AN INSTITUTIONAL PERSPECTIVE OF ICT GOVERNANCE IMPLEMENTATION: A CASE STUDY OF THE DEPARTMENT OF TRANSPORT

By

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submitted in accordance with the requirements for the degree of

MASTER OF COMPUTING

In the subject

COMPUTING

at the

UNIVERSITY OF SOUTH AFRICA

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Date submitted November 2023

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ABSTRACT

ICT today has risen to prominence as a critical determinant of the growth and survival for organisations. The objective of this study was to identify how ICT governance was implemented in the public sector. A case study of the Department of Transport was used in conducting this study. In 2012, The Department of Service Administration (DPSA) released a Corporate Governance of ICT policy Framework (CGICTPF) for implementation in the public sector in order to improve the status of ICT governance. There was no information and communications technology (ICT) strategy to drive ICT that is also aligned to the goals and objectives of the department. ICT was not pitched as an enabler in the public sector. The study was conducted in Gauteng. Personnel who were involved in the implementation of the CGICTPF were invited to participate in the study. The study adopted an interpretivist approach since it was a study of an exploratory nature. Interpretivism is adopted where the researcher desires to have a richer understanding of the reality according to the participant's view. Interpretivism research philosophy allowed the researcher of this study to gain new knowledge from participants offering different views.

A case study research approach was utilised as it provides rich-qualitative information about the phenomena being studied. It was selected on the basis that it enables the generation of new ideas and indicates how different aspects relate together. Furthermore, it was utilised as it provides insight and illuminates meanings that expand experiences of researchers.

Qualitative research methodology was utilised to gather data from participants. Inductive data analysis based on facts, general subjects and respondents' opinions offers valuable perceptions and understanding of the question set as IT professionals' experiences, understandings and perceptions were used to uncover how the CGICTPF was implemented at the Department of Transport.

The study highlights the challenges and the prerequisites of implementing an effective ICT governance framework.

Data was collected through interviews and by analysing the audit reports of the Department of Transport in prior years.

Findings from the study revealed that there are gaps that need to be filled in executing ICT governance in training and communication within organisations. The influence of external and internal pressures in the implementation process was also highlighted. The study is significant as it will assist the practising managers in other public entities in increasing the probability of a successful implementation of an ICT governance framework. It is also important for academics and scholars as it adds to the knowledge in existing literature

KEYWORDS: ICT governance, institutional theory, Corporate Governance of ICT policy Framework (CGICTPF), department, framework

ACKNOWLEDGEMENTS

I want to thank my supervisors, Dr Mampilo Phahlane and Prof NM Ochara for their guidance, support, and willingness to assist at any time and their passion for education.

To my mother, for being my stronghold and for supporting me in reaching for my goals, for your understanding when I couldn't make it to family events due to my work and academic commitments. I looked up to you for upliftment and inspiration every time the hill seemed to be steeper than what my feet could take. To my guarding angels Vhanyai na Vhakwevho, your guidance will never fall on deaf ears.

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LIST OF ACRONYMS AND ABBREVIATIONS

AG	Auditor General
AGSA	Auditor General of South Africa
CGICTPF	Corporate Governance of ICT policy Framework
CGIT	Corporate Governance regarding Information Technology
COSO	Committee of Sponsoring Organizations
DPSA	Department of Service Administration
GCC	Gulf Cooperation Council
GIT	Government Information Technology
GITO	Government Information Technology Officer
ICT	Information and Communications Technology
IoDSA	Institute of Directors in South Africa
ISACA	Information Systems Audit and Control Association
IT	Information Technology
OECD	Organization for Economic Co-operation and Development
PRC	Presidential Review Commission
RBV	Resource-Based View
SAI	Supreme Audit Institution
SOEs	State-Owned Entities
MP	Multiple Perspectives

CHAPTER ONE
INTRODUCTION

1.1 Introduction to the study

This study sought to understand how ICT governance was implemented in the South African public sector after the introduction of the Corporate Governance of ICT policy Framework (CGICTPF) which was developed by the Department of Service Administration (DPSA). This chapter introduces the field of study; provides the background to the research problem, problem statement and then the purpose of this study.

Corporate governance is about how a company is run and managed to ensure its well-being (Organization for Economic Co-operation and Development [OECD] 2018). ICT governance is a subset of corporate governance, which ensures the well-being of a company's IT and IT assets. ICT governance has been defined as "an actively designed set of ICT governance mechanisms that encourage behaviour consistent with the organization's mission, strategy, values, norms, and culture" (Weill & Ross 2004:3-4).

Compared to private enterprises, the majority of state-owned entities (SOEs) have not been successful in playing their economic role due to low performance (OECD 2018). According to the World Bank (2019), poor governance and resistance to structural reform have eroded pockets of viability leaving most of them in a loss-making position. From the literature, it has been established that SOEs are characterised by ambidexterity. Ambidexterity has been defined as the ability to simultaneously pursue incremental and discontinuous innovation from hosting multiple contradictory structures, processes, and cultures within the same firm (Werder & Heckmann 2019).

Digital transformation is an important element in the development and implementation of a company's business strategy. It is crucial that its governance is within the scope of the company's corporate governance as one of the key tasks of a board of directors (Yukhno 2021).

Lack of internal control policy to safeguard assets, promote accountability, increase efficiency and stop fraudulent behaviour has been one of the major corporate governance challenges in SOEs (OECD 2018). Additionally, failure to produce financial statements, lack of proper accounting standards and

weak auditing practices (OECD 2018) have led to low levels of financial disclosure. There is therefore no transparency to both accounting officers and the public on the accountability and performance of most public enterprises.

The management of information technology devices will improve the quality of company operations. Wilkin, Couchman, Sohal and Zutshi (2016) said that at this time corporate governance regarding information technology (CGIT) is targeted to maximise the achievement of the objectives and business value of information technology investments. Pillai and Al-Malkawi (2017) also examined the impact of internal corporate governance mechanisms on company performance in Gulf Cooperation Countries (GCC), while Salehi, Jayashree, Malarvizhi, and Abdollahbeigi (2018) found that effective ICT governance guarantees the alignment between business goals and IT.

All organisations (public and private sector) need to ensure that their IT functions support their business goals and objectives. A well-implemented ICT governance programme should assist any organisation in ensuring compliance to applicable regulations related to financial and technological accountability.

1.2 Background of the study

The DPSA is a government department that has mandates from the constitution and the legislation. One of its principles is to promote an efficient, economic, and effective use of government resources.

1.2.1 Presidential Review Commission (PRC) findings

In 1998, the Presidential Review Commission (PRC) released a report which outlined the shortcomings of ICT service delivery in government. Its recommendation was “that all-important ICT-decisions should come from the senior political and managerial leadership of the state and not be delegated to the technology specialists, and further that the management of ICT should be on the same level as the management of other resources. It furthermore advocated a common enabling framework of governance” (South Africa Government 1998).

To address the recommendations made by the 1998 Presidential Review Commission (PRC) report, parliament approved the creation of the Government Information Technology Officer (GITO) position in government structures. The role of the GITO was to ensure alignment of the business strategy and the business plan and strategic objectives with IT. However, this role did not achieve its purpose because it was not at a decision-making level. GITO had little to no influence in the management of

the IT in government. Because of this, the role of GITO did not improve the status of the management of IT in government. This was confirmed by the Auditor General's (AG) information systems review of governance of ICT in government conducted in 2008/09 and again in 2009/10. The role of the AG is explained below.

The Auditor General of South Africa (AGSA) is the supreme audit institution (SAI) of South Africa. It is the only organisation that has the mandate to audit and report on how the government is using South African taxpayers' money. The mandate of the AGSA is outlined in the Constitution of the Republic of South Africa Chapter 9 (sections 181 & 188).

1.2.2 Auditor General recommendations

In 2008/09 and again in 2009/10 AGSA reported on the state of IT in government. The AGSA recommendations included the following:

> "A government-wide Governance of ICT Framework should be put in place to implement a national ICT strategy to address ICT risks based on defined processes and standards; and The Governance of ICT roles and responsibilities should be defined and implemented to ensure adequate Public Service ICT enablement" (Department of Public Service and Administration [DPSA] 2012a:13).

In his 2010/11 general report, the AG reported that little progress had been made as only 21% of departments had implemented adequate governance controls but the controls were not formally implemented. This was not sustainable.

The recommendations by the AG were also supported by internationally accepted good practice, and aligned with King 4, ISO 38500 Standard and COBIT 5, the AG introduced the CGICTPF.

1.2.3 Study location and Corporate Governance of ICT policy Framework (CGICTPF)

In response to the AGSA's findings and recommendations, the DPSA developed the CGICTPF. According to the DPSA, "The purpose of the CGICTPF project is to institutionalize the Corporate Governance of and Governance of ICT as an integral part of corporate governance within departments. This CGICTPF provides the Political and Executive Leadership with a set of principles and practices that must be complied with, together with an implementation approach to be utilized for Corporate Governance of ICT within departments. This CGICTPF is applicable to all spheres of government,

organs of state and public enterprises" (DPSA 2012). The implementation of CGICTPF was supported by a three-phased implementation guideline which was released in February 2014. The three phases of the CGICT implementation are illustrated in Figure 1.1 below.

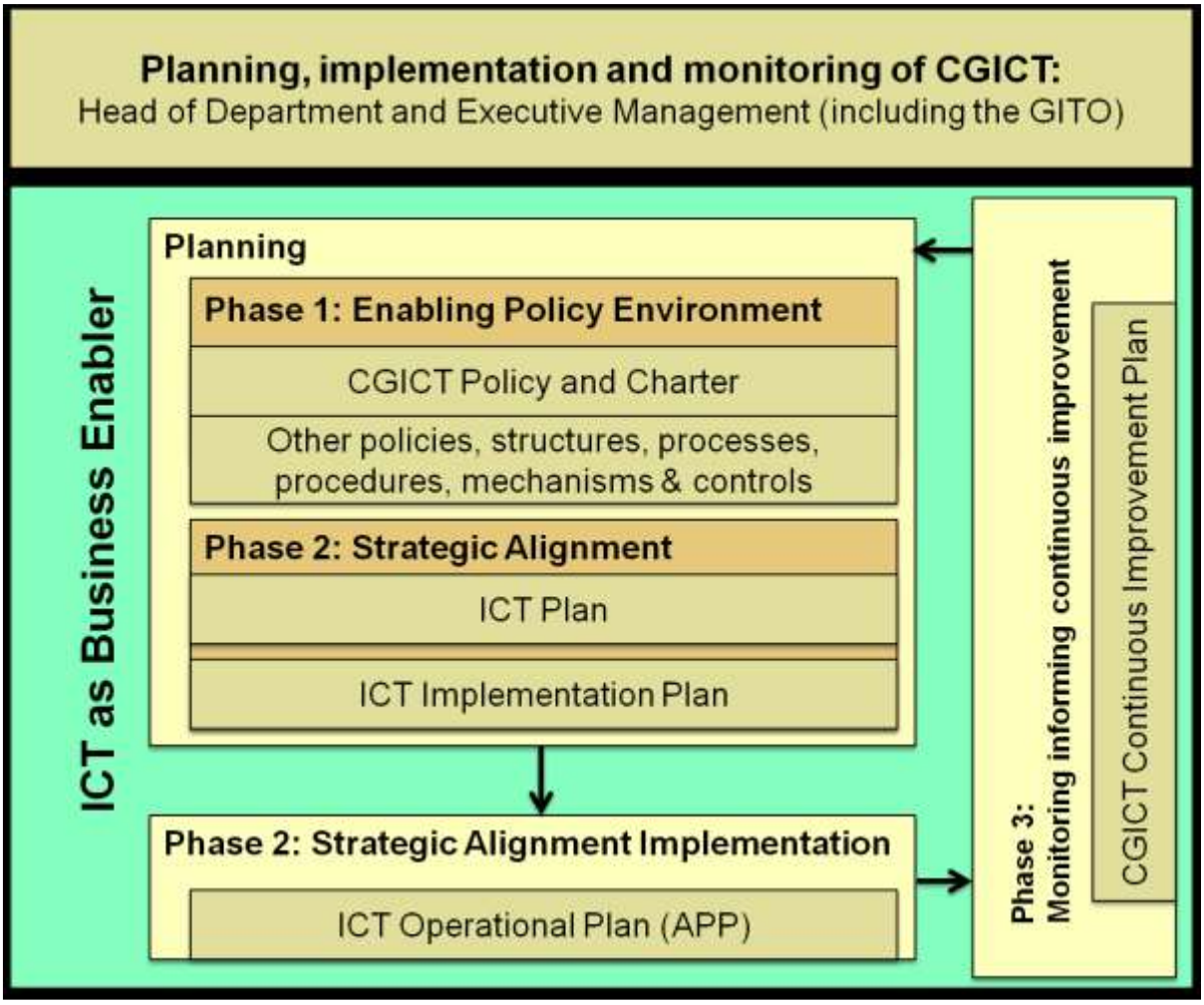

Figure 1.1: The Three Phases of CGICT implementation

Source: CGICT implementation guideline (DPSA 2012b)

"Phase 1 (March 2014): Creation of an enabling environment: Implementation of the CGICT and GICT

- Departmental Corporate Governance of ICT Policy and Charter depicting how CGICT will be implemented and managed in the context of the department
- Designation of a Governance Champion to coordinate the development and implementation of CGICT

- Departmental Governance and Management of ICT Framework for the governance and management of the ICT unit by the GITO

Phase 2 (March 2015): Strategic alignment: Implementation of business and ICT alignment

- ICT Strategic Plan (ICT Plan), ICT Implementation Plan (depicted in the MTEF) and ICT Operational Plan (ICT APP); which is aligned with the departmental strategic plan.

- Optional deliverables that will allow departments to improve the articulation of ICT enablement and management of information.

Phase 3 (Beyond March 2015): Continuous improvement of governance and strategic alignment arrangements

Continuous Improvement Roadmap depicting the department's improvement plans for its CGICT, GICT and strategic alignment arrangements to optimize ICT enablement of service delivery" (DPSA 2012)".

While the transition to the Digital Age brings new opportunities to organisations, there are also many potential threats coupled with the need to adapt ICT governance systems to meet new regulations and ensure compliance. Additionally, the market dynamics of the Digital Age require organisations to be more agile than ever and this necessitates the design of flexible ICT governance systems that can adapt quickly to the new reality. COBIT provides a body of knowledge for designing and implementing not only the ICT governance system, but also the IT management system that is governed and the latest version of the framework is COBIT 2019 (Poels, Proper & Bork 2022).

