology now serves business goals and requirements as IT decisions are no longer made in isolation but in collaboration with business decisions. Interviewees also mentioned that regulatory compliance forced them to think about IT governance. The policies of the government and other regulatory authorities have an impact on the environment in which businesses operate. These outside variables prompted organisations to think about implementing IT governance. One of the crucial laws promoting the implementation of IT governance was named as the *Protection of Personal Information Act 4 of 2013* (PoPIA). The rising reliance of business on IT, they continued, made it imperative to govern IT in order to achieve the intended business benefits. The quotations from the interviewees that are included below support the aforementioned opinions on the subject of the factors that influence IT governance in organisations.

According to a report by an IT governance officer, there are several factors that influence IT governance:

> 'I think it's to provide the element of a number of things, there is legislation coming through like PoPIA to enable deliver value through IT to the business, deliver business value through IT, obviously manage some of the risks that we have, manage some of the IT risks, and also as a framework IT governance is also helps ensure that you plan for it as a business strategy so it gives that framework that is essential. (IP1, participant, n.d.)

The IT risk manager concurred as well:

> 'We didn't have a governance framework that was overseeing everything that was happening in IT because you invest so much in IT but you don't necessarily derive the benefit from it, and you constantly see IT projects, you constantly see business needs not being aligned to IT strategy, and they have to be some mechanisms where we can track, we can audit trail, and security as well. Because we came from a company where we purchased various companies, there were therefore widely dispersed methods and varied IT systems. (IP2, participant, n.d.)

The IT risk manager emphasised further that:

> 'The recommendation was also made by the board because we report our risks to the board's audit and risk committees. As a result, the board wasn't happy with the level of risk we were carrying from an IT perspective and ordered that some of the burden of ensuring IT risks be placed on audit. Accordingly, the board audit committee gave the order that we begin looking at a framework to put into place.' (IP2, participant, n.d.)

According to the compliance officer:

> 'First and foremost, King III compliance was a driving force behind the need for IT governance because it is a condition for JSE listing and King III places a lot of stress on it. They then chose COBIT, the most well-known standard to align to, as their prior CIO determined that we required a framework to base our IT governance on. After that, COBIT's design was started approximately three or two years ago, and we began implementing it last year. To answer your question, I would say that it is first and foremost a matter of legislation, but it is also important to put in place a framework that will add value to the company. In other words, the goal is not to accomplish everything, but rather to streamline the framework for the organisation.' (IP3, participant, n.d.)

The second IT governance officer said:

> 'We always approach audits from a risk-based perspective, mitigating risk organically even when we don't provide a particular or mandated name for a framework. We've been doing that for a long time. We wanted to be able to discuss governance in a way that individuals outside the organisation could comprehend, in my opinion.' (IP4, participant, n.d.)

Member 1 of the IT governance team said:

> 'I believe the only justification for doing so is to minimize risk to reduce any exposure or potential harm. In my opinion, businesses simply need to embrace this and understand the necessity of governance regulations and enforcements.' (IP5, participant, n.d.)

The results show a pattern in what motivates health care organisations to adopt IT governance. The findings showed that several factors influence organisations' decision to establish IT governance, including IT risk management, statutory requirements and IT value delivery. Most interviewees said that IT governance helps organisations accomplish their intended business goals and objectives, from IT investments to better business and IT alignment. They also referred to how IT has developed into a strategic business enabler in the business and health care environments. Because businesses rely so much on IT, good governance is essential. Additionally, most participants agreed that the realisation of the advantages of IT governance has prompted executive management and boards to put it into practice for better IT decision-making and IT reporting.

The study also reveals that both internal and external pressures have an impact on how IT governance is implemented by organisations. There is consensus that the drivers are the outcome of trigger events and pain spots, as shown by a comparison of the literature and research data. The literature divides the drivers into internal and external components, and the current investigation has confirmed this division. However, the study shows that organisations are mostly driven to implement IT governance by internal forces. However, it appears that meeting legislative requirements is the only external commitment that must be fulfilled; all other motivations for IT governance come from within the organisations.

Moreover, organisations are compelled to realise economic gains from such expenditures because of the high capital requirements of IT systems. The best strategy to get the intended business value out of IT investments has been identified as IT governance. Information technology now satisfies business demands as IT decisions are no longer made independently from business decisions. For routine business operations, organisations are becoming more and more dependent on IT systems. The systems completely cover the essential business operations of the organisations; thus, any interruption in the operation of the IT systems results in a significant loss of revenue for the company. As a result, the organisations are left with no choice but to manage the IT systems.

Information technology governance has primarily been viewed as an administrative hassle in recent years. There was a lack of understanding of the justifications for its consideration. In this perspective, organisations in the past saw IT governance as a resource-intensive activity with few actual, measurable business benefits. The benefits of IT governance have, however, been more apparent and more understood during the past few years. Business and IT decision-makers are now seriously considering IT governance in their organisations as a result of this.

In addition, it has been discovered that one of the most significant drivers of IT governance in organisations is the requirement to match business decisions with IT decisions. All IT decisions are made to satisfy business expectations and obligations; they are no longer done in isolation. From that angle, a successful alignment occurs when business and IT work together to accomplish a common objective.

However, there are risks associated with using IT. The best method to recognise and control IT risks is through governance. Investing in technologies that ultimately do not provide business benefits is one of the biggest dangers. Organisations have come to the realisation that the high capital requirements for IT investments in the past were not maximising true business value. This resulted from a misalignment of business and IT directions because business was not involved in IT decision-making. The biggest IT risk is that IT will fail to generate business benefits, resulting in expenditures without any additional value to the company. All business units are involved in IT governance decisions, which results in the management of IT risks.

Beyond that, organisations are motivated to implement IT governance by a need to fulfil obligations, particularly when board directions on IT governance are involved. From the top down, directives are pushed for IT governance by the boards and executive management. The structures in charge of IT governance are left with no choice but to put it into practice because it becomes a part of their obligations.

Government and other statutory organisations also have an indirect impact on businesses and how they conduct their operations. Government rules, laws and acts are the main sources of influence. Legislation and regulatory compliance are enforced by organisations to control IT. Public safety is the goal of this act, which includes the PoPIA. The act has an impact on how businesses run because compliance is required; otherwise, businesses risk fines and reputational damage.

Stakeholder and shareholder assurance is one of the key driving forces behind the introduction of IT governance in businesses. Investors are now more aware of the importance of evaluating an organisation's governance policies before making an investment decision because of past governance scandals in organisations that forced the closure of the affected businesses. Investors are attracted to good and sound governance standards; hence, organisations are considering implementing IT governance in order to uphold investor confidence and enforce strong governance procedures. For different stakeholders to share their worldviews about IT, IT governance promotes a shared understanding of IT. Stakeholders can communicate about IT decision-making in a common language thanks to IT governance. The achievement of a shared IT objective is facilitated by the mutual understanding of various business representatives in committees.

Additionally, better decision-making is produced by IT governance because IT decisions are no longer made in isolation. Without a clear goal in mind, IT investments are expensive for organisations to make and have a high capital demand. In this sense, IT investments are made to meet business expectations, which increases company value. Better decisions are made possible through inclusive IT decision-making between IT and business.

Similarly, a lack of IT governance causes duplication in IT systems. Because of the lack of appropriate inclusive decision-making processes, organisations have been investing in IT at random. In the same organisations, several departments and divisions are supported by various IT systems that almost execute the same activities. Information technology governance has been implemented by organisations because of the need to eliminate duplication caused by IT systems. One of the motivators for the governance of IT has been identified as the necessity to overcome systems integration issues. In the absence of IT governance, several IT systems for various departments within the same organisation were purchased. Uninformed IT system acquisition leads to a variety of systems with integration issues. It becomes difficult to move data from one system to another and share data between systems. As a result, IT governance is looked to for solutions to the system integration issues.

Health care is now implementing its governance because of its growing reliance on IT. Deriving the promised benefits and controlling the dangers that IT entails are difficult without adequate IT governance. Organisations have been pushed to think about IT governance to realise its commercial benefits as a result of the rising reliance on IT for strategic business. Businesses must make a variety of judgements about a range of IT initiatives. The expenses, advantages to the business, and levels of priority among these projects vary. Information technology governance offers organisations and top management direction so they can prioritise projects intelligently. A project's business contribution is now taken into consideration while evaluating it, along with other crucial business factors like competencies and expected return on investment. Technology adoption rate has been highlighted as a key factor in IT governance. Business procedures that rely largely on IT have compelled concerned organisations to give IT governance substantial thought.

Information technology governance has grown in importance as organisations' understanding of IT has improved. Information technology was previously thought of as a support role apart from other important business tasks. The governance of IT activities and investments as a result received little attention. However, throughout time, IT appreciation has increased because of shifting viewpoints on its significance and business enablement.

Boards and senior management have set strong examples by drawing attention to and acting on the issue in their individual organisations as IT governance has become a focal point in organisations across many sectors. The boards' impact and debate of the phenomena, which resulted in directions for organisations to implement IT governance, has been identified as one of the causes of the implementation of IT governance in organisations. Organisations use money on IT to achieve a variety of objectives. The targets' achievement has forced significant thought into the implementation of IT governance. Information technology governance is thought to maintain IT IS progress towards achieving the established business goals.

Even though organisations work hard to steer IT through its governance, without sufficient IT governance, investments in IT are made haphazardly and spontaneously without adequate knowledge regarding the need and demand for such investments. The final effect could be inadequate or excessive spending on IT infrastructure that is not put to good use for business growth. Information technology governance directs IT spending, ensuring that money is only spent on IT that benefits the company.

In addition, one of the important reasons for IT governance has been recognised is IT cost optimisation. Organisations strive to spend money on IT in industries that offer a good return on investment. Furthermore, without appropriate IT governance policies, it might be difficult to maintain a balance between business expenses and IT spending for valid reasons. Organisations have experienced service interruptions, prolonged system downtime and financial loss. Because of the lack of IT governance tools to address these issues, it was determined that the lack of appropriate measures was to blame. One of the key motivators for organisations to pursue IT governance is business continuity and recovery.

The results are in line with the literature, which claims that organisations are driven to incorporate IT governance by a variety of internal and external reasons (Xue, Liang & Boulton 2008, p. 69). Diverse IT governance drivers in the form of various difficulties and expectations make its execution necessary (Hoving 2007, p. 150; Luftman & Kempaiah 2007, p. 136). The literature also claims that internal and external forces, such as corporate values, competitive environments, and external political and economic settings, are what primarily maintain the drivers (Guldentops 2014, p. 5). It is essential to identify IT governance drivers in both the internal and external environments given the ever-changing business and economic environment (ISACA 2014, p. 35). The results also confirm that one of the factors influencing IT governance is the requirement to adhere to rules and regulations (De Haes & Van Grembergen 2006a, p. 7).

The results also corroborate ITGI's (2011, p. 2) assertion that the most crucial factor in enterprise IT governance is ensuring that current

IT capability is in line with current business requirements. The report also revealed that one of the primary forces behind IT governance is the desire for better risk management (ITGI 2011, p. 2). According to the literature, another important motivation for IT governance in the study has been highlighted as the desire to deliver IT value (Kan 2004, p. 3). Every organisation operates in a different environment, and this environment is shaped by both internal and external influences, including organisational culture, risk appetite and changing business strategies. As a result, every organisation needs its own governance framework (ISACA 2014, p. 45). The study's findings identified factors that were unique to the organisations under examination and the health care sector. Organisations are pushed into IT governance by a variety of internal and external push forces, which make up the drivers. The deployment of IT governance was described qualitatively in this section. Through the presentation of qualitative study results on how organisations are implementing IT governance in the health care industry, the section below addresses the second research question.

Information technology governance implementation results

Information technology governance is reportedly being applied in a variety of ways, including structures, procedures, and relational mechanisms, according to participants who were interviewed. The interviewees believed that their organisations are primarily driving the implementation process. The implementation process used a top-down approach, with directives from boards and executive management emphasising the necessity to begin implementing an IT governance structure. As every expenditure in IT governance must be thoroughly justified, the majority of interviewees believed that a pragmatic approach to implementation was the best strategy. Furthermore, they emphasised that gaining management support for IT governance projects requires a risk-based approach to IT governance. The interviewees' quotes, which are included below, provide evidence that the organisations' use of IT governance is in line with the ideas expressed earlier.

According to the IT governance officer:

> 'Our CIO sits on the executive committee and the audit committee of the board of directors. We have an IT steering committee, an IT governance function, a GRC manager, IT governance and compliance officers, an IT security committee, an information security officer, a group risk officer, and a CIO who likely reports to the CEO.' (IP6, participant, n.d.)

According to the other IT governance officer:

> 'We have the IT balanced scorecard, service level agreements, the Cobit and King III IT governance framework, self-assessments, a project office, IT budget

and control, and management reporting for our governance status. We also have the IT balanced scorecard, portfolio management for business cases when we look at our projects and return on investment (ROI), and the IT balanced scorecard.' (IP7, participant, n.d.)

Further stating that the following related mechanisms were taken into consideration and that:

'Knowledge management on IT governance is undoubtedly important, with senior and executive management serving as an excellent example because we were able to secure significant support from senior executives across a number of boards committees, audit committees, risk committees, executive committees, and informal meetings between business and IT. We have a close relationship with our IT, and the group risk department plays a key role in many of the activities we carry out. We run awareness-raising campaigns for IT governance, which will undoubtedly increase once COBIT is operational, but we currently do so to a certain extent. We also regularly conduct internal corporate communications involving IT on a monthly basis. We don't conduct co-locations because of the early stage at which we are now operating. Cross-training is not a practice.' (IP6, participant, n.d.)

A member of the IT governance team said:

'Your job is to implement, but be sensible and pragmatic; if your system only completes 80% of what has to be done, maybe deliver 80% instead of 100%. At that moment, a budget increase is not required to seek the best goods that address the targeted goals.' (IP8, participant, n.d.)

The risk manager stated:

'People, there is no blame check, and we must defend and demonstrate the value and purpose of every investment we attempt to make. This is challenging, but it means that by the time we arrive, you will have given it some thought and will be honest in your assessment of whether the processes you have in place are effectively addressing the risk. Given the admiration for the risk-taking approach and our conviction that this is the solution, we frequently discover that we are accepted for the funding for it. This is exactly why it takes a lot of work to get to that position.' (IP8, participant, n.d.)

An IT governance officer stated:

'It requires a lot of tact, and you have to choose your important buttons well, but ultimately I think my opinion on it... Everyone else, including my colleagues, I believe, approaches things from a factual standpoint. We don't try to persuade you to do anything; instead, you examine the risk and consider our facts, your viewpoint, and your arguments. When a risk is significant and real and you need a solution for it, you have the talk on that premise. If your goal is to reduce the risk and improve the situation of the organisation, people are inclined to listen.' (IP6, participant, n.d.)

The CIO stated:

'The business also values that approach, in my opinion, if we think we are reducing a possible risk before it even arises. Due to the fact that we are now executing 36 COBIT objectives and purchasing software everywhere, there is

> no blame to be assigned. It's not how we operate; rather, we take a pragmatic, hands-on approach to finding and implementing the answers we need right away to reduce the risks associated with our situation.' (IP10, participant, n.d.)

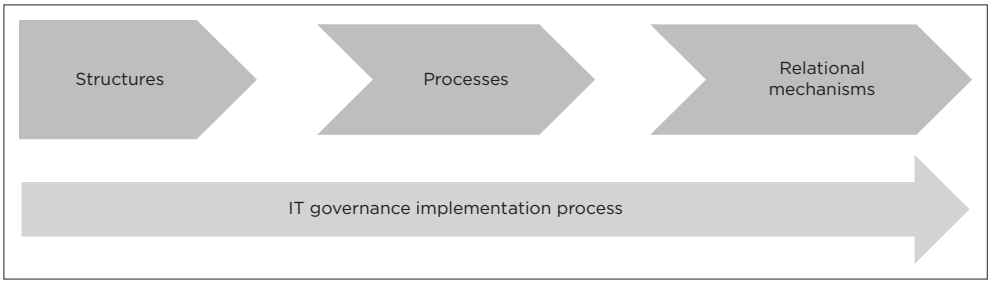
The CIO also stated:

> 'I believe that external consulting firms can offer some assistance with implementation, but in the end, it will be the workforce that is required to carry out the work. Knowing that someone from within the organisation, the full-time employee, will always have to undertake the task short of actually hiring additional workers, consulting firms serve their purpose, but not in the long run.' (IP10, participant, n.d.)

Additionally, research organisations showed that structuring structures, then procedures and last relational mechanisms come first in the implementation process. The majority of those surveyed mentioned the existence of mechanisms that facilitate IT governance, including committees and positions that focus on this issue. An overview of the journey organisations are taking to implement IT governance is shown in Figure 5.1.

According to those questioned, the creation of IT governance systems has received a lot of thought. Structures such as governance committees and IT governance roles and duties are in charge of overseeing the execution of IT governance. They also supervise the execution of IT governance processes after the development of IT governance structures. However, none of the interviewees supported the idea that their IT governance included relational processes. The participants mentioned that they will look at relational techniques in the future when IT governance maturity increases.

The study also showed that a cycle-like structure governs the deployment of IT governance. The initial step entails selecting and prioritising controls. The controls are chosen based on their significance in connection to the risks to be mitigated, and this work is carried out by



Source: Adapted from Mangundu (2017, p. 115).
Key: IT, Information Technology.

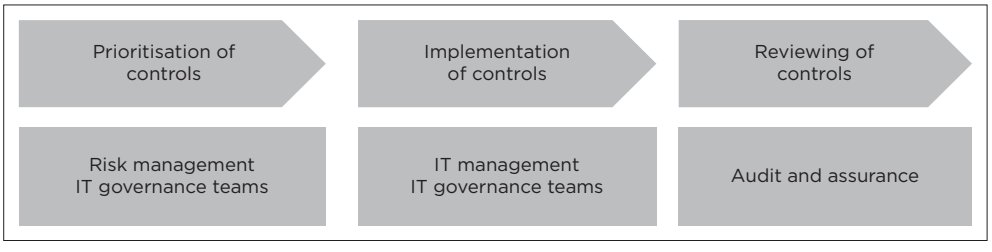
FIGURE 5.1: Stages in information technology governance implementation.

risk management units in collaboration with IT governance teams. The second activity entails putting the chosen controls into action, during which process and control owners are chosen and charged with maintaining the controls. Finally, evaluations of the imposed controls are performed to see whether they are functioning as intended. It has been said that the audit and assurance function include reviewing controls. Figure 5.2 shows the structures involved in the IT governance controls implementation cycle.

