Governance of information technology within South African Development Finance Institutions

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ABSTRACT

The governance of IT within the public sector continues to be one of the focus areas in ensuring that the government delivers on its mandate. Various efforts are being put in place to ensure that the controls around the governance of IT are adequate. From an information system audit conducted by the Auditor General for the financial years ending 2009 and 2010, various recommendations were made. The first recommendation was that an ICT governance framework be developed for the implementation of an IT strategy to address IT risks at a national level. Second, that a governance-wide policy framework and an implementation guideline be developed to address IT risks. Third, it was recommended that the roles and responsibilities be defined and implemented to ensure appropriate governance of ICT.

The objective of the study was to explore the state of IT governance within South African DFIs. This study deployed a qualitative method using purposive sampling and a semi-structured interview guide. The interviews were conducted face to face and some over teleconference with a total of 23 interviewees across 8 DFIs.

The findings suggest that the levels of IT governance maturity with DFIs are at acceptable levels, although some still require improvement. There is clear alignment of the IT strategy to the overall strategy of DFI and the management of IT risks is properly monitored. However, there is increased focus on demonstrating and delivering the value that IT adds to the organisations. In addition, the IT governance structures within DFIs are in place and their roles are clearly defined. However, challenges such as lack of buy-in by management and limited resources were experienced when implementing IT governance.

The study concludes that the governance of IT within South African DFIs is at a “Managed” level and requires improvement.

DECLARATION

I, Abbrey Rudzani Nemaangani, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

Abbrey Rudzani Nemaangani

Signed at ……

On the …….. day of …… 2014

DEDICATION

To my son Romeo, you are my life and my everything. Without your love and encouragement, I would not have had the strength to complete this journey. Thank you for believing in me and for bringing a smile in my face even when things are hard.

I love you now and forever. Your future is always on my mind.

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My heartfelt thanks go to my best friend, Stephen Letsoenya, for your continued support, to my Supervisor, Rabelani Dagada, for all your guidance and leadership. I will forever be grateful to all the professionals from the various DFIs and the Auditor-General of South Africa, who agreed to share their experiences and time to make my research report a reality.

Above all, I wish to acknowledge my mom for giving me life, for without her I wouldn't be where I am. To my sisters, this just goes to show that anything is possible, thanks for all your love. Lastly, to my father who is in heaven, I know if you were still alive, you would have been the proudest dad. I continue to represent you and all that you believed in. I am a great dad to my son, because of the dad you are to me.

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LIST OF ABBREVIATIONS

AI : Acquire and Implement
CEO : Chief Executive Officer
CIO : Chief Information Officer
COBIT : Control Objectives for Information and related Technology
COCO : Criteria of Control
CMM : Capability Maturity Model
CMMI : Capability Maturity Model Integration
CRO : Chief Risk Officer
DFI : Development Finance Institution

DPSA	: Department of Public Service and Administration
DS	: Deliver and Support
ERM	: Enterprise Risk Management
Exco	: Executive Committee
FISMA	: Federal Information Security Management Act
GICTF	: Governance of ICT Framework
GITO	: Government Information Technology Officer
GITOC	: Government Information Technology Officer's Council
IoDSA	: Institute of Directors in Southern Africa
ISACA	: Information Systems Audit and Control Association
ISO	: International Standards Organisation
IT Steerco	: Information Technology Steering Committee
IT / ICT	: Information Technology/
ICT	: Information and Communication Technology
ITGI	: Information Technology Governance Institute
ITIL	: Information Technology Infrastructure Library
ITSC	: Information Technology Strategy Committee
ME	: Monitor and Evaluation
MOF	: Microsoft Operations Framework
PMBOK	: Project Management Body Of Knowledge
PMO	: Project Management Office
PO	: Plan and Organize
RUP	: Rational Unified Process
SOAP	: Simple Object Access Protocol
SOX	: Sarbanes-Oxley
TQM	: Total Quality Management

1. CHAPTER 1: INTRODUCTION

1.0 Purpose of the study

Over the past few years there have been numerous large-scale corporate failures, such as Enron and WorldCom. These events have left corporate boards and management teams wondering what risks their organisations may face. The South African public sector, especially the Development Finance Institutions (DFIs), has not been exempt from the numerous corporate failures.

IT has become fundamental to sustain growth, innovation and transformation, reduce and retain costs, and support the on-going business operations of most organisations. IT has become a crucial part of business and huge organisations can no longer operate without it. For IT to operate efficiently and effectively, IT governance has to be in place.

The purpose of this study was to understand the extent to which South African DFIs have implemented IT governance, as prescribed in King Code of Governance Principles and the King Report on Governance (King III), which deal with the structures and processes associated with management, decision making and control in the organisation.

The concept of IT governance has existed for almost as long as computers have been in business, but widespread interest and concern is fairly new, resulting from recent business trends such as regulation, globalisation, business process reengineering, business continuance and transparency in corporate reporting (Weill & Ross, 2004a).

Absent from a growing body of knowledge within governance of IT, is a focus on DFIs. The research is aimed at benefiting DFIs and other public sector entities that are considering implementing an IT governance framework and might be questioning the potential benefits of such a programme. It further provides a South African perspective on the implementation of IT governance and provides an overview of the regulatory and guideline governance frameworks in existence. The ultimate goal of IT governance is achieving strategic alignment between the business and IT to ensure that funds spent on technology add value to the business (De Haes & Van Grembergen, 2004).

This study focuses on DFIs within South Africa. Furthermore, leading practice frameworks on IT governance and the King III principles are used for reference to leading practice (IoDSA, 2009).

1.1 Context of the study

A number of research initiatives have been conducted in the area of corporate governance and IT governance. Previous research conducted by Gomes (2007), Motloutsi (2009), Mahlamvu (2011) and Tobin (2011) focused on understanding the state of IT governance within South African private companies and State Owned Entities. However, there has generally been a limited focus on the public sector and the studies have largely been focused on the surveys completed by IT executive management with very limited or no response from business executive management (Mahlamvu, 2011). Given the emphasis in the King III code on the role of the Board and other senior executives with regard to IT governance according to IoDSA (2009), there is a need to conduct a study that attempts to gather insights from other business and IT executives involved with DFIs.

1.2 Problem statement

1.2.1 *Main problem*

The research project will seek to explore the state of IT governance within South African DFIs.

1.2.2 *Sub-problems*

The first sub-problem is to examine the IT governance practices applied within DFIs.

The second sub-problem is to assess the IT governance structure and explore the roles of different stakeholders to the extent that they impact on the IT governance within DFIs.

The third sub-problem is to understand the different levels of IT governance maturity within DFIs.

1.3 Significance of the study

Gumede, Govender, and Motshidi (2011) argued that for South Africa to achieve required growth rates that will assist in meeting its developmental challenges, its DFIs will have to make significant contributions in aiding these initiatives and addressing any development failures. A recommendation by Gumede et al. (2011) was that the country should clarify its governance environment and rationalise some DFIs. This includes reviewing the overarching policy and framework legislation as well as strengthening oversight and corporate governance. They further recommended that DFIs should be rationalised vertically and horizontally across national and provincial spheres, and if necessary, some provincial and municipal DFIs may have to be merged.

This study therefore contributes to untangling some of the issues in terms of IT governance of such DFIs, so that they are better placed to achieve their objectives. The study's findings and recommendations will assist internal auditors in their role of reviewing the implementation of IT governance frameworks and defining various roles that they can and cannot undertake, to ensure their role is not compromised. The boards of directors within DFIs will also benefit as a result of management implementing an integrated IT framework that is based on best practice.

1.4 Delimitations of the study

The research project is limited to DFIs in South Africa. The data collection tool of this research was based on a questionnaire that was used to guide the interviews. Interviews were conducted with members of management teams including chief audit executives, compliance officers and chief risk officers. The research was not conducted from a business perspective. DFIs outside of the Gauteng province were excluded from this study.

1.5 Definition of terms

COBIT 5 is the latest edition of ISACA's globally accepted framework, providing an end-to-end business view of the governance of enterprise IT that reflects the central role of information and technology in creating value for enterprises (ISACA, 2012).

Development finance institutions (DFIs) provide a wide range of financial services in developing countries, such as loans or guarantees to investors and entrepreneurs, equity participations in firms or investment funds and financing for public infrastructure project (Gibbon & Schulpen, 2002).

Information & Communication Technology (ICT/ IT) are the products, services and solutions that are deployed to store, retrieve, and transport or process information in the course of a business unit or end-user accomplishing a goal (Ward, 2006).

IT Governance is an integral part of enterprise governance and consists of the leadership organisational structures and procedures that ensure that the organisation's IT sustains and extends the organisation's strategies and objectives (ITGI, 2003).

1.6 Assumptions

The following assumptions were made for the success of this research report:

- The researcher used his existing networks within the DFIs through his current job role of Head: Internal Audit at one of the DFIs ensuring that there was access to the other DFIs.
- IT, business and audit executives were available and granted permission to code their responses.
- All respondents were open in their views and that they provided their individual perspectives.

2 CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter contains a literature review of the themes that are relevant to the study. The aim is to review the literature pertaining to governance of IT more broadly, and in particular, to which IT frameworks are implemented within South African DFI's. The section also highlights some of the research that has been done in this area.

2.1 Background discussion

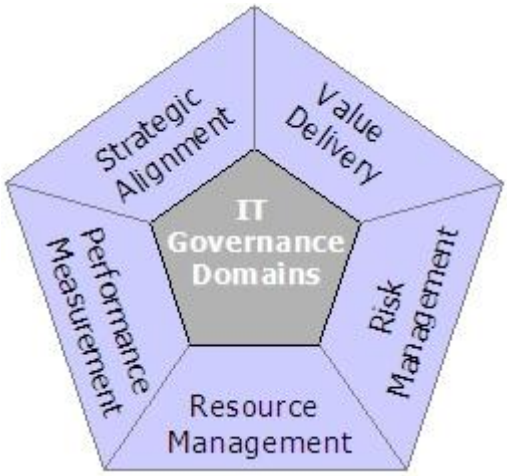
According to the IT Governance Institute ITGI (2003), IT Governance is a responsibility of the board of directors and executive management. For IT governance to be effective, there has to be effective corporate governance/ enterprise governance as IT governance is a subset of corporate governance. Governing IT trade off requires trade-offs between balancing the responsiveness of the organisational process owners to their customers and sharing and standardising the use of IT within the organisation (Motloutsi, 2009).

The purpose of DFIs is to ensure investments are made in areas where there are insufficient investments. Government relies on institutions such as DFIs to ensure that their efforts to improve the lives of citizens are met. (PublicSectorManager, 2011).

2.2 IT Governance practices

In terms of IT governance framework as defined by the ITGI (2011), there are five fundamental practices, which should be applied by organisations when implementing IT governance. Furthermore, according to the ITGI (2003), the five IT governance practices represent management-related responsibilities associated with governance. Figure 1 below depicts the integrated view of the IT governance practices:

Figure 1: IT governance domains (ITGI, 2003)



2.2.1 *Strategic Alignment*

Strategic alignment involves the achievement of set goals and strategic objectives by an organisation through activities by the governance structures and management controls. This can be achieved through developing a culture between business and IT through a partnership that supports the interest of the IT function and an understanding of the business of IT issues and potential opportunities. This collaborative approach enables the strategy development and a shared focus on IT investments, (ISACA, 2009).

The literature suggests that:

- IT strategy alignment has an impact on the effectiveness and performance of a business, as noted by (Musuka, 2006).
- There is a relationship between IT governance and IT strategy – Business strategy alignment, (De Haes & Van Grembergen, 2009).
- IT Governance components have an impact on IT strategy and business strategy alignment, (Sabegh & Motlagh, 2012)

A study performed by Musuka (2006), focused on the impact on IT effectiveness and business performance in the Zimbabwean environment. The primary purpose of the study was to establish to what extent, if any, do Zimbabwean companies proactively

align their IT strategies with business strategies, as a way of building and sustaining business competitive advantage. The research also sought to provide further insights into the business performance implications of the alignment between IT and business strategies. Secondly, it sought to determine if there are any linkages between strategic alignment, IT managerial resources and IT effectiveness.

The study by Musuka (2006) established that the alignment of IT strategy with the business strategy has an impact on IT's effectiveness, therefore this research shall consider strategic (IT – Business Strategy) alignment as one of the key success factors to the implementation of IT Governance. The study by Musuka (2006) also made use of questionnaires and the Likert scale; this research also makes use of the interview questionnaire.