Many organisations find it difficult to apply enterprise architecture (EA) for strategic management of modern IT solutions (Iyamu 2022). In general, developing an ICT governance system requires a significant effort, which can be a barrier to adoption (Vejseli, Proba, Rossman & Jung 2018). According to Chergui and Chakir (2020), these challenges call for smart ICT governance, which relies on artificial intelligence and knowledge management to leverage the rich knowledge base encapsulated in the COBIT framework. Furthermore, the high turnover of IT solutions and the increased reliance of business on IT created a challenge to align business strategy with IT investment (Ask & Hedström 2011; Berkheimer, Tang, Boyce & Aswani 2014). Some challenges, however, arise in the sense that the traditional view of a problem within a complex system is dominated by the

technical perspective that focuses on the technical analysis to find a solution. However, the human and organisational resources that are used to implement the solution are neglected during the problem analysis (Al-Kharusi, Miskon & Bahari 2016). However, according to Castrillon (2021:181), in general, the traditional definition of corporate governance is the one proposed by the OECD in April 1999 which provided the following: Corporate governance is the system by which business corporations are directed and controlled (Isaksson 1999).

1.3 Problem statement

The problem is that there is poor ICT governance in the public sector, which is exposing the public sector to serious ICT risks such cybercrimes, unauthorised access to the ICT infrastructure, lack of patch management and poor user access management and lack of business continuity. These issues impacts on service delivery and exposes the data held by departments to misuse. These issues have been reported by the Auditor General South Africa.

Existing literature offers views on the implementation of an ICT governance framework in general and is not specific to the implementation of the CGICTPF which is a framework that was specifically developed to resolved ICT risks in the public sector. There is literature available on how ICT governance framework can improve the ICT control environment and the benefits of ICT governance in general. This study aimed to determine how CGICTPF was implemented in the public sector and to understand factors that influenced the adoption of the ICT governance. Furthermore, the aim was to understand how ICT was directed, managed, and controlled prior to the implementation of CGICTPF. The available studies do not address the impact of management implementing ICT governance framework due to coercive pressures. There is an assumption that management understands the risk associated with lack of good ICT governance, and have decided to implement an ICT governance framework willingly. It was important for this study to investigate whether the CGICTPF has improved the ICT environment in the public sector or the exercise was not fruitful.

Few studies identifying individual effective ICT governance mechanisms are available, particularly in higher education institutions (Lunardi, Maçada, Becker & Van Grembergen 2017; Turel, Liu & Bart 2017). Different sets of ICT governance mechanisms have been identified in the financial sector (Pereira & Mira Da Silva 2012), healthcare (Pereira, Mira Da Silva & Lapão 2014) and in higher education (Bianchi, Sousa, Pereira & Hillegersberg 2017). Additionally, several studies have shown a positive impact of effective governance of IT on organisational performance and profitability

(Chong & Duong 2017; Lunardi et al 2017). This study evaluated the implementation of ICT governance in the Department of Transport.

It is important to expend on the studies that will investigate the reasons why public sector specifically in South Africa have not successfully reaped the benefits of technology or used technology to advance the agenda of service delivery. The implementation of the CGICTPF was to enforce governance and put in place structures such as ICT steering committee in order to ensure that ICT is used to improve service delivery and also to protect the ICT assets including data.

1.4 Research purpose, goal and objectives

The purpose of the study was to evaluate the implementation of ICT governance in the South African public sector, using one South African public sector institution as a case study (Department of Transport). The study examined the role of institutional influences in the implementation and adoption of the CGICTPF. The research goal was to conceptualise a framework that may be used to understand how CGICTPF implementation takes place in South African public sector organisations. To achieve the goal, the following research objectives were identified:

Primary objective of the study was to evaluate the implementation of CGICTPF in South African public sector organisations.

The following were the secondary objectives:

- To evaluate the role of institutional influences in the adoption of CGICTPF in the South African public sector.
- To identify the factors and challenges faced in implementing CGICTPF in South African public sector organisations.
- To offer recommendations on how CGICTPF implementation can be utilised to improve IT performance in South African SOEs.

1.5 Research questions

The following was the primary research question:

- How ICT governance implemented in South African public sector organisations?

The following secondary research questions had to be answered to arrive at an answer to the primary research question:

- What role do institutional influences play in the adoption of CGICTPF in South African public sector organisations?
- What are the issues and challenges regarding CGICTPF, in South African public sector organisations?
- What recommendations may be provided utilising CGICTPF to improve IT performance in South African SOEs?

1.6 Institutional theory

This study aimed to improve understanding of what social forces influence employees' attitude and intention in adopting an ICT framework within a public organisational context. Drawing upon the institutional theory, this study has proposed a model to examine three social environmental factors of coercive, normative, and mimetic pressures. The results indicate that normative and mimetic pressures significantly influence the attitude and intention of the Department of Transport in the adoption of the ICT governance framework, while coercive pressures appear not to.

1.7 Research methodology

An interpretivism research philosophy was adopted as it allows the researcher to gain new knowledge from different views of participants, with everyone offering a different view of the phenomena. Interpretivism philosophy was employed due to its stance on complexity, richness, multiple interpretations and meaning making.

1.8 Delimitations of the study

The qualitative methodology is underpinned by interpretivist epistemology (what he or she knows) and constructionist ontology (nature of reality). This assumes that meaning or purpose is embedded in the participants' experiences and that the meaning or purpose is translated through the researcher's own perceptions.

Denzin and Lincoln (2011) stated that the qualitative research methodology treats people as research participants and not as objects. This empowers people who are participating in a research process to express their own views rather than just being subjects of a research process.

The qualitative research method was deemed suitable for this study based on the context, the purpose and nature of the research study. The methodological assumption was that the research would be context bound, and the research process would be inductive and would be formed by the data collection.

1.9 Limitations of the study

The study was limited to the National Department of Transport and the interviews were conducted only with the participants who were involved in the implementation of the CGICTPF only. Interview schedules were used to gather information from participants. In this study, the limitation in gathering information using interviews could have been the objectivity of the subject expert being interviewed. However, this was mitigated by analysing audit reports from the AGSA as a secondary source of data. Open-ended questions were used in the interview in order to promote openness.

1.10 Assumptions

An assumption was made that the department had concluded the implementation of the CGICTPF and that the participants were truthful and honest in providing answers to the questions posed.

1.11 Significance of the study

A limited number of studies have been conducted on the implementation of the CGICTPF in the public sector. These research findings may be used to improve how public sector may implement an ICT governance framework.

Studies have not been conducted on how the public sector can improve the success rate of implementing the CGICTPF. Furthermore, few studies have been conducted to assess the implementation of CGICTPF, and further, the problems that were experienced when implementing the CGICTPF have not been addressed in the literature.

This study was aimed at addressing the research gaps and identifying how theories can be used to understand the realm of ICT governance. This study will thus contribute by demonstrating how CGICTPF implementation takes place in the public sector.

Definition of terms:

AGSA	Auditor-General of South Africa

CGICTPF	Corporate Governance of ICT Policy Framework
Corporate public service	A group of related departments that enable the public service to achieve its strategic mandate
ICT governance	"ICT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives." (Board Briefing on ICT governance, 2nd Edition)
Executive management	The executive of the department and could be the Head of Department, Deputy Directors-General (DDGs)/Executive committee of the Department.

1.10 Operational definitions

According to Shirwa and Onuk (2020), corporate governance is the management and regulation of companies in line with the principles and rules in the corporate governance field and in the best interest of all the stakeholders. In general, there are two types of corporate governance used widely around the world. These are: shareholder-based, shareholder or market-focused model and stakeholder-based, stakeholder or network-focused model (Clarke 2007). Other definitions emphasize different aspects, for example Chisari and Ferro (2010) emphasised the Government Financial Model, the Organisation for Economic Co-operation and Development (OECD 2004) emphasised the Cognitive Government Model, while Denis and McConnell (2003) emphasised the Decision-making Model. According to Linstone (1989), the technical perspective alone is not sufficient to get the real picture and hence, he proposed the Multiple Perspectives (MP) approach in assessing complex problems or systems that involve multiple actors by considering three perspectives, namely technical, organisational and personal (Benjamin & Levinson 1993:31).

1.11 Chapter outline

Chapter One – Introduction, background to the study, research aims and objectives and research questions.

Chapter Two – Literature review of the study concerning ICT governance, implementation concepts and the role of institutional influences in ICT governance.

Chapter Three – Theories of governance are presented

Chapter Four – Research methodology, research design, population and sampling, and data analysis for the study.

Chapter Five – Presentation and analysis of the findings.

Chapter Six – Conclusion of the study, summarising the findings from primary and secondary data.

1.12 Chapter summary

This chapter introduced the background to the field of study, the research problem statement, the objective, and the research questions. The chapters that follow comprise a literature review on ICT governance, the purpose of having ICT governance and some context to how ICT governance is implemented, as well as the research methodology on how this study was conducted.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The previous chapter introduced the study, outlining the context, aims and objectives of the study. In this chapter an assessment of literature on the study is presented. It defines ICT governance, the theories related to its implementation, and the challenges in its implementation. The chapter also examines the literature related to theories of governance in the public sector.

2.2 Conceptualising ICT governance

ICT governance is a subset of the corporate governance. ICT governance is the responsibility for directing and controlling IT in an organisation. ICT governance provides processes, policies and guideline to ensure that the IT is used in a manner that promotes and enables the organisation to meet its business objective. ICT governance serves as a framework that provides direction, structure, processes, and standards to ensure that IT supports and enables the organisation to meet its strategic objectives and goals (Calder & Moir 2009).

In the public sector, the focus on ICT governance has intensified as governments become large consumers of IT (Pang 2014) and have moved toward the modernisation of public administration, where questions related to performance, transparency, quality of service, and efficiency have become central concerns (Campbell et al 2009; Tonelli, De Souza, Santos, Zuppo & Zambalde 2017).

Corporate governance is a toolkit that enables management and the board to deal more effectively with the challenges of running a company. Corporate governance ensures that businesses have appropriate decision-making processes and controls in place so that the interests of all stakeholders are balanced (Information Systems Audit and Control Association [ISACA] 2021).

ICT governance framework provides guidance on how an organisation can implement, manage and monitor IT within the organisation. It provides means to measures the efficiencies and effectiveness of IT resources and processes. ICT governance helps enterprises to create value from IT by maintaining a balance between IT benefits realisation and optimising risk levels and resources (ISACA 2021). It enables information and related technology to be controlled and monitored.

The aim of ICT governance is to improve business alignment with IT. The relationship between strategic alignment and business performance or business value of IT has been researched over the years and evidence has suggested that organisations with a 'high' degree of alignment are able to leverage on new information technologies more innovatively, achieve IT optimisation and have competitive advantage (Luftman & Kempaiah 2007; Oh & Pinsonneault 2007; Johnson & Lederer 2010; Luftman et al 2010; Taskin & Verville 2010). There is a view that organisations that successfully align their business and IT strategy will outperform those that do not (Chan et al 2006 as cited in Ako-Nai & Singh 2019). Research has shown that not implementing ICT governance has a negative impact on the organisation.

2.3 Implementing ICT governance

In this section the following tools of implementing ICT governance are discussed:
COBIT 5, COSO, and ITIL. These are discussed below.

2.3.1 COBIT 5

COBIT 5 is a framework developed and published by Information Systems Audit and Control Association (ISACA) in 2012 (Maseko & Marx 2016). It provides guidance for organisations to achieve their goals related to ICT governance and IT management. COBIT 5 enables information and related technology to be governed and managed in a holistic manner for the entire organisation, it covers the overall business processes and functional areas of responsibility and considers the IT-related interests of internal or external stakeholders (Ahriz, El Yamami, Mansouri & Qbadou 2018). In this model, there is an option for auditors and companies to integrate technology and implement controls to meet specific business objectives (Ghildyal & Chang 2017). COBIT has proven its reliability and has become a worldwide leader in ICT governance, control security and assurance (Andry & Setiawan 2019).

Due to the complex architecture, it is difficult for organisations to understand and use it. There are no concrete methods or guidelines to facilitate the customisation to a specific environment. In addition, the value of COBIT is hard to perceive because there are no proven statistics or studies confirming its claimed advantages. In contrast, other programs such as ITIL and ISO27000 provide more significant values (Ghildyal & Chang 2017). The ICT governance approach and management of information technology services in COBIT and ITIL mutually complete each other to maintain the achievement of organisational goals (Fryonanda, Sokoco & Nurhadryani 2019). Motti and Semma (2017)

concurred that in terms of process management, utilising COBIT 5 and ITIL v3 collectively will provide a powerful model.

2.3.2 COSO

Ettish, El-Gazzar, and Jacob (2017) developed an integrated framework that aligns the corporate strategic and operational controls and processes of ERM, COSO, and COBIT 5 with ICT governance principles. Based on these operational controls, it is evident that ICT governance is influenced by five corporate domains. These domains include (but are not limited to) IT:

Strategic alignment

Alignment is a complex concept that can be evaluated through one of the alignment models, such as the Strategic Alignment Model (Weil & Ross 2004).

Value delivery

Without an effective ITG, information technology can also negatively affect and reduce business value (Valentine, De Haes & Timbrell 2016). Effective governance adds value to IT projects and reduces IT and project risks, allowing control over IT functions (De Haes, Huygh & Joshi 2017).

Resource management

IT risk management must ensure the protection of IT resources, disaster recovery and business continuity. Therefore, top management must understand and identify IT risks and ensure that critical risks are under control (Weil & Ross 2004).

Risk management

The IT audit committee is an independent body at the level of corporate governance, which is responsible for identifying and managing IT risks on a strategic level (Weil & Ross 2004). Moreover, portfolio management manages IT as a portfolio of assets similar to a financial portfolio and strives to improve the portfolio's performance by balancing risk and return (Ettish et al 2017).

Performance measurement

IT performance measurement (e.g. IT balanced scorecard) is essential in the domains of business contribution, user orientation, operational excellence and future orientation. (Ettish et al 2017). Coordinating these domains along with IT controls should lead to the appropriate ICT governance structure.

COSO of the Treadway Commission developed a framework for evaluating internal controls. COSO defines internal controls as a process designed to provide reasonable assurance but not absolute assurance of the achievement of objectives. COSO has five components, namely control environment, risk assessment, control activities, information and communication and monitoring.