Implementation is based on a prioritisation of controls that is guided by the most significant risks in the business environment, as shown in Figure 5.2. Prioritisation is used to determine how to implement IT governance projects. After measures are put in place, audit and assurance functions examine the controls to determine how well they work to reduce the risks that they are intended to do so. The approach is repeated until the controls are effective in achieving the desired goals.

It has been discovered that the most typical method used by investigated organisations to adopt IT governance is a top-down strategy. As a result, the board of directors and top management issue instructions and directives emphasising the necessity of starting the road towards IT governance. The top-down strategy attempts to solve problems like change resistance, and the structures in charge of implementation are left with little choice but to start using it. In addition, a top-down strategy results in the integration of IT governance into the regular tasks and obligations of the organisations in charge.

Additionally, organisations adopt IT governance by using a risk-based strategy in order to persuade and win over upper management support. The function of risk management identifies significant threats to the business and suggests suitable countermeasures. A risk management strategy places a strong emphasis on IT governance. In that sense, it demonstrates the critical role IT governance must play in removing the hurdles from a managerial standpoint. The strategy makes it easier to



Source: Adapted from Mangundu (2017, p. 116).
Key: IT, Information Technology.

FIGURE 5.2: Information technology governance implementation cycle.

get the support of higher levels of management for IT governance projects.

Results show that organisations are implementing IT governance efforts in phases rather than all at once, and that this is not a one-day event. Relevant controls are found to address the risks found after the risk-based approach. The installation of IT governance is done in stages, starting with the most crucial controls and moving on to audit and assurance to determine whether the goals were achieved. The second set of controls is implemented based on risk prioritisation if the first set of controls chosen meets the requirements. Guidance is provided on how to accomplish the specified implementation objectives by internal and external assurance. The audit evaluates if control owners are present, how the control is implemented and whether it adheres to predetermined standards. The audit also makes it easier to update boards and top management on the status of IT governance projects.

The study discovered that the studied organisations have incorporated a variety of structures, procedures and relationship mechanisms. This is consistent with the literature, which shows that a variety of structures, procedures and relational mechanisms are primarily used to deploy IT governance. Importantly, this study found additional evidence that when organisations implement IT governance, the creation of pertinent IT governance structures is the first step. After that, the structures put into place procedures that support IT governance. Relational mechanisms as a means of implementing IT governance receive little to no attention, while more focus is placed on creating the structures that facilitate the procedures. This illustrates that higher level methods, such as relational mechanisms, are used in the implementation of IT governance.

Additionally, organisations choose a variety of structures, procedures and relational mechanisms to meet their particular issues. Information technology governance is not a 'one-size-fits-all' concept. The choice of IT governance strategies is made based on pragmatism and implementation methods. Organisational resources, expectations and capabilities serve as the basis for implementation. Given that IT governance requires resources, it may not always be ideal to apply a framework at its highest level of maturity. There are other ways to show strong IT governance outside of having a fully developed IT governance ecosystem. Information technology governance is implemented by organisations at a level sufficient to address the risks in their operating environment.

The results are in line with several studies described in the literature, which claim that a combination of relational mechanisms, structures,

and procedures is used to implement IT governance (De Haes & Van Grembergen 2009, p. 123). Determining the mix of implementation strategies is a difficult process that depends on numerous organisational elements as IT governance implementation is based on various and changing internal and external factors (Patel 2004, p. 20; Ribbers, Peterson & Parker 2002, p. 2). Patel (2004, p. 20) and Ribbers et al. (2002, p. 1) further contend that, while being in the same industry, the ideal combination will differ from organisation to organisation. The findings corroborated the literature and demonstrated the undeniable existence of IT governance structures and procedures. Relational processes, however, were not firmly established in the study as a component of how organisations are carrying out IT governance. Patel (2004, p. 20) emphasises that various organisations may require various combinations, sets, or sets of structures, processes and relational mechanisms depending on their requirements.

The findings do, however, contribute more to the body of knowledge regarding the actual implementation methods for particular structures, processes and relational mechanisms. Importantly, the findings show that implementing IT governance is a never-ending process. Organisations must adopt new and changed IT governance strategies because of the always-evolving business contexts. In that sense, IT governance should not be a one-time thing; rather, it should be a continuous activity. Because IT governance frameworks are significant undertakings, treating their implementation as an event puts pressure on organisations. The staged approach, where implementation is based on prioritising the most crucial parts of the frameworks first, is preferred for organisations. Based on the importance of the risks they are meant to manage and control, the governance elements are ranked.

The establishment of IT governance must involve the board and executive management to promote a top-down approach. A top-down strategy makes it easier to get through change resistance, which is one of the obstacles to adoption. Additionally, resources for implementation, including extra people, money and time, are assured to be directed towards implementation with management directives and support. The part that follows discusses IT governance inhibitors after this one has reported on qualitative results regarding the use of IT governance.

Information technology governance inhibitor results

Based on the qualitative interviews conducted at the organisations under investigation, the obstacles that prevent the implementation of

IT governance in health care are presented and discussed in this part. Most interviewees agreed that internal organisational issues are what hinder IT governance; by contrast, the external environment had little influence on this issue and played no part in its implementation. Most interviewees believed that limitations on human and financial resources were impeding the adoption of IT governance within the context of organisational problems. Additionally, the majority of interviewees agreed that obstacles to IT governance included a lack of IT appreciation, complexity of IT governance, lack of prioritisation of IT governance, a lack of knowledge of IT governance, a high effort requirement for implementing IT governance, communication issues with IT governance, a lack of executive management support for IT governance, conflicting stakeholder expectations with IT governance and difficulties prioritising IT governance, among others. The quotes from the interviews below support the opinions.

The IT governance officer emphasised that, 'In terms of trying to adopt this IT governance structure, we are understaffed due to the workload. We do not have enough resources because it's such a big project'.

The compliance officer stated:

> 'That's a big obstacle for us. We have a finite amount of IT resources, and these resources must both do their daily duties and attend to other concerns, such as resolving audit results, working on new projects, and, on top of that, deploying Cobit and ensuring that it is done so in an efficient and long-lasting way. As a result, it's not simply about checking boxes or finishing a paper; it truly needs to be repeated, which is where the difficulty lies.' (IP3, participant, n.d.)

The IT governance officer further stated that:

> 'I suppose also spending time with the upper management who might be in charge of putting in place some controls. It seems like everyone's hands are full because department heads and everyone else are busy.' (IP6, participant, n.d.)

The risk manager commented, 'I mean, the organisation faces limits. You have money constraints, as well as time and priority restrictions' (IP1, participant, n.d.).

The compliance officer stated that:

> 'The amount of work and resources required to develop a framework like this was somewhat overwhelming when they first began the implementation, in my opinion because they didn't fully comprehend its scope. It was an expensive process that took three to four years for some of the large parastatals to complete because they hired one of the major four consulting firms to assist them. Therefore, I believe that they lacked the necessary tools to comprehend it, and they didn't realise how resource-intensive the project would be until we got started. I believe there was some initial resistance, but it is typical human behaviour when it comes to reluctance to change.' (IP3, participant, n.d.)

The IT governance officer said:

> 'Less potential funding, fewer resources, and regrettably, one of the difficulties of governance is that it supports ongoing processes by adding work to them. Therefore, you need resources if you really want to be ruled. If you don't have the resources, you'll need to strike a balance between following regulations to the letter, obtaining an ISO certification, and following regulations only to the extent that you think you've reduced the risks.' (IP5, participant, n.d.)

The governance risk and compliance officer said:

> 'People are undoubtedly under stress as a result of the additional administrative effort and have to produce documentation. I believe we eventually reach the point where we find new controls that were either non-existent or ineffective. They may come with additional resources, including, of course, financial and human resources, some of which will call for equipment and goods.' (IP3, participant, n.d.)

The CIO stated:

> 'The difficulties we face in persuading individuals to do this. The realisation of how much the organisation depends on IT for the future is something we have observed in our firm and the industry as a whole.' (IP12, participant, n.d.)

The IT manager commented:

> 'Conversations are now easier—still not easy—but easier as a result of people's growing awareness of the importance of governance and IT to organisations like ours and to meeting their demands.' (IP13, participant, n.d.)

He stated further:

> 'The objective or perception was that unless you contributed to my primary business, why would I have to do this? We had enough problems to go around and try persuading people that this is something we have to pursue. A few years ago, the budget was reduced because it wasn't appreciated for its intended use and function. We are now beginning to notice that people have acquired this knowledge, respect, and understanding of the profession.' (IP13, participant, n.d.)

He added the following:

> 'I believe that IT governance is really complex for the, I suppose for many other sectors. However, I believe that the health care industry is particularly at risk because any businessperson is required to consider the benefits or return on investment. The return on the IT governance programme is difficult to measure. When the true question you want to know the answer to is "how can I increase my patient base," how do you measure the worth of creating procedures that add through paperwork and administration?' (IP13, participant, n.d.)

The CIO stated further:

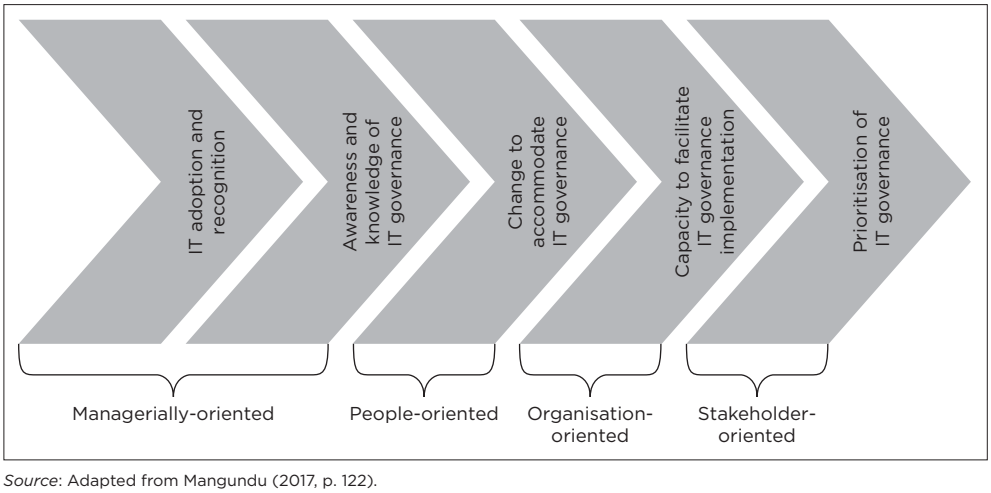
> 'You know, I think they are put off by technical jargon or because they don't see the complete picture. When it comes to information, speaking the same language the person or department understands and delivering information in

terms they can understand might be challenging at times because they don't always fully get what you are trying to do.

'I believe IT governance and governance in general are quite recent in South Africa, so there may be a skills gap, but I believe it is filling up quickly. So, while it's possible that there are skills gaps in IT governance, they are swiftly being filled by the industry as a whole. There are definitely enough abilities in this country, in my opinion.' (IP12, participant, n.d.)

According to those who participated in the interviews, the degree of IT adoption and integration into company processes has a significant impact on IT governance. As a result, organisations with poor IT maturity do not understand IT governance. Following an organisation's adoption of IT for its operations, IT governance awareness and understanding play a crucial role in its execution. After management has become aware of the advantages of IT governance through the stages, another barrier that organisations must overcome typically takes the shape of a failure to adapt to IT governance. The resistance to change in people's behaviour has been described as people-oriented. From the perspectives of the interviewees, the barriers to IT governance are depicted in Figure 5.3.

The study shows that implementation challenges or inhibitors are encountered at various phases when organisations implement IT governance. Inhibitors resulting from management's failure to recognise the strategic value of IT and its governance are shown in the first domain. In this regard, executive management and boards' failure to acknowledge IT governance cause a bottleneck in organisations' attempts to start IT governance conversations and activities. The motivation to implement IT



Source: Adapted from Mangundu (2017, p. 122).
Key: IT, Information Technology.

FIGURE 5.3: Information technology governance inhibitor phases.

governance is impacted by the failure to acknowledge IT as a critical part of the business. Less emphasis has been placed on IT innovations and greater IT budget cuts are the result of IT being seen as a supporting function that is separate from the larger business function. According to a report, top management must put out a lot of work in order to properly comprehend the significance of IT and recognise its influence as a business enabler.

The relevance of IT governance and management's understanding of it have a dramatic impact on the deployment process. However, even as organisations start to acknowledge the importance of IT, inadequate understanding of how IT is regulated causes problems for IT governance. It takes a lot of work, according to interviewees, to convince top management of the business value that IT governance offers. This is linked to a dearth of concrete financial metrics for the advantages of IT governance.

As the boards and top management come to understand the need for IT governance along the way, several barriers to changing the organisation into an adoptive one start to appear. The implementation of IT governance is facilitated by providing a supportive corporate environment, which falls under the second domain of the inhibitor phase. According to reports, IT governance will alter the official and informal relationships that exist in the organisations in question, as well as their structures and processes overall. The impacted parties, however, are quite resistant to altering the current structures and relationships in an effort to create an environment that supports IT governance.

Additionally, organisations are confronted with a distinct set of inhibitors after overcoming people-oriented ones, which primarily take the form of resistance to change. Block 3 in Figure 5.3 represents this new collection of inhibitors. These barriers relate to an organisation's inability to implement IT governance as doing so could result in additional resource demands in the form of higher implementation budgets, human resource capabilities, IT governance skills, implementation time, and effort needs. Because of their close ties to the organisation, these inhibitors are categorised as organisational-oriented.

Organisations have been leveraging the same human resources that manage daily company operations to adopt IT governance. Information technology structural limitations have been identified as one of the main obstacles to IT governance. Organisations' failure to establish and maintain IT structures forces them to make do with subpar ones, which leads to muddled reporting and ambiguous IT lines of authority. Information technology employment issues have been identified as yet another significant barrier to IT governance. Organisations struggle to establish

and maintain IT governance because of a lack of competent IT governance employees, who are also expensive to hire.

A significant obstacle to the deployment of IT governance is the lack of IT and IT governance capabilities. According to reports, the available staff needs instruction in the frameworks and procedures for IT governance. Increasing the abilities of the available workforce has been difficult because of the decreasing funds allocated for IT efforts. Staff members are under pressure because of a lack of skills and staffing issues, and they are resistant to change. Although businesses have sought to hire outside consultants, these professionals do not understand the industry as well as internal staff. Information technology governance concerns in the organisations have not been resolved by applying general solutions to various circumstances. Investment in IT governance's implementation becomes more challenging because it is difficult to demonstrate concrete direct economic benefits from it, and management is reportedly diverting more resources to the organisations' main businesses. Convincing upper management to invest in IT governance becomes challenging because the ROI is difficult to quantify. This economic argument is challenging, particularly in the private sector when businesses are motivated by profits.

Furthermore, it has been reported that implementing IT governance requires a lot of time and work. Information technology governance is a journey that should not be taken lightly, according to organisations. The detailed recording of the controls is demanding on top of daily business routines. Implementation puts pressure on the workforce that is on hand. The utilisation of many technologies and organisational complications like size make it more difficult to manage IT. The governance of large organisations using several IT platforms is challenging. Another manifestation of organisational complexity is a failure to comprehend how businesses operate.

The study discovered that organisations must deal with an additional set of IT governance barriers, which are depicted in the last block of Figure 5.3. Disagreement about prioritisation, including the degree of IT governance maturity, among IT governance structures and other relevant stakeholders is a defining feature of these inhibitors. From the start of the implementation process for IT governance, consensus on expectations must be reached. One of the biggest obstacles to implementing IT governance was discovered to be disagreement, and this kind of barrier has not been noted in the literature.

One of the main problems is dealing with stakeholders' conflicting expectations regarding the maturity and implementation of IT governance. The board, top management, internal and external auditors,

the risk management team, the governance risk and compliance team, and IT management are just a few examples of the various stakeholders that may be involved. Information technology governance becomes complicated because of the differences in people's knowledge and expectations of IT governance. According to the report, the board, executive management, and auditors are overburdened and anticipate that IT governance will be applied at the maximum degree of maturity. However, governance risk and compliance and IT management, who oversee its execution, are aware of the ramifications of implementing IT governance and IT governance frameworks and push for its implementation to the extent necessary to fulfil organisational risk requirements. The execution of IT governance is hampered by the disparities in understanding between those who are accountable and those who are responsible. Without a common understanding of the nature of business, organisations are unable to recognise the most significant risks in their operating environment, which has an impact on the prioritisation of IT governance controls because it depends on knowledge of the most significant risks that need to be reduced by IT governance initiatives.

However, the study finds that IT governance is not regarded as a complicated invention, and IT governance complexity has not been highlighted. Misunderstandings of the nature of business and the desire to adopt IT governance at the maximum maturity level contribute to the perception of complexity. Because of the challenges found, organisations either fail to begin implementing IT governance or stop doing so. Overall, the findings support previous findings in relation to innovation adoption. In relation to the DOI and the Technology Acceptance Model (TAM) frameworks, which informed the study, findings reveal that inhibitors of IT governance are mainly organisationally context-based. Little consideration is given to IT governance and external factors that influence IT governance implementation.

The research, which supports the notion that implementation inhibitors fall into multiple categories including expression, specification, and implementation barriers, is supported by some of the findings (Weill & Broadbent 1998, p. 42). Although Luftman, Papp and Brier (1999) noted that social and managerial-oriented problems, rather than technical ones, prevent alignment between IT and business, the study results showed a consensus that managerial-oriented problems are inhibitors of IT governance (Luftman et al. 1999, p. 112; Weill & Broadbent 1998, p. 43). If top management is involved and committed to IT, it automatically becomes a facilitator; otherwise, it becomes an inhibitor. Luftman et al. (1999, p. 20) emphasised that managerial commitment and support is the most important aspect. Additionally, the results showed that organisational

context (internal context of organisations) is the key factor inhibiting the implementation of IT governance, which is consistent with the literature. The PWC and ITGI study from 2006 showed that organisations have powerful forces like resistance to change, improper communication, internal politics, resistance to accepting standards, and resistance to accepting accountability, all of which can act as barriers to the implementation of IT governance. The research also recognised a variety of organisational contexts, national contexts, contexts for IT governance practices, and environmental contexts as inhibitors to IT governance (Othman et al. 2011, p. 13).