De Haes and Van Grembergen (2009) carried out an exploratory study into IT governance implementations and its impact on business/IT alignment. The research questions were focused on how organisations were implementing IT governance and the nature of the relationship between IT governance and business/IT alignment. The research by De Haes and Van Grembergen (2009) made use of interviews, review of current literature and the Delphi research method. The research concluded that there is a clear relationship between IT Governance and business/IT alignment and that highly aligned organisations leverage more mature IT governance practices compared to poorly aligned organisations. The research by De Haes and Van Grembergen (2009) focused on the Belgian financial services industry and further research was recommended to test the conclusion and also to address contingencies such as industry, geography, size of the organisation and/or IT department, business strategy. The authors further confirmed that there is a relationship between IT governance and business/ IT alignment.

Sabegh and Motlagh (2012) carried out research on the role and relevance of IT governance and IT capability in Business - IT alignment in medium and large companies. The main purpose of the study was to determine the factors that affect business - IT alignment and also the extent of their effect. The researcher concluded that IT governance components have a positive impact on alignment of IT with business strategy. The study by Sabegh and Motlagh (2012) confirmed that IT Governance components have a positive impact on the alignment of IT with business strategy.

When considering the studies by (Musuka, 2006; De Haes and Van Grembergen, 2009; Sabegh and Motlagh, 2012), IT Strategy – Business strategy alignment has an impact on IT governance and vice versa. Therefore, this research considers strategic alignment (IT strategy – business strategy alignment) as a practice of IT governance.

2.2.2 *Value delivery*

Most organisations are expected to create new value, maintain existing value and increase value derived from existing IT investments, and eliminate IT initiatives and assets that are not adding value to the organisation. The basic principles of IT value are delivery of fit-for-purpose services and solutions on time and within budget, and generating the financial and non-financial benefits that were intended. The value that IT delivers should be aligned directly with the values on which the business is focussed and measured in a way that transparently shows the impacts and contribution of the IT-enabled investments in the value creation process of the enterprise (ISACA, 2009).

A study was carried out by Gaybba (2006) entitled 'Return of Investment in Information Technology in the South African Post Office'. The objective of the research was to determine the relationship between IT expenditure and the financial performance of a firm. The secondary objective of the study was to explore the perceived value of IT investment in a company. The research made use of semi-structured self-administering questionnaires and the Likert scale was used to quantify responses. Gaybba (2006) concluded that there a positive relationship existed between IT expenditure and the net profit of the firm. In order to obtain management commitment, there has to be value foreseen in any activity. Value delivery is key to obtaining top level management commitment and top level management commitment is one of the IT governance practice.

2.2.3 *Risk Management*

The management of risks is critical on the management of IT to ensure that strategic objectives of the business are met. Business managers continue to place reliance on

service providers to address the technical complexity of addressing risk monitoring information (ITGI, 2003).

IT risk is the business risk associated with the use, ownership, operation, involvement, influence and adoption of IT within an enterprise. IT risk consists of IT-related events that could potentially impact the business. While value delivery focuses on the creation of value, risk management focuses on the preservation of value (ISACA, 2009).

Gheorge and Boldeanu (2011) carried out a study entitled, 'Risk Management in IT Governance Framework'. The purpose of the paper was to approach the complex problem of risk management, under the premise that risk must be treated as a conscious and calculated assumption of reality. The study consisted of a review of current literature on IT governance. The research by Gheorge and Boldeanu (2011) concluded that the knowledge-based society cannot eliminate the traditional risk concept but must accept the necessity of its reconsideration and readjustment to a new informational dimension. The authors argued that management needs to be sensitive to risk, pursue the implementation and usage of reliable, performing systems, by elaborating action and security plans by ranking the objectives on operational levels which are adoptable to changes.

Koornhof (2009) carried out a study entitled 'A Framework for IT governance in small businesses.' The primary objective of the study was to develop a framework that small businesses can use to implement IT governance. The secondary objective of the paper was to identify characteristics that define IT governance in small businesses. The study consisted of a review of IT governance frameworks. The outcome of the research was a framework that small businesses can use to implement IT governance. The author highlights the need for an overall IT governance framework.

Studies performed by (Koorhof, 2009; Butler and Butler, 2010; Gheorge and Bodeanu, 2011) highlighted the need to implement frameworks to manage risks. This study considers the implementation of frameworks when implementing IT Governance. This study not only considers who should be responsible for what when implementing IT governance but considers the usage of frameworks without getting into finer detail in

terms of which framework should be used. The study considers how the usage of framework will have an impact on the successful implementation of IT Governance.

2.2.4 *Resource Management*

Resources management ensure that the right capabilities are in place to roll out the strategic plan and sufficient, appropriate and effective resources are provided. According to Feeny (1998), successful IT performance is the result of investment, use and allocation of IT resources needed to service the organisation. It recognises the importance of people, in addition to hardware and software, and therefore focuses on providing training, promoting retention and ensuring competence of key IT personnel, (ISACA, 2009).

Ali (2006) carried out a study entitled effective information technology governance mechanisms in Australia. The purpose of the study was to examine the individual IT governance mechanisms that influence the overall effectiveness of IT governance. The study sought to examine the influences of six proposed IT governance mechanisms on the overall effectiveness of IT governance. The six factors include:

- IT Strategy Committee;
- IT Steering Committee;
- Top management involvement in IT;
- Performance measurement systems;
- Ethics/culture of compliance; and
- Communication systems.

The research by Ali (2006) established that:

- The existence culture of compliance and ethics in IT is positively correlated with the overall effectiveness of IT governance;
- The existence of communication systems support enhances the overall effectiveness of IT governance; and
- The existence of an IT strategy committee is positively correlated with the overall effectiveness of IT governance.

Based on the factors identified by Ali (2006), this study shall consider the existence and effectiveness of governance forums as part of the monitoring of IT governance:

- The establishment of the IT steering committee and IT strategy committee; and
- Top level management involvement.

2.2.5 *Performance Measurement*

The performance measurement domain includes the creation of business-oriented IT scorecards, assessment and assurance activities and a focus on continual performance improvement. It provides a link back to the other focus areas by monitoring whether the required direction is being followed and creates the opportunity to take timely corrective measures (ISACA, 2009).

Simonsson, Johnson, and Ekstedt (2010) carried out a study that looked at the effect of IT governance maturity on IT governance performance.' The study aimed at testing the following research hypothesis:

H1: There exists a positive correlation between IT governance maturity and IT governance performance.

Simonsson et al. (2010) performed four pilot case studies via interviews and survey forms. The Kolmogorov-Smirnov test was used for the correlation analysis. The outcome of the research was that most processes were statistically significantly medium positive and there was small positive correlation. The research concluded that improved activities, monitoring, documentation and role assignment would pay off in terms of business stakeholder satisfaction while improvements of the problem management process would not provide as high performance. The authors emphasised the importance of quality management and quality management is achieved through the use of frameworks. This study shall consider performance management as an IT governance practices.

2.2.6 *Research Question 1*

How are the IT governance practices applied within South African DFIs and to what extent are these supported by IT governance?

2.3 Effectiveness of IT governance

According to King III, boards of directors are custodians of corporate governance in organizations (IoDSA, 2009). They have the responsibility to ensure that risks are effectively managed. The board usually delegates the operation of the risk management framework to the business executives. It is therefore imperative that the management team implements a strategy to manage risk throughout the organisation. IT governance is a management tool to coordinate IT management throughout an organisation.

Gomes (2007) highlighted that the successful implementation of IT governance in alignment with corporate governance through formal, well defined, flexible controls and processes to ensure the successful selection, execution, and support of IT initiatives is critical to continued investment in IT and the success of the IT function.

Xue, Liang, and Boulton (2008) proposed three factors that could affect the governance of IT, which are an organisation's IT investment characteristics, its external environment, and its internal context. In light of this study's aim of understanding the state of IT governance within DFIs, the researcher will attempt to examine whether any of the factors outlined above have any influence on the effectiveness of IT governance within DFIs.

Similarly, Weill and Ross (2004b) suggested seven factors that can lead to poor IT governance, these include:

- Senior management senses low value from IT investments;
- IT seen as a barrier to implementing new business strategies;
- The mechanisms to make IT decisions are slow or contradictory;
- Lack of explanation by senior management on governance of IT issues;
- Poor project planning and management;
- Senior management's view on outsourcing; and

- Frequent changes to governance.

Weill and Ross (2004b) also asserted that enterprises with effective governance generate strategic benefits from IT through IT-related desirable behaviours of their people. In addition, effective governance allows enterprises to extract maximum value from IT. Furthermore, effective governance of IT allows enterprises to optimally leverage organisational resources while ensuring compliance with the organisational vision and principles (Weill & Ross, 2004b). This view is supported by Abu-Musa (2009) who suggested that effective governance of IT ensures that the IT function supports the business goals, appropriately manages IT-related risks and opportunities and optimises business investment in IT,

Blowers, Illsley, Jennings, and Thompson (2007) proposed four basic principles that should be considered by organisations for effective IT governance, these include:

- IT governance requires executive leadership;
- Maturity models should be used to baseline the existing IT governance environment;
- The IT governance implementation plan must focus on processes and people; and
- Effective IT governance applies across the whole IT value chain.

Similarly, Bowen, Cheung, and Rohde (2007) suggested that effective IT governance is associated with outcomes related to a shared understanding of business and IT objectives; active involvement of the IT steering committee (or similar IT forum); a balance of business and IT representatives in IT investment decisions; and comprehensive and well-communicated IT strategies and policies. These findings are supported by Ali and Green (2005) as they concluded in their study that there is a significant positive relationship between the effectiveness of IT governance and the following four IT governance mechanisms; IT strategy committee, IT involvement by senior management, the existence of ethics or a compliance culture, and corporate communication systems.

While a number of studies (Weill and Ross, 2004a; Bowen et al, 2007; Abu-Musa, 2009; Xue et al, 2008) suggested that effective governance results, in part, from the existence of key governance forums and senior management involvement, Weill and Ross (2004a)

argued that to be effective, IT governance must be actively designed. Furthermore, IT governance should not be a result of an isolated mechanism such as an IT Steering Committee implemented to address challenges of the moment (Weill & Ross, 2004a).

Accordingly in this study, the researcher will attempt to understand some of the key factors affecting the implementation of effective IT governance within DFIs, and the role of different stakeholders in supporting the governance of IT (Bowen et al, 2007; Blowers et al, 2007; Xue et al, 2008).

2.3.1 *Roles and responsibility for IT governance*

ITGI (2003) developed various roles suggested to ensure the success of effective governance of IT within an organisation. Table 1 below are some of these roles considered to be applicable to DFIs by the researcher:

Table 1: IT roles and responsibilities ITGI (2009)

Role	Description of the role
Board of directors	• Ensure management has put in place an effective strategic planning process; • Ensure IT investments represent a balance of risk and benefit and that budgets are acceptable; • Monitor how management determines what IT resources are needed to achieve strategic goals; • Be familiar with IT risk exposures and their containment; and • Work with the executive to define and monitor high-level IT performance.

Role	Description of the role
CEO	• Align and integrate IT strategy with business goals; • Ensure that financial reporting has accurate accounting of IT; • Set up organisational structures and responsibilities that facilitate IT strategy implementation; • Embed responsibilities for risk management in the organisation; and • Obtain assurance of the performance, control and risks of IT and independent comfort about major IT decisions.
CIO/ Head of ICT	• Assess risks, mitigate efficiently and make risks transparent to the stakeholders; • Ensure the availability of suitable IT resources, skills and infrastructure to meet the strategic objectives; and • Implement an IT balanced scorecard with performance measures directly linked to the business strategy.
IT Steering committee	• Define project priorities and assess strategic fit for proposals; • Act as sponsor of the control, risk and governance framework; • Perform portfolio reviews for cost optimization; and • Follow progress on major IT projects.

Butler and Butler (2010) carried out a study with the primary objective of providing guidance on IT governance accountability to individual management layers in South Africa, a level of detail not addressed in King III, and not adequately addressed within existing literature. The research was based on a review of current literature on IT governance. The outcome of the research was a framework on accountability at various management levels.