The above components are foundation of a sound internal control within an organisation.

2.4 Challenges in implementing ICT governance

According to Selig (2016), there are two pre-requisites for the implementation of an effective ICT governance framework which are the buy-in from the board as the board must understand the benefits of implementing ICT governance, and secondly, management and ICT governance practitioners within the organisation must commit to the ICT governance framework.

Implementation of ICT governance may depend on the organisation's plan. Most companies run the implementation as a project. In a case of the public sector, DPSA released an implementation guideline which required the framework to be implemented in a three-phased approach.

The implementation of ICT governance must address the issue on how IT decisions are made and who should be making IT decisions (Weill & Ross, 2004 as cited in Selig 2016).

Lack of senior management/executive buy-in hinders a successful implementation of the ICT governance framework as management need to need by example and be the first to adopt and also advocate for the change.

Secondly, financial constraints may hinder successful implementation of the ICT governance framework as the organisation may not have the budget to implement management controls to improve ICT environment.

Furthermore, lack of ICT personnel skills is a challenge during implementation and also during tracking and monitoring to ensure that implemented controls are working effectively.

The problem with implementing an ICT governance framework (Giordano 2014) is right-sizing an information governance process – Organisations use a framework suited for a complex IT environment without considering the size, data use and security suited for their environments. An

organisation implementing ICT governance must understand the problem they face which they intend to resolve by implementing an IT framework in order to determine the components of ICT governance framework they should adopt or implement. It is further supported by Judge and Zeithaml (1992) that the size of the organisation should determine the implementation of the ICT governance framework.

Giordano (2014) further stated that the impact on existing industry standards also creates challenges when implementing an ICT governance framework. Most organisations fail to start with defining processes that they already have. They don't take advantage of existing standards which the organisation already complies with.

Also, organisations whose data maturity level is low may find it challenging to implement ICT governance (Giordano 2014). Organisations must define their information in order to know which component of ICT governance framework to implement and which ones already exist.

The must be interactions with the IT Department. Organisations who consider the IT business unit as a strategic partner have a high likelihood to succeed when implementing ICT governance.

One of the challenges of implementing ICT governance is lack of understanding and knowing the external data used to analyse and run the business (Giordano 2014). In addition, failed ICT governance implementations are mostly the result of incorrect expectations between sponsors and IT.

2.5 Hybridity

Scholars use the concept of hybridity to describe how organisations, under pressure to reconcile different goals and institutional logics, adopt hybrid organisational structures and procedures (Ramus, Vaccaro & Brusoni 2017). According to Johanson and Vakkuri (2017:4), hybridity is described as “ambiguous types of social organizing” with several sources of hybridity such as mixed ownership, incongruent goals, competing institutional logics, multiplicity of funding arrangements, and mixed (public and private) forms of financial and social control.

Even SOEs with 100% state ownership can be considered hybrid organisations because of their need to combine different institutional logics, to pursue both commercial and sociopolitical goals, and to be accountable for their public service performance and financial performance (Okhmatovskiy, Grosman & Sun 2021). Christensen (2017) contrasts by stating “new public management logic” (characterized by professionalization, commercial re-orientation, and de-politicization) with the traditional governance of SOEs.

2.6 State officials' interventions

Recent studies provide evidence that state officials can circumvent formal corporate governance mechanisms and use informal mechanisms to exercise influence over SOEs (Bałtowski, Kozarzewski & Mickiewicz 2021; Okhmatovskiy et al 2021). When the appointment of SOE managers is tightly linked to the turnover of political elites, when SOEs are used by the state as tools for achieving political goals, and when SOE autonomy cannot be effectively protected by institutional constraints isolating them from political influences, it may be expected that state influence exercised through informal channels would play an important role in the governance of SOEs (Okhmatovskiy et al 2021).

2.7 Privatisation or corporate governance?

The proponents of privatisation argue that inefficiencies of SOEs are unavoidable as reflecting inherent problems associated with state ownership (Megginson 2017). An alternative perspective is less critical of state ownership per se and identifies the source of SOEs' problems in their corporate governance practices (Jia, Huang & Zhang 2019; Musacchio & Lazzarini 2018). This shift of focus from state ownership to corporate governance of SOEs has important practical implications: if poor governance is viewed as the main reason for SOE problems, there is a possibility to resolve these problems through improving corporate governance while preserving at least partial state ownership.

ICT governance offers opportunities for increasing economic, social, and environmental returns. Krell, Matook and Rohde (2016), however, cautioned that mere adoption of ICT governance does not appear to be sufficient to diminish the detrimental effects of using IT.

2.8 Framework for South African SOEs to implement ICT governance programme

Even though some of the public entities and departments in South Africa implemented ICT governance programmes prior to the release of the CGICT policy framework, some also opted to implement their preferred frameworks and others used the CGICT policy framework. Those who didn't use the CGICT policy framework had to ensure that there was alignment between the preferred ICT governance frameworks with the CGICT policy framework.

The public sector has developed the ICT House of Value which outlines the 13 strategic outcomes of the South African government and thus allows for government to fulfil its mandate through ICT. Various initiatives assessed the adequacy of IT-enabled service delivery (Corporate Governance of Information and Communication Technology Policy Framework [CGICTPF] 2012).

There is need for provision of a set of principles/processes that all public sector institutions must adopt and implement. This is one of the pressing issues in ICT governance with the need for institutionalising ICT governance with the CGICTPF. For this reason, the government established a Ministerial Regulation of the State-Owned Enterprises regarding Guidelines for the Preparation of Information Technology Management of State-Owned Enterprises. The existence of information technology and its governance is believed to be able to improve company performance (Muslih, Rahadi & Sugianti 2020). Therefore, this study aimed to understand how the Department of Transport implemented ICT governance framework.

Moreover, organizations should adopt and implement ICT governance as its implementation is useful to ensure that the ICT supports and aligns consistently with the organization's objectives (Andry & Setiawan 2019). ICT governance concerns on how the ICT in the organization is managed and structured, it provides practices that enable the alignment between business and ICT to enhance their performance and governance (Rubino, Vitolla & Garzoni 2017).

2.9 Factors that drive an effective ICT governance

For ICT governance to be effective the department must ensure alignments between business and ICT, deploy skilled and effective ICT human resources and manage ICT performance. These three drivers enables a successful implementation of ICT governance.

2.10 Conclusion

This chapter discussed the literature related to the study. The chapter examined the ICT governance definitions and strategies for its implementation including the COBIT and COSO frameworks.

CHAPTER THREE
THEORIES OF GOVERNANCE

3.1 Introduction

This chapter discusses theories of governance. Theories of governance are analytical lenses that help us understand. These theories have different purposes. Some of them bring into focus how different actors, jurisdictions, levels and institutional arenas interact to exchange knowledge and ideas, coordinate action and collaborate in making authoritative decisions that produce collective outcomes (Ansell & Torfing 2016).

Some theories help us to understand the role played by different public, private and civil society actors in governing processes at different levels and in different countries or parts of the world while some help us in analysing how governance is designed and organised and orchestrated, or how it evolves over time and across sectors and domains. Others measure governance, study its impact and effects or help us to understand how different kinds of governance contribute to more effective, democratic or innovative ways of solving societal problems, delivering public services or regulating social and economic life. Still others analyse governance failure or how to improve governance to secure desirable outcomes. Collected together, these theories of governance provide an analytical tool kit for reflecting on and participating in the production of ordered rule in our increasingly complex, fragmented and dynamic society.

3.1.1 Resource-based theory

Information technology has become an important method to achieve and reinforce competitive advantage for many organisations (Al-Houri & Abdulsattar 2013 as cited in Alalie, Harada & Mdnoor 2018). Accordingly, organisation managements need to enhance their understanding of the importance of information technology, alongside other means, as an essential tool for achieving and supporting competitive advantage through cutting costs, improving quality, and boosting productivity (Sulaimani 2012 as cited in Alalie et al 2018).

The Resource-based view (RBV) posits that the firm's internal resources are the primary predictors of superior financial performance (Alalie et al 2018). Hence, the understanding, interpretation and use of information technology may enable fundamentals to be created to sustain competitive advantage.

Theory assumptions of Resource-based theory (RBT) suggests that an organisation's internal factors, such as resources and capabilities, determine a firm's profit. However, the RBT is not suitable for this study as it's not fully based on the department's resources. Furthermore, the National Department of Transport is not a profitable business.

3.1.2 Institutional theory

Institutional perspective explains drives which are moulded as the independent variables in the research model that would lead to swift organizational behaviour, which in turn may influence the success of that behaviour (Krell et al 2016). The theory points out that pressures are the main motivations of organisations in adopting ICT governance.

In the Krell et al (2016) model, the institutional pressures are considered independent variables that influence the manager's decision to adopt ICT governance. The independent and mediating variables in turn influence intentions to continue using ICT governance. The predicted model is depicted conceptually in Figure 3.1.

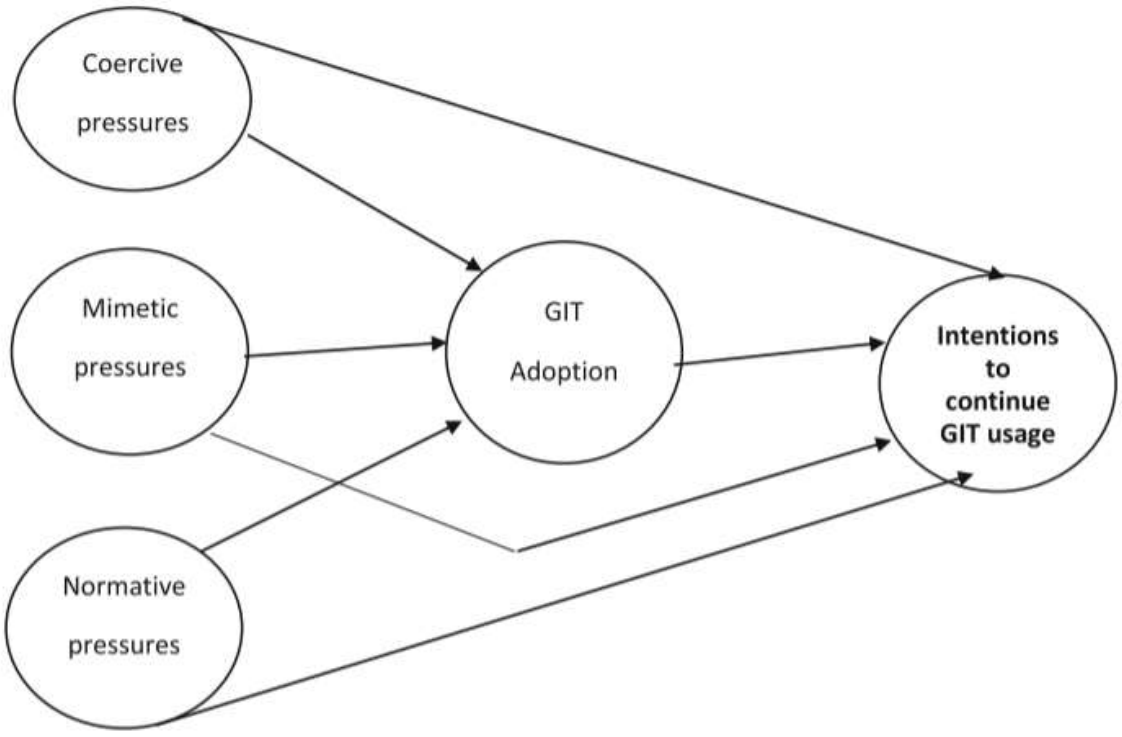

Figure 3.1: Institutional pressures research model

Source: Alalie et al (2018)

Coercive pressures

SOEs are surrounded by institutions that impose on them, directly or indirectly, engaging in ICT governance practices. These institutions that likely include resource dominant traders, customers, state agencies, and local agencies use their power to force SOEs to involve in ICT governance practices, which, in turn, can directly impose constraints on them. According to Alalie et al (2018), coercive pressures mainly stem from the resource dependence perspective.

Mimetic pressures

Organisations also mimic the behaviours of other organisations with whom they share important features. Mimetic isomorphism suggests that organisations will follow leading organisations that have gained benefits from being the first movers in the industry (Deng & Ji 2015). New organisations attempt to undertake similar steps of movement to those of leading organisations. It is defined as pressures that stem from behavioural uncertainty on how to solve a specific problem, perform a specific activity, or reach a specific goal (Krell et al 2016). These kinds of pressures that are likely to arise when conditions are uncertain, lead to an organisation imitating the actions of other organisations.

Normative pressures

Normative pressures are associated with professionalisation, and it shapes organisational response (Deng & Ji 2015 as cited in Alziady, Abdul, Enayah & Sabah 2019). Normative pressures are defined as the pressures that stem from norms which are specified by institutions such as professional or industry associations (Krell et al 2016). As a result, the decision makers believe that compliance with norms specified by the professional and industry institutions may be beneficial for their firm.

GIT adoption

ICT governance adoption may be perceived as a realistic way for organisations to tackle the current problems facing SOEs. An important competitive advantage can be created by making the company distinguish itself from other SOEs by means of ICT governance. At the same time, it can also be regarded to improve the organisational image and economic performance (Gou et al 2016). The adoption of GIT can be an example of organisational behaviour that is required by institutions if the motive for adoption is to get accepted rather than to maximise the organisations' efficiency.

Nevertheless, there are motivational factors such as economic benefits, regulation requirements, stakeholder obligations and ethical reasons which all need to be considered when exploring and analysing factors that may influence the adoption of ICT governance (Khorasanizadeh et al 2016).

For this study, an institutional theory was used as it was more suitable to determine the pressures and behaviours that led to the implementation of the CGICTPF in the Department.

3.1.3 Agency theory

Agency theory, initially presented by Jensen and Meckling (1976), is explained as a contract under which shareholders delegate directors to do some services including corporate decision-making on their behalf. As such, it concentrates on the conflict of interests between managers/owners and shareholders, and between equity holders and debt holders (Jensen & Meckling 1976). The problem with agency theory arises from the separation of control from ownership. Shareholders appoint managers to administrate the firms in their interest. This separation, from one side, reduces the monitoring level of the owners on the managers, and from the other side, may encourage the managers to pursue their self-interest through owning stock ownership, receiving compensation, seeking higher salaries, and job security (Faizabad, Refakar & Champagne 2017).