Information technology governance performance results

Information technology governance officer said:

> 'As we develop, I think it's something we look at. In my opinion, we haven't really attempted to assess the impact of the COBIT framework, particularly in relation to . We have reached the point where we should really be closing out the first step of putting a few controls in place.' (IP6, participant, n.d.)

A governance risk and compliance officer stated:

> 'Once we have completed our initial evaluations against those controls, I believe we will be able to examine how they work, look for efficiency in the designs we use, identify any gaps, and make some changes. It's only after looking back at the data that you realise you might need to make some improvements in some areas. Therefore, I believe that given where we are right now, it's a little early to determine whether or not this has improved or positively altered us.' (IP11, participant, n.d.)

The study discovered that as organisations incorporate IT governance, performance is evaluated qualitatively and subjectively. In the early stages of its execution, no quantitative approaches have been used. The organisations under study began to experience the benefits of IT governance, but no unbiased, quantitative techniques have been used to assess its effectiveness. Organisations are now implementing IT governance, however at the interview stage there is no way to assess IT governance performance objectively. The section that follows, which provides a summary of findings that were further included in the quantitative survey instrument for phase 2 of the study, comes after this section has given and examined qualitative findings related to the research topics.

Summary of findings

A summary of the conclusions drawn from data analysis and the development of categories in ATLAS.ti is shown in the Table 5.1.

TABLE 5.1: Summary of findings.

Drivers for IT governance	IT governance implementation	IT governance inhibitors	IT governance performance
Increased reliance of health care on IT	Structures	Lack of IT appreciation	Hard to measure performance
Need for improved IT decision-making	Processes	Limited knowledge of IT governance	Improved clinical services delivery
Stakeholder And shareholder assurance	Relational mechanisms	Lack of IT prioritisation	Enhanced effective administrative processes
Business–IT alignment	Combination of internal and external resources	High implementation effort requirement	-
Realisation of IT governance benefits	Policies and procedures	Executive management buy-in	-
Strategic importance of IT	Top-down approach	Lack of executive management support	-
Need to give IT guidance	Pragmatic approach	Conflicting stakeholder expectations	-
Achievement of goals	Phased approach	Prioritisation challenges	-
Board and senior management setting an example	-	Lack of skills	-
Need for improved security	-	Budgetary and financial requirements	-
Project prioritisation	-	Organisational complexities	-
Regulatory compliance	-	Time constraints	-
Better IT risk management	-	Political factors	-
Business recovery and continuity	-	Inadequate IT structures	-
Improved service delivery	-	Resistance to change factors	-
Eliminate duplication of IT systems	-	Inadequate resources	-
Improve shared understanding on IT	-	Challenges of lean IT perspective	-
Business value delivery	-	Lack of training	-
-	-	Lack of IT understanding	-
-	-	IT governance complexities	-
-	-	Business environment	-
-	-	Inadequate advisory services	-
-	-	Communication problems	-
-	-	Formal and informal relationships	-
-	-	Lack of coordination	-
-	-	Inadequate creation of IT structures	-

Source: Adapted from Mangundu (2017, p. 128).
Key: IT, Information Technology.

Conclusion

The data analysis processes used to respond to study questions from qualitative data gathered through semi-structured interviews and organisational documentation are described in Chapter 5. The ATLAS.ti qualitative data analysis programme was used to aid in theme analysis of the data that was gathered. Results from interviews with business and IT decision-makers in the organisations under study were reported in the chapter. Additionally, it examined and discussed the qualitative study's findings. The qualitative findings were essential for comprehending the drivers of IT governance implementation, the manner in which organisations are doing so, and, most crucially, the barriers to implementation and performance of IT governance.

The findings centred on what study participants said, giving a thorough understanding of what they thought about IT governance in their organisations. Therefore, the qualitative research was crucial for confirming the organisations' use of IT governance. The study showed that IT governance is a complex issue that necessitates multilevel appreciation. The findings also show that organisations confront various IT difficulties and demands, which results in a variety of IT governance approaches. Organisational environments influence implementation because what works well for one organisation may not always be a successful formula for another. Organisations may overcome their worries and adopt IT governance in a way that satisfies organisational requirements with the support of pragmatic techniques. As a result, acknowledging the obstacles gives organisations excellent flexibility in how they might approach the problem of IT governance, facilitating the adoption of that solution.

By referring back to the literature review and subsequently to the more general IT governance theories, the discussion established a connection between theory and practice based on the empirical findings of the research questions. Through comparison, contrast and discussion of the results, relevant concepts are discovered, changes are acknowledged and an academic attempt is made to develop well-informed arguments about the application of IT governance in organisations. Integrating qualitative findings with the quantitative component was essential to enhancing the validity of the research findings. After presenting and discussing the qualitative results in this chapter, the next chapter will discuss the outcomes of the quantitative data.

Chapter 6

Presentation, interpretation and analysis of quantitative data

Introduction

Chapter 5 presented and discussed results from qualitative data gathered using the interview guide and from study organisation materials. Results from the previous chapter were determined by conducting a qualitative examination of the data. The findings from the first portion of the study are expanded upon in this chapter (quantitative phase), which is a follow-up to the qualitative phase. In addition to providing answers to some of the concerns that could not be fully addressed during the qualitative phase, the quantitative results are helpful in triangulating some of the qualitative results and strengthening their credibility.

Linking Phase 1 and Phase 2

The study questions were addressed by qualitative findings, which were also used to improve the data collection tool (questionnaire) for the following stage. The researcher used the findings from the qualitative phase to become familiar with the organisations under investigation and to specifically target respondents for the next stage. Using a purposive sampling technique, respondents from the qualitative phase were increased for the quantitative phase in order to respond to the study questions.

How to cite: Mangundu, J 2023, 'Presentation, interpretation and analysis of qualitative data', in *Information technology governance practices and inhibitors in South African private and public health care*, AVARSITY Books, Cape Town, pp. 117–143. https://doi.org/10.4102/aosis.2023.BK418.06

Purposive sampling was used to choose respondents, which made it easier to find those with a useful understanding of the topic at hand. Additionally, gatekeepers helped in locating some of the respondents who were unable to participate in the qualitative phase. Using the scientific sample size estimation techniques from Morgan's table and SurveyMonkey, which recommended a minimum sample of 108 to produce reliable results with a 5% margin of error and a 95% confidence level, a sample of 120 from a population of 150 respondents proved to be scientifically adequate.

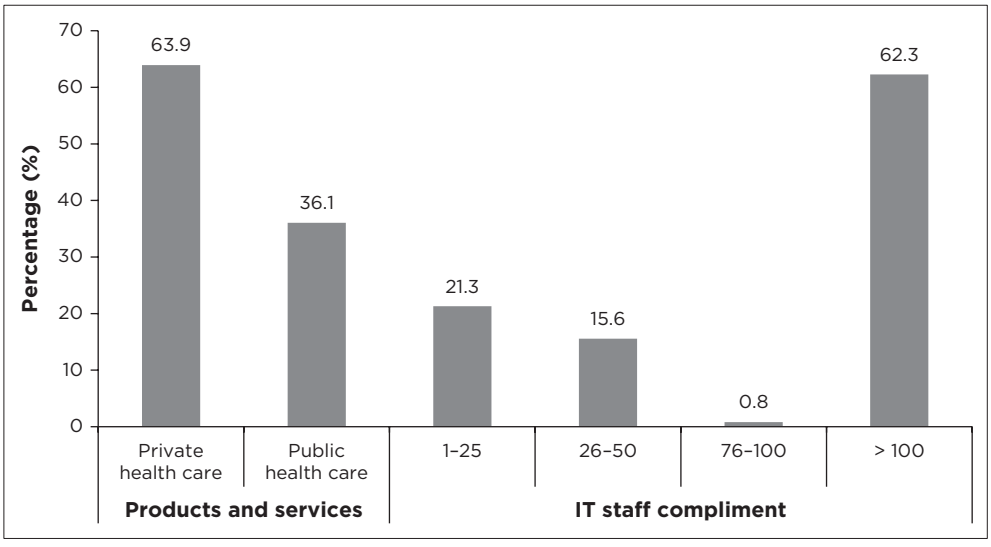
Construct frequencies

The relationship between the qualitative and quantitative phases was covered in the preceding section. This section describes the quantitative data's statistical processing and how constructs were quantified. According to the Likert scale, which ranges from the lowest (strongly disagree, 1) to the highest (strongly agree, 5), constructs were measured. In order to do statistical calculations like *t*-tests, analysis of variance, correlations and regression analysis, the analysis was based on the calculation of construct scores. Standard deviations and frequencies are included in descriptive statistics and are shown in tables and graphs. To ascertain whether there are any statistically significant correlations between the two variables included in the cross-tabulation, the chi-square test of independence was used for the data. Furthermore, binomial tests are used to determine whether a sizable majority of respondents choose one of two alternative answers. To determine whether a mean score differed significantly from a scalar value, a one-sample *t*-test was performed. Finally, independent sample *t*-tests were used to compare two different case groups. Only tables that are directly related to the issues being investigated are included in the chapter. On request, a complete statistical analysis output is available. The demographic information for the organisations and survey respondents is included in the section after this one.

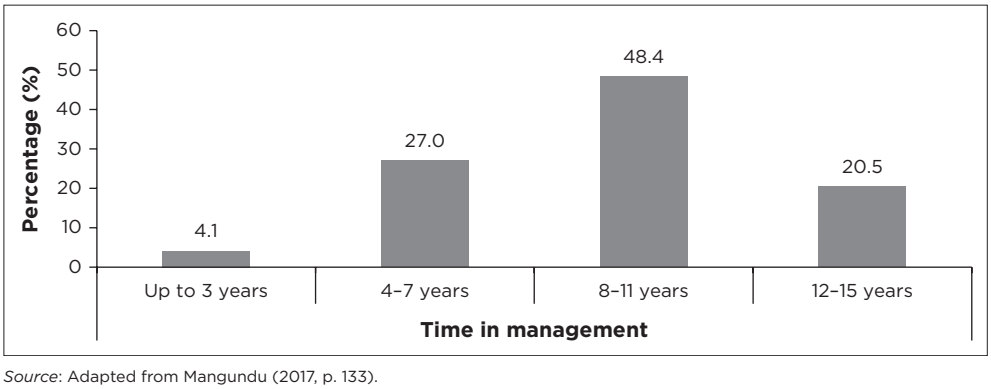
Demographic characteristics

The business type of the respondents' companies, the services and goods they offer, their positions and length of time in management, the proportion of IT staff employed by the organisation, the importance of IT issues, how frequently these issues were brought to management's attention, and the alignment of IT strategy and business strategy were among their demographic characteristics.

According to Figure 6.1, 64% of respondents to the poll worked in private health care, whereas 36% did so in public health care. Those who made business and IT decisions made up most of the respondents; however, some came from other departments. Fifteen per cent of responders were auditors, with 12% coming from governance, risk and compliance.



Source: Adapted from Mangundu (2017, p. 132).
Key: IT, information technology.
FIGURE 6.1: Organisational profile.



Source: Adapted from Mangundu (2017, p. 133).
FIGURE 6.2: Respondents' experience levels in management.

Figure 6.2 demonstrates that 4.1% of people had one to three years of managerial experience, 27% had between four and seven years of managerial experience, 48% had between eight and eleven years of managerial experience and 25% had between twelve and fifteen years of managerial experience. Between one and 25 IT employees made up approximately 21% of respondents, between 26 and 50 IT employees made up about 16%, between 76 and 100 IT employees made up 0.8%, and the majority of 62% had more than 100 IT employees. According to analysis, IT is employed much more often than other business practices ($m = 4.57$, SD = 0.513, t [121] = 33.889, $p = 0.0005$). Significant relevance is shown for IT in sustaining business in organisations ($m = 4.46$, SD = 0.670, t [121] = 24.058, $p = 0.0005$). Meeting and board agendas feature

IT concerns quite frequently (m = 3.98, SD = 0.530, t [121] = 20.505, p = 0.0005). The findings show that in the studied organisations, IT is widely used and esteemed as a crucial strategic business tool. The results, however, also show that as the outcomes were not significant, no inference can be drawn about the alignment of IT strategy with business strategy. After presenting the demographics, this section is followed by the portion that presents the outcomes of the IT governance drivers.

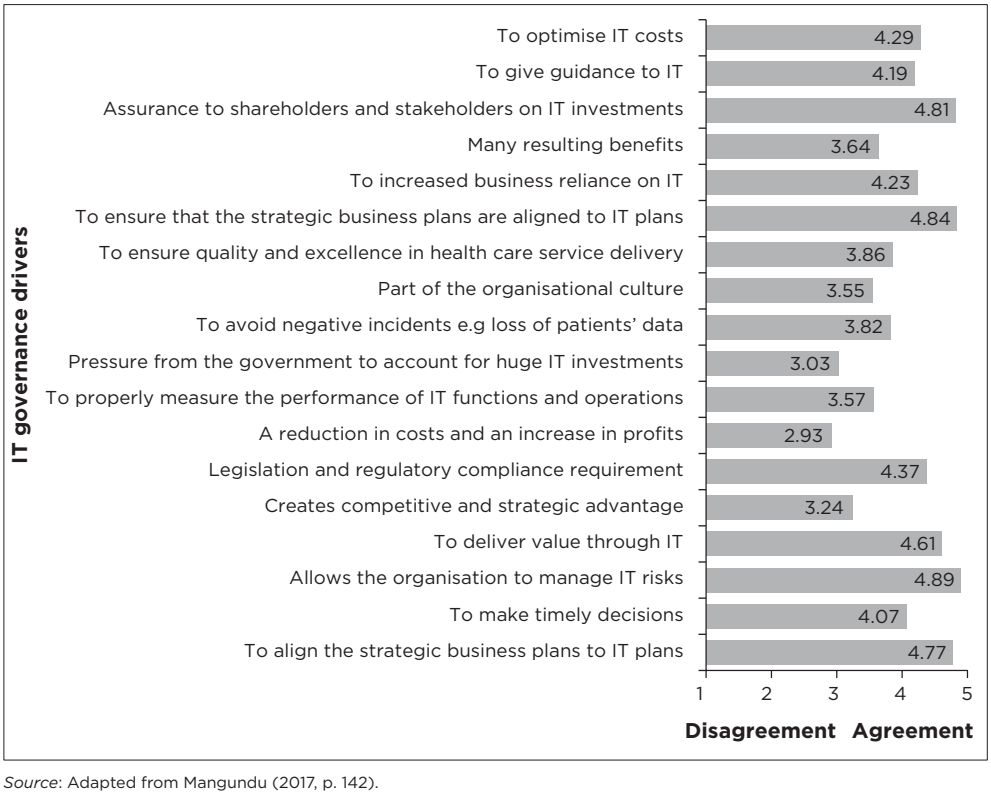
Information technology governance driver frequencies

The demographic details of the respondents and the organisations that took part in the study were covered in the previous section. Based on the responses gathered from the organisations that participated in the online survey, this section covers the frequency of IT governance driver events. The one-sample t-test was used to determine whether the drivers of the adoption of IT governance are genuinely in place by determining whether the average score for drivers is significantly different from '3'.

The results of the analysis show that there are strong IT governance drivers in the health care industry (m = 4.3607, SD = 0.31582, t [121] = 47.587, p = 0.0005). The requirement to ensure that business plans and IT plans are in sync considerably motivates organisations to establish IT governance, according to further research (m = 4.77, SD = 0.441, t [121] = 44.305, p = 0.0005). Additionally, IT governance supports organisations in timely decision-making (m = 4.07, SD = 0.639, t [121] = 18.406, p = 0.0005). Information technology risks can be managed by organisations with good IT governance (m = 4.89, SD = 0.310, t [121] = 67.502, p = 0.0005). Additionally, a significant majority of respondents (m = 4.61, SD = 0.507, t [121] = 34.993, p = 0.0005) agreed that IT governance enables the organisation to deliver value through IT. Information technology governance gives IT advantages in terms of strategy and competition (m = 3.24, SD = 0.681, t [121] = 3.856, p = 0.0005). In addition, the organisation must establish IT governance in order to comply with laws and regulations (m = 4.37, SD = 0.795, t [121] = 19.027, p = 0.0005). According to the analysis of the findings, the organisation is able to accurately measure the performance of IT operations and functions (m = 3.57, SD = 0.738, t [121] = 8.460, p = 0.0005). The organisation can avoid unfavourable situations thanks to IT governance, such as the loss of patient data (m = 3.82, SD = 0.739, t [121] = 12.256, p = 0.0005). There is a lot of agreement that the organisational culture promotes good governance (m = 3.55, SD = 0.717, t [121] = 8.460, p = 0.0005).

Additionally, organisations are strongly motivated to implement IT governance as a means of guaranteeing quality and excellence in the

provision of health care services (m = 3.86, SD = 0.594, t [121] = 16.015, p = 0.0005). Similarly, there is broad agreement that governance is required because of the growing reliance of business on IT (m = 4.23, SD = 0.477, t [121] = 28.448, p = 0.0005). There are numerous advantages to implementing IT governance (m = 3.64, SD = 0.604, t [121] = 11.693, p = 0.0005). Information technology governance is heavily influenced by the requirement to reassure shareholders and stakeholders about IT investments (m = 4.81, SD = 0.413, t [121] = 48.417, p = 0.0005). Additionally, governance supports the studied organisations by directing IT (m = 4.19, SD = 0.503, t [121] = 26.078, p = 0.0005). Additionally, there is broad consensus that IT governance assists the organisation in reducing IT expenditures (m = 4.29, SD = 0.686, t [121] = 20.717, p = 0.0005). Analysis of the data, however, shows that no deduction can be made in relation to IT governance, which would result in a decrease in expenses and an increase in profits. The results were not substantial because of demands from the government to account for significant IT investments. The most significant IT governance drivers in both private and public health care sectors are displayed in Figure 6.3, making identification simple.



Source: Adapted from Mangundu (2017, p. 142).
Key: IT, information technology.

FIGURE 6.3: Information technology governance driver frequencies.

