

**Information Technology Governance  
Frameworks in higher education in  
South Africa: A paradigm shift**

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## **ABSTRACT**

Good corporate governance has, in recent years, been placed on centre stage worldwide and several frameworks have been put in place to enable organisations as well as higher education institutions to adhere to effective IT governance with regards to IT service delivery and support. At the same time, demand from users for access to corporate resources with their own personal devices other than desktop or laptop computers and options such as cloud computing, social media and mobility have converged into a renewed driving force influencing all IT decisions regarding service delivery and support, whilst higher education institutions attempt to comply with governance regulations.

The aim of this study was to investigate whether ITIL as an IT governance framework is still applicable and relevant to a changed service delivery context in IT service delivery departments in the higher education sector in South Africa.

Higher education in South Africa has not been excluded from adhering to good governance and the draft Regulations for Reporting by Higher Education Institutions have been updated with the recommendations of King III which, for the first time, addressed IT governance and insisted on management to implement an IT governance framework. ITIL is one of the most widely used governance frameworks, however its position as a technology on the Gartner Hype Cycles for Education for 2011 and 2012 displayed a move backwards from being widely understood to a display of waning interest amongst institutions in the education sector worldwide.

Exploratory research found that ITIL is still valued as a governance framework in higher education in South Africa however staff members in IT support departments displayed a resistance to change and also found it difficult to implement ITIL processes. This is, however, not primarily due to a changing IT service delivery

context. Findings also indicated that ITIL should be considered as a set of guidelines and best practices and not a governance framework as such.

Recommendations towards a paradigm shift regarding ITIL as a governance framework *per se* as well as a proposal towards a possible alternative conceptual IT governance framework incorporating only ITIL guidelines and best practices as well as COBIT for risk management were put forward.

**Key terms:** ITIL, COBIT, IT governance, King III, higher education.

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## LIST OF ABBREVIATIONS

ASAUDIT	Association of South African University Directors of Information Technology
BYOD	Bring Your Own Device
CCTA	Central Computer and Telecommunications Agency
CISR	Centre for Information Systems Research
COBIT	Control Objectives for Information and related Technologies
CUT	Central University of Technology
DHET	Department of higher Education and Training
HE	Higher Education
HESA	Higher Education South Africa
ICT	Information, Communication and Technology
IEC	International Electrotechnical Commission
IoD	Institute of Directors
ISACA	The Information Systems Audit and Control Association
ISO	International Standards Organisation
ITC	Information Technology Central
ITGI	Information Technology Governance Institute
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
itSMFsa	Information Technology Service Management Forum in South Africa
JSE	Johannesburg Stock Exchange

King III	The King Report on Governance for South Africa, 2009
MIT	Massachusetts Institute of Technology
MUT	Mangosuthu University of Technology
NMMU	Nelson Mandela Metropolitan University
NWU	North-West University
OGC	Office of Government Commerce
ROI	Return on Investment
SFIA	Skills Framework for the Information Age
SOX	Sarbanes-Oxley Act of 2002
SMPI	Service Management Proficiency Index
SRC	Student Representative Council
TENET	The Tertiary Education and Research Network of South Africa
UFH	University of Fort Hare
UFS	University of the Free State
UJ	University of Johannesburg
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UL	University of Limpopo
UNISA	University of South Africa
Univen	University of Venda
UP	University of Pretoria
US	University of Stellenbosch
USA	United States of America

UWC	University of the Western Cape
V3	Version 3 (ITIL)
Val IT	The Value IT Framework
WITS	University of Witwatersrand

# CHAPTER 1

## ORIENTATION AND PROBLEM STATEMENT

### 1.1 INTRODUCTION

The demand from users who are more “technology-savvy” than ever before has changed the relationship of information technology (IT) support departments to information consumption and service delivery forever. Although access to corporate resources is still in demand, former IT responsibilities have now moved to the users themselves as they take more control of new technologies with personal mobile devices such as cell phones and tablets. Options such as cloud computing, social media and mobility have now converged into a renewed driving force influencing all IT decisions regarding technology solutions for content management, collaboration and social business needs (Dulaney, 2011:1; Plummer & Middleton, 2011:1-2).

On the other hand, the lack of boardroom ethics, failures in auditing and risk management and the indifference in establishing careful checking and monitoring structures for control purposes has placed corporate governance compliance on centre stage worldwide. In the United States of America (USA), the downfall of Enron and its auditing firm, Andersen, are still regarded as the biggest corporate collapses ever and led to the enactment of the Sarbanes-Oxley Act of 2002 (SOX). SOX, for the first time in the USA, addressed corporate governance through regulation (Raghupathi, 2007:98; Solomon, 2010:3 & 28; USA, 2002).