The Agency theory was not suitable for this study as the Department of Transport is not an agency but a government department which does not make profit.

3.1.4 Conceptual research framework

This section discusses the conceptual framework as provided in Table 3.1. Here, the variables that make up the framework are the problem statement, and based on the problem statement an institutional theory was adopted which theory deals with descriptive and normative which influence the behaviours based on the laws and the environments. In gathering information, aqualitative method was used as it looks at how people behave or think. Information was gathered through interviews and analysing documentation. The outcome of implementing ICT governance is to achieve an aligned IT and business strategy, meet business objectives and have defined processes and structures.

Table 3.1 Conceptual framework of institutional theory

Theory Element	Regulative	Normative	Cognitive
Basis of compliance	Expedience	Social obligation	Shared understanding

Theory Element	Regulative	Normative	Cognitive
Mechanism	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs
Basis of legitimacy	Legally sanctioned	Morally governed	Recognisable, culturally supported.

Source: Scott (1995)

3.2 Conclusion

This chapter discussed theories, namely the institutional theory, resource-based theory and agency theory. The next chapter presents the research methodology employed in the study.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 Introduction

The previous chapter examined the literature related to the study. This chapter presents the research methodology that was employed in the study. The chapter discusses the research philosophy, the research strategy, population, and sampling as well as data analysis.

4.2 Research paradigm

Research philosophy refers to the belief about the way in which data about a phenomenon should be gathered, analysed and used (Žukauskas, Vveinhardt & Andriukaitienė 2018:121). Saunders, Lewis and Thornhill (2009:124) defined research philosophy as a system of beliefs and assumptions about the development of knowledge. In research philosophy, two terms exist, namely epistemology and doxology. Epistemology refers to what is known to be true, and doxology refers to what is believed to be true (Dudovskiy 2016:28). Therefore, the purpose of research is to transform things believed to things known, or simply doxa to episteme. There are three main trends of research philosophy: the positivist research philosophy, interpretivist research philosophy and pragmatist research philosophy. These research philosophies are discussed next.

4.2.1 Positivism

Positivists are of the view that reality is stable which can be observed and described from an objective viewpoint (Saunders, Lewis & Thornhill 2009:107). Žukauskas et al (2018:123) argued that positivists claim that the researcher is an objective analyst who dissociates himself from his personal values and works independently, without interfering with the phenomena being studied. Positivists contend that the phenomena being studied must be isolated and the observations should be repeatable (Rehman & Alharthi 2016:58). Positivists argue that all reality can be interpreted through measurable numeric inferences. Positivists try to be external to the data collection process as they argue that there is little that can be done to change the substance of the collected data.

4.2.2 Pragmatism

Pragmatism aims to reconcile objectivism and subjectivism, facts and values, and accurate and rigorous knowledge (Saunders et al 2009). Pragmatism does not belong to any philosophical system

and reality, and this indicates that the researchers have freedom of choice. In pragmatism, the research philosophy is determined by the research problem (Alghamdi & Li 2013). Pragmatists believes that the world cannot be interpreted using a single view but must be interpreted using different ways as there are multiple realities. Rehman and Alharthi (2016) claimed that pragmatism starts with a problem and aim to contribute towards a practical solutions that can be used in the future. Žukauskas et al (2018) stated that pragmatism research philosophy does not limit researcher buts helps the researcher to research what is of value and appropriate and the results will be in line with what the researchers believes.

4.2.3 Interpretivism

In interpretivism, the greatest attention is given to the ways through which people experience the social world. Interpretivists argue that the social world is complex and to be interpreted using theory laws and there is a high possibility of losing new and rich insights if the world is reduced to law-like generalisations (Saunders et al 2009). Interpretivism is adopted where the researcher desires to have a richer understanding of the reality according to the participant's view. Participants have different views over reality which is influenced by social constructs and meaning they assign to these. These social constructions would include attributes such as language, consciousness, symbols, documents, tools, shared meanings, inferences and observations which are often expressed through the participants' voices, activities, beliefs and behaviour. In this study, the interpretivist's research philosophy was adopted.

In this study, interpretivism research philosophy was adopted as it allows the researcher to gain new knowledge from different views of participants, with everyone offering a different view of the phenomena. The interpretivism philosophy was employed due to its stance on complexity, richness, multiple interpretations and meaning making.

4.3 Research approach

Easterby et al (2015) defined research methodology as the combination of different techniques used to explore different situations. Van Zyl (2014) defined research approach as the activities which are taken in the research such as sampling techniques, selecting the sample, the research instruments, data collection, storage, and analysis. The main idea of understanding the research approach is to assess how the information or data will be collected, analysed, and interpreted from the respondents to the

study. There are three research approaches, namely and quantitative, qualitative, and mixed methods research. These are discussed next.

The research strategy is a roadmap on how the researcher will go about answering the research questions to solve the research problem (Saunders et al 2009). The selection of the research strategy is guided by the research questions, time, and resources available. There are seven research strategies which include the action research, ethnography, archival research, experiment, case study, survey, and grounded theory. These research strategies are grouped into two broad categories, namely deductive reasoning (positivist research strategies) and the inductive reasoning (interpretivism research strategies). Research strategies such as the experiment and survey belong to the positivist research strategies whereas research strategies such as action research, case study, ethnography, grounded theory and archival belong to the phenomenological research strategies.

In this study, a case study approach was utilised as it provides rich-qualitative information about the phenomena being studied. It was selected on the basis that it enables the generation of new ideas and indicates how different aspects relate to one another. It was utilised as it provides insight and illuminates meanings that expand the experiences of researchers.

Focus groups and cognitive interviews are now a standard part of the development of a valid and reliable survey instrument and they are useful in developing surveys to gather data on experience and responses. For purpose of the study, to ensure validity and reliability of data collected, the interview schedule and the analysis of documentation approach was adopted. This approach is suitable for the qualitative research method. Data were induced from the interview schedule and documentation in order to come up with the results of the study on the implementation of the CGICTPF.

4.3.1 Quantitative research methodology

Quantitative research involves evaluation of relationships between the variables, through the application of statistical procedures (Dudovskiy 2016:35). It also involves weighing of predetermined assertions with numeric significance which are subjected to statistical inferences. Creswell (2015:132) argued that quantitative research is a strategy used to test objectives of a hypothesis by examining their relationship among factors and this indicates that it is deductive in nature. Data for quantitative research is generally obtained by use of highly structured instruments such as questionnaires along with surveys and case studies as research strategies (Dudovskiy 2016:35). Questionnaires are common

because they can be designed using closed-ended questions ranked on a Likert scale and the results obtained can be analysed using statistical packages and presented in form of tables, figures or percentages.

4.3.2 Qualitative research methodology

Creswell (2015:43) argued that qualitative research is any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification. Malhotra (2015:61) argued that the qualitative research methodology involves developing questions and procedures utilised for data collection from the participants. Inductive data analysis based on facts and general subjects, and respondents' opinions offers valuable perception and understanding of the question set. The common research instruments used to collect qualitative data include interviews, focus groups and observations. Based on the above, the qualitative research method was deemed more suitable for the purpose of this study because it seeks to collect rich data that is more specific to the implementation of CGICTPF.

4.3.3 Mixed methods research methodology

Mixed method study is a logical amalgamation of qualitative and quantitative techniques in a solitary study with an aim of getting a complete image and deep insight into a phenomenon (Cohen, Manion & Morrison 2000:76). The mixed methods are used when the use of either qualitative or quantitative research methodologies do not adequately address the research questions. The mixed methods counter the strength and weaknesses of both qualitative and quantitative research methodologies (Dudovskiy 2016:37).

The qualitative research methodology was utilised in this study to ensure that various perceptions about government's ICT governance strategies are highlighted and to ensure that comprehensive data was collected. It was selected due to its ability to provide complex textual descriptions of how respondents understand the concept of talent management. Qualitative research was selected as it focuses on studying human action in its natural context and through the perspective of the actors themselves.

Thanh and Thanh (2015) examined the connection between interpretivism and qualitative methods. They found that interpretivism as a research approach prefers using qualitative methods in data collection. There is a tight connection between the interpretivist paradigm and qualitative

methodology as one is a methodological approach, and one is a means of collecting data. Researchers who are using the interpretivist paradigm and qualitative methods often seek experiences, understandings, and perceptions of individuals for their data to uncover reality rather than to rely on numbers of statistics. In the implementation of the CGICTPF, IT professionals' experiences, understandings and perceptions were used to uncover how the implementation of the CGICTPF was implemented in the government departments.

4.4 Data collection techniques

This section discusses the data collection techniques for the study. These relate to the data collection instrument, time horizon, unit of analysis, and data collection techniques.

4.4.1 Data collection instrument

The data collection instrument used to collect the data was an interview questionnaire. The questionnaire was developed to gather information in line with the conceptual framework of institutional theories. Where the aim was to find out if the Department was influenced to implement the CGICTPF, to identify issues and challenges and also to understand if there where improvement or benefits realised by the department from the project of implementing CGICTPF. The questionnaire was piloted to test if it addresses the goal of the study.

4.4.2 Time horizon

Data was gathered once over a period of three months. Due to the timeframe for this study and cost associated with the collection of data, the cross-sectional approach was applied.

4.4.3 Unit of analysis

The focus of the study was the National Department of Transport. The employees of the department participated on the study.

4.5 Population

The National Department Transport was population for this study. The National Department Transport was one of the government departments that implemented the GCICTPF, as instructed by the DPSA. Figure 4.1 below indicates that there are 36 positions in the Transport organogram, and these formed the target population of the study.

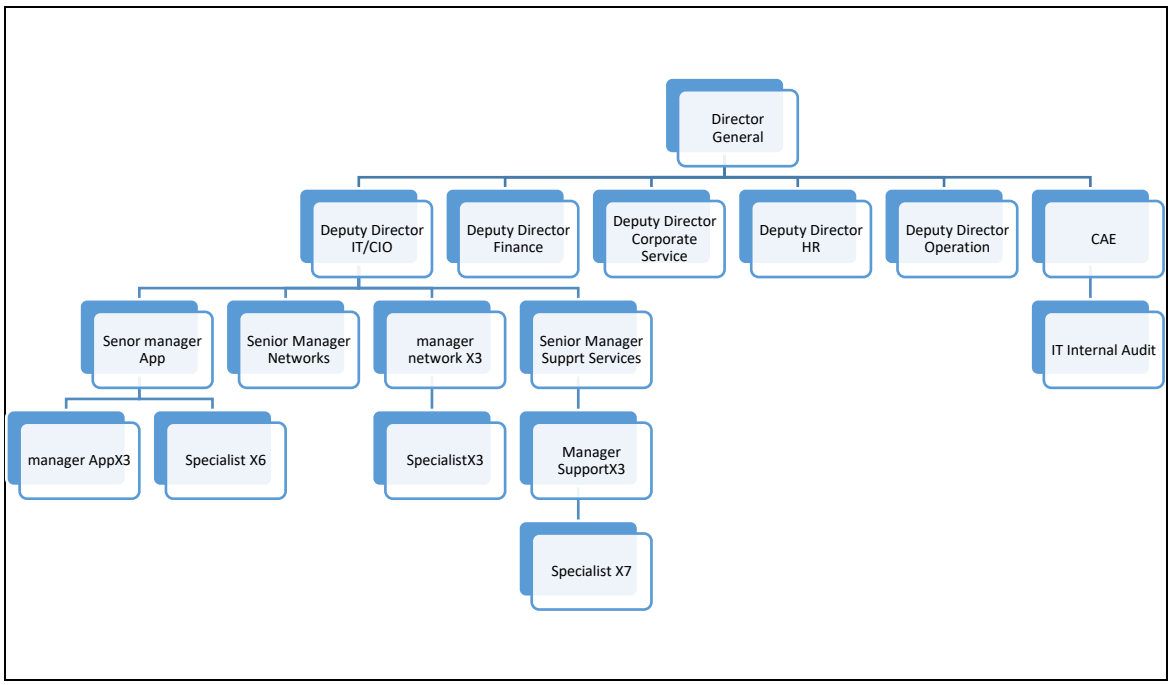

Figure 4.1: National Department of Transport Organogram

4.6 Sampling strategy

There are two types of sampling strategy, namely probability and non-probability sampling. Probability sampling gives each element an equal chance of being selected whereas in non-probability sampling technique samples are gathered in a way that does not give all the elements an equal chance of being selected (Proctor 2014:96). This type of sampling uses techniques such as simple random sampling**,** stratified random sampling, systematic sampling, and cluster sampling.

Probability sampling was not used to select the sample in this study as it was not relevant for the study.

4.6.1 Non-probability sampling

The non-probability sampling technique makes use of units which in some cases have the probability of not being selected, i.e. the probability of being selected is zero (Saunders et al 2009:226). Common non-probability sampling techniques are the following:

Convenience sampling

With the convenience sampling technique, it is cheaper and easier to come up with the required sample size as the elements are easy to identify. A researcher may employ convenience sampling by simply

standing at a public place such as at a shopping mall and engaging people who are passing by to take part in the research.

Quota sampling

During the quota sampling approach, the researcher firstly clusters the target population into various sub-groups. After this exercise, the researcher specifies an inclusion-exclusion criterion, to make a selection of the elements of the population which have certain characteristics

Snowball sampling

The researcher identifies a case and asks for that case to identify another case until there are no more cases or a threshold has been reached.

Purposive sampling

In purposive sampling, researchers handpick the participants they want to be included in the study based on their judgements or the characteristics they possess. Purposive sampling is a sampling technique used to select elements or people by considering some specific characteristics that they possess. In this study, purposive sampling was used to select the sample, based on the characteristics they possess as senior management in the Department of Transport. It was chosen as it allows for money and time saving. The careful selection of respondents minimises non-response rates.

Proctor (2014:95) claimed that sampling refers to the process of selecting the representative sample from the target population. It is an important tool in research studies as sometimes the population contains too many elements or individuals for a research to include all of them as participants. Sampling is also important in research as in some instances it may be impracticable to collect data from the entire population, to save time and resources (Majid 2018:4). If the sample is conducted properly, it can give a true representation of the population and in these cases the obtained data can be inferred to the entire population.

A sample of 10 participants was selected to participate in the study from the 36 relevant senior personnel at the Department of Transport who were involved in the implementation of CGICTPF. The sample was selected using a purposive sampling technique. Interviews were conducted on the sampled individuals. And the selection criteria are listed in Table 4.1 below.