Information technology governance driver comparative analysis

Independent sample *t*-tests are used to analyse whether the IT governance drivers differ between the public and commercial health care sectors. The findings show that the commercial sector and the public sector have significantly higher levels of agreement (m = 4.19, SD = 0.625, and m = 3.84, SD = 0.609, respectively) and that timely decision-making is what motivates the implementation of IT governance (t [120] = 3.010, p = 0.003). However, there is much less agreement that legislation and regulatory compliance are drivers for the implementation of IT governance in the private sector (m = 4.15, SD = 0.854) than in the public sector (m = 4.75, SD = 0.488) (t [120] = −4.906, p = 0.0005). Similarly, there is much less agreement in the private sector (m = 2.12, SD = 1.105) than in the public sector (m = 4.66, SD = 0.608) that the need for IT governance is a result of pressure from the government to account for significant IT investments (t [120] = −137 16.408, p = 0.0005). The agreement that IT governance enables the organisation to avoid bad situations, such as the loss of patient data, is likewise considerably lower in the private sector (m = 3.72, SD = 0.754) than in the public sector (m = 4.00, SD = 0.682) (t [120] = −2.052, p = 0.402). However, there is a lot more agreement that excellent governance as part of the organisational culture is a driver in the private sector (m = 3.89, SD = 0.511) than in the public sector (m = 3.09, SD = 0.802) (t [120] = 5.349, p = 0.0005).

Furthermore, there is a lot more agreement that the requirement to make sure that the strategic business strategies are in line with IT plans is a driver for the implementation of IT governance in the private sector (m = 4.90, SD = 0.305) than in the public sector (m = 4.73, SD = 0.451) (t [120] = 2.233, p = 0.029). Further findings show that, because of increased corporate reliance on IT, there is considerably greater agreement in the private sector (m = 4.33, SD = 0.474) than in the public sector (m = 4.05, SD = 0.429) on the need for IT governance (t [120] = 3.425, $p < 0.001$). Additionally, there is a lot more agreement in the private sector. IT governance is driven by the need to give shareholders and stakeholders certainty on IT investments, which is more important in the private sector (m = 4.87, SD = 0.303) than in the public sector (m = 4.70, SD = 0.462) (t [120] = 2.055, p = 0.043). Giving IT direction is a driver for IT governance, and there is a lot more agreement about this in the private sector (m = 4.29, SD = 0.459) than in the public sector (m = 4.00, SD = 0.528) (t [120] = 3.101, p = 0.003). Additionally, there is a much greater agreement in the private sector (m = 4.38, SD = 0.707 vs. m = 4.11, SD = 0.618) than in the public sector (m = 4.11, SD = 0.618) about the fact that IT governance enables the organisation to reduce IT expenditures (t [120] = 2.206, p = 0.030).

Additional independent sample tests were undertaken to see if there were any changes in the level of driver existence between the public and private sectors. The findings reveal that there is much higher agreement with the existence of IT governance drivers in health care in the private sector (m = 4.4343, SD = 0.28542) than in the public sector (m = 4.2301, SD = 0.32790) (t [120] = 3.594, p = 0.0005).

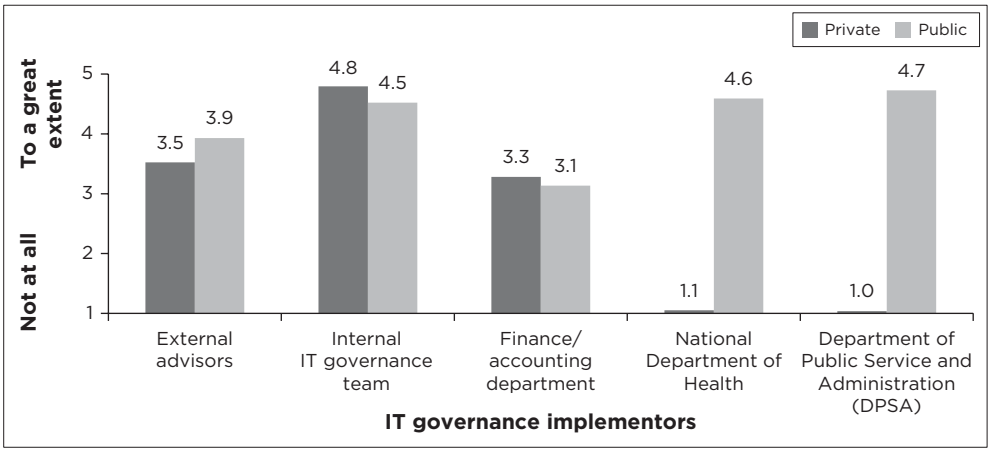
The comparison results show that private health care exhibits a stronger recognition of the drivers than public health care, even though IT governance in health care is generally present. The motivations behind private health care's IT governance initiatives are well understood. Results show that in contrast to private health care, public health care is more influenced by outside forces like legislation, the regulatory environment and political pressure. The drivers of IT governance in both private and public health care sectors are summarised in Figure 6.3. The drivers' diagrammatic representation is shown in the picture, with the highest mean values belonging to the most identified drivers.

The requirement to guarantee that IT and business plans are aligned, assurance to stakeholders and shareholders, and risk management are the three main drivers of IT governance, according to Figure 6.3. This includes the delivery of IT business value, IT cost optimisation, IT coaching and the requirement to adhere to legal and regulatory requirements. The need to lower expenses and boost profitability was the least important motive. After providing IT governance drivers in the previous section, the following sections show IT governance implementation results.

Information technology governance implementation frequencies

The results of the analysis show that IT and its governance are very important to both commercial and public health care organisations (m = 4.56, SD = 0.531, t [121] = 32.404, p = 0.0005). However, there is a lot more agreement that IT governance is important in the private sector (m = 4.71, SD = 0.459) than in the public sector (m = 4.30, SD = 0.553) (t [120] = 4.392, p = 0.0005). Given the significance of IT and IT governance to the organisations, they are actively working to execute it, utilising various entities to varying degrees.

Analysis reveals varying degrees of reliance on various entities by organisations for the execution of IT governance as demonstrated in Figure 6.4. For the most part, health care organisations rely heavily on internal IT governance teams (m = 4.70, SD = 0.528, t [121] = 35.470, p = 0.0005) and external advisers (m = 3.67, SD = 0.732, t [121] = 10.138, p = 0.0005) to execute IT governance. Additionally, for the implementation



Source: Adapted from Mangundu (2017, p. 143).
Key: IT, information technology.

FIGURE 6.4: Information technology governance implementation frequencies.

of IT governance, organisations depend less on the National Department of Health (m = 2.33, SD = 1.797, t [121] = −4.130, p = 0.0005) and the Department of Public Service and Administration (DPSA) (m = 2.37, SD = 1.846, t [121] = −3.776, p = 0.0005).

Comparative investigation, however, reveals disparities in how much private and public health care organisations rely on the organisations for the implementation of IT governance. Public health care (m = 3.95, SD = 0.728) relies much more on external consultants for implementing IT governance than private health care (m = 3.53, SD = 0.728, t [120] = −3.040, p = 0.003). Contrarily, internal IT governance teams are significantly more relied upon by private health care (m = 4.79, SD = 0.466) than by public health care (m = 4.52, SD = 0.590) to implement IT governance (t [73.483] = 2.631, p = 0.010). Additionally, analysis shows that public and private health care sectors are much more in agreement about how much they depend on the National Department of Health to implement IT governance (m = 4.59, SD = 0.726 vs. m = 1.05, SD = 0.453) (t [62.300] = −29.300, p = 0.0005). In addition, analysis reveals that public and private health care sectors are much more in agreement about how much they depend on the Department of Public Service and Administration for implementing IT governance (m = 4.73, SD = 0.694 vs. m = 1.04, SD = 0.340) (t [54.838] = −33.081, p = 0.0005).

Analysis reveals that COBIT is the framework that is most frequently used to execute IT governance in both private and public health care sectors (m = 4.94, SD = 0.234, t [121] = 91.885, p = 0.0005). Both commercial and public health care IT governance recommendations from the King III study are taken into consideration (m = 4.80, SD = 0.439, t [121] = 45.410,

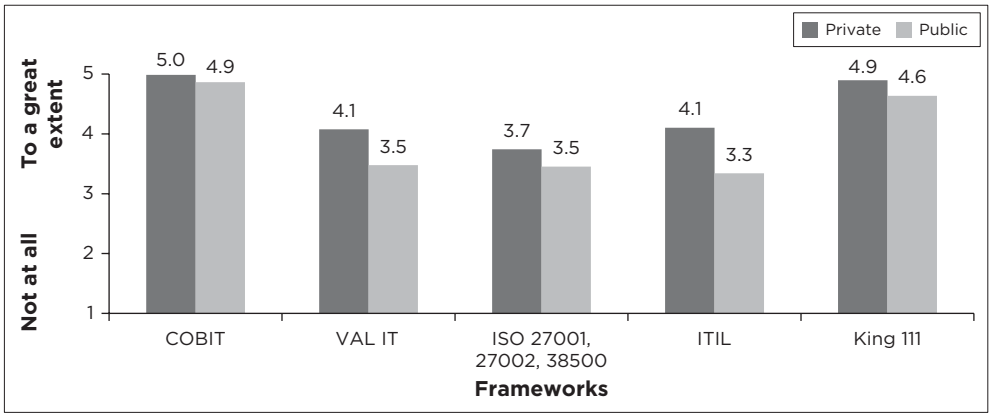
p = 0.0005). As an IT governance implementation framework, Val IT (*m* = 3.86, SD = 0.696, *t* [121] = 13.656, *p* = 0.0005) compares favourably to ITIL (*m* = 3.83, SD = 0.897) and ISO (*m* = 3.64, SD = 0.644).

Regarding the degree to which the COBIT framework is used for IT governance, there is noticeably greater agreement in the commercial sector (*m* = 4.99, SD = 0.113) than in the public sector (*m* = 3.86, SD = 0.347) (*t* [48.219] = 2.293, *p* = 0.026). Additionally, there is a lot more consensus about how much the VAL IT framework is used for IT governance in the private sector (*m* = 4.08, SD = 0.576) than in the public sector (*m* = 3.48, SD = 0.731) (*t* [73.361] = 4.683, *p* = 0.0005). Furthermore, there is greater consensus regarding the degree to which the ISO 27001, 27002 and 38500 frameworks are used for IT governance in the private sector (*m* = 3.74, SD = 0.521). Regarding the degree to which the ITIL framework is applied to IT governance, there is much greater agreement in the commercial sector (*m* = 4.10, SD = 0.749) than in the public sector (*m* = 3.34, SD = 0.939) (*t* [74.086] = 4.617, *p* = 0.0005). Additionally, there is a significantly greater agreement regarding the degree to which the King III framework is followed for IT governance in the private sector (*m* = 4.90, SD = 0.345) compared to the public sector (*m* = 4.64, SD = 0.532) (*t* [63.829] = 2.925, *p* = 0.005). The findings in each case show that the commercial sector uses the frameworks more extensively than the public sector.

The implementation of IT governance frameworks makes use of both internal and external resources. According to Z approximation, all techniques were significantly implemented: top-down (98%, *p* = 0.0005), pragmatic (66%, *p* = 0.0005), risk-based (93%, *p* = 0.0005), phased (80%, *p* = 0.0005) and implementation through prioritisation (85%, *p* = 0.0005).

The chi-square test of independence is used to compare different industry sectors. When the conditions were not met, Fisher's exact test was used. According to the analysis, there is a strong correlation between the top-down methodology's use and the sector (*p* = 0.045). Unexpectedly, more public corporations than predicted do not employ the top-down strategy. Additionally, there is a strong correlation between the sector and the application of the pragmatic approach (*p* = 0.0005; 2 [1] = 101.278). The pragmatic approach is used by private companies more frequently than predicted but less frequently by public companies.

Sector and the application of the risk-based strategy are significantly correlated (*p* = 0.001). The public sector does not employ the risk-based strategy as frequently as would be expected. Sector and the application of the phased technique are significantly correlated (2 [1] = 47.513, *p* = 0.0005). The amount of public firms not using the phased method is higher than projected, whereas private companies do.



Source: Adapted from Mangundu (2017, p. 144).
Key: COBIT, Control Objectives for Information and Related Technologies; VAL IT, value of information technology framework; ISO, International Organization for Standardization; ITIL, Information Technology Infrastructure Library.
FIGURE 6.5: Information technology governance frameworks frequencies.

Through the prioritisation method, there is a substantial correlation between sector and implementation (p = 0.0005; 2 [1] = 30.826). In contrast to public health care, the private health care sector prioritises its initiatives. A review of the variations in the implementation strategies used across sectors is shown in Figure 6.5.

All of the aforementioned IT governance implementation strategies are more common in the private sector than in the public sector, as shown in Figure 6.5. Both the corporate and public health care industries hold top-down and risk-based methods in high regard. Results show a substantial difference when it comes to the pragmatic approach, with the private sector using it significantly while the public sector does not. The establishment of IT governance is prioritised by both private and public sector organisations, although private health care receives more attention. Results on IT governance frameworks and implementation strategies are discussed in this section. As a part of implementing IT governance, the following section presents IT governance structures.

Information technology governance structures

The qualitative phase showed that structures, processes and relational mechanisms are being used by both private and public health care sectors to establish IT governance. This chapter's statistical analysis looks at how well the respondents agreed with the findings of the qualitative research. Results of the examination of IT governance structures in support of IT governance in both private and public health care sectors are presented in the section below. Analysis reveals that board-level IT strategy committees strongly favour IT governance (m = 4.09, SD = 0.680, t [121] = 33.889, p = 0.0005). As a formal structure supporting IT governance, IT audit

committees at the board of director level are shown to be of significant relevance (m = 4.41, SD = 0.665, t [121] = 23.417, p = 0.0005). Additionally, CIOs on executive committees considerably support IT governance (m = 4.60, SD = 0.676, t [121] = 26.110, p = 0.0005). In support of IT governance in health care, analysis reveals that IT steering committees (m = 4.92, SD = 0.303, t [121] = 69.695, p = 0.0005) have the greatest influence.

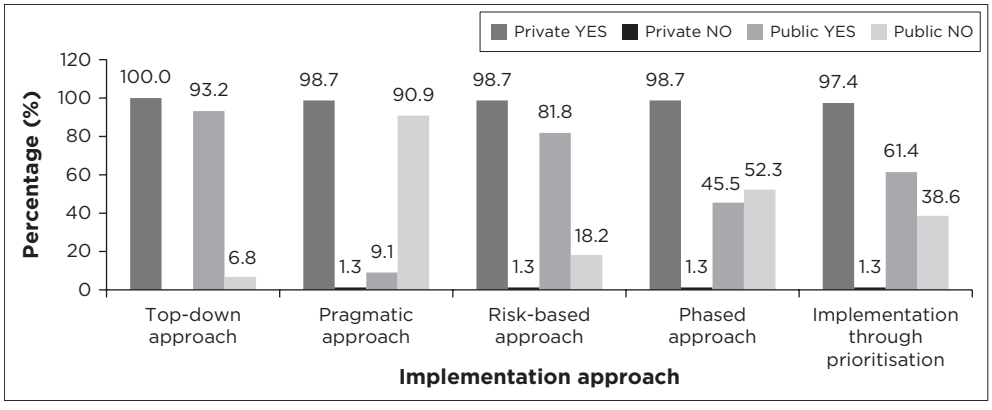
The IT governance function/officer (m = 4.16, SD = 0.504, t [121] = 25.514, p = 0.0005) plays a significant role in supporting IT governance, according to subsequent analysis. The results also demonstrate the large contribution that steering committees for IT projects make (m = 3.97, SD = 0.629, t [121] = 16.985, p = 0.0005). The security, compliance and risk officer (m = 4.24, SD = 0.705, t [121] = 19.397, p = 0.0005) and the CIO reporting to the head of department or Chief Operations Officer (COO) (m = 4.66, SD = 0.701, t [121] = 26.071, p 0.0005) significantly assist IT governance initiatives in health care organisations, according to the results. Information technology governance in both private and public health care sectors is highly supported by IT 148 governance structures. A comparison of IT governance systems across industries is provided in the section that follows.

Information technology governance structure comparative analysis

Information technology strategy committees at the level of the board of directors support IT governance measures, but there is a noticeably greater agreement in the private sector (m = 4.27, SD = 0.617) than in the public sector (m = 3.77, SD = 0.677) (t [120] = 4.118, p = 0.0005). Additionally, there is more agreement that the IT audit committee at the level of the board of directors supports IT governance in the private health care sector (m = 4.58, SD = 0.570) than in the public sector (m = 4.11, SD = 0.722) (t [120] = 3.907, p = 0.0005). In comparison to the public sector (m = 4.23, SD = 0.886), the CIO on the executive committee considerably promotes IT governance in the private health care industry (m = 4.81, SD = 0.397). There is a lot greater agreement that the IT governance function/officer promotes IT governance in the commercial health care sector (m = 4.24, SD = 0.514) than in the public sector (m = 4.02, SD = 0.457) (t [98.377] = 2.448, p = 0.016).

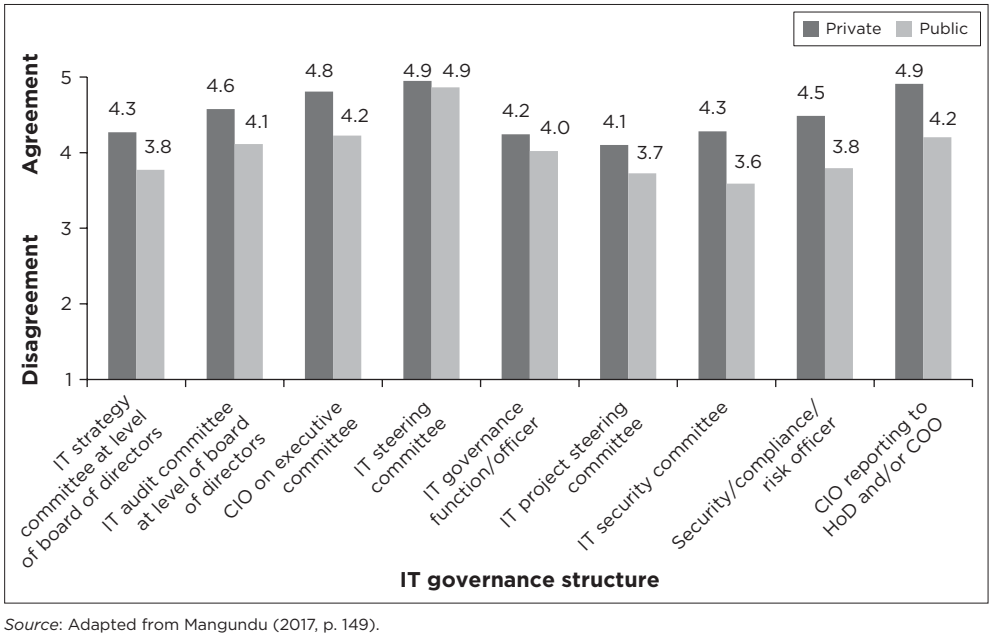
Information T project steering committees support IT governance innovations more frequently in private health care (m = 4.10, SD = 0.616) than in public health care (m = 3.73, SD = 0.585) (t (120) = 3.291, p < 0.001). More considerable agreement is seen in the commercial health care sector (m = 4.28, SD = 0.579) than in the public health care sector (m = 3.59, SD = 0.726) with reference to IT security committees supporting IT governance (t (74.042) = 5.420, p = 0.0005). Furthermore, there is a lot more agreement that IT strategy committees at the level of the board of directors support IT

governance activities in the private sector (m = 4.49, SD = 0.597) than in the public sector (m = 3.80, SD = 0.668) (t [120] = 5.884, p 0.0005). Finally, there is more agreement that IT strategy committees at the level of the board of directors support IT governance activities in the private sector (m = 4.91, SD = 0.401) than in the public sector (m = 4.20, SD = 0.878) (t [53.291] = 5.043, p = 0.0005). A summary of IT governance mechanisms in both private and public health care sectors is shown in Figure 6.7.