Duffy (2002) summarises the roles of the board, CEO and CIO in performance management as follows, see table 2 below:

Table 2: IT performance management responsibilities

Role	Responsibility
Board	• Ensure that IT delivers on the promises of related business strategies; • Work with management through the CEO to define and monitor performance measures; and • Ensure that IT investments represent a balance of risk and benefit, and budgets are acceptable and reflect the organisational financial objectives.
CEO	• Ensure that there is a link between business and performance measurement; • Develop an incentive scheme to drive adherence to defined performance measures; • Integrate the IT budget and investment plan into the overall financial plan of the organisation; and • Provide feedback to the board on a regular basis.

Role	Responsibility
CIO	• Develop and manage the IT budget, including short and long term investment strategies; • Develop an IT performance measurements plan with metrics; and • Implement and manage a performance management scheme.

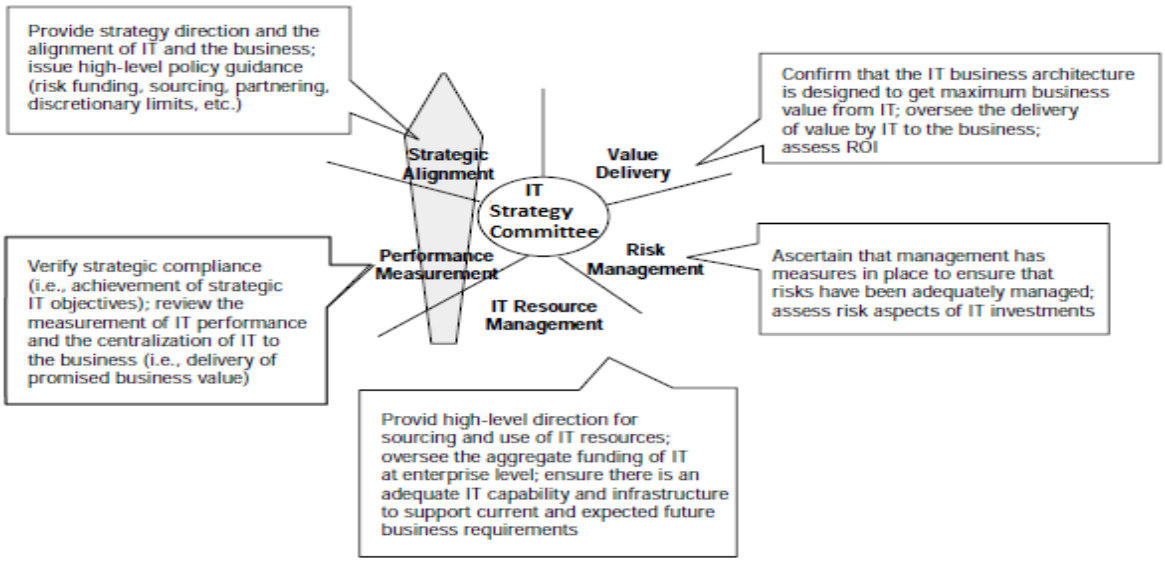
2.3.2 *The IT Steering Committee*

The IT steering committee plays an important role in IT governance. The IT steering committee operates at the executive or senior management level, driving IT priority setting and resource allocation, while continuously monitoring the success of, and value returned by major IT initiatives (Guldentops, 2004). The IT steering committee also meets to discuss future states of the organisation and how the IT organisation will meet the organisation's needs. The committee consists of senior level IT managers as well as key customers or constituents (Gregory, 2010).

ITGI (2009) suggests that the membership of the IT steering committee should be composed of business unit executives, IT executives, and finance. In organisations where IT provides significant value, the board of directors should have an IT strategy committee. This group will advise the board of directors on strategies to better enable the organisation's overall strategy and objectives. The IT strategy committee can meet with the organisation's top executives to impart the board's wishes directly to them (Gregory, 2010).

The key responsibilities for the IT strategy committee include strategic alignment, risk management, IT resources management, value delivery and performance measurement. Figure 2 shows the key responsibilities of the IT strategy committee.

Figure 2: Responsibilities of the IT Strategy Committee (Hardy, 2003)



This study considered the creation of the IT strategy committee and IT steering committee as a governance structure at DFIs as well as the roles of various stakeholders within DFIs.

2.3.3 *Research Question 2*

How is the governance of IT structured within the DFI's and what is the role of various stakeholders?

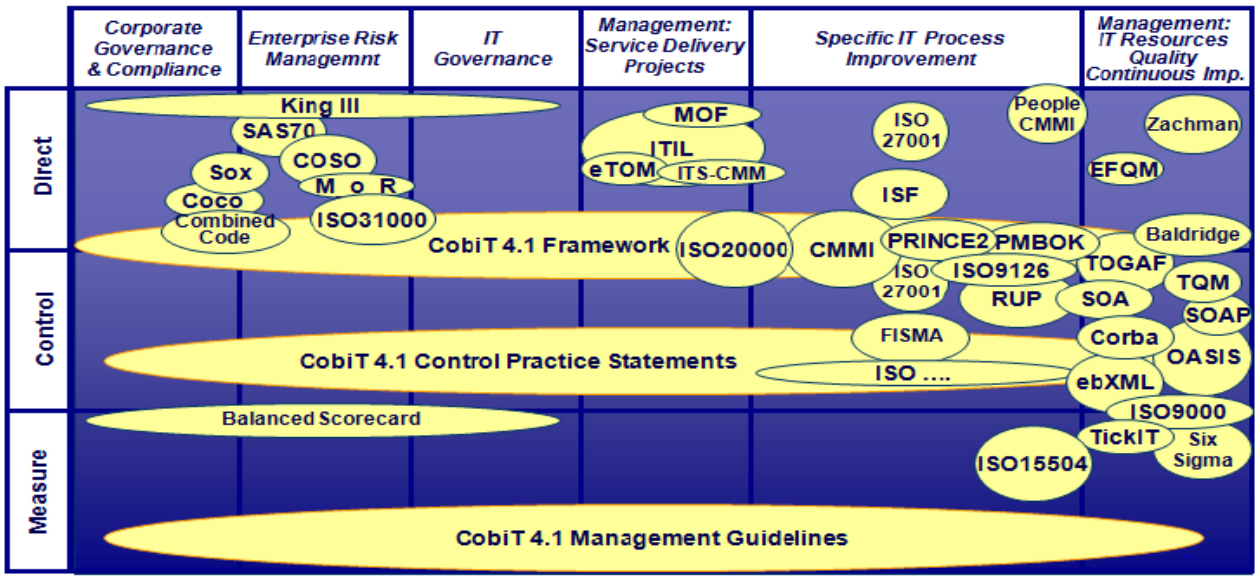
2.4 IT governance frameworks

2.4.1 *IT governance implementation frameworks*

A number of IT governance implementation frameworks that are widely used include COBIT, ITIL, ISO 17799, as well as a combination of various internally developed frameworks ((De Haes & Van Grembergen, 2005). Best practice frameworks, including the ones noted above, are used to aid the effective management of IT and IT governance (Goeken & Alter, 2009). According to Spafford (2003), there is no overlap between the three frameworks, COBIT is strong in IT controls and metrics, ITIL places emphasis on processes surrounding the IT helpdesk and ISO 17799 covers IT security

extensively. This view is also supported by Badenhorst (2009), who indicates that each of the corporate and IT governance related frameworks can be applied to achieve a number of governance related objectives. Other frameworks are shown in a figure 3 below.

Figure 3: IT governance frameworks (Liell-Cock, Graham, & Hill, 2009)



2.4.2 *The COBIT framework*

According to a number of studies (ITGI, 2011; Abu-Musa 2009; ITGI 2008), COBIT is a widely used and commonly accepted framework, which serves a number of purposes, including IT governance improvement and assisting in the improvement of internal controls within organisations. While there are a number of frameworks that could be used to achieve effective IT governance, it has been established that a number of frameworks are also linked to COBIT thus making COBIT the most widely accepted framework (Heschl, 2007). According to Damianides (2005), the success in the use of COBIT for improved governance was also seen in the case of Charles Schwab, where it helped with the establishment of an IT governance programme, maintaining consistency in risk management and information system audits, ensuring that its audit approach is consistent with regulatory guidelines, improving its information system control environment, enhancing IT and business processes, and educating internal clients on risk and control concepts.

A number of IT related frameworks are mapped to each of the COBIT domains; illustrating that through the use of COBIT, organisations are likely to cover a wider scope in terms of IT governance implementation and improvement initiatives. In light of the frameworks outlined in Table 3, the researcher will attempt to understand which of the frameworks are predominantly applied or used within DFIs.

Table 3: Mapping of other frameworks to COBIT domains (Mahlamvu, 2011)

	PO	**AI**	**DS**	**ME**
COCO	+	+	0	0
ITIL	0	0	+	-
ISO / IEC 17799	0	+	+	0
ISO / IEC 20000	0	-	+	-
FFIEG	+	0	0	+
PMBOK	0	-	-	-
CMMI	-	+	-	0
TOGAF 8.1	0	-	-	-
NIST 800-53	0	-	0	-
(+) Frequently addressed (0) Infrequently addressed (-) Not or rarely addressed				

2.4.3 *DPSA Governance of ICT Framework (GICTF)*

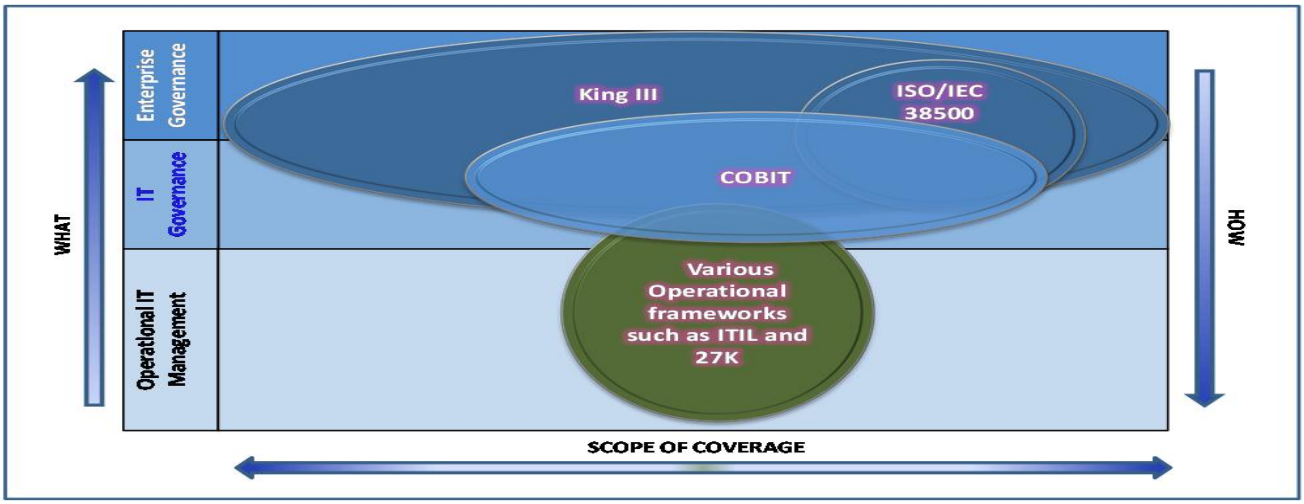
The overriding principle for public service transformation is service for all. However, in South Africa, the public sector must not operate in silos, especially in the ICT sector. Following recommendation from an information system audit conducted by the Auditor General in the years ending 2009 and 2010, the GICTF was developed and adopted by cabinet in December 2012. The need for the creation of this Framework was informed by various investigations performed in the past. It was reported that ICT is not effectively managed at the various levels of the Public Service, as intended by the applicable acts and regulations (DPSA, 2013).

According to DPSA (2013) the following objectives for IT governance were adopted:

- Establish a common framework;
- Implement and embed a guideline for the public sector;
- Embed IT governance as part of corporate governance;
- Create business value through ICT enablement; and
- Achieve ICT service delivery performance.

The Government-wide GICTF is based on principles as explained in the international standard for IT governance, ISO/IEC 385003, King III report and COBIT, Figure 4 below indicates these relationships.