Table 4.1: Sample size determination

Department	Target Population	Sample size
Director General	1	1
Deputy Director Generals	6	2
Senior managers	7	2
Managers	15	3
Specialists	7	2
Total	36	10

4.7 Data analysis

Data were collected using interview questions and administered to 10 employees at the Department of Transport. The data was collected by means of interviews, using Microsoft Teams/Zoom meetings, and each interview lasted approximately 30 minutes. The interview questions were structured similar to the research objectives, and they were open-ended questions. On analysis, the study adopted a Gioia approach employing the use of a theoretical coding structure to organise text (Tracey & Phillips 2016). Snippets of text were also provided, and the study's primary data source was interviews. In Chapter Five, the findings are presented in tabular format highlighting the textual content of the responses as they were linked to the theoretical aspects in the discussions.

4.8 Reliability and Validity of the collected data

The data collected were based on the interviewee's experience and knowledge in order to valid and test whether the data provided, the data collected was compared to test if the interviewees had common or similar experience and data/ information was common across.

4.9 Ethical considerations

Ethical considerations in this research formed a crucial construct of the data collection phase. Ethics are the norms or moral standards which distinguish right from wrong. Ethical standards prevented the researcher from fabricating and falsifying data and therefore promote the pursuit of knowledge and truth, which is the primary goal of research. Ethical behaviour is especially crucial for collaborative work as it encourages an environment of trust, accountability, and respect for individual researchers (Privitera 2017:2).

4.9.1 Permission granted

Permission to perform the study was obtained from the gatekeeper at the Department of Transport.

4.9.2 Ensuring no harm comes to participant

Participants were made aware that their participation was entirely voluntary, and no harm was to be incurred if they chose to withdraw from the study. Additionally, the research was partly administered on a digital platform, therefore the risk of physical harm was minimised with COVID-19 protocols being observed.

4.9.3 Informed consent

The researcher has a moral obligation to ensure the highest level of ethical conduct is administered throughout the study (Wegner & Koetz 2016:45). The researcher in this study provided all participants with the relevant information about their role in the study to obtain their informed consent (Saunders et al 2016:280). The participants were made aware of the consequences of participation which could be done through exercising their decision to either participate or not.

As a result, the participants received a letter of consent which ensured they were fully informed about the study.

4.9.4 Confidentiality and anonymity

To ensure the highest level of confidentiality, the researcher opted to obtain minimal biographical data on the subject. The data in question was compiled individually by the researcher in an anonymous format on a secure drive. Data collected in this regard will be destroyed within the general data protection regulation framework of five years. The research instrument was calibrated to omit email addresses and personally identifiable data.

4.10 Conclusion

This chapter has presented the research methodology that was adopted in the study. The study adopted an interpretivist research paradigm. The population was the national Department of Transport with a sample of 10 participants selected by using a purposive sampling method. The next chapter presents the findings from the primary research.

CHAPTER FIVE
PRESENTATION AND ANALYSIS OF FINDINGS

5.1 Introduction

This chapter presents the findings from the interviews with staff. The interviews were conducted to evaluate how ICT governance is implemented in South African public sector organisations. It was also to identify the role that institutional influences play in the adoption of CGICTPF in South African public sector organisations. A third objective of the study was to identify the issues and challenges regarding CGICTPF, in South African public sector organisations. Findings from the survey as well as from interviews are both presented in this chapter.

The first two questions were related to respondents' demographic profiles and are summarised in Section 5.2. From the objectives of the study, the following research questions were derived in the following manner. The primary research question was how CGICTPF can be implemented in South African public sector organisations. To answer this question the following questions were relevant:

- What role do institutional influences play in the adoption of CGICTPF in South African public sector organisations?
- What are the issues and challenges regarding CGICTPF, in South African public sector organisations?
- What recommendations may be provided utilising CGICTPF to improve IT performance in South African SOEs?

As mentioned, the findings from the study are discussed in this chapter. First, the demographic profiles of the interviewees are presented in the following section.

5.2 Demographic profiles

This section discusses the demographic profiles of the participants in the surveys. A total of 10 interviewees participated in the interviews.

Figure 5.1: ICT governance work experience

Figure 5.1 indicates that there were no participants with less than five years' work experience. Over 50% were between 6 – 10 years while almost a third (30%) had between 11- 20 years' experience. Additionally, almost a fifth (17%) had over 20 years' experience. This reflects the mature and experienced traits of the respondents, and this also ensured reliability of the study. The implications from an ICT governance point of view is that there is need for a balance of experience so that there is continuity of knowledge sharing among staff with different levels of experience. According to the Harvard Business Review (Kropp & McRae 2022), in 2022, executives will need to address how they are managing fairness and equity across the increasingly varied employee experience.

5.3 Role in ICT governance implementation

Figure 5.2: Role in ICT governance implementation

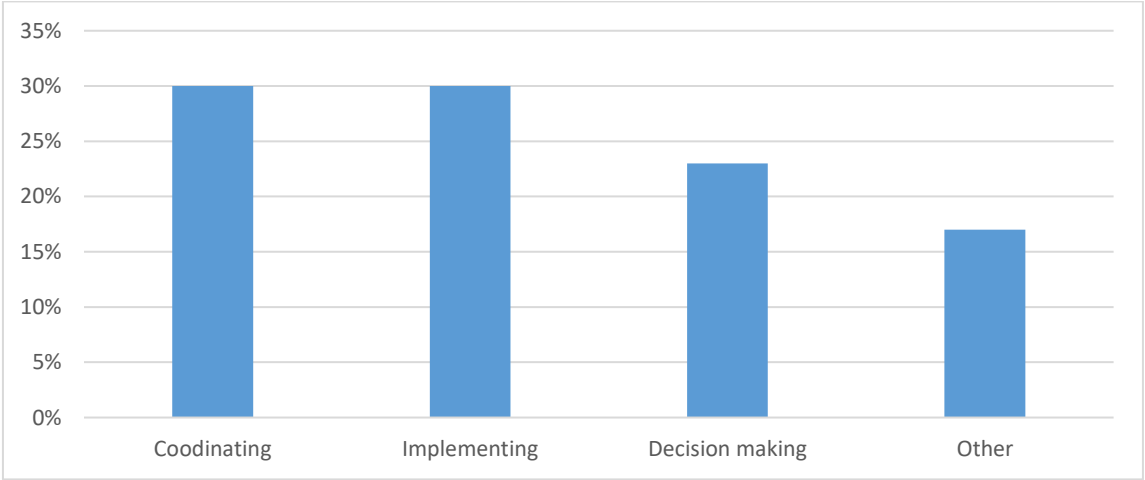

Figure 5.2 reflects the roles that different participants played in the implementation of the ICT governance. Almost a third (30%) performed a coordinating role and a further 30% performed an implementing role. Almost a quarter of the participants were involved in decision making roles and 17% were involved in other activities. The profile indicates a high percentage of decision making participants (30%) which also reflects on the quality of the respondents. This enhanced the reliability of the study as well. From the literature it is revealed that ITG is often the weakest part of corporate governance (Turel et al 2017). Additionally, Rusu and Gianluigi (2017) confirmed that the main reasons for this are lack of awareness and insufficient knowledge about IT among top management, in addition to a lack of commitment to the acquisition of knowledge in this area. The implication is that ICT governance requires decision makers in the organisation to possess some knowledge and skills in IT.

The findings are presented in a similar structure as the research objectives. The study adopted a Gioia approach employing the use of a theoretical coding structure to organise text (Tracey & Phillips 2016). Snippets of text are also provided, and the study's data primary source was interviews.

5.4 The role of institutional influences in the adoption of CGICTPF in the Department of Transport

Krell et al (2016) confirmed that the institutional perspective proposes that organisations endeavour to strike a balanced approach to economic growth which considers Green Information Technology (GIT). This is because GIT offers opportunities for increasing economic, social and environmental returns (Krell et al 2016), Moreover, institutional theory researchers have shown that coercive pressures such as regulations are vital to create an environmental permit to adoption behaviour (Lin & Ho 2016). These influences are discussed in relation to the findings from the study in this section.

5.4.1 Role during ICT governance implementation

Governance is an act of controlling and a process of decision-making. Thus, the social learning process applies to understand the mechanism of governance as well as strengthening its implication (Rana & Ahsan 2019). Rana & Ahsan, 2019 argued that social learning occurs in the form of expectancies and incentives. Expectancies are about the environment or how things are connected, the consequences of a person's action, and the individual's own capability to act or behave.

Additionally, collaborative governance is the key to solve public policy problems (Siddiki, Kim & Leach 2017). Corporate governance regimes also influence legal systems, corporate structures and philosophies, political orientation, and socio-economic and cultural practices (Goyal, Kakabadse & Kakabadse 2018).

Cognitive theories focus particularly on creating internal knowledge from organisational learning. The firm is seen as a repository of knowledge, not only as a nexus of contracts. In this study, the cognitive approach attaches more importance to the contribution of intellectual capital through enhanced ICT governance, in creating value.

The study adopted an approach based on the three concepts of value creation, namely operating skills, knowledge, and organisational learning.

5.4.1.1 Operating skills

This refers to respondents who played an implementing role – the frontline staff who were involved in implementing the project possess this knowledge. Cognitive theories focus particularly on creating internal knowledge from organisational learning. The frontline staff are the ones who possess the skills of how to operate the ITC system. Hence, they contribute a pool of skills necessary to implement the ICT governance system.

5.4.1.2 Knowledge

Relates to respondents who played a coordinating role – this relates to management responsibility for acquiring and allocating of resources during the execution of the project. The behavioural theory contends that more attention should be paid to the psychological dimensions of value creation. Achieving the desired performance requires knowledge of the behaviour of actors or groups of actors in an organisation. This role relates to the knowledge, skills and specific skills of the manager and his team and it is often tacit.

5.4.1.3 Organisational learning

This relates to respondents who played a decision-making role – Management and senior managers involved in the project are responsible for organisational learning. This knowledge needs to be harnessed as a pool of value creation and not just information. In the cognitive vision of governance, the role of the board goes beyond the interests of shareholders. It is a mechanism to ensure the best possible cooperation between managers and shareholders.

5.4.2 Motivation for adoption of ICT governance framework

Some respondents pointed out the normative (behavioural) aspects of the motivations, citing this as a management decision. The findings related to this question are presented in Table 5.1.

Table 5.1: Motivation for adoption of ICT governance framework

Respondent	Comment	Related theory	Implications for the organisation
Respondent 1	*"To put in place system of ICT governance that has functional committees and encompassing top management."*	Pressures are the main motivations of organisations in adopting ICT governance. Three forms of pressure are coercive, mimetic, and normative (Krell et al 2016).	The department implemented CGICTPF in order to comply with the DPSA directive.
Respondent 4	*"They saw it fit to set up ICT governance"*.	Organisations are suspended in a web of values, norms, beliefs, and taken-for-granted assumptions (Barley & Tolbert 1997 as cited in Boubaker, Harguem & Nyrhinen, 2021).	The department's executive did buy-in to the idea of implementing ICT governance framework for compliance.
Respondent 5	*"Corporate integrity was the main motivator because the organization structure provides the means to harness knowledge and such corporate integrity will add value to the organization."*	ICT governance specifies the decision rights and accountability framework to encourage desirable behaviour in IT use (Weill & Ross 2004).	The framework will provide direction and accountability.

According to the literature from Krell et al (2016), pressures are the main motivations of organizations in adopting ICT governance. The author goes on to mention three forms of pressure as coercive, mimetic, and normative. According to Alalie et al (2018), coercive pressures mainly stem from the resource dependence perspective. It was therefore concluded that all three elements of the institutional theory model contributed to the decision to implement ICT governance.

5.4.3 Regulatory influences in adoption of ICT governance framework

For this question it was confirmed that regulatory structures and requirements influenced the decision to adopt ICT governance. Most of the respondents agreed that the DPSA and the Office of the Auditor General influenced the decision. The findings are presented in Table 5.2.

Table 5.2: Regulatory influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 7	*"Motivation came from external sources in the form of The DPSA and The Office of the Auditor General (AG)."*	Coercive pressures are exerted on organisations by other organisations upon which they are dependent (DiMaggio & Powell 1983).	Motivational factors such as economic benefits, regulation requirements, stakeholder obligations and ethical reasons need to be considered for influences on adoption of ICT governance (Khorasanizadeh et al 2016).
Respondent 3	*"When organization comply, it will realize benefits for implementing IC governance framework."*	A dominant actor may demand organisations dependent on him to deploy structures or programs that serve his interests (Teo et al 2003).	Restrictions placed by governments on technological advances are difficult to maintain and cannot be sustained in the long run (ITU 2018).
Respondent 6	*"We had an Exco that supported the adoption of the ICT governance framework from the department of public services (DPSA)."*	Coercive pressures are present through the legal environment of the organisation (DiMaggio & Powell 1983).	ITC infrastructure requires high levels of fixed investment. Once it has been deployed, variable costs and marginal costs are relatively low (ITU 2018).

5.4.4 Regulatory structures and requirements influences

The findings confirmed that the structures and requirements contributed to the organisation's decision to implement ICT governance. These are presented in Table 5.3.

Table 5.3: Regulatory structures and requirements influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 3	*"The structure is there just for compliance purpose and even the setup of it is very doggy. The relevant parties are not forming part of the committees."*	Institutions are social structures that have attained a high degree of resilience (Scott 1995).	Enforcing information security standards and policies for protecting information in organisations is a proactive approach that is widely used (Lee, Lee & Kim 2016).
Respondent 10	*"The decision was highly influenced by DPSA."*	Resource-dependence theory (Pfeffer and Salancik 1978 as cited in Ben Boubaker et al 2021).	The department may not fully embrace the importance of ICT governance.
Respondent 5	*"The decision was influenced by a number of factors such as the DPSA and Office of the AG and hence the need to adopt ICT governance."*	Key suppliers, resource and product consumers, regulatory agencies, and other organisations that produce similar services or products can be considered part of the organisational field (DiMaggio & Powell 1983).	There is an accelerated adoption of the information security compliance approach in organisations across the world (Kim et al 2016).

5.4.5 ICT governance mechanisms implemented through regulatory influences

The responses were related to the coercive part of the institutional theory. These are presented in Table 5.4.