Source: Adapted from Mangundu (2017, p. 146).

FIGURE 6.6: Information technology governance implementation approach frequencies.



Source: Adapted from Mangundu (2017, p. 149).

Key: IT, information technology; CIO, Chief Information Officer; COO, Chief Operations Officer; HoD, Head of Department.

FIGURE 6.7: Information technology governance structure frequencies.

The findings imply that IT governance systems are evident in both private and public health care sectors. However, there are large gaps in the understanding of the support provided by IT governance structures. Overall, private health care and public health care sectors were more in agreement about the support that IT governance structures should provide. Contrary to expectations, private health care has more mature IT governance systems than that of public health care. Results of the IT governance processes are provided in the next section.

Information technology governance processes

Results on IT governance structures were covered in the previous sections. The processes used for IT governance in both private and public health care sectors are discussed in this section (m = 3.86, SD = 0.469, t [121] = 20.263, p = 0.0005), and the analysis of the results demonstrates that strategic information systems planning considerably helps IT governance in health care. Additionally, IT governance is supported by IT performance measurement (such as an IT balanced scorecard) (m = 4.93, SD = 0.249, t [121] = 85.962, p = 0.0005). Portfolio management procedures significantly support IT governance (m = 3.97, SD = 0.588, t [121] = 18.161, p = 0.0005). According to the results, charge-back agreements provide significant support (m = 4.01, SD = 0.766, t [121] = 14.538, p = 0.0005). Additionally, service level agreements significantly aid IT governance (m = 4.97, SD = 0.179, t [121] = 121.516, p = 0.0005). Additionally, IT governance frameworks (m = 4.96, SD = 0.199, t [121] = 108.696, p = 0.0005) and IT governance assurance and self-assessment (m = 4.27, SD = 0.668) considerably promote IT governance. In addition, project governance/management techniques (m = 7.37, SD = 0.515, t [121] = 15.650, p = 0.0005) promote IT governance in the health care industry. According to the analysis of the data, IT budget reporting and control promote IT governance (m = 3.92, SD = 0.611, t [121] = 16.594, p = 0.0005). The findings also show that benefit management and reporting considerably aid IT governance in both private and public health care sectors (m = 4.03, SD = 0.629, t [121] = 18.137, p = 0.0005).

The researcher conducted a comparative analysis to ascertain the variations in the degree to which the processes support IT governance in private and public health care sectors independently after realising that there is significant agreement that the aforementioned IT governance processes support IT governance in both private and public health care sectors. The comparative analysis is provided in the sections that follow.

Governance process comparative analysis

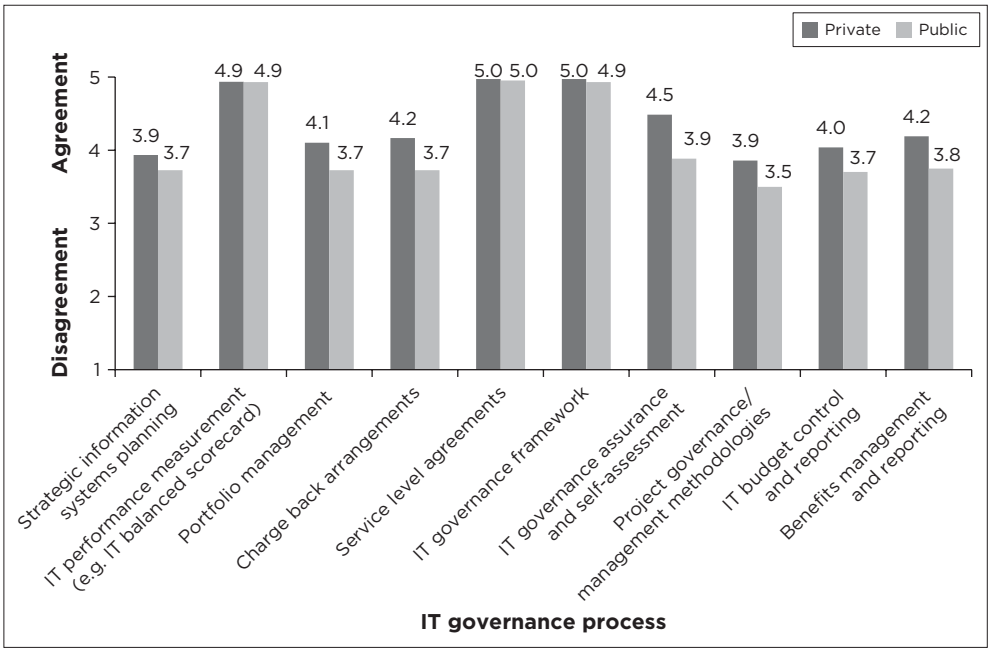
Strategic information systems planning is supported by IT governance initiatives, according to comparative analysis, which shows that there is considerably more agreement in the private sector (m = 3.94, SD = 0.437) than in the public sector (m = 3.73, SD = 0.499) (t [79.784] = 2.316, p = 0.023). Additionally, the findings indicate that portfolio management supports IT governance measures more significantly in the private sector (m = 4.10, SD = 0.524) than in the public sector (m = 3.73, SD = 0.624) (t [77.278] = 3.375, p < 0.001). Charge-back arrangements promote IT governance activities, according to more private sector respondents (m = 4.10, SD = 0.673) than public sector respondents (m = 3.73, SD = 0.845) (t [73.930] = 3.375, p = 0.004). Information technology governance assurance and self-assessment support IT governance initiatives, with more significant agreement seen in the commercial sector (m = 4.49, SD = 0.575) than in the public sector (m = 3.89, SD = 0.655) (t [120] = 5.267, p = 0.0005).

Additionally, there is a lot greater agreement that project governance and management approaches help IT governance initiatives in the private sector (m = 3.86, SD = 0.448) than in the public sector (m = 3.50, SD = 0.550) (t [75.326] = 3.694, p = 0.0005). The findings show that there is still much greater agreement about how IT budget control and reporting help IT governance initiatives in the private sector (m = 4.04, SD = 0.521) than in the public sector (m = 3.70, SD = 0.701) (t [70.112] = 2.758, p = 0.007). In addition, the private sector demonstrates more agreement that IT budget control and reporting help IT governance activities (t [72.861] = 3.688, p = 0.0005) than the 151 public sector (m = 3.75, SD = 0.686; m = 4.19, SD = 0.536). The results discussed previously are summarised in Figure 6.7.

According to a comparative investigation, there is greater consensus regarding the existence of IT governance mechanisms in commercial health care than in public health care. In contrast to the public sector, processes are more well-established and employed to assist IT governance in the private sector. However, the findings show consistency in how balanced scorecards, service level agreements and IT governance frameworks are used by both the private and public health care sectors. The results of the IT governance process are presented in this section, and the results of the IT governance relational mechanisms are provided in the following chapter.

Information technology governance relational mechanisms

Significant support for IT governance was found in IT governance processes and structures, as discussed in the previous sections. This section covers the consensus and dispute regarding the support for IT governance in both



Source: Adapted from Mangundu (2017, p. 151).
Key: IT, information technology.

FIGURE 6.8: Information technology governance process frequencies.

private and public health care sectors provided by relational systems. Analysis of the data reveals a significant discrepancy regarding the assistance for IT governance provided by co-location ($m = 1.47$, SD = 0.517, t [121] = −32.733, $p = 0.0005$). Additionally ($m = 1.43$, SD = 0.497, t [121] = −35.006, $p = 0.0005$), cross-training does not benefit IT governance activities. Further findings show a considerable divide between the support for IT governance in both commercial and public health care sectors (m = 1.85, SD = 0.626, t [121] = −20.263, p = 0.0005). Information technology governance is supported by business/IT account management; however, there is a significant gap between the two (m = 1.68, SD = 0.607, t [121] = −24.027, p = 0.0005). Further analysis of the data reveals that there is substantial disagreement with the idea that senior or executive management sets a positive example for IT governance (m = 2.53, SD = 1.062, t [121] = −4.861, p = 0.0005). Results show that there is substantial disagreement about the support for IT governance provided by informal meetings between business and IT executive/senior management ($m = 1.75$, SD = 0.659), (t [121] = −20.867, p = 000.5). Information technology governance is not supported by regular corporate internal communication about IT (m = 1.74, SD = 0.736, t [121] = −18.935, p = 000.5). Last but not least, the data demonstrate that there is substantial disagreement regarding the help that IT governance awareness initiatives provide (m = 1.53, SD = 0.533, t [121] = −30.408, p = 0000.5). Overall findings show that relational methods for IT governance

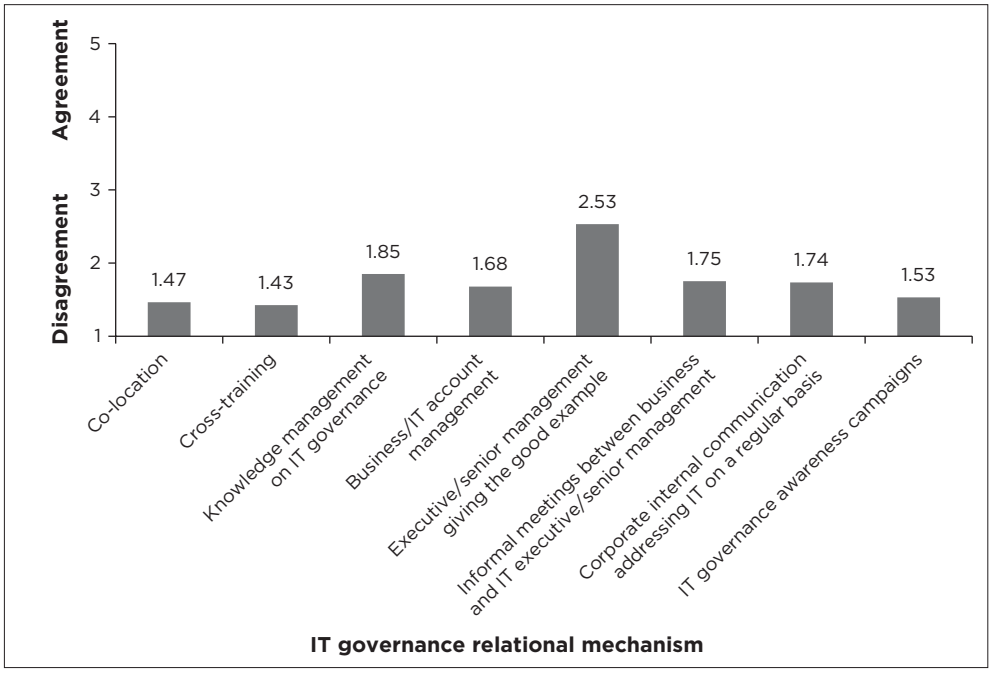
do not assist IT governance in both private and public health care sectors. To identify the differences in the conflicts surrounding the usage of relational mechanisms for IT governance, additional investigation was conducted across industries. The outcomes are given in the section that follows.

Information technology governance relational mechanism comparative analysis

A comparison of relationship mechanisms between private and public health care sectors was conducted to see if there are any differences. Comparative examination between sectors, however, does not find any appreciable variations in the degree to which relational mechanisms enable IT governance. Conflicting IT governance relationship mechanisms are shown in Figure 6.9.

According to respondents, relational mechanisms for IT governance are not generally supportive of IT governance in both private and public health care sectors, as seen in Figure 6.9.

Additional research was conducted to identify the structures, procedures and relational mechanisms that greatly contribute to IT governance in both private and public health care sectors. The outcomes are displayed below.



Source: Adapted from Mangundu (2017, p. 153).
Key: IT, information technology.

FIGURE 6.9: Information technology governance relational mechanism frequencies.

Information technology governance implementation further tests

The weighting of IT governance structures, procedures and relational mechanisms was statistically determined, as well as which of the three most strongly supports IT governance for health care generally and across industries. Cronbach's alpha was used to evaluate the consistency of integrating these variables. A number > 0.7 denotes a trustworthy measurement. These composite measures underwent analysis to determine whether there is a statistically significant difference between them. To check for significant differences between two of the metrics, a paired samples *t*-test was used.

Results show that there is much higher agreement with the support for IT governance efforts provided by IT governance structures (m = 4.3415, SD = 0.38494) as opposed to IT governance processes (m = 4.2648, SD = 0.27721) (t [121] = 3.330, $p < 0.001$). Additionally, the results of the analysis show that IT governance relational mechanisms (m = 1.9115, SD = 0.50717) and IT governance structures (m = 4.3415, SD = 0.38494) support IT governance initiatives much more than the latter two do (t [121] = 40.723, p = 0.0005). The results of the analysis show that there is much greater agreement that IT governance relational mechanisms (m = 1.9115, SD = 0.50717) than IT governance processes (m = 4.3648, SD = 0.27721) support IT governance initiatives (t [121] = 42.349, p = 0.0005). From the foregoing, it is clear that support is ranked from strongest to weakest in terms of IT governance structures, processes and relational mechanisms. An analysis of support across sectors reveals that the private sector's IT governance relational mechanisms, structures and processes are supported in decreasing order of strength. Although IT governance structures and processes are not materially different in the public sector, they are both superior to relational mechanisms. The results on how private and public health care sectors are adopting IT governance were presented in the previous sections. The results on implementation barriers for IT governance are provided in the sections that follow.

Information technology governance inhibitors

Regarding the conceptual framework described in Chapter 2, an analysis was conducted. Through the lens of the TOE framework combined with the DOI theory, IT governance inhibitors are investigated. The three factors – technological context (IT governance context), organisational context and environmental context – that affect how an enterprise applies technological improvements were developed through the application of the DOI theory and the TOE theory. Finally, a comparison analysis is carried out to identify the barriers to IT governance across industries.

Information technology governance context inhibitors

Results analysis shows that there is strong agreement that IT governance frameworks, standards and solutions are complicated and hinder the application of IT governance (m = 4.55, SD = 0.500, t [120] = 34.000, p = 0.0005). There is a great deal of agreement about how expensive and difficult IT governance is to execute as a barrier to adoption (m = 4.54, SD = 0.533, t [120] = 31.728, p = 0.0005). Additionally, there is strong agreement that IT governance is incompatible with current structures (m = 3.64, SD = 0.729, t [120] = 9.731, p = 0.0005) and that there are no tangible gains from IT governance (m = 4.06, SD = 0.537, t [120] = 21.672, p = 0.0005).

Organisational context inhibitors

Results indicate significant agreement on the majority of the factors resistant to change, including IT governance context inhibitors (m = 4.06, SD = 0.537, t [120] = 21.672, p = 0.0005), management's lack of awareness of IT governance (m = 3.17, SD = 0.843, t [120] = 2.264, p = 0.025) (management's lack of awareness of IT governance) and a lack of skills and knowledge about IT governance (m = 4.62, SD = 0.959). Budgetary and financial constraints (m = 4.90, SD = 0.300, t [120] = 69.665, p = 0.0005), staffing constraints (m = 4.78, SD = 0.524), IT structure constraints (m = 4.60, SD = 0.540), lack of IT governance prioritisation (m = 4.11, SD = 0.480), IT governance implementation time constraints (m = 4.83, SD = 0.380) and high effort requirement in implementation (m = 4.83, SD = 0.380).

External environment context inhibitors

According to the findings analysis, there are many disputes over the existence of frameworks, standards and solutions for IT governance (m = 1.66, SD = 0.525, t [120] = −9.595, p = 0.0005). Additionally, there is a lack of support from the market structure and industry characteristics (m = 2.32, SD = 0.777, t [120] = −28.034, p = 0000.5), a lack of support from technology (m = 1.83, SD = 0.823), a lack of support from vendors (m = 1.59, SD = 0.715) and a lack of support from the regulatory environment (m = 1.77, SD = 0.783). Additionally, the results do not support the claims that business and IT professionals do not communicate well with one another or that political influence hinders IT governance. A cross-sector comparison of IT governance barriers is provided in the section below.

Information technology governance inhibitor comparative analysis

Comparative analysis reveals that there is much more disagreement regarding the lack of IT governance frameworks, standards and solutions in the public sector (m = 1.81, SD = 0.450) than in the private sector (m = 1.58, SD = 0.547) (t [101.51] = −2.564, p = 0.012). Although the lack of a close link between IT and non-IT sectors is a hindrance to IT governance, there is much more agreement in the public sector (m = 3.56, SD = 0.590) than in the private sector (m = 3.18, SD = 0.528) (t [78.954] = −3.506, p = 0.001). Additionally, the findings reveal that there is much greater agreement in the public sector (m = 3.47, SD = 0.667) than in the private sector (m = 3.01, SD = 0.890) regarding the claim that management is unaware of IT governance (t [119] = −2.910, p = 0.004). Further analysis reveals that there is significantly greater agreement in the public sector (m = 4.79, SD = 0.412) than in the private sector (m = 4.53, SD = 0.659) regarding the fact that the implementation of IT governance is being hampered by a lack of knowledge and skills (t [117.067] = −2.718, p = 0.008). A lack of executive management buy-in is also shown to be hindering IT governance, with data showing that there is much more agreement in the public sector (m = 4.07, SD = 0.507) than in the private sector (m = 3.79, SD = 0.567) (t [119] = −2.649, p = 0.009).