Figure 4: Interrelated Reference Base of the GICTF (DPSA, 2013)

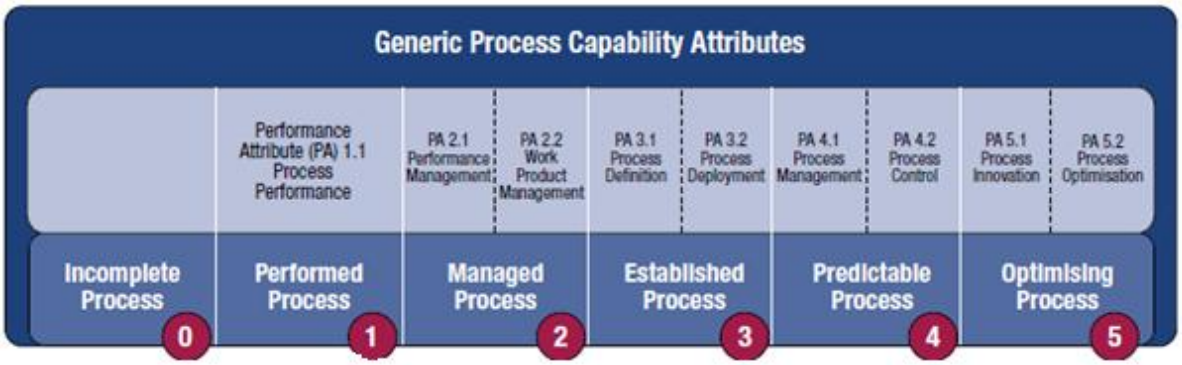


2.4.4 *The Maturity model*

When implementing IT governance, organisations need to assess how they are currently performing and be able to identify where and how improvements can be made. This applies to the IT governance process and to all the processes that need to be managed within IT (ITGI, 2003).

This view is also supported by De Haes and Van Grembergen (2005) as they assert that a maturity model (as illustrated in Figure 5) provides a methodology to define the "as–is" and the "to-be" situations in the organisation's IT governance model and analyse the gaps between them and extract improvement projects (De Haes & Van Grembergen, 2005).

Figure 5: Maturity model (ITGI, 2003)



Furthermore, Debreceny and Gray (2009) also suggested that an important attribute of IT governance is the development and maintenance of the capability to perform key IT processes. The IT function, working with the rest of the organisation, must build a variety of capabilities to meet organisational and strategic objectives, which can be achieved through understanding the current state of IT process and establishing a desired state.

In light of the importance of using a maturity model to determine the "as-is" and the "to-be" situations, the researcher will use the maturity model (Appendix D) in attempting to understand the current state of IT governance within DFIs.

2.4.5 *Research question 3*

What is the extent of IT governance implementation and at what is the level of IT governance maturity?

2.5 Summary

IT governance covers five main focus areas, which are all driven by stakeholder value. It is perhaps a maxim that the role and impact of IT on today's organisations has significantly changed over the last decade. As suggested by ITGI (2003) , the role of the Board, CEO, CIO and the IT steering committee is key to the success of effective governance of IT within an organisation.

The quality of the IT function and its processes are measured using any one of several maturity models depending on the business focus. The underlying premise of maturity models is that, if an organisation does not have defined and standardised processes, it will not be able to provide consistent and reliable products and services. This study attempts to answer the following research questions:

2.5.1 ***Research Question 1:*** How are the IT governance practices applied within South African DFIs?

2.5.2 ***Research Question 2:*** How is the governance of IT structured within the DFI's and what is the role of various stakeholders?

2.5.3 ***Research Question 3:*** What is the extent of IT governance implementation and at what is the level of IT governance maturity?

3 CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the methodology that was used to conduct this research. Firstly, the relevant literature around qualitative research is discussed, followed by the review of the research design and the population and sample used. The research instrument is described, accompanied by a method that was used to collect the data. Validity and reliability as they apply to this study are discussed as well as a conclusion on the chosen method.

3.1 Research paradigm

For this study, selecting an overall research paradigm is the choice between two primary alternatives: between a positivist (quantitative) and a phenomenological (qualitative) philosophy (Hussey & Hussey, 1997). Given the research problem identified in chapter 1, the research study followed a phenomenological paradigm.

3.2 Research Design

According to Hussey and Hussey (1997), “there are four types of research purpose: exploratory, descriptive, analytical or predictive.” A descriptive study was undertaken, where a qualitative research method was used, through a series of face-to-face semi-structured interviews with business, audit and IT executives within the DFIs. While it is argued that a qualitative research method is more suited for an exploratory study (Blumberg, Cooper, & Schindler, 2008), the researcher chose to conduct a descriptive study on the basis that IT governance is a well-known phenomenon, as indicated in prior studies (Gomes, 2007; Mahlamvu, 2011; Motloutsi, 2009; ITGI 2011; Tobin, 2011). In addition, Blumberg et al. (2008) suggests that one of the objectives for a descriptive study is to provide a description of phenomena or characteristics associated with a subject population, which is consistent with the objective of this study that attempts to understand the state of IT governance within DFIs.

Furthermore, it can also be argued that the researcher should make use of a quantitative research method, as the method has been widely used in a number of IT governance related studies (Gomes, 2010; ITGI, 2008; Motloutsi 2009; ITGI 2011; Tobin 2011). However, the researcher chose a qualitative research method for this study on the basis of limitations outlined in the studies conducted by Gomes (2007) and Motloutsi (2009), which highlighted a low response rate on on-line surveys and responses obtained from non C-level management and the lack of understanding IT governance concepts (including interpretation of the maturity levels) by the respondents, as the main challenges (Gomes, 2010; Motloutsi, 2009). Gomes (2007) also argues that greater use of semi-structured interviews on future research will be instrumental in providing clarity of concepts to the interviewee and the opportunity to request additional information. The use of semi-structured interviews is also supported by Blumberg et al. (2008) as they assert that while semi-structured interviews usually start with rather specific questions, they allow the interviewee to follow his or her own thoughts. Furthermore, Blumberg et al (2008, p. 281) suggest that "the absence of assistance in interpreting questions is a clear weakness that can be improved by the presence of the interviewer".

3.3 Population and sample

3.3.1 *Population*

A population is a group of potential participants to whom a researcher wants to generalize the results of a study (Salkind, 2012). The population for this study consisted of national DFIs in South Africa.

The unit of analysis included IT, including audit professionals, compliance officers and risk officers within the DFIs. The executive managers largely affect IT governance related decisions and are directly responsible for IT governance initiatives as described in the literature review.

3.3.2 *Sample and sampling method*

A sample is a subset of a population (Salkind, 2012). The sample of DFIs included in the study was determined through guidance from the supervisor as the researcher did not intend selecting a sample of all DFIs in South Africa.

The researcher selected the sample based on personal judgment. In purposive sampling, people or other units are chosen, as the name implies, for a particular purpose (Leedy & Ormrod, 2013).

The target number of respondents within the DFIs was set at twenty. Non-probability sampling was preferred, based on convenience (Blumberg et al., 2008). Furthermore, due to the qualitative nature of this study in the judgement of the researcher, there is no role for probability sampling hence probability sampling approach was not used. (Table 4 provides a list of DFIs which were interviewed).

Table 4: List of interview candidates

Name of DFI	Mandate	Actual interview
DFI A	SMME development	3
DFI B	Industrial development	3
DFI C	Agriculture and land reform development	4
DFI D	Housing development	3
DFI E	Black Economic Empowerment (BEE) development	3

DFI F	Infrastructure development	3
DFI G	Rural development	2
DFI H	Youth development	3

3.4 The research instrument

3.4.1 *Instrument used*

Instruments such as questionnaires are examples of data collection techniques and form part of research design. This study adopted interview questionnaires as a means of collecting data. This was considered suitable for this study as it is an important self-report technique in order to address respondents' thinking and knowledge about the phenomenon (Mahlamvu, 2011).

The questionnaire used was based on the King III principles and the COBIT 5 framework. COBIT 5 builds and expands on COBIT 4.1 by integrating other major frameworks, standards and resources, including ISACA's Val IT and Risk IT, ITIL and related standards from the International Organization for Standardization (ISO) (ISACA, 2012).

Table 5 provides a comparison of the two approaches to governance, illustrating the alignment between the international leading practice and local framework on IT Governance.

Table 5: Comparison of Cobit 5 and King III (Iodsa, 2009; ISACA, 2012)

Cobit 5: IT Governance domains	King III: IT Governance Seven Principles
Meeting stakeholder needs Covering the enterprise end-to- end Applying a single, integrated framework Enabling a holistic approach Separating governance from management	Board responsibility Strategic alignment IT governance framework IT investment and expenditure (monitor and evaluate) Effectively manage information assets Roles of the risk and audit committee.

3.4.2 *Pilot study*

The research instrument was piloted with the IT Audit Director from a Big 4 firm and a Head of ICT from one of the DFIs. The purpose of the pilot study was to ensure that the semi-structured interview questionnaire provided the necessary data to assist interviewees in answering the research question. The objective of the pilot study was to test the validity of the questionnaire. Required changes to the research instrument were made after the pilot study was concluded.

3.5 Procedure for data collection

The data gathering process included both primary and secondary data sources. In terms of the secondary data sources, the following sources were used:

- Industry publications and subject matter reports;
- Corporate and IT Governance theory books; and
- Information from a consulting organisation that provides advisory services on IT governance in multiple industries and organisations.

Patton (2002) proposes three methods for collecting qualitative data through interviews, these are:

- The informal conversation interview – relies on the spontaneous generation of questions in a natural flow of an interaction;
- The general interview guide approach – outlines a set of issues that are to be explored with each respondent before the interview begins; and
- Standardized open-ended interview – consists of a set of questions carefully worded and arranged with the intention of taking each respondent through the same sequence and asking each respondent the same question with essentially the same words.

For the purpose of this study, the standardised open-ended interview approach was adopted, particularly given the objective of this study, which was to understand the state of IT governance within DFIs.

3.6 Data analysis and interpretation

Blumberg et al. (2008) describes data analysis as a process that involves reducing data to a manageable amount, developing summaries and looking for patterns or common themes. Furthermore, Blumberg et al. (2008) recommends a number of methods for qualitative data analysis, however the researcher used the two methods described below:

- **Content analysis** – a technique based on a detailed and systematic examination of the contents for the purpose of identifying patterns, themes and biases (Leedy & Ormrod, 2013). This method of analysis was performed in conjunction with other methods and it involves a great amount of planning at the beginning of the research.

- **Narrative analysis** – a method that facilitates in-depth investigations. The method is based on examining stories, specifically focussing on how elements are sequenced and how they are evaluated. This method was used during and after the interview.

For the purpose of this study, the narrative analysis was important in exploring the concept of IT governance in the context of the King III code principles. The content analysis method was used to facilitate the descriptive analysis.

The researcher applied the following six steps to analyse the data:

Step 1: the interview recordings were transcribed after the interviews.

Step 2: An understanding of the data was reached by examining the relevant text and making analytical notes.

Step 3: Themes were generated from the data by organising the data through a process of line-by-line analysis.

Step 4: The data were coded by breaking down the text into meaningful sections and was labelled accordingly.

Step 5: The analytical process was expanded by paying attention to the meaning of the data.

Step 6: Lastly, the data were interpreted.

3.7 Limitations of the study

Some of the limitations to the study included:

- Research quality is heavily dependent on the skills of the researcher. This was a first research by the researcher and therefore, the quality of the data and interview process may be affected.
- Lack of access to some of the DFIs in South Africa. However, this limitation was overcome through leveraging existing networks within the industry through the researcher's current job role.
- Unavailability of some of the business and IT executives given their busy schedules. This limitation was overcome through extending the interview invitations to 25

executives with a view to securing a minimum of 20 interviews. In addition, interviews were scheduled weeks in advance to secure a slot in the diaries of the respective executives.

- The results of the interview required coding of the responses. The definition of the codes required judgement by the researcher, introducing subjectivity to the data analysis process.
- Convenience sampling may have resulted in a response bias, particularly when the respondents were from the same organisation.
- Self-selection bias may have occurred. This is a situation where bias occurs when IT executives feel strongly about the subject of IT governance and respond in favour of their organisation.

3.8 Validity and reliability

The researcher considered both the internal and external validity when designing the research project. The pilot study enhanced the validity and reliability of the research.

3.8.1 *External validity*

External validity is the extent to which research study results apply to situations beyond the study itself (Leedy & Ormrod, 2013).

A content validity of the questionnaire scores was addressed by inviting an expert from the IT advisory firms to determine whether the scores reflect the practices and frameworks currently employed within the public sector, especially DFIs, and whether additional information or items needed to be included. In this research, limited generalisation could be made, as the main purpose of this study was to contribute to the body of knowledge rather that to generalise to a population.