Table 5.4: ICT governance mechanisms implemented through regulatory influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 5	*"We have implemented a framework based on the ICT Governance framework which was published by DPSA."*	Strategic information system planning is aligning an enterprise's business strategy with an IT strategy to achieve key business goals (Weill & Ross 2004).	When developing and maintaining the ICT application, organisational procedures and rules are revised and developed accordingly (Kim & Kim 2020).
Respondent 7	*"ICT Policy, Processes and Procedures and IT plans."*	Strategic information system planning represents one of the essential activities of strategic management (Weill & Ross 2004).	Education and training programmes on the use of the new applications result in the ICT application and related services being ready for use (Kim & Kim 2020).
Respondent 2	*"We have been successful in achieving the Business - IT alignment which is now in place and running."*	Business/IT alignment is one of the fundamental goals of ITG (Van Grembergen & De Haes 2008).	Business and IT alignment should improve service delivery.

5.4.6 Influence of society expectations

The study identified that social pressures do not have a significant impact on management commitments towards information security compliance. This is presented in Table 5.5 below.

Table 5.5: Influence of society expectations

Respondent	Comment	Related theory	Implications for the organisation
Respondent 4	*"The decision to implement ICT governance was not influenced by society."*	Strategic information system planning: Regular self-assessment and external verification of the ITG system should be an integral part of effective ITG (Pereira & Mira Da Silva 2012).	Information technology has been recognised as the potential engine for transforming how the government works.

Respondent	Comment	Related theory	Implications for the organisation
Respondent 9	*"It was not, to a large extent influenced by society."*	Compliance management: Business development and regulatory regulations are increasing, especially in the financial industry (Lunardi et al 2017).	The change was triggered by technological adaption more than expectations from society.
Respondent 10	*"Society influences did not play a very influential role in the decision to implement ICT governance."*	Project reporting and benefits management: Formal monitoring of IT business value improves knowledge and understanding of how IT can create business value (Pereira & Mira Da Silva 2012).	The influence was from DPSA and not society.

5.4.7 Normative influences on implementation of ICT governance mechanisms

Normative pressures come from the community expectation that organisations are compelled to honour a specific circumstance as responsible citizens. Such pressures are raised from the values and norms that are embedded in the organisation for information security. In this study the normative factors were identified in the form of society's expectation that the organisation needs to comply with regulations. Findings are presented in Table 5.6.

Table 5.6: Normative influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 5	*"All mechanism was influenced by normativity which was a regulation."*	Institutional theory: Normative pressures stem from professionalisation, where organisations impose their conditions and methods of work (DiMaggio & Powell 1983).	There was both internal and external pressures in implementation of ICT governance mechanism.
Respondent 7	*"The organization was likely to adjust its behaviours based on*	Institutional theory:	Lack of executive support in implementing effective ICT governance is viewed

Respondent	Comment	Related theory	Implications for the organisation
	beliefs about what is viewed as appropriate among members of their social networks."	Mimetic pressures appear in uncertain contexts, where firms tend to model themselves after similar legitimated or successful organisations (DiMaggio & Powell 1983).	as a main obstacle in its effective implementation (Borja, Kim, Yoon & Hwang 2018).
Respondent 8	*"Normative influences did not affect the IT government mechanisms at all."*	Adopting a technology is influenced by normative pressures caused by partners from the organisation's professional environment (Teo et al 2003).	The IT industry did not influence the department towards implementing CGICTPF.
Respondent 9	*"It was inevitable that the organization should adopt techniques and methods that reflect the current standards of their social networks."*	Institutional theory (DiMaggio & Powell 1983).	ICT governance has a positive and significant influence on innovation product and process (Borja et al 2018).

5.4.8 Benchmarking the ICT governance framework adoption

Based on the findings, some respondents confirmed that the only benchmark used in the project was taken only from the guidelines from DPSA, and no benchmark was conducted (Table 5.7).

Table 5.7: Benchmarking

Respondent	Comment	Related theory	Implications for the organisation
Respondent 5	*"No benchmark was conducted."*	IT performance measurement: IT performance measurement (e.g. IT balanced scorecard) is essential in the domains of business contribution, user orientation, operational excellence and future	Socially desirable needs put organisations and their management in the spotlight, making them conscious of the need to maintain the trust of stakeholders and preserve their reputation.

Respondent	Comment	Related theory	Implications for the organisation
		orientation (Van Grembergen, & De Haes 2008).	
Respondent 7	*"The only benchmark used in the project was taken only from the guidelines from DPSA."*	ITG assurance and self-assessment (Pereira & Mira Da Silva 2012).	Lack of skills and experience.
Respondent 6	*"Benchmarking was done with a private sector department as most government organizations were busy implementing at the same time as the Department of Transport."*	IT performance measurement: (Van Grembergen & De Haes 2008).	COBIT 5 provides an option for auditors and companies to integrate technology and implement controls to meet specific business objectives (Ghildyal & Chang 2017).

5.5 Challenges in implementing CGICTPF

This section presents findings on identifying the issues and challenges faced in implementing ICT governance. ICT is changing and driving the growth of the global economy. It enables enterprises to be more productive, thereby encouraging growth (ISACA 2009 as cited in Usman 2019). Moreover, enterprises achieve full value of ICT investment when they align IT with business strategies, performance of IT is monitored, and IT-related risks are managed and mitigated (Usman 2019). Krell et al (2016), however, cautioned that mere adoption of ICT governance does not appear to be sufficient to diminish the detrimental effects of using ICT. The issues and challenges of ICT adoption are discussed in this section. The section discusses these findings as culture-cognitive influences, and the role of the ICT strategy committee. The section also includes positive and negative factors in implementing ICT governance as well as the impact of external influences.

5.5.1 Culture-cognitive influences

Efficiency depends not only on technology but also on the motivation and skills of the workforce, and on the organisational and managerial supervision. Management supervision, on the other hand, is being based on the institutional structures and routines and cultural norms inherited from the past. The findings are presented in Table 5.8

Table 5.8: Culture-cognitive influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 3	*"Knowledge creation has been a result of the implementation of ICT governance through culture-cognitive influences."*	IT competencies at the top management level: Members of the top management must have appropriate IT competencies (Weill & Ross 2004).	King III & IV Reports are important and needed to harmonise the South African corporate governance and the international trends (Mutize & Tefera 2020).
Respondent 3	*"Culture-cognitive influences have been instrumental in bringing knowledge creation in this organization."*	IT competencies at the top management level (Weill & Ross 2004).	Culture-cognitive influences have resulted in processes changing and raising awareness.
Respondent 3	*"Change management process; business process awareness; and risk management committee – were some mechanisms implemented as a result of culture –cognitive influences."*	Top management must have knowledge and experience in ITG, which enables them to direct and manage IT on the strategic level (Van Grembergen & De Haes 2012).	Formation of the risk management committee is one of some positive benefits from the adoption of ICT governance.

5.5.2 The role of ICT strategy committee

The findings revealed that the role of the IT strategy committee is fulfilled by the Exco who is responsible for the achievement of the organisation's five-year strategy. These are presented in Table 5.9.

Table 5.9: The role of IT strategy committee

Respondent	Comment	Related theory	Implications for the organisation
Respondent 4	*Role of the IT strategy committee is fulfilled by the Exco*	Information Technology Strategy Theory: Focus on how the information technology development and services are organised for the different facets of the organisation and policies	ICT is one of the key elements that contribute to making the work environment stable and improving the quality of services and productivity.

Respondent	Comment	Related theory	Implications for the organisation
		such as using the technical devices and security (Khawan 2019).	
Respondent 6	*The role of the IT Strategy committee is fulfilled by the Exco who is responsible for the achievement of the organisation's five-year strategy*	Information Technology Strategy Theory (Khawan 2019).	Information technology is the driver for transforming the organisation's devices security
Respondent 7	"*The role of the IT strategy committee currently is restricted to Exco. It does not filter below hence the harnessing of organization wide knowledge about IT strategy is not possible under these conditions*."	The ICT is one of the main elements that contribute to making the organisation stable internally and externally (Khawan 2019).	Exco does not prioritise ICT matters and majority of the time spent in Exco is dedicated to finance and service delivery. ICT matters are operational matters and not strategical.

5.5.3 Positive factors in implementing ICT governance mechanism

There is a relation between ethical leadership and corporate governance because each needs the other to be relevant. Due to the demand and complex corporate environment, organisations need ethical leadership to survive and prosper (Institute of Directors in South Africa [IoDSA] 2016). According to Alalie et al (2018), coercive pressures mainly stem from the resource dependence perspective. Normative pressures are described as the pressures that stem from norms which are specified by institutions such as professional or industry associations (Krell et al 2016). The findings are discussed in Table 5.10. (Positive factors in implementing ICT governance mechanism) and Table 5.11(Negative factors in implementing ICT governance mechanism).

Table 5.10: Positive factors in implementing ICT governance mechanism

Respondent	Comment	Related theory	Implications for the organisation
Respondent 10	*"The phase approach proposed by the DPSA helped in ensuring that a project plan is developed for the implementation of the ICT governance framework"*	Coercive/regulatory factors.	It was a combination of all these factors collectively that contributed to the success of the project.
Respondent 6	*"Positive factors came from Involvement by IT and Finance Senior management."*	Value creation factors at organisational level. ITG assurance and self-assessment (De Haes & Van Grembergen 2009)	Regular self-assessment and external verification of the ITG system should be an integral part of effective ITG.
Respondent 4	*"The success is due to top management involvement and support and the understanding of ICT governance by the CIO also assisted."*	Cognitive/organisation learning factors.	ITG structures enable IT to transparently provide added business value, clearly defined competencies and responsibilities while managing risks and considering business needs (Dahlberg & Lahdelma 2007).

5.5.4 Negative factors in implementing ICT governance mechanism

Table 5.11: Negative factors in implementing ICT governance mechanism

Respondent	Comment	Related theory	Implications for the organisation
Respondent 1	"*I lay the blame for negativity in project implementation at the ICT operation committees in line with the assumption that the rationality of individuals is limited*."	This theory states that the rationality of individuals is limited, and an organisation consists of a coalition of actors with specific objectives which is a source of differences and potential conflicts.	No accountability and performance of most public enterprises makes it difficult to provide oversight, ensure accountability and responsibility on institutions whose major part of performance

Respondent	Comment	Related theory	Implications for the organisation
			monitoring system is non-functional.
Respondent 3	"*The implementation process Lacked Leadership commitment; poor organizational structures; inadequate role and responsibilities; no clear business processes; and a general lack of segregation of duties. These are the coalition factors that contributed negatively during project implementation.*"	Lack of internal control policy to safeguard assets, promote accountability, increase efficiency, and stop fraudulent behaviour has been one of the major corporate governance challenges in SOEs (OECD 2018).	Failure to produce financial statements, lack of proper accounting standards and weak auditing practices, have led to low levels of financial disclosure. (OECD 2018).

The next section discusses the findings related to the impact of external influences.

5.5.5 The impact of external influences

Table 5.12: The impact of external influences

Respondent	Comment	Related theory	Implications for the organisation
Respondent 1	*"There was no external influence that impacted on project implementation."*	Minimal external influences	This implies that the change was brought about because of strategic information system planning. This is aligning an enterprise's business strategy with an IT strategy to achieve key business goals.
Respondent 3	*"The department of public service and the office of the auditor general were external influences that impacted on the project.*"	Business/IT alignment	Business/IT alignment is one of the fundamental goals of ITG. It can be evaluated through one of the alignment models, e.g. the Strategic Alignment Model (Weill & Ross 2004).
Respondent 9	*"There is an effect from the need to outsource work from external service providers."*	Normative pressure	In the public sector, contracts can be understood as an economic relationship between actors that

Respondent	Comment	Related theory	Implications for the organisation
			align the public benefit with the institutional rules and the conditions of the service market (Brown, Potoski & Van Slyke 2006).

5.5.6 Increased use of IT to improve business processes

Table 5.13: Increased use of IT to improve business processes

Respondent	Comment	Related theory	Implications for the organisation
Respondent 6	"*Some of the processes which were manually executed have been now automated."*	Digital transformation (Weill & Ross 2004).	Digital management includes all those corporate mechanisms that enable the coordinated operation and sharing of resources throughout the enterprise (Weill & Ross 2004). Digital transformation requires a balanced top-down and bottom-up approach.
Respondent 7	*"The outcome of implementing ICT governance is to achieve an aligned IT and business strategy."*	Business/IT alignment (Weill & Ross 2004).	The CGICTPF was developed using the COBIT processes (management objectives) and prescribes a minimum of 12 processes that must be implemented by public sector organisations. This helps with the process of improving business processes. COBIT has proven its reliability and has become a worldwide leader in ICT governance, control security and assurance (Andry & Setiawan 2019).
Respondent 9	*"Having defined processes and placing structures in place, the alignment of IT with Business strategy has been achieved."*	Business/IT alignment. (Weill & Ross 2004).	Institutional theory looks at structures and processes which become guidelines to how people within the organisation may behave. Behaviour decision theory is a human decision-making theory.

5.6 Recommendations on CGICTPF implementation to improve IT performance

This section discusses the findings from interviews relating to recommendations on ways to improve ITC adoption in state-owned enterprises (Table 5.14).

Table 5.14: CGICTPF implementation to improve IT performance

Process	Findings	Recommendations
5.6.1. Process to be implemented to achieve sufficient ICT governance	*"There is need to develop an organisational structure that has roles for ICT governance."* - Respondent 1 *"This could be achieved through teaching other role players to appreciate the role of IT and how it can improve the efficiency of the department."* – Respondent 6 *"Consultation and Awareness were essential elements in driving the push for new practices to be implemented."* – Respondent 8	There is need for improvement in the training and awareness programmes for the benefits of the project to be realised.
5.6.2 ICT governance enabled the utilisation of IT in a cost-effective manner	*"IT purchases are now centralized aiding the department to get good deals. Even though the budget it's limited we have seen improvements when requesting IT budget in a more uniformed manner."* – Respondent 6 *"IT is always going over budget; the projects are always not performed optimally.*" – Respondent 3	In light of the digital transformation and constant evolution of ICT, public organisations are seeking to promote the engagement of citizens in their organisational processes (Datta 2020).
5.6.3 ICT governance enabled the effective use of IT for growth	*"Processes are uniform and structured. IT skills are centralized and deployed where they are most needed."* – Respondent 6 *"There is no leadership will, to enable the anticipated growth."* – Respondent 3	Normative pressure occurs when an organisation voluntarily, but unconsciously imitates the attitude, behaviours, and practices of other organisations. This does not appear to be taking place and only the coercive pressures have motivated for the effective use of IT for growth.
5.6.4 The impact of ICT governance	*"Setting the advisory team from legal expert and conducting awareness concerning regulation in the IT space."* - Respondent 3	Legitimacy is legally sanctioned and indicated by the presence of rules, laws

Process	Findings	Recommendations
	"The department is now in compliance with the directive from DPSA and can now be more effective in fraud investigations using the data." – Respondent 9	and sanctions (DiMaggio & Powell 1983).