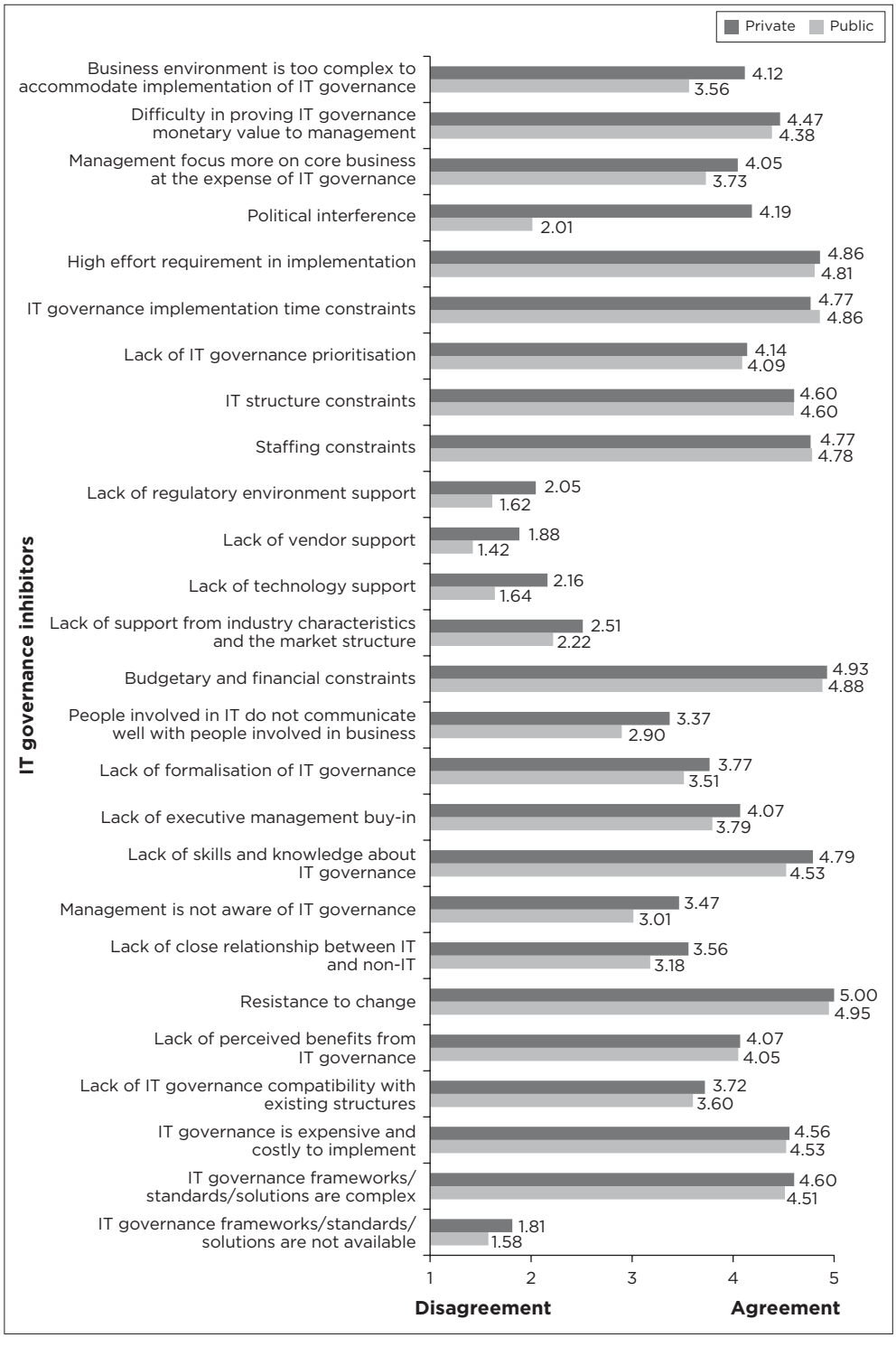
Further comparison analysis demonstrates that the public sector (m = 3.77, SD = 0.527) and the private sector (m = 3.51, SD = 0.698) are much more in agreement that the absence of institutional IT governance is a hindrance (t [107.564] = −2.259, p = 0.026). Results indicate that there is significantly greater agreement in the public sector (m = 3.37, SD = 0.578) than in the private sector (m = 2.90, SD = 0.695) regarding the issue of communication barriers between IT and business stakeholders as a barrier to the implementation of IT governance (t [119] = −3.809, p = 0.0005). The private sector (m = 2.22, SD = 0.784) exhibits more disagreement than the public sector (m = 2.51, SD = 0.736) about the significance of IT governance being severely hampered by a lack of support from industry features and the market structure (t [119] = −2.015, p = 0.046). There is much less agreement that a lack of technological support prevents the implementation of IT governance in the commercial sector (m = 1.64, SD = 0.720) than in the public sector (m = 157 2.16, SD = 0.898) (t [119] = −3.488, p = 0.001).

In addition, there is much more dispute over whether a lack of vendor support is impeding the adoption of IT governance in the private sector (m = 1.42, SD = 0.547) than in the public sector (m = 1.88, SD = 0.879) (t [60.365] = −3.121, p = 0.003). The findings reveal that there is significantly

more disagreement in the private sector (m = 1.62, SD = 0.688) than in the public sector (m = 2.05, SD = 0.872) regarding the claim that the implementation of IT governance is being hampered by a lack of support from the regulatory environment (t [119] = −2.995, p = 0.003). According to the findings, political influence is substantially more widely agreed upon in the public sector (m = 4.19, SD = 0.824) than in the private sector (m = 2.01, SD = 0.860) (t [119] = −13.499, p = 0.0005). According to the findings, management is less concerned with IT governance and is impeding the implementation of IT governance in the public sector (m = 4.05, SD = 0.434) than in the private sector (m = 3.73, SD = 0.678) (t [116.240] = −3.117, p = 0.002). Finally, comparison analysis shows that the business environment complexity is a substantial barrier to the implementation of IT governance in the public sector (m = 4.12, SD = 0.731) compared to the private sector (m = 3.56, SD = 0.862) (t [99.276] = −3.728, p = 0.0005).

Comparative studies in the earlier sections show that there is more consensus regarding the existence of inhibitors in public health care than in private health care. To statistically establish the classification of IT governance inhibitors, an additional study was carried out. The findings are provided in the section below. The findings indicate that there are organisational IT governance inhibitors that are significantly present (m = 3.5041, SD = 0.40669, t [120] = 13.635, p = 0.0005) and that these are the elements preventing IT governance from occurring within the organisations. Results, however, show that there are no external environment-related IT governance inhibitors (m = 1.8760, SD = 0.58195, t [120] = −21.245, p = 0.0005). The findings unmistakably show that organisations have powerful pressures working against the application of IT governance. Additionally, group statistics using Levene's test for equality of variance were used to assess the importance of inhibitors in various industries. The findings reveal that there is much greater agreement about the fact that organisational problems are impeding the adoption of IT governance in the public sector (m = 3.6977, SD = 0.32768) than in the private sector (m = 3.3974, SD = 0.40835) (t [119 = −4.140, 158, p = 0000.5). Additionally, the findings show that there is much more disagreement about external reasons impeding the implementation of IT governance in the private sector (m = 1.7244, SD = 0.32768) than in the public sector (m = 2.1512, SD = 0.40835) (t [67.101] = −3.757, p = 0.0005). Information technology governance barriers in both private and public health care sectors are shown in Figure 6.10.

Overall results show that the public sector faces higher organisational and external barriers to IT governance than the private health care industry, which is more than predicted. Results on implementation barriers for IT governance in both private and public health care sectors were covered in the section before, and the sections that follow present results on the effectiveness of IT governance.



Source: Adapted from Mangundu (2017, p. 158).
Key: IT, information technology.

FIGURE 6.10: Information technology governance inhibitor frequencies.

Information technology governance performance

Analysis of the data reveals that organisations are monitoring the effectiveness of their IT investments (m = 3.38, SD = 0.733, t [121] = 5.703, p = 0.0005). In both commercial and public health care, however, there is a large divide between how well IT satisfies organisational needs and expectations (m = 2.83, SD = 0.489, t [121] = −3.718, p = 0.0005).

Additional one-sample t-tests on each industry separately demonstrate that private health care is monitoring IT investment performance (m = 3.72, SD = 0.556, t [77] = 11.406, p = 0.0005). It is not important for either organisation whether IT satisfies their needs or expectations. Contrarily, there is a lot of dispute over how public health care measures the effectiveness of its IT investments (m = 2.77, SD = 0.611, t [42] = −2.496, p = 0.017). Furthermore, there is a lot of disagreement about whether public health care IT meets the needs and expectations of the organisations (m = 2.49, SD = 0.592, t [42] = −160 5.662, p = 0.0005). As seen in the earlier sections, it is evident that IT initiatives in public health care are a long way from achieving their intended goals.

Four domains made up of anticipated IT governance results, were determined during the qualitative phase. Improved health care service delivery, cost-effective IT use, administrative procedures and clinical research are the results of IT governance. The four domains were surveyed to determine their significance as consequences of IT governance and the role that IT governance played in their creation. The sections below include the results.

Analysis of the data reveals strong consensus that improving clinical services delivery as an outcome of IT governance is crucial for the health care industry (m = 4.77, SD = 0.433, t [120] = 43.943, p = 0.0005). Additionally, the findings demonstrate strong consensus that the health care industry values improving cost-effective IT use as an outcome of IT governance (m = 4.21, SD = 0.604, t [120] = 21.960, p = 0.0005). Additionally, the findings demonstrate strong agreement that improving administrative procedures is a crucial IT governance outcome for the health care industry (m = 4.51, SD = 0.549, t [120] = 30.277, p = 0.0005). However, as the outcome was not significant, no inference regarding how to improve clinical research can be made.

To find out how IT governance affected the realisation of its results, more study was done. The findings demonstrate strong agreement that improving clinical service delivery in the health care industry has been influenced by IT governance (m = 3.29, SD = 0.612, t [120] = 5.203, p = 0.0005). Results, however, demonstrate stark disagreement on the claim that IT governance has improved the cost-effective use of IT in the

health care industry (m = 2.59, SD = 0.654, t [120] = −6.949, p = 0.0005). Additionally, the findings demonstrate strong agreement that IT governance has contributed to improving administrative procedures in the health care industry (m = 3.40, SD = 0.598, t [120] = 7.293, p = 0.0005). The degree to which IT governance has improved clinical research in the health care industry is significantly disputed (m = 1.74, SD = 0.639, t [120] = −21.612, p = 0.0005).

Results show that IT governance improved the provision of health care services and improved administrative procedures. However, there was no change in the efficient use of IT for clinical research in both private and public health care sectors. The results of the comparison analysis across sectors that were required as a result of the aforementioned findings are presented in the section below. The performance of IT governance across sectors is compared in the section that follows.

Information technology governance performance comparative analysis

Comparative study was carried out in order to come to comparative conclusions on the measurement of IT investment performance. According to comparative analysis across sectors, the private sector (m = 3.72, SD = 0.556) and the public sector (m = 2.77, SD = 0.611) had considerably higher levels of agreement regarding how well they are monitoring IT investment performance (t [119] = 8.689, p = 0.0005). Results also indicate that the private sector (m = 3.03, SD = 0.278) and the public sector (m = 2.49, SD = 0.592) have considerably higher levels of agreement regarding the extent to which IT meets organisational needs and expectations (t [52.389] = 5.616, p = 0.0005).

Additionally, research on the outcomes of IT governance across sectors yields intriguing findings. Enhancing the cost-effective use of IT is crucial as a consequence of IT governance, and there is considerably more agreement in the private sector (m = 4.37, SD = 0.537) than in the public sector (m = 3.91, SD = 0.610) (t [119] = 4.339, p = 0.0005). However, there is disagreement in the public sector (m = 2.77, SD = 0.841) and agreement in the private sector (m = 3.35, SD = 0.850) about the significance of improving clinical research as an IT governance result (t [119] = 3.598, p = 0.0005).

According to a comparative analysis, there is noticeably more agreement in the commercial sector (m = 3.49, SD = 0.575) than in the public sector (m = 2.93, SD = 0.507) that improved clinical care delivery has been influenced by IT governance (t [96.339] = 5.510, p = 0.0005). However, the findings indicate that there is significant disagreement regarding the impact of IT governance on the cost-effective use of IT for

both the commercial sector (m = 2.81, SD = 0.625) and the public sector (m = 2.19, SD = 0.500) (t [119] = 5.601, p = 0.0005). Further findings indicate that there is broad agreement that improved administrative procedures have been influenced by IT governance for both the commercial sector (m = 3.55, SD = 0.595) and the public sector (m = 3.12, SD = 0.498) (t [100.290] = 4.283, p = 0.0005). Finally, the findings reveal that there is significant disagreement regarding the impact of IT governance on improved clinical research for both the commercial sector (m = 1.87, SD = 0.611) and the public sector (m = 1.51, SD = 0.631) (t [119] = 3.068, p = 0.003). More than anticipated, the findings show that there is little consensus regarding how IT governance affects every IT governance outcome in the public health care sector. As a result, IT governance in public health care is ineffective.

One-sample t-test results for each sector demonstrate a considerable degree of agreement that improved administrative procedures and clinical care delivery (m = 3.49, SD = 0.575, t [77] = 8.174, p = 0.0005, and m = 3.55, SD = 0.595, respectively) have benefited from IT governance in the private sector. Results, however, indicate that there is significant disagreement in the private sector regarding the impact of IT governance on improved clinical research (m = 1.87, SD = 0.611) and enhanced cost-effective use of IT (m = 2.81, SD = 0.625). As the results are not statistically significant, no conclusion can be drawn about improved clinical service delivery and improved administrative procedures in the public sector. However, there is considerable disagreement in the public sector on the impact of IT governance on improved clinical research (m = 1.51, SD = 0.631) and enhanced cost-effective use of IT (m = 2.19, SD = 0.500) (t [42] = −10.669, p = 0.0005).

Results show that improved clinical care delivery and improved administrative processes were made possible thanks in part to IT governance in the private sector. The cost-effective use of IT for improved clinical research, however, is not being realised via IT governance. Similar findings are shown for the public sector, where 163 improved clinical research and cost-effective IT utilisation are still not realised in IT governance outcomes. Results of IT governance performance were reported in this section, and the section that follows offers some interesting correlations.

Correlation analysis

The frequency with which IT issues are mentioned on board agendas is significantly positively correlated with the frequency with which IT is used for routine business (r = 0.309, p = 0.001). The level of significance for correlation (2-tailed) is 0.01. The outcome shows that organisations talk about IT issues more frequently on board's agendas the more dependent they are on IT as shown in Table 6.1.

TABLE 6.1: Correlation between information technology use and information technology on board agenda.

	1.5 Use IT for your everyday business	1.7 Frequently are IT issues included in your organisation's meetings or board agenda
Pearson's correlation	1	0.309**
Sig. (2-tailed)	-	0.001
n	122	122
Pearson's correlation	0.309**	1
Sig. (2-tailed)	0.001	-
n	122	122

Source: Adapted from Mangundu (2017, p. 163).
Key: IT, information technology; Sig., significance; **Correlation is significant at the 0.01 level (2-tailed).

TABLE 6.2: Correlation between information technology issues on boards and business/information technology alignment.

	1.7 Frequently are IT issues included in your organisation's meetings or board agenda	1.8 Alignment between your organisation's IT strategy and business strategy
Pearson's correlation	1	0.354**
Sig. (2-tailed)	-	0.000
n	122	122
Pearson's correlation	0.354**	1
Sig. (2-tailed)	0.000	-
n	122	122

Source: Adapted from Mangundu (2017, p.164)
Key: IT, information technology; Sig., significance; **Correlation is significant at the 0.01 level (2-tailed).

Additionally, there is a strong positive association (r = 0.354, p = 0.0005) between the regularity with which IT issues are placed on board agendas and the alignment of an organisation's IT strategy with its business plan, as shown in Table 6.2. Previous studies have shown that organisations use IT governance in order to integrate their business and IT strategies. Information technology concerns should be often discussed on board agendas in order to achieve alignment of IT strategy to business strategy.

The measurement of IT investment performance and the significance of IT and its governance are significantly positively correlated (r = 0.268, p = 0.003), as shown in Table 6.3. The findings show that attempts to assess IT performance are undertaken when organisations view IT and its governance as critical to their operations. Additionally, there is a strong positive association (r = 0.227, p = 0.012) between the significance of IT, its governance and IT satisfying the needs and expectations of the organisations.

Furthermore, Table 6.4 demonstrates a strong positive association (r = 0.215, p = 0.018) between the perceived benefits of IT governance and executive management support. If management does not see benefits from IT governance initiatives, they do not prioritise them.

IT governance implementation time restrictions and the complexity of frameworks, standards and solutions have a substantial positive association (r = 0.195, p = 0.032), as revealed in Table 6.5. The longer it takes to deconstruct IT governance frameworks for implementation, the more complex they are.

TABLE 6.3: Correlation between importance of information technology and measurement of information technology performance.

	3.1 Importance of IT and its governance to your organisation	5.1 Measuring of IT investments performance
Pearson's correlation	1	0.268**
Sig. (2-tailed)	-	0.003
n	122	121
Pearson's correlation	0.268**	1
Sig. (2-tailed)	0.003	-
n	121	121

Source: Adapted from Mangundu (2017, p. 164).
Key: IT, information technology; Sig., significance; **Correlation is significant at the 0.01 level (2-tailed).

TABLE 6.4: Correlation between executive management buy-in and information technology governance perceived benefits.

	4.1.10 Lack of executive management buy-in	4.1.5 Lack of perceived benefits from IT governance
Pearson's correlation	1	0.215*
Sig. (2-tailed)	-	0.018
n	121	121
Pearson's correlation	0.215*	1
Sig. (2-tailed)	0.018	-
n	121	121

Source: Adapted from Mangundu (2017, p. 165).
Key: IT, information technology; Sig., significance; **Correlation is significant at the 0.01 level (2-tailed).

TABLE 6.5: Correlation between framework complexity and implementation time constraints.

	4.1.2 IT governance frameworks/ standards/solutions are complex	4.1.21 IT governance implementation time constraints
Pearson's correlation	1	0.195*
Sig. (2-tailed)	-	0.032
n	121	121
Pearson's correlation	0.195*	1
Sig. (2-tailed)	0.032	-
n	121	121

Source: Adapted from Mangundu (2017, p. 165).
Key: IT, information technology; Sig., significance; **Correlation is significant at the 0.01 level (2-tailed).