3.8.2 *Internal validity*

Internal validity of the information coded was validated by the persons interviewed. Where there were discrepancies, the necessary changes were made. The researcher relied on the interviewee's trustworthiness in providing true information from the questions asked. Triangulations were employed to verify findings from independent measures with the hope that they converged to support a theory (Leedy & Ormrod, 2013). The researcher validated the findings from independent sources such as the internal and external audit reports on IT governance reviews.

3.8.3 *Reliability*

Reliability was assured through the use of the research instrument. The researcher ensured that the results were consistent and that they yielded the same results on repeated interviews. An in depth review and edit process were employed to ensure that there was clarity in the data used. Furthermore, the researcher adopted the "auditing approach" which ensured that complete records were kept of all phases of the research and are accessible.

4 CHAPTER 4: PRESENTATION OF RESULTS

4.0 Introduction

This chapter presents the findings from interviews of the 23 interviewees. The interviewees comprised IT, audit and business executives from various DFIs. The chapter presents the sample demographic profiles of the interviewees and the themes which arose from the qualitative data. The themes are based on responses received from the participants and interview guide used to meet the objectives of the study. In addition, a summary of the extracts of the interviews is included in this chapter to support the data analysis.

4.1 Demographic profile of respondents

This section covers the profiles of individuals interviewed and the DFIs to which they are exposed. The researcher aimed to interview 20 individuals across the DFIs, however 23 were actually interviewed. Table 6, below shows the breakdown of interviewees by position.

Table 6: Breakdown of interviewees

Position	Number of interviews
CFO	1
CIO/ Head of IT	5
CRO/ Head of ERM	6

Head of Internal Audit	6
External Audit	5

4.2 Results pertaining to Research Question 1

IT value add

Interviewees were asked to describe how they believe IT adds value within their DFIs, and below are some responses received:

"Since most of the operations are dependent on IT systems and infrastructure, IT ensures that its priorities are aligned to business solutions, which in turn are linked to the company's mandate as a DFI."

"IT Department is business enabler providing IT services & support to the business operations. To this end, reliance on IT service is very crucial and increasingly based on the state of the art solutions provided by the advent of technology and most importantly IT assists the business operation for innovation"

"IT Department innovate the business solutions. They optimise the performance of our ICT human resources by paying attention to the dual skills acquisition and utilisation of both core business audit knowledge and ICT knowledge and skills to ensure leading-edge capabilities and expertise within the business unit. They deliver solutions in organized disciplines within portfolios, programmes and projects. That is they strive to optimise our internal interactions through agile motions for maximum knowledge sharing and personal development in the process of driving ICT value into business units."

IT governance principles

Interviewees were asked to describe how their DFI apply all the five IT principles. Generally, there was some focus on each of the IT governance principles within DFIs. Below are some of the responses highlighted during the interviews:

Strategic alignment

The interviewees were asked to comment on how the strategy formulation process was organised and how they ensured alignment between business and IT strategies. Overall it was noted that the DFI strategy is developed first, before the IT strategy is developed. This is to ensure that the IT strategy use the business strategy as a basis. Some of the responses related to strategy formulation included the following:

"It's aligned at the high level. There is no measurement of the value achieved from the IT investment. So it's difficult to assess whether the impact of the IT strategy in driving the overall strategy of the DFI".

"The current IT strategy has not been assessed and updated to align to the Bank's new updated strategy and endorsed by the Board".

"IT Strategy is modelled around the business strategy / objectives generally over a 3 year to 5 year period. The company's strategy as a DFI is strictly aligned to the Human Settlements Outcomes 8 programme in terms of providing housing to all South Africans".

"The DFI business strategy consists of seven pillars. When we review our internal IT Strategy, we use those pillars to identify our strategy and to review our strategy. So, all our projects and our activities in the department are driven by those business pillars. And it is continuously reviewed and we also report on it on a quarterly basis in the IT Steerco and that's how we maintain that alignment and make sure that we are still on the right track".

“The IT budgeting process is revised annually and is closely aligned to IT strategy. Through the ITMC, priority business systems are identified and project managed to delivery, ensuring that these are within budget systems. Since IT is a complex operation, all IT staff members are multi-skilled and sent on formal technical courses in line with the company’s needs”.

Some instances were noted where the respondent clarified that their DFIs did not have an IT strategy, instead they developed an IT framework. Below is a comment from one of the interviewees:

“We’ve got policies and procedures, we’ve got frameworks, and I would not say we have an IT strategy”.

“We have not developed the IT strategy as yet. It is also in the plan to be developed. But we have not developed it as yet.”

Risk management

With regard to risk management, all respondents indicated that a formal organisation wide risk management framework had been developed within their DFI. This has resulted in IT risks, such as disaster recovery planning and information security, being key agenda items in governance forums such as IT steerco and Exco, and, in some instances, at board level. Some of the responses provided included the following:

“A risk register is compiled of all risks (strategic and operational) and how these will be addressed. These are reported into the Board Risk & Audit Committees and oversight is provided by Enterprise Risk as well as Internal Audit”.

“IT risks are identified through a risk assessment. This risk management is done by the enterprise risk management department and they are there to oversee the monitoring of all risks within the organisation and that includes IT risks. There is a risk register which is monitored by the risk committee and reports to

the board on a quarterly basis. Within our own environment we also have, because we follow a very strict project methodology based on SDLC methodology and within our project we also continuously identify risks and then address those risks as part of the project".

"IT Risks are identified through Internal Audit and the Enterprise Risk Management Unit in collaboration with ICT Management. IT risks are monitored via these units as well as Audit Committee and CEO via Internal Audit's Audit Committee reports detailing the status of outstanding Audit findings and corresponding key risks".

"There is an IT risk register that we update on a quarterly basis through the steering committee. Risk is one of the agenda items there. Through the register, we will have meetings sort of monthly or weekly with the IT department on their steerco register and also we have got risks identified and their controls around those risks and the calculated risk is presented to the committee on a quarterly basis. So at least annually we have an IT audit but we also have the different applications controls review audit as well".

IT value delivery

While the IT respondents agree that the IT department aims to satisfy the business units, there was a general view that the value currently being delivered could be improved. Some of the responses provided include the following:

"There has, there always is you know, been pockets around the organisation they were saying IT doesn't meet the requirements. Legislation and strategy we've put together tries to attempt to fill some of those gaps".

"Currently the business will disagree with me but they are not happy with the service we've been getting from IT but what I have realised in terms of systems upgrade the information we get from IT and the time that business spends on IT is how they want and suddenly they want miracles".

Performance management

Most of the respondents recognised the need to measure value being added by the IT department as well as metrics used to measure their performance. There was a general view that the focus on monitoring of projects and IT investment performance was critical. However, there was also an acknowledgement that the balanced scorecard was not generally used. Some of the responses provided include the following:

"There is no specific mechanism that is used; we use reports that are based on project milestones".

With regard to board reporting and the frequency thereof, most respondents indicated that they do report on IT, however the focus of the report differs from meeting to meeting. There was also a general view that the reporting at board level was operational and not at strategic level. Some of the responses included the following:

"While progress/status of key ICT projects are reported to the board-delegated committees, the Board does not currently formally, and at regular intervals, monitor the delivered ROI from IT investments and projects to ensure expected project benefits exceed project costs. That is, it has not been driven by IT management and presented to the Board. Additionally, benefits realization reviews of key ICT projects have not been performed".

"The majority of the reporting sort of happens towards the audit committee, risk committee level and another thing those committees will prepare a summary to present up to the board like you know, for IT to be specifically discussed at the board level I'd say maybe once a year".

"Governance of IT is not a recurring item on the risk committee and board meetings agenda".

Resource management

When asked how IT resources (such as people, systems and financials) are managed in implementing IT governance initiatives, there was a general view that a skills gap is one of the fundamental challenges, followed by extensive use of legacy systems, within DFIs.

"There hasn't been much implementation of IT governance initiatives, so the framework, part of this is partially enabled through the IT steering committee. The IT steering committee would play a role in driving some of the IT governance initiatives and systems and financials. I'm not aware if there is a bigger role that's played in implementing IT governance initiatives. There is a focus on IT security as a portion of IT governance that is for the implementation of the IT security framework is still not in place".

"We've got a formalised project management approach where we have a PMO office, we are busy establishing our PMO office right now and there's projects run according to the methodology that's being defined".

"We've been doing a lot of outsourcing, as we don't have the in-house skills. Most of our IT staff, we had our IT manager who recently resigned, and we got sort of 2 senior IT personnel. But those 2 senior personnel are also doing a lot of studying at the moment. And the 3 would sort of be the IT Manager and the two senior personnel, one on the application side and other on database".

"I am running the entire system with one full time system administrator and two interns; there are two interns intact with experience that are assisting there and there. Other than that, there is no other resource that we actually need. To implement IT governance management you don't need desktop management and all of that. I am not using any consultants but I believe for somebody else, to want to implement this, they are going to need lots of consultants to assist in this."

4.3 Results pertaining to Research Question 2

The role of IT within the DFIs

In understanding the views that respondents have on what the role of IT is within their DFIs, most respondents acknowledged that IT was critical in the running of the DFI. Most respondents had a view that IT was a business enabler with a role to support business in meeting its strategic objectives.

What was common from the responses was a theme that IT was now seen as a business partner and not a support centre as traditionally seen. Some of the responses relating to the role of IT within the respective DFIs included the following.

"IT is a business enabler that assists the Corporation in achieving its objectives".

"ICT provides services to support the information and communication technology in use within the office in a secure and safeguarded manner. They make sure that we have a telephone on our desks, a computer, and the software and support to be able to do our work. ICT does all the work negotiating with the suppliers to get the best rate for the organization for all equipment and spares. They monitor all systems all the time to make sure that they are working, and manage any problems. ICT also manage maintenance and development of systems and make sure that your information is secure. They optimise the administration of ICT. That is to ensure that the utilisation of resources is optimal with the ICT"

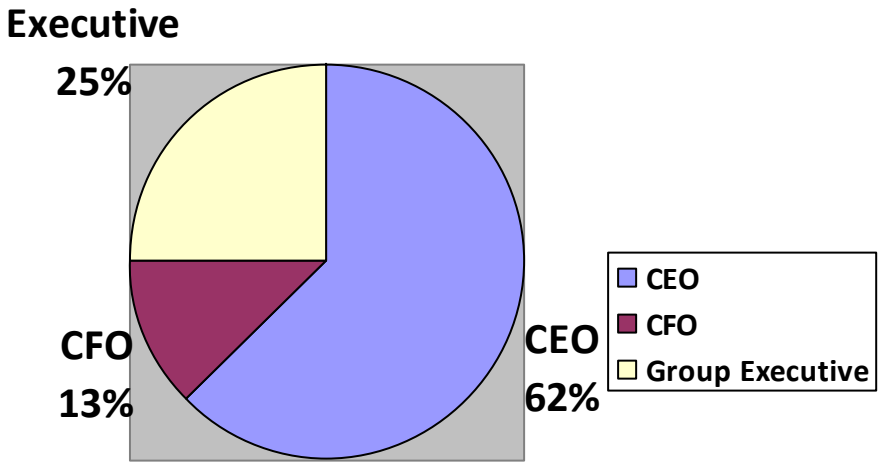
"Key partner to business, looking to help drive efficiency"

"A support and enablement function, i.e. supporting and enabling the business functions to meet the business objectives and in an efficient way, possible".

Reporting lines

Respondents were asked to indicate to whom the CIO or Head of IT reported to within their DFI. The CIO or Head of IT generally reported to the CEO and the CFO. It was noted that within some DFIs, the traditional CIO role was done away with, with the designated Head of IT reporting to a business executive. Figure 6 shows the current reposting lines of the CIO within DFIs.