5.7 How the IT function can improve support for CGICTPF implementation

This section deals with recommendations on how the IT function can improve support for CGICTPF implementation. This is presented in the framework in Table 5.15.

Table 5.15: IT support for CGICTPF implementation

Functional roles	Findings	Recommendation
5.7.1 The role of the IT steering committee within the Department of Transport	*"The role of the steering committee is currently filled through a representation from all business units."* Respondent 1 *"From a behavioural theory point of view, there is a committee, but they can't make decisions on transversal systems"* Respondent 10	The desired situation would be when the decision-making process is interactive and emerges from the possibility of organisational learning.
5.7.2 IT performance measures within the Department of Transport	*The organizational structure is not clearly defined to accommodate ICT.* - Respondent 1 *"Everything in IT is outsourced hence there is no way to measure the performance of the IT function"* - Respondent 2	ICT governance framework provides guidance on how the organisation can implement, manage, and monitor IT within the organisation. It should be used to measure the efficiencies and effectiveness of IT resources and processes.
5.7.3 IT function communicates its plans and performance with the rest of the organisation	*"They keep their plan and strategy to them and no workshop to explain their strategy by knowing how they fit the organization."* Respondent 1 *"The planning is not from top to down, No consultation about the plans"* Respondent 3 *"Measurement is done through the annual plans."* - Respondent 9	The implementation of ICT governance must address the issue on how IT decisions are made and who should be making IT decisions and how decisions should be made (Weill & Ross 2004).
5.7.4 ICT governance enables the IT function to	*"Some of the business units now viewed IT as business partner and engages with IT when planning. This*	Management needs to establish that the infrastructure underpinning current and

Functional roles	Findings	Recommendation
influence business's flexibility	*was not the case before."* Respondent 6 *"As a result of ICT governance, Business interacts with IT more."* Respondent 9	future IT (technology, people, and processes) can support expected business needs.

5.8 Results Analysis Outcome

From the results of the interviews conducted it was clear that the main motivation of implementing ICT governance in a form of the CGICTPF was to comply with the DPSA directive. The department's senior management's buy-in was based on the pressures. In the literature, we understood that executive buy in was one of the two pre requisite of a successful implementation of ICT governance (Selig, 2016).

There has been improvement in the ICT control environment resulting in better ICT audits results. Internally business units' executives form part of the ICT Steering committee and they are now able to track and provide oversight over ICT projects that have impact on their day to day business operations.

The CGICTPF is aligned to the COBIT 5 and the COSO frameworks. COBIT 5 and COSO frameworks are widely used. However, CGICTPF only had 12 processes to be implemented in Phase 1. The Department must still implement other processes applicable to the department in order to have an effective and a comprehensive framework.

5.9 Conclusion

From the findings it can be concluded that there were coercive pressures from the AG's office, and from the DPSA as well as society's expectations that compelled and stimulated the setting up of ICT governance framework within the organisation. Additionally, most respondents stated that the ICT governance was only done to comply with the regulations. This also confirms the theory that coercive pressures may come from regulatory bodies which may influence a practice to become law and Wijethilake, C., Munir, R., & Appuhami, R. (2017).

Furthermore, the responses from participants suggests that the buy in from management was driven by the need to comply with a regulation rather than to enforce good governance and risk management.

The next chapter presents the summary of the study and conclusions that are drawn thereon.

CHAPTER SIX
CONCLUSIONS

6.1 Introduction

The previous chapter dealt with the findings from the primary research related to the study. This chapter summarises the findings from the primary and secondary research and presents a framework for recommendations on implementing ICT governance in a public enterprise. The chapter also suggests areas for future studies.

6.2 Objectives restated

The primary objective of the study was to examine the role of institutional influences in the implementation and adoption of the CGICTPF. The following were the secondary objectives:

- To evaluate the role of institutional influences in the adoption of CGICTPF in the South African public sector.
- To identify the factors and challenges faced in implementing CGICTPF in South African public sector organisations.
- To offer recommendations on how CGICTPF implementation can be utilised to improve IT performance in South African SOEs.

In pursuit of these objectives, a literature review was conducted which is summarised in the next section.

6.3 Summary of findings from literature

This section presents the findings from literature related to tools of implementing ICT governance such as COBIT 5 and COSCO.

6.3.1 COBIT 5

COBIT 5 is a framework developed and published by ISACA in 2012 (Maseko & Marx 2016). It provides guidance for organisations to achieve their goals related to ICT governance and IT management. In addition, the value of COBIT is hard to perceive because there are no proven statistics

or studies confirming its claimed advantages. In contrast, other programs such as ITIL and ISO27000 provide more significant values (Ghildyal & Chang 2017).

6.3.2 COSO

Ettish et al (2017) developed an integrated framework that aligns the corporate strategic and operational controls and processes of ERM, COSO, and COBIT 5 with ICT governance principles. However, relationships are a crucial mechanism for ITG to achieve and maintain alignment between IT and the business, even when appropriate structures and processes are in place (Van Grembergen & De Haes 2008).

6.3.3 Challenges in implementing ICT governance

According to Selig (2016), there are two pre-requisites for the implementation of an effective ICT governance framework which are the buy-in from the board as the board must understand the benefits of implementing ICT governance, and secondly, management and ICT governance practitioners within the organisation must commit to the ICT governance framework.

6.3.3.1 Hybridity

According to Johanson and Vakkuri (2017:4), hybridity is described as "ambiguous types of social organizing" with several sources of hybridity such as mixed ownership, incongruent goals, competing institutional logics, multiplicity of funding arrangements, and mixed (public and private) forms of financial and social control. Moreover, Christensen (2017) contrasts "new public management logic" (characterised by professionalisation, commercial re-orientation, and de-politicisation) with the traditional governance of SOEs.

6.3.3.2 State officials' intervention

Okhmatovskiy et al (2021) posited that SOEs are used by the state as tools for achieving political goals, and when SOE autonomy cannot be effectively protected by institutional constraints isolating them from political influences, it may be expected that state influence exercised through informal channels would play an important role in the governance of SOEs.

The problem with implementing an ICT governance framework (Giordano 2014) is right-sizing an information governance process – organisations use a framework suited for a complex IT environment without considering the size, data use and security suited for their environments. Judge and Zeithaml

(1992) concluded that the size of the organisation should determine the implementation of the ICT governance framework.

6.3.4 Theories of governance

This section examines the resource-based theory, institutional theory, GIT adoption and agency theory to explain theories of governance.

6.3.4.1 Resource-based theory

This theory pronounces that information technology, alongside other means, is an essential tool for achieving and supporting competitive advantage through cutting costs, improving quality and boosting productivity (Sulaimani 2012 as cited in Alalie et al 2018).

6.3.4.2 Institutional theory

The institutional perspective explains drives as the independent variables in the research model that would increase organizational behaviour, which in turn may influence the success of that behaviour (Krell et al 2016).

The predicted model is depicted conceptually in Figure 6.1.

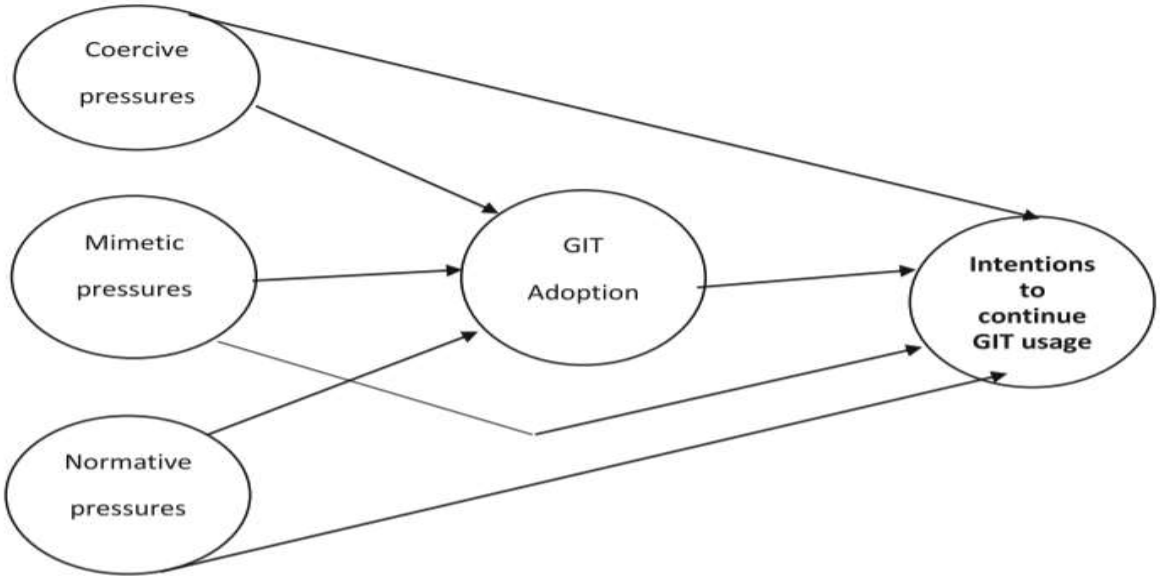

Figure 6.1: Institutional pressures research model

Source: Alalie et al (2018)

6.3.4.3 GIT adoption

ICT governance adoption may be perceived as a realistic way for organisations to tackle the current problems facing SOEs. An important competitive advantage can be created by making the company distinguish itself from other SOEs by means of ICT governance. Nevertheless, there are motivational factors such as economic benefits, regulation requirements, stakeholder obligations and ethical reasons which all need to be considered when exploring and analysing factors that may influence the adoption of ICT governance (Khorasanizadeh et al 2016).

6.3.4.4 Agency theory

Agency theory is a contract under which shareholders delegate directors to do some services including corporate decision-making on their behalf (Faizabad et al 2017). The problem with the agency theory arises from the separation of control from ownership.

The outcome of implementing ICT governance is to achieve an aligned IT and business strategy, meet business objectives and have defined processes and structures. Below is the conceptual framework of institutional theory and its features.

Table 6.1: Framework of institutional theory and its features

Theory element	Regulative	Normative	Cognitive
Basis of compliance	Expedience	Social obligation	Shared understanding
Mechanism	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs
Basis of legitimacy	Legally sanctioned	Morally governed	Recognisable, culturally supported.

The next section presents a summary of the primary research findings.

6.4 Summary of findings from Primary Research

Table 6.2 below indicates the summary of the findings from primary research.

Table 6.2: Summary of findings from primary research

Respondent	Comment	Related theory	Implications for the organisation
Regulatory structures and requirements influence	*"The structure is there just for compliance purpose and even the setup of it is very doggy. The relevant parties are not forming part of the committees."* – Respondent 1	Institutions are social structures that have attained a high degree of resilience (Scott 1995).	Enforcing information security standards and policies for protecting information in organisations is a proactive approach that is widely used (Lee et al 2016).
Were the ICT governance mechanisms implemented through regulatory influences	*"We have implemented a framework based on the ICT Governance framework which was published by DPSA."* – Respondent 5	Strategic information system planning is aligning an enterprise's business strategy with an IT strategy to achieve key business goals (Weill & Ross 2004).	When developing and maintaining the ICT application, organisational procedures and rules are revised and developed accordingly (Kim & Kim 2020).
Normative influences	*"All mechanism was influenced by normativity which was a regulation."* – Respondent 6	Institutional theory: Normative pressures stem from professionalisation, where organisations impose their conditions and methods of work (DiMaggio & Powell 1983).	There was both internal and external pressures in implementation of an ICT governance mechanism.
Benchmarking	*"No benchmark was conducted."* – *respondent 5*	IT performance measurement: IT performance measurement (e.g. IT balanced scorecard) is essential in the domains of business contribution, user orientation, operational excellence and future orientation (Van Grembergen & De Haes 2008).	Socially desirable needs put organisations and their management in the spotlight, making them conscious of the need to maintain the trust of stakeholders and preserve their reputation.

6.4.1 Recommendations for CGICTPF implementation

Management must support the ICT department in the implementation of the CGICTPF by provide sufficient budget, providing overall oversight over the project to ensure that it is successfully implemented, providing training, ensure that there is sufficient resources include human capacity and infrastructure and by leading by example when it comes to change management.

ICT department should assess the entire ICT control environment and implement ICT controls that are applicable for the size of the department and processing that are in place. The ICT department should consult and gather inputs from all its stakeholders.

Management's buy in is essential a successful implementation of CGICTPF. Management should sponsor and provide oversight over the project to implement CGICTPF, the Head of ICT should report at the right level and should have the right skills and qualification to management the ICT department.

Coercive pressures from other institution may not ensure continuity in good governance practice and ICT risk management. Therefore, undermining the initiatives that were taken to implement CGICTPF. CGICTPF as a document does not mitigate risks.

The recommendations on ICT support for ICT governance are provided in Table 6.3.

Table 6.3: IT support for CGICTPF implementation

Functional roles	Findings	Recommendation
6.4.1.1 The role of the IT steering committee within the Department of Transport	*"The role of the steering committee is currently filled through a representation from all business units."* Respondent 1	The desired situation would be when the decision-making process is interactive and emerges from the possibility of organisational learning.
6.4.1.2 IT performance measures within the Department of Transport	*"The organizational structure is not clearly defined to accommodate ICT."* Respondent 1	ICT governance framework should be used to measure the efficiencies and effectiveness of IT resources and processes.
6.4.1.3 IT function communicates its plans and performance with the rest of the organisation	*"They keep their plan and strategy to them and no workshop to explain their strategy by knowing how they fit the organization."* Respondent 5	The implementation of ICT governance must address the issue on how IT decision are made and who should be making IT decisions and how decisions

		should be made (Weill & Ross 2004).
6.4.1.4 ICT governance enables the IT function to influence business's flexibility	*"Some of the business units now viewed IT as business partner and engages with IT when planning. This was not the case before."* Respondent 6	Management needs to establish that the infrastructure underpinning current and future IT (technology, people, and processes) can support expected business needs.

Table 6.4 presents the recommendations on CGICTPF implementation to improve IT performance.