Discussion

According to quantitative findings, organisational factors, which come from within the organisation, are the key drivers for IT governance. Relational mechanisms do not significantly help IT governance activities; instead, organisations implement IT governance through structures and processes. Organisations must deal with impediments to IT governance implementation, mostly from within the organisation and the external environment. But IT governance on its own does not present any obstacles.

Conclusion

The quantitative results confirmed and helped to clarify a number of ambiguous findings from the qualitative phase. The chapter covered quantitative findings from data gathered from respondents' completed questionnaires. In order to present a complete picture of the study outcomes as part of mixed-methods research, the following chapter covers integrated results.

Chapter 7

Integrated study findings

Introduction

The previous chapter provided the quantitative findings, which were helpful in addressing some of the issues that the qualitative findings were unable to definitively resolve. The integration of qualitative and quantitative findings in a single study was encouraged by the exploratory sequential mixed-methods research design. This chapter begins with a defence of the integrated results before moving on to a consideration of the unified outcomes.

Integrated results

In order to suggest implementation solutions, the study sought to identify barriers to IT governance implementation. The case study exploratory sequential mixed-methods methodology was utilised to gather and analyse data in order to meet the objectives. The goal of the qualitative phase was to better understand the issue by drawing on the IT governance experiences of the interviewees. By using an online survey questionnaire, the quantitative phase extended the qualitative phase in order to provide a better understanding of the issues addressed in Phase 1. Although the qualitative results accurately captured the interviewees' experiences with IT governance in their organisations, they were unable to fully explain the IT governance concerns raised by the study questions on their own.

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By quantifying the severity and scope of the problems brought up in Phase 1 in relation to the phenomenon under investigation, the quantitative phase helped provide a comprehensive picture.

However, because of an unanticipated initial deficit in the agreement over the qualitative and quantitative data, there were very minor variances. This inspired the researcher to conduct additional qualitative analysis that would not have been examined otherwise in order to get definitive conclusions. In order to ascertain whether the research's findings are connected with the principal participants' experiences and so added more validity to the findings, informal follow-up telephonic and Skype conversations were held with them. The disparities might not have been discovered without a mixed-methods research strategy that attempted to combine the qualitative and quantitative phases' findings. As a result, the strength of the mixed-methods research technique allowed for the creation of a comprehensive depiction of the barriers to IT governance. The sections that follow go over integrated outcomes.

Information technology governance driver integrated results

Participants in the qualitative narratives described the forces influencing IT governance as coming both from within and outside of the organisations. The quantitative data, however, did not clearly support these important conclusions from the qualitative study, which indicated that organisational and external factors were the main drivers. Although additional quantitative research using factor analysis demonstrated that external components were invalid, their removal did not significantly alter the conclusions of the drivers of IT governance in health care. In order to help clarify the frictional findings, the researcher enquired into the discrepancy through telephone conversations with important individuals. Participants emphasised that internal organisational pressures and imperatives undoubtedly influenced the establishment of IT governance. They clarified that ensuring the application of IT governance in health care has very little to do with the external environment, if anything. Results of integrated IT governance deployment are shown in the following section.

Information technology governance implementation integrated results

Qualitative findings agreed with the literature in terms of how IT governance is being implemented by organisations. Although qualitative

studies show that IT governance is implemented through structures, processes and relational mechanisms, quantitative findings show that organisations now exclusively execute IT governance through structures and procedures. In the organisations under study, relational mechanisms are not included in IT governance projects. Participants made references to the fact that relational mechanisms are not given priority before structures and processes in IT governance efforts have been completed. The results of integrated IT governance inhibitors are provided in the following section.

Information technology governance inhibitor integrated results

Qualitative findings showed that the external environment, organisations and IT governance as an innovation are all sources of IT governance obstacles. Although IT governance elements were not significant as IT governance constraining factors, quantitative results showed several surprises and differences. Follow-up conversations with participants were conducted in order to provide some resolution, giving the researcher the opportunity to further the explanation. Additional interviews confirmed and backed up the findings, which unmistakably show that in order to provide IT governance with some wiggle room, organisations must deal with internal organisational constituents.

Additionally, contrary to what was previously stated in the qualitative portion of the study, inhibitors could not be statistically classified into managerial, people-oriented elements. The composite category that the inhibitors are solely organisational context factors was supported. The findings further demonstrated that there is no relationship between organisational and external barriers to the implementation of IT governance, demonstrating that organisations have high internal barriers to adoption, independent of the business context in which they operate.

Information technology governance performance integrated results

The results in relation to IT governance performance show significant disparities among sectors. Despite the fact that IT governance performance is evaluated in private health care. Unfortunately, public health care does not assess IT governance, and it is obvious that IT is a long way from achieving public health care's intended business goals. Additionally, private health care demonstrated a significant respect for

their desired IT governance results, as well as the impact IT governance has had on the results. Results, however, show that IT governance is not performing as anticipated. After this section has presented the combined results, the next section provides the revised framework based on the data analysis.

Refined theoretical framework

Through statistical examination of the constructs under investigation, the study's conceptual framework was found to be valid. Based on the responses of the study participants, correlation analysis helped to provide a determination of the links between the framework's constructs.

Framework constructs reliability test

The Cronbach's alpha test was used to evaluate the reliability and acceptability of the framework constructs in order to refine the model. The constituent components that make up the structures were examined. The constructs of the framework were unaffected by the other components. Important test elements are displayed in Table 7.1.

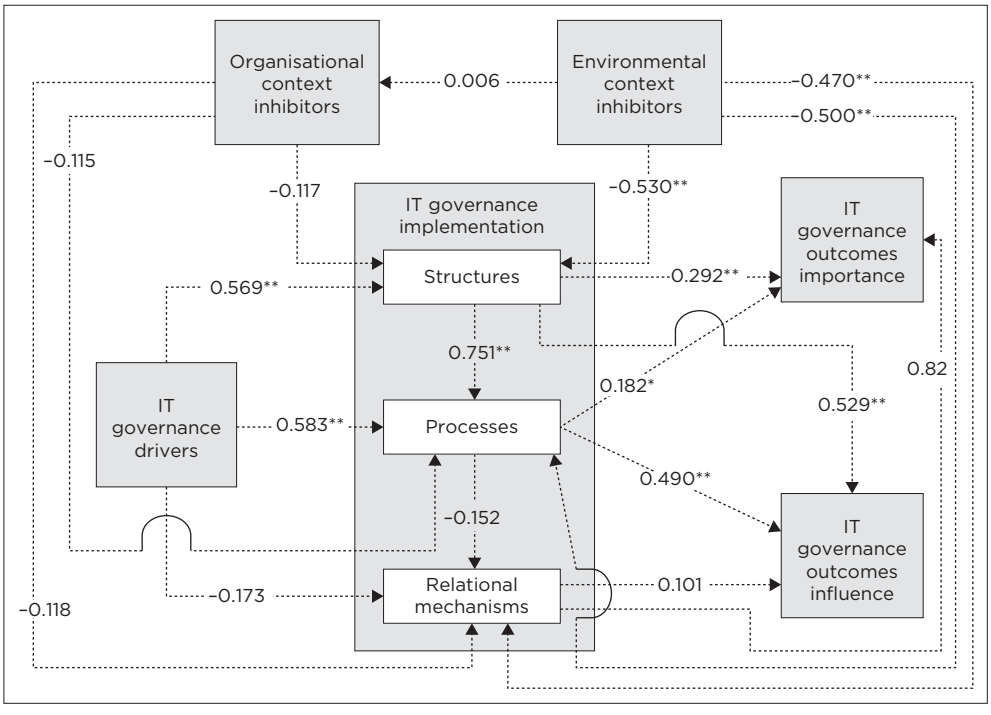
According to Cronbach, who states that acceptable reliability is between 0.6 and 0.8, Table 7.1 shows questionnaire items that were valid to measure the model constructs. The average score from all of the survey items was 0.7, which shows strong item dependability for the constructs.

The improved framework shown in Figure 7.1 is made up of a number of elements that the data analysis supported. A positive correlation indicates a relationship between two constructs that are related to their agreement, while a negative correlation indicates a relationship between their disagreements. Correlations between various framework constructs are shown and discussed in the sections that follow.

TABLE 7.1: Framework construct reliability.

Construct	Questions	Cronbach's alpha	Reliability
Organisational inhibitors	4.1 : 4; 7; 10; 11; 12	0.621	Good
External inhibitors	4.1 : 14; 15; 16; 17	0.741	Good
Drivers	2.1 : 1;2;3;4;5;13;17;18	0.734	Good
IT governance structures	3.7 : 1;2;3;4;5;6;7;8;9	0.787	Good
IT governance processes	3.8 : 1;2;3;4;5;6;7;8;9;10	0.711	Good
IT governance relational mechanisms	3.9 : 3;4;5;6;7	0.693	Good
IT governance outcomes importance	5.3 : 1;2;3;4	0.642	Good
IT governance outcomes influence	5.4 : 1;2;3;4	0.721	Good

Source: Adapted from Mangundu (2017, p. 170).
Key: IT, information technology.



Source: Adapted from Mangundu (2017, p. 175).
Key: IT, information technology; ***Correlation is significant at the 0.10 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed); (n = 121).

FIGURE 7.1: Final information technology governance implementation framework.

Information technology governance drivers construct correlation results

The relationship between IT governance frameworks and drivers is positively correlated, as shown by the Pearson's correlation coefficient of 0.569 between the two. Information technology governance frameworks are formed as long as there are IT governance drivers. The p-value is less than the significance level of 0.01 with a value of 0.01. According to the p-value, the association is significant. Additionally, there is a positive link between the variables, as seen by the Pearson's correlation coefficient of 0.583 between IT governance processes and drivers. Information technology governance processes are formed as a result of existing IT governance drivers. The p-value is less than the significance level of 0.01 with a value of 0.01. According to the p-value, the association is significant. However, the p-value is higher than the significance threshold of 0.01 and is more than the Pearson's correlation coefficient between IT governance drivers and relational mechanisms, which is −0.173. The correlation is not statistically significant, according to the p-value.

The framework illustrates the connection between agreement on the existence of IT governance drivers and agreement on the support for IT governance provided by IT governance procedures. The framework also shows a connection between agreement on the existence of IT governance drivers and agreement on the support provided by IT governance structures. The development of IT governance structures and processes that support IT governance activities are positively correlated with the drivers of IT governance. The framework, however, shows that the notion that there are IT governance drivers is unrelated to the relational support mechanisms for IT governance.

Organisational inhibitors construct correlation results

The relationship between organisational barriers and IT governance frameworks is inverse, as indicated by the Pearson's correlation coefficient, which is −0.117. Organisational barriers are lessened as IT governance structures are built. The *p*-value is greater than the significance level of 0.01 at 0.202. The correlation is not statistically significant, according to the *p*-value. According to the updated framework, there is a correlation between the agreement that IT governance structures support IT governance and the disagreement that there are organisational barriers. The findings imply that the absence of organisational IT governance barriers occurs in the existence of IT governance frameworks.

A negative link between the variables is also indicated by the Pearson's correlation coefficient of −0.115 between organisational hindrances and IT governance procedures. Organisational barriers are diminished as IT governance mechanisms are developed. The significance criterion of 0.01 is exceeded by the *p*-value of 0.292, which is higher. The correlation is not statistically significant, according to the *p*-value. According to the updated framework, there is a correlation between the agreement that IT governance processes support IT governance and the disagreement that there are organisational barriers. The findings imply that the absence of organisational IT governance barriers occurs in the existence of IT governance processes.

The final statistic shows a negative association between the variables, with a Pearson's correlation coefficient of −0.118 between organisational inhibitors and IT governance structures. Organisational barriers are lessened as relational tools for IT governance are built. The *p*-value is greater than the significance level of 0.01 at 0.201. The correlation is not statistically significant, according to the *p*-value. The improved approach shows that agreement that relational processes promote IT governance is connected

to disagreement that organisational bottlenecks exist. The findings imply that the absence of organisational IT governance inhibitors occurs in the presence of relational mechanisms for IT governance.

Environmental inhibitors construct correlation results

The association between external inhibitors and IT governance structures is inverse, with a Pearson's correlation coefficient of −0.530. External impediments are lessened as IT governance structures are built. The *p*-value is less than the significance level of 0.01 with a value of 0.01. According to the *p*-value, the association is significant. The improved framework demonstrates a relationship between disputes over the existence of environmental inhibitors and agreement over the support provided by IT governance institutions for IT governance. Environmental context factors are minimised as IT governance frameworks are built up to assist IT governance.

A negative correlation between the variables is indicated by a Pearson's correlation coefficient of −0.500 between external inhibitors and IT governance processes. External impediments are lessened as IT governance practices are implemented. The *p*-value is less than the significance level of 0.01 with a value of 0.01. According to the *p*-value, the association is significant. The improved framework demonstrates a relationship between disputes over the existence of environmental inhibitors and agreement over the support provided by IT governance processes for IT governance. Environmental context factors are minimised as IT governance processes are set up to assist IT governance.

Additionally, a negative correlation between the variables may be seen in the Pearson correlation coefficient of −0.470 between external inhibitors and relational mechanisms of IT governance. External impediments are lessened as relational methods for IT governance are built. The *p*-value is less than the significance level of 0.01 with a value of 0.01. According to the *p*-value, the association is significant. The improved approach shows that agreement that relational processes enable IT governance is connected to disagreement that environmental inhibitors exist. Environmental context factors are diminished as relational mechanisms for IT governance are set up to support IT governance. Additionally, there is no connection between organisational and environmental barriers.

Information technology governance structures construct correlation results

The significance level of 0.01 is equal to the Pearson's correlation coefficient of −0.292 between IT governance structures and the importance of IT

governance results. The *p*-value provides ambiguous evidence for the association between the relevance of IT governance results and IT governance architecture because it is near the significance level. Additionally, the *p*-value is below the significance threshold of 0.01, and the Pearson's correlation coefficient between IT governance structures and IT governance outcomes influence is 0.529. According to the *p*-value, the association is significant. The framework highlights the relationship between the consensus that IT governance procedures support IT governance and the consensus that IT governance structures support IT governance. Additionally, the agreement that IT governance outcomes are significant is connected to the agreement that IT governance frameworks assist IT governance. The findings also imply that IT governance procedures are established and present as a result of IT governance structures in order to support IT governance. The findings also suggest that the significance given to IT governance outcomes influences how IT governance frameworks are established.

Information technology governance processes construct correlation results

The relevance of IT governance results and processes has a Pearson's correlation coefficient of 0.182, and the *p*-value is 0.046, which is less than the 0.05 level of significance. According to the *p*-value, the association is significant. Additionally, the *p*-value is below the significance threshold of 0.01, and the Pearson's correlation coefficient between IT governance practices and outcomes influence is 0.490. According to the *p*-value, the association is significant. Additionally, agreement that the outcomes of IT governance are significant is connected to agreement that IT governance methods promote IT governance. It is connected to agreement that IT governance influences results that IT governance practices support IT governance. The findings imply that the significance given to IT governance outcomes has a direct impact on IT governance processes. The findings also suggest that the foundation of IT governance processes is based on their impact on governance outcomes. The findings are consistent with both quantitative and qualitative research in that IT governance methods are crucial to the success of both IT governance and outcome realisation.

Information technology governance relational mechanisms construct correlation results

The significance criterion of 0.01 is exceeded by the Pearson's correlation coefficient of 0.082 between the relevance of IT governance results and relational mechanisms, which has a *p*-value of 0.369. The correlation is not

statistically significant, according to the *p*-value. Additionally, the *p*-value of 0.272 exceeds the significance threshold of 0.01, and the Pearson's correlation coefficient between IT governance relationship mechanisms and IT governance outcomes influence is 0.101. The correlation is not statistically significant, according to the *p*-value. The concept provides no evidence that IT governance relational mechanisms are connected to both the relevance and influence of IT governance outcomes. The findings imply that relational mechanisms are not necessary for achieving the desired objectives of IT governance. At the same time, relational processes have no impact on the outcomes of IT governance. Relational mechanisms are higher-order processes as organisations set up IT governance. This is consistent with academic research and qualitative studies that showed how organisations build IT governance first through structures, then through procedures and last through relational mechanisms.

As relationships are built on correlation results, correlation results show the relevance of the framework constructs. The correlations between the framework constructs were covered in this section. The diagrammatic form of the framework constructs is shown in Figure 7.1.

A more detailed model of the explored constructions is shown in Figure 7.1. In the sections that came before the figure, the construct correlations were explained.

Discussion on framework

The existence of IT governance drivers in organisations is supported by the IT governance drivers' component. Organisational requirements do force organisations to think about and execute IT governance. The approach also accepts that environmental and organisational contexts play a role in the occurrence of inhibitors. However, the paradigm does not significantly provide context inhibitors for IT governance. The framework's organisational context component makes the case that organisations must recognise and acknowledge the fact that substantial forces are working against the implementation of IT governance. The environmental context component also shows that there are external impediments to organisations.

The IT governance implementation structures component promotes the creation of IT governance, positions in IT governance and committees that regularly monitor IT governance. Additionally, the methods used to implement IT governance promote the requirement for IT governance organisations to set up different processes. Relational procedures for IT governance, which are not a crucial component of an organisation's pragmatic application of IT governance, are not supported by the framework.

In conclusion, the framework contends that barriers to IT governance implementation can take many different forms and originate both inside and outside of organisations. The adoption of IT governance is not difficult on its own. The methodology and results have the potential to improve the implementation of IT governance, which is now a difficult problem, and demystify the phenomenon around it. Instead of being scared by the alleged barriers to IT governance, organisations should focus their efforts on adapting to and preparing for the implementation process.

Results and framework validation interviews

Interviews with some of the participants from the first sample were conducted to validate the results, utilising the strength of the mixed-methods design. The results and improved framework served as the basis for interview questions. The framework and results, which served as the foundation for the research's major contribution – its conclusions and recommendations – were accepted by the interviewees. A description of the factors to be considered when presenting the integrated findings is provided in the section that follows.

Discussion

The combined qualitative and quantitative study findings were discussed in this chapter. Disparities were also found, pointing to further contributions from the mixed-techniques strategy. The power of mixed methods to provide a reciprocal dialogue between qualitative and quantitative data is thus proved, as findings from one phase inform the migration to the next, enabling a refinement of the next stage of the inquiry. In this study, quantitative measurements were advanced using qualitative findings. However, a more thorough application of mixed methods might make use of the divergent results to refine the data collection instrument based on the effort to reconcile the results, even if it would not be feasible given the financial restrictions and timescale for the current project. It is probable that the results were impacted by the outcomes of the one-year delay between the gathering of qualitative and quantitative data. The validity of the results, which would have been overlooked in the absence of a mixed-methods approach, was further illuminated by further interviews to learn from the participants whether the study findings resonate with their experience.