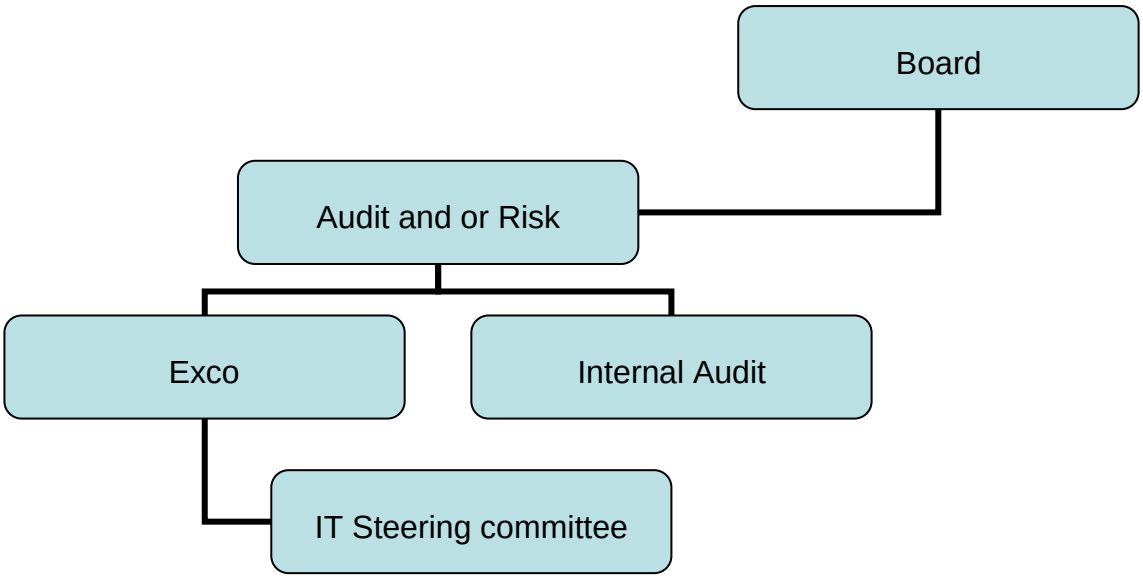
Figure 6: CIO/ Head of ICT reporting lines



Roles and responsibilities

When interviewees were asked to describe their IT governance structure and the role fulfilled by the various governance forums in regards to IT governance, there was a consistent theme with regards to high level governance structure within each DFI. An overview of the governance forums that are responsible or play some role in governance initiatives as analysed based on the responses is outlined below in Figure 7.

Figure 7: Key governance forums



From 62.25% of the respondents, it was acknowledged that the IT steering committee was new and its roles and responsibilities were still being defined. The other common theme that was noted was that the IT steering committee consists of other business executives and not only IT professionals as was historically the case. The IT steering committee is chaired by an executive outside of the IT business unit, with most DFIs' CEO (50%) being the chair of these committees. Another key theme noted was the inclusion of the CIO/Head of ICT at Exco meetings in the majority of the DFIs. According to Mahlamvu (2011), this was not practiced historically.

IT steering committee influences the procurement decision regarding IT resources, strategy development and execution as well as monitoring and reporting of performance. The IT steering committees in the majority of the DFIs were fairly new and thus some of their roles were still being defined as highlighted in some of the comments below:

"The IT steering committee has just recently been established. And it is chaired by the CEO, all members of Exco attend including the newly appointed CEO. The formal agenda has not been set yet, as we are still in the infancy stage."

"We have recently started an ITMC, which is the IT Management committee. This committee is chaired by the CEO and the CIO attends together with the rest of the DFI executives."

IT governance implementation challenges

Interviewees were asked to describe some of the key challenges that were faced by the DFIs in implementing effective governance. From the responses obtained, the common themes are described in table 7 below.

Table 7: Challenges in implementing effective governance

Challenges in implementing effective governance	DFI A	DFI B	DFI C	DFI D	DFI E	DFI F	DFI G	DFI H
Lack of business buy in	❍	❍	❍	❍	❍	❍	❍	❍
Unavailability of resources			❍	❍		❍		
Resistance to change		❍		❍	❍			
Lack of appropriate IT skills and competencies		❍	❍		❍			
Difficulty on showing the benefits	❍	❍	❍	❍	❍	❍	❍	❍

When interviewees were asked to indicate some of the challenges experienced in implementing an effective governance of IT, their responses included the following:

"Within any organisation when there is any change, there is bound to be resistance. People tend to be used to doing things in a certain way but whenever there's a change introduced some people tend to resist. And the other challenge is perception. People tend to view IT governance as an IT issue but then there are various stakeholders in IT governance. There's the business, there's the board and there's IT people".

"I think the big thing is internal IT staff and not necessarily understanding or appreciating the importance of IT governance as well as the skills and expertise in ICT regarding governance".

"So as IT governance is the responsibility, the accountability of the board and the responsibility for all the EXCO members, there was an expectation from IT to drive and help and so the big issue there is awareness but people were not involved in how, operational management and applying it in their day to day life and it's a leadership issue".

"We took too long in actually appointing resources to actually oversee. And it obviously was too expensive for what we were trying to achieve. We should have implemented as little as possible given how unimportant IT is. Another mistake we made was to allow consultants to run with the framework process because they ended up putting in place something for them to tender for".

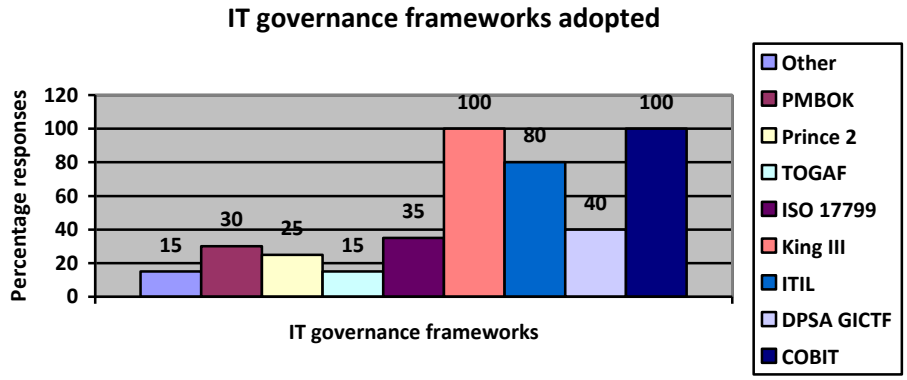
4.4 Results pertaining to Research Question 3

IT Governance frameworks

Interviewees were asked to provide an overview of IT governance frameworks which they have adopted or consulted in.

All of the responses (100%) indicated that they have adopted COBIT and ITIL to guide the implementation of IT governance. The next widely adopted framework was the King III principles. Furthermore, most of the respondents indicated that they are aware of the DPSA GICTF, and that a gap analysis was done between their custom frameworks and the requirements of the DPSA GICTF. Figure 8 below indicates the IT governance frameworks that have been adopted or consulted as highlighted by the interviewees:

Figure 8: IT governance frameworks adopted



Overall, the interviewees indicated than IT governance framework has been adopted, and that they were aware of other IT frameworks including those not adopted by their DFI. The responses received included the following:

"COBIT 4 and will be soon using COBIT 5. The reasons why they are used are to ensure that IT risks are properly managed & mitigated by the governance section of the IT department."

"For our IT governance we are using "COBIT 5" best practice framework as a guideline but we are also driven by the government's ICT framework which was developed by DPSA and approved in parliament. Because we fall in the public sector, we are governed by that framework. That framework is based on COBIT 5 so it didn't have a big influence on our activity when it was published because we were already looking at using COBIT 5 as a guideline. Then you also have your ISMS controls and for that we look at the ISO 27000 for our information security control and security governance."

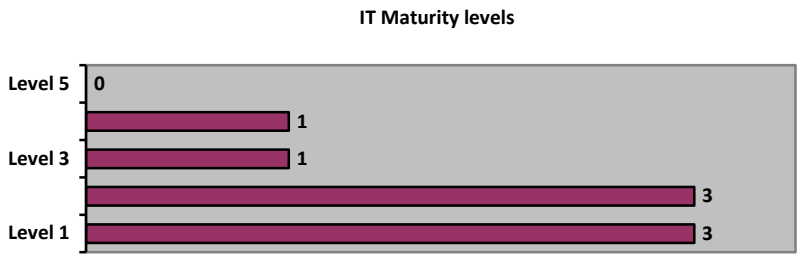
"DPSA's GICTF, COBIT and King III. It should be noted that the GICTF framework is aligned to King III, ISO 38500 and to COBIT. The reason why GICTF is used is because a directive was communicated that all state-owned/government entities need to comply with this framework. This directive was sent by the DPSA. We use COBIT because the GICTF references this framework. Lastly, we consider King III IT Governance principles/guidelines."

"We have adopted the following frameworks to govern IT: Cobit 5 and ITIL Service Management Framework. Well, COBIT framework is based on best practice. And it is an industry preference, I wouldn't say proven framework but has a very good standing in the industry when it comes to implementing governance controls. Of course at your board level, the framework is more in guidelines for your IT departments' structure activities but at your board level, they look at King III and how King III dispenses governance into the organisation."

IT governance maturity level

To ascertain the level of IT maturity, respondents were asked to rank themselves on what level they believed their maturity level was, in line with Cobit 5. Respondents from audit confirmed that as part of their audit reviews, the maturity level was assessed and this is their basis for the response. Three instances were noted where IT practitioners did not agree with the rating as assessed by third parties. Figure 9 , below, shows the number of DFIs per maturity level.

Figure 9: IT governance maturity levels



As indicated in some of the responses below, there was an overall view that IT governance maturity within DFIs is currently at level two, with a few DFIs at level three and four. Some of the responses received included the following:

"I would say we are definitely at the level 3. We have processes in place and our processes are approved. We have approved policies in place. We have continuous improvement activities in place and on a yearly basis review our policies for improvement. And our processes are also formalized."

"Level 2. The whole policy and the framework and the governance structures of IT are in place and makes it an adequate governance in place, it's just the effectiveness that needs to be improved."

"Low level of maturity as a number of issues still need to be remediated, say level 2."

"If I were to use COBIT maturity ratings, I would say my organisation is at level four. All processes have been defined and are monitored repeatedly."

"Moderately mature as while there are IT Governance structures in place, however, there is improvement required in these areas as well as continuous improvement processes for the current structures."

"Leaning towards maturity level of three with room for improvement"

4.5 Summary of the results

This chapter provided a summary of the results of the interviews, where similar responses pertaining to a particular question were received, they were grouped together. In grouping these responses together, the researcher was able to identify potential findings that were common across the DFIs.

5 CHAPTER 5: DISCUSSION OF THE RESULTS

5.0 Introduction

This chapter is composed of three sections. The first section reviews the IT governance practices applied within South African DFIs and to what extent are these supported by IT governance. The second section explains the IT structure within the DFIs as well as the role of various stakeholders. The third section assesses the extent of IT governance implementation as well as the level of maturity of existing IT governance frameworks.

5.1 Discussion pertaining to Research Question 1

The increased dependence on IT suggests that organisations should implement IT governance practices. According to (De Haes & Van Grembergen, 2004), there are five IT practices, namely strategic alignment, value delivery, risk management, resource management and performance management.

The results pertaining to DFIs' focus on strategic alignment indicate that the focus on this principle has increased. This contradicts the findings of Milne and Bowles (2009) who argued that the organisations with high levels of IT governance are largely focused on enabling business needs. While IT was viewed as an enabler, some areas of improvement were noted where some of the respondents felt that the focus was on a short to medium term in comparison to a long term focus. A recent directive was issued by the National Treasury for state-owned companies addressing cost containment in a number of expenses. The results relating to the risk management practice found that there is increased focus on the risk management principles, and this is consistent with the findings by Milne and Bowles (2009), which suggested that organisation with low levels of IT maturity are generally focused on risk reduction and cost containment.

Strategic alignment

Understanding the business strategic imperatives and providing the necessary technology support and enablement to achieving the strategic objectives is important to strengthening the culture of a business and IT partnership, ITGI (2005a) For the DFIs to achieve long term sustainable success, all employees need to fully understand the strategic objectives and work together to ensure that those objectives are met. Each DFI has a business strategy. It is discouraging to note that some DFIs do not have an IT strategy and therefore alignment between the two strategies is not achieved. The researcher acknowledges that there are policies, procedures as well as the IT frameworks in place, which have been approved by the board.

None of the DFIs has an IT Strategy committee (ITSC). The role of the ITSC in strategic alignment is to assist and advise the board on the formulation of the IT strategy. The critical matter is to ensure that all significant lines of business are represented at higher levels and that this responsibility is not delegated downwards. The ITSC should primarily comprise boards of directors (executive and non-executive), with the CIO or Head of ICT as a full or ex officio member.