Table 6.4: CGICTPF implementation to improve IT performance

Process	Findings	Recommendations
Process to be implemented to achieve sufficient ICT governance	*"Consultation and Awareness were essential elements in driving the push for new practices to be implemented."* – Respondent 8	There is need for improvement in the training and awareness programmes for the benefits of the project to be realised.
ICT governance enabled the utilisation of IT in a cost-effective manner	*"IT purchases are now centralized aiding the department to get good deals. Even though the budget it's limited we have seen improvements when requesting IT budget in a more uniformed manner."* – Respondent 6	In light of the digital transformation and constant evolution of ICT, public organisations are seeking to promote the engagement of citizens in their organisational processes (Datta 2020).
ICT governance enabled the effective use of IT for growth	*"There is no leadership will, to enable the anticipated growth."* – Respondent 3	Normative pressure occurs when an organization voluntarily but unconsciously imitates the attitude, behaviours, and practices of other organisations. This does not appear to be taking place and only the coercive pressures have motivated for the effective use of IT for growth.
The impact of ICT governance	*"Setting the advisory team from legal expert and conducting awareness concerning regulation in the IT space."* - Respondent 3	Legitimacy is legally sanctioned and indicated by the presence of rules, laws and sanctions (DiMaggio & Powell 1983).

6.5 Contribution of the study

6.5.1 Theoretical contribution

This study provides research that is specific to the implementation of the CGICTPF in the public sector. This research together with the supporting literature can be used by other public sector institutions who want to implement CGICTPF.

6.5.2 Methodological contribution

The study does prove that external forces does influence behaviour and attitude. The results of the study shows that the Department was influenced to adopt and implement CGICTPF.

6.5.3 Practice contribution

Through this study it was evident that the results or outcomes of the Implementing ICT governance were aligned and supported by the available literature even though the literature was not specific to CGICTPF. The key requirements for successful implementation were well documented and could be matched to the implementation of the CGICTPF. Furthermore, in practice external influences may not be sufficient to ensure continuity if there is no monitoring mechanism. However, there is a unique challenge in public sector with regards to tracking, monitoring and applying improvements due to budget constraints and personnel skills.

6.6 Findings of the study

From the analyses of the data in this study, it was noted that the implementation of the CGICTPF was as a results of coercive pressures and the buy in from management was for compliance with legislation. While good governance and good ICT risk management practice was achieved, it was not the main driver or intended benefits. (Aang KD et al 2022)

Institutional influences played a role in the department's decision to implement CGICTPF. Management should implement ICT balance scorecard to measure the success and improvement of the ICT control environment.

6.7 Areas for future studies

Future research may require a contingency approach to ICT governance through recognising and incorporating contingency theory through ITG mechanisms. Contingency factors, user needs and business objectives, and significantly more appropriate and effective ITG models can be developed and implemented in place of the current dominant models. Future research could widen the number

of individuals interviewed. Also, different roles in the enterprise may reflect different perceptions and insights regarding cultural differences.

6.8 Conclusion

The objectives of the study were achieved. To evaluate the role of institutional influences and pressures did play a significant role in getting senior management “buy-in” to adopt and implement the CGICTPF in the Department of Transport. This study identified the challenges faced by the department during the implementation of CGICTPF. The challenges were in line with literature.

Furthermore, this study can be used by other department as a lesson learnt from other sources when implementing CGICTPF. Lastly, the implementation of CGICTPF did improve IT performance at the Department of Transport.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

Interview schedule

AN INSTITUTIONAL PERSPECTIVE OF ICT GOVERNANCE IMPLEMENTATION: A CASE STUDY OF THE DEPARTMENT OF TRANSPORT

Dear Participant

Thank you for your willingness to participate in this research.

The interviews form part of research currently undertaken by the University of South Africa (UNISA).

The purpose of the study is to evaluate and analyse the adoption, implementation or use of an IS in an organization to support strategy, management or business intelligence. The research has been cleared with the Ethics Committee in CSET at UNISA.

Your opinion regarding this topic is very valuable to us. Note that these are open ended questions and you are free to provide responses with explanations for all the answers and kindly provide your perspectives in an elaborate way. Please be assured that your privacy and anonymity will be respected and that the information you provide will be treated as highly confidential.

Please take note that the interview is voluntary, and you can withdraw at any time, should you so wish, with no consequences. Information collected from participants will be used exclusively for research purposes (entered as anonymous data).

To ensure your privacy, the interview is anonymous. Please fill in the participation consent form and submit it separately. By handing in the consent form separately from your interview, your anonymity is guaranteed.

For more information regarding this project and research topic, please feel free to contact me at any time.

Kind regards

Euphodia Mathase
School of Computing, University of South Africa.

Questionnaire

Section A: Demographic profiles:

Q1 What is your current role in the organisation?

ICT Specialist	Executive Manager	Functional Manager	Other (specify)

Q2 How many years have you been employed at the organisation?

Under 5 years	6 – 10 years	11 – 20 years	Over 20 years

Q3 What was your role during the ICT governance implementation project?

Decision making role	Implementation role	Coordinating role	Other (specify)

Q4 How does your current role interact with ICT governance within the organisation?

As an ICT Specialist	As an Executive Manager	As a Functional Manager	Other (specify)

For the remaining sections please provide your answers in an elaborate manner, explaining the reasons and justifying your answers.

Section B To identify the role institutional influences play in the adoption of ICT governance (through ICT governance mechanisms) in South African public sector institutions.

Q5 What would you say was the overall motivation for your organisation to adopt ICT governance? Explain.

_____

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_____

Q6 What regulatory structures and requirements, in your view, influenced the decision to adopt ICT governance? Explain.

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Q7 To what extent did these structures and requirements influence the organization's decision? Elaborate.

_____

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Q8 What ICT governance mechanisms have been implemented as a result of regulatory influences?

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Q9 How has the mandate and expectations from society, in your view, influenced your organization's decision to implement an ICT governance framework?
Explain.

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Q10 What ICT governance mechanisms have been implemented as a result of normative influences? Justify your answer.

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Q11 Was there any benchmarking with other organisations prior to and during the ICT governance framework adoption?

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_____
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Q12 What ICT governance mechanisms have been implemented as a result of culture-cognitive influences? Provide reasons for your answer.

_____
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Section C To identify the issue and challenges manifesting with regards to ICT governance mechanisms in South African public sector institutions.

Q13 How do you see the role of the IT strategy committee currently being fulfilled within your organisation? Explain.

_____

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Q14 What factors do you think played a positive role in the implementation of this ICT governance mechanism? Rationalize your answer.

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Q15 What factors would you say have played a negative role in the implementation of this ICT governance mechanism?

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Q16 What still needs to be done on the implementation of this ICT governance mechanism? Justify your answer.

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Q17 What, if any, has been the impact of external influences on the implementation of this ICT governance mechanism? Validate your answer.

Q18 How do you see the role of the IT steering committee currently being fulfilled within your organisation? Explain your answer.

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Q19 How is the performance of the IT function currently being measured within your organisation?

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Q20 How does the IT function communicate its plans and performance with the rest of the organisation? Explain.

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Section D To describe how ICT governance implementation results in improved IT performance in South African public sector institutions.

Q21 How has ICT governance enabled your organisation to utilize IT in a cost-effective manner?

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Q22 How has ICT governance enabled the effective use of IT for growth?

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Q23 How has your organisation increasingly utilized IT to improve certain business processes?

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Q24 How has ICT governance enabled your IT function to influence business flexibility?

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Q25 What has been the effect of ICT governance on your compliance with legal and regulatory requirements?

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APPENDIX B: ETHICAL CLEARANCE

UNISA

UNISA COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY'S (CSET) RESEARCH AND ETHICS COMMITTEE

17 December 2019

Ref #: 007/EM/2019/CSET_SOC
Name: Ms Euphodia Mathase
Student #: 41381955
Staff #:

Dear Ms Euphodia Mathase

Decision: Ethics Approval for 3 years (Humans involved)

Researchers: Ms Euphodia Mathase, 41381955@mylife.unisa.ac.za, +27 73 278 3839, 012 422 6705

Project Leader(s):
Dr Mampilo Magdeline Phahlane, phahlmm@unisa.ac.za, +27 11 670 9135
Prof Nixon Ochara, Murgan.da.ochara@univen.ac.za, +27 81 493 8478

Working Title of Research:

An Institutional Perspective of ICT Governance Implementation: A Case Study of the Department of Transport

Qualification: MSc in Computing

Thank you for the application for research ethics clearance by the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee for the above mentioned research. Ethics approval is granted for a period of three years, from 17 December 2019 to 17 December 2022.

1. The researcher will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee. An amended application could

be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

3. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
4. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
5. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
6. No field work activities may continue after the expiry date (17 December 2022). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 007/EM/2019/CSET_SOC should be clearly indicated on all forms of communication with the intended research participants, as well as with the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee.

Yours sincerely

Dr. B Chimbo
Chair: Ethics Sub-Committee SoC, College of Science, Engineering and Technology (CSET)

pp
Dr GH Katumba
Director: School of Computing, CSET

pp Prof B. Mamba
Executive Dean: CSET

Approved - decision template – updated Aug 2016

APPENDIX C: DEPARTMENTAL APPROVAL

transport

Department:
Transport
REPUBLIC OF SOUTH AFRICA

Dated: 15 August 2019

To whom it may concern

I hereby authorize the student to access ICT governance framework and related ICT policies and processes within the ICT division. The student will be given full access to participants and documentations as required.

Student name:	Euphodia Mathase
Student number:	41381955
Institution:	University of South Africa (UNISA)
Study Topic:	An institutional perspective of ICT governance implementation: A case study of the Department of Transport

Should you require more information, please contact Mr Bulelani Didiza (Chief Information Officer) on (012) 309 3770 or send an email on DidizaB@dot.gov.za

Yours Sincerely

Mr B Didiza

APPENDIX D: CONSENT TO PARTICIPANT

UNISA university of south africa

CONSENT TO PARTICIPATE IN THIS STUDY: INTERVIEWS

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and I am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the interview

I have received a signed copy of the informed consent agreement.

Participant Name & Surname..... (please print)

Participant Signature..... Date.....

Researcher's Name & Surname..... (please print)

Researcher's signature..... Date.....

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

APPENDIX E: PARTICIPATION INFORMATION SHEET

Ethics clearance reference number:
Research permission reference number (if applicable):

30 August 2019

Title: AN INSTITUTIONAL PERSPECTIVE OF ICT GOVERNANCE IMPLEMENTATION: A CASE STUDY OF THE DEPARTMENT OF TRANSPORT

Dear Prospective Participant

My name is Euphodia Mathase and I am doing research with Dr. Mampilo Phahlane a senior lecturer in the Department of Information Systems, School of Computing, College of Science, Engineering and Technology at the University of South Africa towards a master's degree. We are inviting you to participate in a study titled: Implementation of ICT governance framework in the national department of transport

WHAT IS THE PURPOSE OF THE STUDY?

The study is focused on how the CGICTPF was implemented at the national department of transport. The research is about what, how and why a Corporate Governance of ICT Policy Framework (CGICTPF) was adopted, implemented as the ICT governance framework of the department.

WHY AM I BEING INVITED TO PARTICIPATE?

You are invited to participate in the research as you have been involved in the implementation of the CGICTPF at the Department of Transport. The research will consist of 20 participants for interviews and analyses of the relevant documentation.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study determines how CGICTPF was implemented in the Department of Transport. The research is about what, how and why a CGICTPF was adopted, implemented. The study will use interview schedule as data collection techniques that will take 45 - 60 minutes to sit for the interview

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participation is voluntary and that there is no penalty or loss of benefit for non-participation and you are under no obligation to consent to participation. If you do decide to take part, you will be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

Potential benefits as a participant include providing information for the group, IS scholars and the general population that are interested in how CGICTPF was adopted/implemented and currently used in the National Department of Transport.

ARE THEIR ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

No negative consequences have been identified in the research. All participation will be anonymous.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to insist that your name not be recorded anywhere and that no one, apart from the researcher, will know about your involvement in this research. And no one will be able to connect you to the answers you give. Your answers will be given a code number, or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings. A report of the study may be submitted for publication, but participants will not be identifiable in such a report.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet on UNISA premises for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. Hard copies will be shredded, and/or electronic copies will be permanently deleted from the hard drive of the computer using a relevant software programme. The hard copies of data will be shredded and thrown away and electronic recording will be deleted.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

No.

HAS THE STUDY RECEIVED ETHICS APPROVAL?

This study has received written approval from the Research Ethics Review Committee of the School of Computing, Unisa. A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Euphodia Mathase on 073 278 3839 or email address 41381955@mylife.unisa.ac.za.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact Euphodia Mathase on 073 278 3839 or email address 41381955@mylife.unisa.ac.za.

Should you have concerns about the way in which the research has been conducted, you may contact Dr Mampilo Phahlane on (011) 670 9176 or phahlmm@unisa.ac.za. Contact the research ethics chairperson of the School of Computing's research ethics committee, Dr Bester Chimbo on (011) 670 9105 or Chimbb@unisa.ac.za, if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.

Signature: _____

APPENDIX F: LANGUAGE EDITING

JEANNE ENSLIN
FREELANCE LANGUAGE PRACTITIONER

Editing certificate

TO WHOM IT MAY CONCERN

Language editing

I, Jeanne Enslin, acknowledge that I did the language editing of **Euphodia Mathase's** thesis submitted in accordance with the requirements for the qualification of Master of Science in Computing at the University of South Africa.

The title of the thesis is:

AN INSTITUTIONAL PERSPECTIVE OF ICT GOVERNANCE IMPLEMENTATION: A CASE STUDY OF THE DEPARTMENT OF TRANSPORT

Feedback of all the language editing done has been provided to the student in writing and is evident in the version of the document in track changes and with comments. The quality of the final document, in terms of language, formatting and references, remains the student's responsibility.

Jeanne Enslin
Language editor
+27026961224

Technical editing

I, Ronèl Gallie, acknowledge that I did all aspects of technical editing and checked and corrected all in-text references and the reference list of **Euphodia Mathase's** thesis submitted in accordance with the requirements for the qualification of Master of Science in Computing at the University of South Africa. Detailed feedback has been provided.

Ronèl Gallie
Technical editor
+2784 7780 292

J H Enslin BA (US); STD (US); Hons Translation Studies (UNISA)

APPENDIX G: TURNITIN REPORT