Conclusion

In order to address the study topics, integrated quantitative and qualitative results presented a comprehensive picture. The next chapter offers a thorough discussion, conclusions drawn from the conversations and the study's suggestions.

Chapter 8

Conclusions and recommendations

Introduction

This final chapter discusses the conclusions drawn from the analysed data that attempted to answer the research questions while addressing the problem statement. To aid organisations in facilitating IT governance adoption, the study's objectives included evaluating implementation barriers. The literature analysis in Chapter 3 showed that corporate organisations are having difficulty implementing well-designed IT governance frameworks, standards and solutions. The literature also demonstrated a dearth of research on the causes of poor adoption rates, particularly when it comes to developing nations like South Africa, which gave rise to this study's goals. The research was required to offer responses to the main research question and the sub-questions to accomplish the goals.

In Chapter 4, a mixed-methods approach was used to conduct the research using interviews, the gathering and analysis of documents, and an online survey from the private and public health care organisations under study. Data were largely gathered from IT and business decision-makers through semi-structured interviews and the survey questionnaire, while secondary data were obtained through document analysis. Phase 1 of the investigation was reported in Chapter 5 as the qualitative findings. Using the theoretical framework offered in Chapter 2 as a guide, quantitative

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study findings were presented and described in Chapter 6. According to the research paradigm offered, many IT governance drivers, IT governance implementation mechanisms and IT governance implementation inhibitors were discovered and explored. The results from Chapters 5 and 6 were combined in Chapter 7 and reviewed in Chapter 8, where insightful information was found that can help organisations implement their IT governance. The chapter also contributes to the corpus of knowledge regarding IT governance. Additionally, Chapter 8 offers suggestions for those working in organisations implementing IT governance, as well as the implications for researchers and some ideas for future research projects.

This book adds to the continuing debate over factors that prevent the implementation of IT governance in underdeveloped nations. Some of the conclusions from the literature review were validated by the empirical data. While the literature partially addressed some of the study questions, empirical evidence analysis was able to provide a clear picture of how and why things were the way they were by identifying some of the emergent determinants. The research is complete as a consequence of the analysis of empirical data. The primary contribution of the study was to identify and validate the barriers to IT governance activities to assist organisations in implementing IT governance. The study of inhibitors is essential because, once they are recognised, their effects can be understood and remedied. A 'lubrication to the IT governance vehicle' is made easier before, during and after implementation when IT governance inhibitors are understood. After a thorough analysis of the literature, the inhibitors were identified and, using a case study methodology, validated through interviews and the survey questionnaire with IT and business decision-makers in private and public health care.

The survey also revealed that managerial in nature, people-, stakeholder- and organisation-oriented IT governance obstacles are internal to organisations. The recognised IT governance impediments serve as a mirror for organisations to examine themselves in order to address them and give a boost to the adoption of IT governance innovation. Companies implementing IT governance should evaluate their goals and resources. Stakeholder expectations that are holistic help everyone understand where the organisation wants to go. One of the main obstacles to its execution is the divergent stakeholder expectations and understandings of IT governance. Therefore, the study advises that before beginning IT governance activities, it is necessary to have a comprehensive grasp of the IT governance problem and its context. The study's findings suggest that implementing IT governance requires a range of resources, from financial and human resources to labour and time requirements. Executive management and board support and oversight are essential to properly support IT governance initiatives because IT is not the main business.

The report also notes that businesses should not try to fully implement IT governance. However, the capabilities, expectations and risks to be minimised of the organisations should be used to establish the maturity stages of IT governance. Different IT governance implementation strategies and maturity levels are required for various organisational environments. Organisations can start IT governance activities and reap the expected advantages when they recognise that the problem context is crucial in establishing the scope of those initiatives. The next section evaluates how well the study addressed the research questions.

Answering the research questions

The degree to which the sub-questions were addressed affected the response to the main research topic. Before offering answers to the primary topic, this section describes how the study addressed related questions.

What are the drivers of information technology governance in private and public health care?

The literature review provided a partial response to the research question on IT drivers. The necessity for new or updated IT governance policies was underlined in Chapter 2 because organisations are driven by both external and internal forces that manifest as trigger events and pain points. The research reaffirmed that there is no set reason why organisations should implement IT governance; rather, the motivations depend on the organisational environment. The Chapter 5 example that some of the forces propelling the private organisations were not seen in the public organisations helped to make the argument. In Chapter 6, the major forces affecting IT governance in health care were measured to identify them. These internal organisational drivers for IT governance encourage organisations to think about implementing it.

How are private and public health care sectors implementing information technology governance?

Chapter 2 of the study's literature review, which focused on how organisations execute IT governance through a combination of structures, procedures and relational mechanisms, provided some insight into the second topic. Both the qualitative and quantitative findings confirmed the point. However, the findings show that relational mechanisms are largely ignored as organisations implement IT governance through structures and processes. Quantitative findings in Chapter 6 served as both confirmation and reinforcement.

What are the inhibitors of information technology governance implementation in private and public health care sectors?

To understand the difficulties of adopting IT governance in organisations, it was essential to read Chapter 2 in its entirety. According to the literature, the inhibitors were managerial and people-focused. The issues go beyond this, according to empirical data, and involve organisational capacities and outside variables. However, the key environmental context elements are the inhibitors.

How is information technology governance performing in private and public health care sectors?

Chapter 2 of the study addressed this question by reviewing the research on the efficiency of IT governance. The importance of IT governance results and their impact on performance are both crucial elements, according to the research. It is difficult to offer a thorough evaluation of IT governance's performance, nevertheless, because health care organisations are still in the early stages of implementation.

Main and secondary objective fulfilment

This section aims to demonstrate how well the study's goals were achieved. The study's primary goals were to identify the barriers to IT governance implementation and to offer suggestions for helping organisations with IT governance. Based on a thorough literature assessment, Chapter 2 more successfully accomplished these goals. Additionally, the inhibitors were verified by gathering and analysis of empirical data from troubled organisations. Before achieving the primary purpose, the subsidiary objectives were covered in this section.

To determine the drivers of information technology governance in South African private and public health care sectors

Through the literature review in Chapter 2, qualitative findings from interviews with IT and business decision-makers, and findings from document analysis in Chapter 5, the study was able to accomplish this goal. Quantitative data from Chapter 6 provided credibility in reaching the research goal. An in-depth understanding of the motivations for IT

governance implementation in organisations was strengthened by data analysis from various sources. The qualitative findings made it easier to understand what participants had to say about the driving forces behind IT governance in their companies.

To determine information technology governance practices being implemented by South African private and public health care sectors

The study achieved this goal through the literature review in Chapter 2, which revealed that a combination of relational mechanisms, structures and processes is used to implement IT governance. Qualitative and quantitative findings showed that while relational mechanisms are somewhat taken into account, organisations are adopting IT governance through structures and processes.

To establish the inhibiting factors in the successful implementation of information technology governance in private and public health care sectors in South Africa

The study's primary goal was to identify and eliminate elements that hinder the adoption of IT governance. After a thorough literature analysis, Chapter 2 partially achieved the goal. Through data-gathering and analysis from IT and business decision-makers in the private and public health care sectors, Chapters 5 and 6 further strengthened the goal.

To determine information technology governance performance in South African private and public health care sectors

By analysing the data in Chapters 5 and 6, this goal was fully attained. However, how the phenomenon of IT governance performance is viewed was informed by the literature review. The next parts go into how the study achieved its major goal.

Reflections from the research

Previous studies make reference to the challenges of gaining access to organisations, their collaboration and approval from gatekeepers for the collecting of empirical data. In this study, similar problems arose to the point where the research technique had to be revisited and changed in

order to meet the requirements for ethical approval. Only one of the study's initial six eligible participants – six private health care organisations – accepted to take part. The study organisations were limited to two as a result of the participation of just one of the five provincial departments of health that were approached. The roles that the participants occupied made it difficult to acquire time with them. Cooperation was nevertheless welcomed. Additionally, combining the methodologies required a lot of time and effort in terms of writing reports and conducting fieldwork. However, the researcher stayed on course by working every day. The research contributions to the body of knowledge are shown in the section that follows.

Research contributions

In addition to adding to information and understanding, the research also advances theory and theory development, practice and application. A discussion of the scientific contributions is given in the sections that follow.

Contribution to knowledge and understanding

The study provides a contribution to the field of IT governance in several ways. With few studies concentrating on the IT governance phenomenon from a developing country perspective, this study therefore makes a contribution by addressing the knowledge gap in such an important emerging area. The study made contributions through presentations at local research conferences.

Contribution to theory and theory development

The study contributed fresh understandings to theories in the area of IT governance that were not before mentioned in the literature. These observations are especially relevant to the issues of IT governance implementation and obstacles to IT governance. Despite the fact that structures, processes and relational mechanisms are used, the study helped with how IT governance is executed. Pragmatism that is guided by organisational expectations and capabilities is used in implementation. The study also showed that the DOI and TOE models are useful conceptual frameworks for researching the difficulties of implementing an innovative IT governance system. Most importantly, by creating and putting forth a research model, the study added to the current conversation on IT governance with regard to implementation. Future academics studying IT governance may use the model and test its hypotheses by using its constructs.

☐ Contribution to practice and application

In order to help organisations facilitate IT governance implementation and reap the benefits of IT decisions, the research helped practitioners of IT governance by resolving problems preventing its implementation. In addition, suggestions are given based on the study's findings. It is clear from this that the study adds to both theory and practice in the field of IT governance. The restrictions placed on the research are covered in the following sections.

☐ Scholarship from the research

The report offers helpful information on how IT governance is implemented in various ways in organisations. Some of the pertinent insights concerning IT governance that were gleaned from the current research were not included in the body of knowledge or literature that already existed.

Even though it can be done by using identical IT governance frameworks, the first thing that needs to be understood is that IT governance is context-based. For the frameworks to match organisational expectations and capabilities, customisation is required. Without considering the organisational capabilities and expectations, the ambition to completely adopt an IT governance framework leads to a complete stoppage of the implementation process. Information technology governance frameworks do not offer implementation tactics or prioritisation categories. Prioritisation should be used in the implementation phase, with the organisation putting the most crucial controls in place first to address the most crucial business environment risks. This study also shows that organisational and internal context variables are the key obstacles to IT governance. As they begin to implement IT governance, organisations must address their expectations and capabilities. The survey also shows that organisations may easily carry out their IT governance activities with the help of a pragmatic strategy.

■ Research limitations

Even though the research made several contributions to the body of knowledge regarding IT governance, limitations must be acknowledged. First, the research's scope and methods must work within certain bounds. According to research ethics, the researcher must obtain written informed consent from all the study's participants and target organisations. The number of organisations included in the study was constrained by ethical issues and the sourcing of gatekeeper and research participant consent. The researcher had to morally accept the positions taken by some private health care groups of hospitals who declared they were not able to participate in the study. Additionally, not all the organisations that may

participate in the study have reached the point where IT governance can be measured. This made it difficult to respond fully to the research question about the effectiveness of IT governance.

The research's conclusions are generalisable because it concentrated on a single provincial health department and a few hospitals, as well as a single private health care organisation and a few particular hospitals within the organisation. To strengthen the generalisability of the findings, the same study might be conducted in South Africa on more private health care organisations and provincial health agencies. The generalisation of the results could be improved with a survey of hospitals throughout South Africa and a quantification of the findings. Additionally, the study's shortcomings include the fact that its participants were decision-makers in business and IT who held strategic positions. These individuals are under strain from organisational matters, which occasionally make it impossible for them to be available for involvement. Finding and soliciting feedback from those second in line of authority was the solution, even though their opinions might not accurately mirror those of the initially intended respondents. Despite these constraints, the researcher used mixed-research methodologies that strictly followed the prescribed research methods and used triangulation to increase the credibility of the findings.

Recommendations for future research

Future research in IT governance can be well founded on the aforementioned restrictions. Action research could be used in future studies to learn more about how IT governance is implemented over time. To fully analyse the phenomenon, the researcher would need to be fully involved. The study's primary focus was on South African private and public health care providers from one province and one private health care group of institutions, placing restrictions on how broadly the findings might be applied. However, the findings and recommendations from this study might also be applicable in other circumstances, particularly in underdeveloped nations. This study was exploratory and relied on case organisations, too.

The variables discovered might be subjected to hypothesis testing in a study with a broad scope that would span many provinces and private hospital groups. Future studies could be accommodated by organisations that have begun to think about IT governance, allowing for the testing of variables in a wider context. Additionally, identified structures might be statistically re-evaluated to eliminate the most important barriers to the implementation of IT governance in the health care industry. Organisations would be aware and able to address the inhibitors based on the results if they were ranked.

This study found that IT governance inhibitors are multi-staged, with different sets of inhibitors being seen at various phases of deployment. In order to build on these findings, future studies might focus on re-evaluating IT governance barriers at different implementation phases. Through quantitative measurements and assumptions, the research model that was created may potentially be examined in various contexts. This study has significantly advanced the field of IT governance, particularly in the health care industry in a developing nation. Based on empirical findings, the following section offers advice for IT and IT governance practitioners in organisations.

Recommendations for information technology governance practitioners

The study's findings can be used to support several suggestions:

1. Before beginning IT governance activities, the report advises that organisations and practitioners understand the problem situations. As they would concentrate on the most crucial implementations in line with their organisations, having knowledge of the organisation's position and demands reduces the complexity of the IT governance implementation process. Additionally, IT governance innovations do not introduce barriers to IT governance.
2. The report suggests implementing IT governance in a practical, realistic manner. When it comes to IT governance, there is no 'one-size-fits-all' solution because every context is unique. Therefore, organisations should evaluate and choose the best controls for their needs rather than focusing primarily on IT governance maturity. Organisations can promote IT governance more easily thanks to pragmatism's reduction of complexity and associated expenses.
3. Conflict between stakeholders about the intended governance maturity environment has been identified as one of the implementation barriers. The study suggests that stakeholders should, from the start, reach a consensus regarding the desired level of control maturity. For IT governance teams and other stakeholders to go in the same direction and accomplish a shared goal, information describing the intended state in terms of IT governance should be effectively communicated.
4. The study also suggests marketing and communication of IT governance within organisations. Stakeholders can understand expectations, the advantages of IT governance and what needs to be done through communication. One of the main barriers to IT governance, opposition to change, is addressed through communication. In these situations, the organisation carries out the implementation efforts for IT governance like a 'well-oiled machine'.

5. The report advises organisations using IT governance to create a supportive environment by changing the culture. One of the factors most frequently cited as impeding IT governance is culture. Ownership of IT governance projects is made easier by a favourable culture.
6. The study also suggests that IT governance be supported from the top down. Results showed that IT governance increases the workload placed on employees' daily responsibilities. When it is supported from the top, the individuals concerned have no choice but to seriously consider the plans and encourage their execution.
7. The support and cooperation of all the relevant stakeholders are essential for improving the execution of IT governance. Everybody who is involved becomes a customer of IT governance as a service. The promotion of ownership and accountability for IT governance activities is necessary.
8. The study's findings also showed that depending on the level of implementation, organisational context variables are the biggest obstacles to the adoption of IT governance. Organisations must realise that there are many different types of barriers to the implementation of IT governance. Before, during and after the deployment of IT governance, the identified impediments must be resolved by the organisations as a continuous process. The potential for future study on IT governance is presented in the final section.

Concluding annotations

The main takeaways from the research on IT governance implementation in organisations are highlighted in this section. The implementation-related barriers are given special consideration. As a result, the study emphasises how important it is to understand an organisation's needs, position and features in connection to its goals. An organisation can start the process of implementing IT governance with a high level of success if it has a strong sense of self. As IT governance is context-based, choosing the optimum implementation mix for it is made easier with self-awareness in addition to strategy. Along with minimising the challenges, self-understanding also enables simple problem-solving while attempting to establish IT governance. The analysis showed that the best course of action for implementing IT governance is a practical, realistic approach. Organisations make IT governance complex by failing to execute it in a practical way. According to reports, IT governance has enormous requirements, and if organisations do not prioritise according to their requirements and capabilities, implementing it will be impossible.

The study also showed that there are various types of IT governance inhibitors and that these inhibitors vary depending on how well organisations have implemented IT governance. As a result of the involvement of many

stakeholders at various phases of the implementation, this has been reported. As a means of achieving similar objectives and facilitating easy implementation processes, the inclusion of stakeholders, open communication, consultation and agreement from the outset has been highlighted. Conflicting expectations hinder implementation efforts and make implementing IT governance even more difficult.

Organisations must understand that IT governance is context-based, which is the final and most crucial point. Adopting tested solutions from another organisation without considering whether they apply to the organisation in question results in implementation barriers. Based on prioritisation and the needs of the organisation, the desired maturity level for IT governance should be customised. Additionally, the adoption of IT governance is a dynamic process that evolves along with changing business needs and capabilities. Without taking these elements into account, organisations risk having a number of issues that obstruct their IT governance initiatives. It is anticipated that the conclusions and suggestions will make IT governance adoption in organisations easier.

Ending remark

Based on the expectations and resources of the organisation, there are organisationally specific IT governance inhibitors. In that sense, organisations can get over the barriers by evaluating their expectations and capabilities and then moving forward with the implementation of IT governance while adopting a practical mindset.

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This scholarly book focuses on the governance of information technology (IT) investments in both the private and public health care sectors, addressing the intricate challenges associated with aligning IT initiatives, delivering value and ultimately realising returns on IT investments. The book sheds light on the pressing necessity for rigorous scientific inquiry into the role of IT governance in enhancing health care service delivery in South Africa. The presented current research holds relevance across the dimensions of technological innovation, health care provisioning and management. This book comprehensively examines the hurdles faced during the implementation of IT governance. By examining IT governance practices from the perspective of both IT and business decision-makers within the private and public health care domains, the book offers a significant contribution to discussions on technological innovation in service delivery, including perspectives from the public and private sectors. Throughout its analysis, the book considers contextual factors such as the environment, organisational dynamics and IT governance, all of which can potentially impede effective governance processes. The book emphasises the substantial influence of organisational factors as impediments to successful IT governance. It demonstrates how health care organisations' perceptions and approaches to IT governance significantly shape the trajectory of their endeavours. This interdisciplinary research offers fresh insights into the implementation of IT governance, particularly within the context of developing economies characterised by resource limitations.

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