Risk management

According to a number of respondents, IT risks were not considered or included in the agendas of key governance forums, including the risk committee, Exco and the board of directors. However, with the growing interest and focus on IT risks, particularly with regards to information security and disaster recovery planning there is a shift towards giving IT risk the deserved attention within most DFIs.

Within the DFIs, there is an ERM department which assists the organisation in identifying risks through workshops. Monitoring of risks takes place at Exco and risk owners are required to resolve and mitigate the risks identified. However, improvement is required, especially when it comes to the risk identification of IT risk and other strategic risks.

Respondents are of the view that most of the risks which are monitored and reported to the board are operational in nature. Most DFIs do not have a specialist IT resource from the risk management business unit who is able to help facilitate the identification of IT risks.

Value delivery

Value delivery can be demonstrated through on time and within budget delivery of IT projects and achievement of benefits that were promised, (ITGI, 2003). From the responses received from the interview, it was noted that there is some reporting that takes place, however this reporting is limited to a comparison of actual costs incurred in comparison to the planned budget. In most instances the budgets are exceeded. This is not consistent with the recommendation by ITGI (2005b) which suggested that there should be proper management of investment and costs for effective IT value to be achieved. IT was challenged at demonstrating the return on investment associated with the specific project. While a number of DFIs have adopted leading practice project management practices, project management was generally poor as projects generally exceed budgets, and projects were not completed on time.

Performance management

Performance monitoring provides an opportunity for the detection of issues within the organisation and the opportunity to take timely corrective action, De Haes and Van Grembergen (2004). The monitoring of performance can be applied at an individual level, project level, functional level, strategy level or even organisational level. While performance monitoring and reporting is considered an integral part of IT governance, particularly in providing the board oversight on IT investments and the success thereof, there was a limited or no focus within most DFs, as indicated in the responses.

From the responses received it was noted that regular review meetings are held and performance reports presented at these meetings, however these initiatives rely mainly on the efforts put in place by the IT management team and the rest

of the business stakeholders opt to participate on a voluntary basis, depending on the IT projects and priorities.

This is inconsistent with the findings of ISACA (2009) which recommended that there should be business-orientated IT scorecards and focus on continual performance improvement. The balanced scorecard is not used to measure performance and there is no standard template used to report to the board. The measurement of IT is performed but is limited to technical measures relating only to the IT function. This contradicts the study by Simonsson et al. (2010), who emphasised the importance of quality management through improved activities, documentation, monitoring and role assignment.

Resource management

According to the ITGI (2005b), resource management is about ensuring that new technologies are introduced as and when required by the business, while obsolete systems and infrastructure are updated or replaced. Furthermore, ITGI (2005b), recognises the importance of having the right people who are appropriately skilled and experienced.

From the responses received, it was noted that the IT resources (people, application, technology, facilities and data) are not managed optimally to ensure that the required quality of service is provided. While availability of adequate resources was highlighted as a key constraint to effective governance of IT, some of the respondents indicated that the current resources were adequate for the support role fulfilled by IT. There is a growing realisation for having the right resources in the right quantities to support and enable the business needs.

5.2 Discussion pertaining to Research Question 2

From the responses received relating to the governance structure within DFIs, it was clear that there are IT steering committees who reports to Exco. The CEO on behalf of Exco then reports to the audit and risk committee on IT issues. However, improvement is required with regard to the agenda of the audit and risk committee, where IT governance is currently not a standing agenda item.

The current practice is not consistent with the findings of Liell-Cock et al. (2009) which recommended that IT governance should be a permanent item on the agenda. Furthermore, Liell-Cock et al. (2009) recommended that the board take proactive steps to ensure that there are resources available to guarantee that IT activities are reported, both to the board by management and by the board in the integrated report.

There is a realisation that more oversight of IT is required, such that it is not only the responsibility of IT management alone, but that of the rest of the business executives. It is the responsibility of the board and executive management to define and monitor performance measures that assess the business value of IT (IoDSA, 2009; Motloutsi, 2009).

Amongst the roles of the CEO, as suggested by Duffy (2002), it can be confirmed that the CEOs are performing duties such as:

- Approval of all significant IT-related business investments;
- Approval of the business strategy and its implication.

However, there is no clear evidence that the CEOs are:

- Ensuring that the IT function has the appropriate resources and the capacity to deliver and maintain the IT element of the business strategy;
- Asking the right questions relating to IT risks as well as ensuring that all IT risks are identified and mitigated; and
- Gaining assurance that value is obtained from IT investments.

5.3 Discussion pertaining to Research Question 3

In measuring alignment and governance maturity, the IT governance maturity framework can be used by an organisation. This method scores the organisation to grade its maturity level from non-existent (0) to optimised (5). The model offers a way to determine the current position and the future position

and enables the organisation to benchmark itself against other organisations in the same industry (De Haes & Van Grembergen, 2004).

The IT governance Capability Maturity Model was used by the researcher in assessing the current state of IT governance within DFIs (Appendix E).

To leverage existing frameworks and to assess the levels of IT governance maturity with DFIs, the research instrument included a question that gave interviewees an opportunity to rate the maturity level of the DFIs IT governance. Respondents from internal audit indicated that an audit was done on IT governance within their DFI and a maturity rating was given after each audit. As a result, most of the interviewees responded, based on the rating as assessed by their auditors. The ratings provided that currently none (0%) of the DFIs were at level 5 of IT governance maturity. This is supported by the respondents as they indicated that there were no standard and effective ways to measure and report on IT related investments. This would imply that the board does not have full visibility into IT related investment as well as the alignment of the IT investment to the business strategic objectives.

Performance metrics with regard to IT performance have not been fully understood and defined. Mahlamvu (2011) found that current measures are still largely focused on operational IT performance and thus a balanced scorecard approach to monitoring and reporting IT performance has not been adopted. A study by De Haes and Van Grembergen (2004) asserted that these factors provide the differentials between the different levels of maturity. To move to a higher level of maturity, all conditions described in the maturity levels need to be fulfilled. This implies that in order to obtain a maturity level of five, all attributes must have the values described under level 5 (De Haes & Van Grembergen, 2005). IT is considered to be not fully geared to meet the future business needs and did not drive innovative projects to provide competitive advantage.

Some of the respondents allocated a four, (12.5%) and most of the respondents allocated a two (37.5%) or three (12.5%). 37.5% of the respondent rated themselves at a level 1. In considering the total of 25% of the respondents who

indicated that their DFI was at a level 3 and 4 maturity rating, it can be argued that the following factors contributed to these ratings:

- The audit and risk committee has been established and IT risks are included in the agenda. These IT risks are reported to the board at strategic level.

- There is an increased focus on regulatory compliance and risk management with limited focus on value delivery and performance management.

- While the progress on IT investments is reported to audit and risk committee, a standard template to facilitate board reporting has not been established and IT issues that are reported are of an operational instead of being strategic in nature.

- Leading practice IT governance frameworks such as COBIT and ITIL have been adopted. Some DFIs have even adopted the DPSA GICTF and King III principles.

- An IT steering committee has been established, which is made up of business Executives and chaired by the executive other than the CIO/ Head of ICT. The committee facilitates strategic alignment to the overall strategic objectives of the DFI as well as monitors and tracks progress on the IT investment spend, which is reported to the audit and risk committee. The sub-committee of the board subsequently report to the board on IT issues as addressed during the sub-committees.

In terms of the respondents who indicated a level 2 (37.5%) maturity rating, it was indicated by the respondents that the DFI had recently introduced IT governance initiatives and the IT steering committee had been formed at the time of the research. The factors noted above are supported by Gartner (2011), ITGI (2007) and ITGI (2009).

The overall results for IT governance within DFIs suggested the IT governance maturity levels within DFIs require improvement. There has been no improvement in the maturity levels within the public sector, particularly when considering results presented in a study by Mahlamvu (2011) where it was reported that 13% of respondents from SOEs indicated that their IT governance maturity levels were at a level one.

5.4 Conclusion

This chapter focused on analysing the results presented in chapter 4 in conjunction with the insight gained from the literature review from chapter 2, thereby responding to the research objectives. As indicated in the analysis, some of the findings associated with the research objectives included the following:

- IT practices are not fully applied as there are gaps to be filled to be fully compliant to the five IT governance practices.
- IT governance maturity levels requires improvement.

Although the board have taken full responsibility of the governance of IT, some key responsibilities around performance management and risk management are not properly executed. A number of challenges were experienced when implementing IT governance and these were mainly lack of appropriate resources and lack of buy-in. The next chapter focuses on the overall conclusion of the study, recommendations and suggestions for future research.

6 CHAPTER 6: CONCLUSIONS

6.0 Introduction

This chapter highlights some of the key findings related to the three research questions. In addition, the chapter provides recommendation to the stakeholders and finally makes suggestions for possible future research on the governance of IT.

6.1 Conclusions of the study

It was established through the results and analysis of data in chapters 4 and 5, respectively, that the level of IT governance maturity with DFIs in South Africa requires improvement. Few DFIs were rated a level three (12.5%) or level four (12.5%) maturity while the majority (37.5%) of the DFIs rated level two maturity, which is considered a “managed” level of maturity, which means that the previously described performed process is now implemented in a managed fashion and its work products are appropriately established, controlled and maintained (ISACA, 2012).

Some of the findings which supported level two ratings include the followings:

- Some of the DFIs were incorporated within the past ten years;
- There is no designated CIO and IT functions are outsourced; and
- There is no business buy-in or sponsorship for IT governance related initiatives.

Similarly, some of the findings supporting level three and four maturity include the following:

- While progress on IT investments is reported to the board, a standard template to facilitate board reporting has not been established or is too operational.
- Performance metrics with regard to IT performance have not been fully understood and defined.
- IT governance frameworks have been adopted including the newly gazetted DPSA GICTF.

Some of the findings which supported level one rating related to the following:

- Some DFIs do not have an IT strategy;
- Strategy formulation has historically been performed in silos;
- The value added by IT is not clearly defined or measured. The inability of IT with the involvement of business executives to define realistic measures and metrics associated with its performance challenges IT in demonstrating their value to DFIs;
- While there was a general acknowledgement that performance management is key to driving continuous improvement of the IT function, its people and processes, it was established that DFIs have not defined performance metrics to enable effective monitoring of performance. In addition reporting to board was at an operational level and not at a strategic level; and
- With regards to resource management within DFIs, it was noted that there was generally a low appetite to automate as noted from the great use of legacy systems and excel spread sheets. This challenges the DFIs from remaining competitive and satisfying the requirements of effective service delivery.

6.2 Recommendations

IT governance principles

The current focus for DFIs on strategic alignment, resource management and risk management is consistent with the overall business objective of DFI's in regards to providing development finance while ensuring compliance to legal and regulatory requirements. For DFIs without an IT strategy, it is recommended that the IT strategy should be developed once the overall DFI strategy is completed. This will allow the IT business units to demonstrate their strategy and how they will enable and support each of the DFI strategic objectives.

For a common understanding of what constitutes value delivery, it is recommended that the IT steering committees should define key measures for value delivery by IT. These measures should be defined by the business executives as the service recipients from IT, and these measures should be agreed with the IT business units on whether they are realistic and achievable. Once the measures have been defined and agreed, a mechanism for monitoring value measures should be implemented and monitored on a regular basis at IT steering committee meetings.

A consistent form of reporting across DFIs will help guide effective decision making by the board and other key stakeholders. It is recommended that DFIs should define a template that will facilitate effective board reporting. The template developed should cover the measurement of financials, processes and customers through the use of a balanced scorecard.

Roles and responsibilities

The role and responsibility of the board and that of the CEO must be clearly defined. A recommendation made by (Duffy, 2002; IoDSA, 2002; De Haes & Van Grembergen, 2005) should be adopted. Risk management including IT should be the responsibility of the board as recommended by King III. The board must be aware of the critical IT risks in the DFI that are not mitigated.

IT governance maturity

In order to improve the maturity level of IT governance, it is recommended that DFIs who have currently been assessed as having a level two rating, should consider obtaining another assessment on the IT governance current state assessment by engaging their auditors. In addition, these DFIs should define their desired future state maturity. It must be noted that, while it can be good to have a level three or four IT governance maturity levels, these levels may not be aligned to the overall strategic objectives of the DFIs, and therefore, the costs associated with a high maturity level may not be justified, given the potential expected return. Thus, it is recommended that DFIs should aim at a level three and support the outcomes of managing risks effectively and complying with legal and regulatory requirements.

Once a maturity assessment has been performed, a detailed implementation plan for addressing the gaps should be developed and implemented. The implementation plan should encompass short term objectives aimed at completion within 9 to 24 months timeline.

For those DFIs who currently have a maturity level of a three of four, it is recommended that they establish a mechanism for continuous monitoring to ensure sustainability of their current maturity levels. To assist the process of continuous monitoring and improvement as suggested by Mahlamvu (2011), an IT governance checklist proposed by Damianides (2005) can be adopted and completed on a bi-annual basis. Moving to a level four or five is not recommended for the DFIs, particularly as they are still operating in a support mode.

IT maturity assessment is a continuous process. Regular benchmarking and independent audits are important since they provide positive assurance to stakeholders, (Motloutsi, 2009).

6.3 Suggestions for further research

As the ICT governance policy framework has been adopted by Cabinet, a study can be conducted to assess whether the number of qualified audits has reduced, as well as the ICT bill, as a result of effective implementation of the governance of ICT framework. Furthermore, another study can be conducted to explore the key success factors of effective implementation of the ICT governance framework.

This research focused on IT practices currently in place within DFI's and did not cover the IT mode which is an important independent variable. The researcher proposes further studies relating to the IT mode currently applied within South African DFIs.

There is a general acceptance that the use of ICT supports increased productivity. The researcher suggests a study on measuring IT value within DFIs, as there are some areas of the academic community that question whether ICT provides business value at all.

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APPENDIX A: LIST OF INTERVIEWEES

DFI Name	Title	Date interviewed
DFI A	Chief Information Officer	08 January 2014
DFI A	Risk Manager	11 December 2013
DFI A	Head - ERM	22 January 2014
DFI B	Senior Risk Manager	17 January 2014
DFI B	Senior Manager – IT Audit	17 January 2014
DFI B	External Audit	17 January 2014
DFI C	Head: ICT	29 November 2013
DFI C	Head: ERM	29 November 2013
DFI C	Manager – IT Governance	10 December 2013
DFI C	Chief Financial Officer	13 December 2013
DFI D	Chief Information Officer	13 December 2013
DFI D	Manager – Internal Audit	12 December 2013
DFI D	Manager - Risk	12 December 2013

DFI Name	Title	Date interviewed
DFI E	Head Internal Audit	08 January 2013
DFI E	External Auditor	08 January 2013
DFI F	Manager - External Audit	11 December 2013
DFI F	Senior Manager – IT Audit	11 December 2013
DFI F	Chief Information Officer	09 January 2014
DFI G	Senior Manager – External Audit	19 January 2014
DFI G	Manager - Risk	12 December 2013
DFI G	Head: Internal Audit	19 January 2014
DFI H	Senior Manager – External Audit	19 January 2014
DFI H	Head: Internal Audit	19 January 2014

APPENDIX B: ACTUAL RESEARCH INSTRUMENT

Interview questionnaire

Below is the interview guide that was used to facilitate the semi-structured interviews for this study and the introductory letter that was sent to the respondents. The questionnaire is largely adopted from chapter five of the King III code, with some questions adapted from the ITGI questionnaire.

Dear Sir/ Madam

I am a Master of Business Administration (MBA) final year student at the Wits Business School. I am currently conducting a research project titled "Governance of Information Technology in South African Development Finance Institutions (DFIs)", supervised by Rabelani Dagada.

The objective of the study is to investigate the status of IT governance within DFIs. In order to complete this study, I need to conduct interviews of approximately 45 minutes. Please note that:

- Any information obtained from the interview will be used exclusively for the purposes of the research.
- All information will be treated with strict confidentiality and your name will not be reflected in the dissertation.
- You are under no financial obligation or commitment.
- Interviews are open-ended and will be tape recorded.

The direct benefit to you participating in this study is that you will have the opportunity to review your IT governance practices and benchmark yourself with other DFIs.

A summary of the research findings will be made available to you on request.

I would like to thank you in advance for choosing to participate in my Master's research study. Herewith please find attached the research questionnaire.

Should you wish to contact the researcher, you may do so at the following address:

Email: rudzani.nemaangani@gmail.com

Cell: 0727 04 04 04

Kind regards

Mr Rudzani Nemaangani

Section 1: Organisation details

Name of DFI:

Job title/ designation?

- CEO
- CFO
- CIO/ Head of IT
- CRO
- CAE/ Head of Internal Audit
- External Audit
- Other: Risk

Section 2: Questions

1. How would you describe the role of IT within your DFI?
2. To whom does the CIO or Head of IT report to in your DFI? May you also describe the IT Governance structure within your DFI?
3. In your understanding, what IT frameworks does your DFI apply or consult in implementing their IT governance structures, processes and mechanisms? And why are these framework applied?
4. What would you say were the challenges faced with the implementation of IT governance and what were the causes of these challenges?

5. How is your DFI's IT strategy formulation process organised? How is the IT strategy aligned to the overall strategy of the DFI?
6. How are IT resources (such as people, systems, and financials) managed in implementing IT governance initiatives?
7. How do you think the IT department add value to the business units and the DFI as a whole?
8. How are IT risks identified and IT risk management monitored?
9. Please describe how IT activities are reported to the board, and how often does the reporting take place?
10. How would you rate your DFI's maturity level of IT governance?

APPENDIX C: CONSISTENCY MATRIX

Research problem: Explore the state of IT governance within South African DFIs.					
Sub-problem	**Literature Review**	**Research questions**	**Source of data**	**Type of data**	**Analysis**
Examine the IT governance practices applied within DFIs.	(Ali, 2006) (Butler & Butler, 2010) (De Haes & Van Grembergen, 2009) (Feeny, 1998) (Gaybba, 2006) (Gheorge & Boldeanu, 2011) (ISACA, 2009) (ITGI, 2003) (ITGI, 2011) (Koornhof, 2009) (Musuka, 2006) (Sabegh & Motlagh, 2012) (Simonsson et al., 2010)	How are the IT governance practices applied within South African DFIs and to what extent are these supported by IT governance?	Interview questionnaire; Recorded transcripts; and Notes	Qualitative data	Content Analysis Narrative Analysis

Research problem: Explore the state of IT governance within South African DFIs.					
Sub-problem	**Literature Review**	**Research questions**	**Source of data**	**Type of data**	**Analysis**
Assess IT governance structure and explore the roles of different stakeholders to the extent that they impact on the IT governance within DFIs.	(Abu-Musa, 2009) (Ali & Green, 2005) (Blowers et al., 2007) (Bowen et al., 2007) (Butler & Butler, 2010) (Duffy, 2002) (Gomes, 2007) (Gregory, 2010) (Guldentops, 2004) (Hardy, 2003) (IoDSA, 2009) (ITGI, 2009) (Weill & Ross, 2004b) (Xue et al., 2008)	How is the governance of IT structured within the DFI's and what are the roles of various stakeholders?	Interview questionnaire; Recorded transcripts; and notes	Qualitative data	Content Analysis Narrative Analysis

Research problem: Explore the state of IT governance within South African DFIs.					
Sub-problem	**Literature Review**	**Research questions**	**Source of data**	**Type of data**	**Analysis**
Understand the different levels of IT governance maturity within DFIs.	(Abu-Musa, 2009) (Badenhorst, 2009) (Damianides, 2005) (De Haes & Van Grembergen, 2005) (Debreceny & Gray, 2009) (DPSA, 2013) (Goeken & Alter, 2009) (Heschl, 2007) (ITGI, 2003) (ITGI, 2008) (ITGI, 2011) (Liell-Cock et al., 2009) (Mahlamvu, 2011) (Spafford, 2003)	What is the extent of IT governance implementation and at what level of maturity are existing IT governance frameworks?	Interview questionnaire; recorded transcripts; and notes	Qualitative data	Content Analysis Narrative Analysis

APPENDIX D: MATURITY MODEL

The table below provides a summary of the maturity scale used in this study. This is aligned to the new descriptors as defined in COBIT 5, ISACA (2012).

Level	Descriptor	
0	Incomplete process	The process is not implemented or fails to achieve its process purpose. At this level, there is little or no evidence of any systematic achievement of the process purpose.
1	Performed process	The implemented process achieves its process purpose.
2	Managed process	The previously described performed process is now implemented in a managed fashion (planned, monitored and adjusted) and its work products are appropriately established, controlled and maintained.
3	Established process	The previously described managed process is now implemented using a defined process that is capable of achieving its process outcomes.
4	Predictable process	The previously described established process now operates within defined limits to achieve its process outcomes.
5	Optimising process	The previously described predictable process is continuously improved to meet relevant current and projected business goals.

APPENDIX E: IT GOVERNANCE MATURITY CRITERIA

	Incomplete - 0	Performed - 1	Managed - 2	Established - 3	Predictable - 4	Optimising - 5
Leadership	No IT governance champion has been identified	It governance champion or similar has been identified, however clear roles and responsibilities have not been defined	The roles of the CIO and or IT governance champion have been defined and are clearly understood. The CIO represents IT at key governance forums	The CIO reports directly to the CEO. IT is included in the agenda of the executive meetings and the board	An IT – business governance forum has been established and it is chaired by a business executive. The agenda for this forum is largely driven by performance against strategy.	It Governance initiatives are sponsored by a business executive (CEO or equivalent) Business and IT seamlessly integrate into daily decision making. The board has delegated responsibility for IT governance and they are in turn accountable.
IT Governance Frameworks	No leading practice frameworks have been adopted and	IT governance frameworks have been identified but not	Leading practice frameworks have been adopted, however not consistently applied across the	Leading practice frameworks such as COBIT, ITIL, BS17799, TOGAF have been adopted and are widely	The IT governance framework provides clear criteria for governance decision	An integrated IT governance framework has been adopted and implemented. The framework is consistent

	Incomplete - 0	Performed - 1	Managed - 2	Established - 3	Predictable - 4	Optimising - 5
	implemented	implemented	organisation	used across the organisation for the effective governance of IT.	making	with leading practice and has been customised to the organisation.
Strategic Alignment	There is no formal IT or business strategy in place	The strategy formulation process is performed in silos	The IT strategy is focused on IT requirement with a short-term focus	Process for identifying and exploiting business opportunities through IT has been defined.	The board ensures integration between IT objectives and the business strategic objectives.	The IT strategy contributes to the business growing financially, gaining competitive advantage and dealing with competitors
Value Deliver	No process in place to measure value delivery	Value delivery measures / metrics have not been defined.	Value delivery measure is not widely understood across the organisation. IT is not able to demonstrate its value to the business.	Value delivery is measured in terms of cost reduction only.	Key business outcome metrics often shift from cost reduction and compliance to top-line growth and operating excellence	IT governance efforts drive improved business performance and increasing levels of return on investment

	Incomplete - 0	Performed - 1	Managed - 2	Established - 3	Predictable - 4	Optimising - 5
Risk Management	No risks management framework or practices in place	A risk management frame work has been adopted, however it is not consistently applied across the organisation	IT risks are considered the responsibility of IT with no business ownership. Risk management is not a proactive process	An enterprise risk management framework has been adopted and is consistently applied across the business. IT risks are the responsibility of everyone and not just the CIO	A risk committee has been established and is responsible for facilitating risk management activities across. Risks are accepted an managed based on the return on investment	Strategic and operational IT risks are included in the board agenda and are considered as critical risks to the business. Calculated risks are generally taken for competitive advantage.
Resource Management	Here is no resource plan defined	Critical skills and positions have not been identified	Critical skills and positions have been defined but are not filled. The organisation largely uses legacy systems with a number of systems and infrastructure lacking	Mechanism for the retention of critical staff have not been established and implemented	Critical position within IT has been filled. IT is provided with funding to drive growth and innovation projects. The IT environment is generally composed of latest technologies	Available IT resources are able to meet the business demands. Leading technologies are used to give business a competitive advantage

	Incomplete - 0	Performed - 1	Managed - 2	Established - 3	Predictable - 4	Optimising - 5
			appropriate support			
Performance Management	Performance monitoring and the related performance metrics have not been defined	A performance management process has been defined but not implemented	Performance management is individually focused with no performance of the IT function	Performance metrics have been defined and these are largely related to availability of IT systems, number of IT incidents, with no focus on business performance metrics	Performance management drives continuous improvement on a more frequent basis.	A balanced scorecard approach to performance has been adopted, with a focus on financial, customer, process and people parameters.

Source: Mahlamvu (2011)