The King Report on Governance for South Africa, 2009 (King III), became effective on 1 March 2010 and provided directors and executives of organisations guidance through a list of best practice principles to utilise organisational resources in such a way as to ensure the continuing viability of the organisation. Due to IT tools and solutions having become pervasive to

business as an operational asset, the additional risks it introduced and the fact that it is no longer only utilised to enable business, Chapter 5 of King III mandated the management of operational IT risk and securities, effective IT governance and compliance with laws, rules, codes and standards. South Africa's new Companies Act (71 of 2008) and continuing obligations of the listing requirements of the Johannesburg Stock Exchange (JSE) Ltd. required the application of the principles addressed in King III. This in turn would lead to a company or institution practicing good governance (Deloitte, 2009; King, 2009:80; PricewaterhouseCoopers, 2009:2).

## **1.2 CONTEXT**

The breakdown of institutional boundaries between companies and universities has become evident and corporate governance is equal to higher education governance when it is translated to the education sector. IT governance in King III is just as relevant to the higher education sector as it is to private companies and IT governance and IT service delivery in higher education institutions do not differ from similar activities in any other organisation. IT service delivery in the higher education sector faces the same challenges than businesses in the private sector and the need for effective IT governance and the application of IT governance frameworks must be emphasised (Conceicao & Heitor, 2001:1; Viljoen, 2005:1, 41- 42 & 134).

Organisations worldwide attempt to use or follow IT governance principles, as embodied in IT governance frameworks such as the Information Technology Infrastructure Library (ITIL) service management practices and Control Objectives for Information and related Technologies (COBIT); however, demand from users for more flexible and intuitive IT tools may leave IT service delivery departments with no control over tool selection or solution provisioning. IT governance cannot be applied overnight and no organisation or higher education institution can move from a non-existent state regarding IT governance to a managed, measurable and optimised state as described by

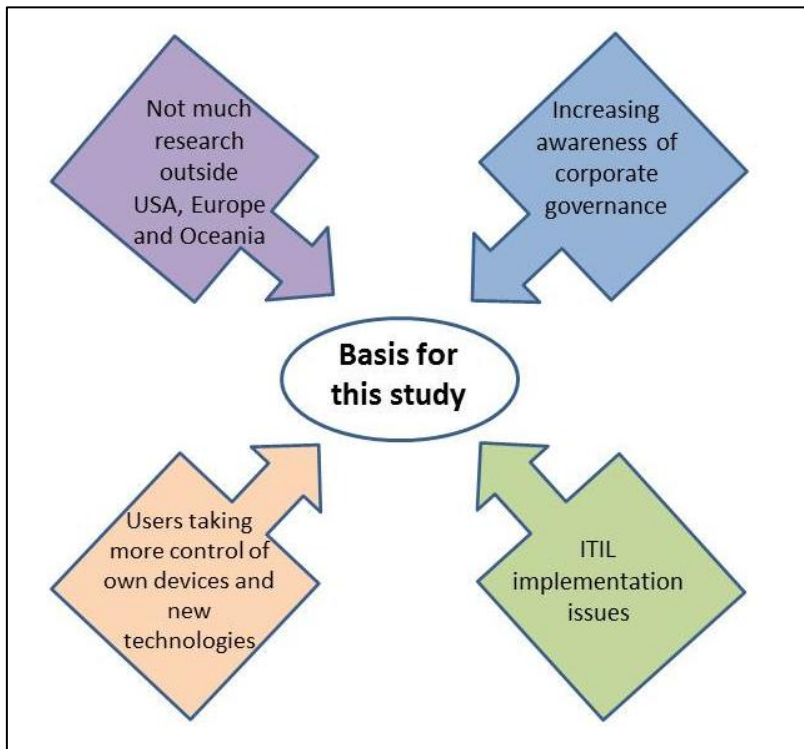
COBIT's maturity model in a relatively short period of time. The implementation of an IT governance framework such as the ITIL service lifecycle intends to implement logical processes for a flow from service strategy to design, transition, operation and continual service improvement. It does, however, not take into account the gap between the demand from users for content sharing and collaboration needs and the implementation of enterprise content management platforms to provide the governance to assure transparency and accountability and to adhere to good governance (Bloodworth & Herron, 2007; Chitambala, 2006:11; Hart, 2011:1; Shegda & Drakos, 2011:1-2).

IT service delivery now entails the provisioning of network connectivity and access to organisational resources and content at any time and from anywhere. IT support departments are now expected to provide end-user assistance for multiple devices such as personal computers and laptops, cell phones and tablets with user-owned applications, whilst simultaneously attempting to align IT technologies such as content management, collaboration and social business with good corporate governance.

### **1.3 CAUSAL FACTORS**

The causal factors for this study were as follows (see figure 1.1):

**Figure 1.1: Causal factors highlighted**



**Source:** Adapted from Nicho and Al Mourad (2012:27)

- **Not much research** has been done on the effectiveness, challenges, success factors and best practices of ITIL outside the USA, Europe, Australia and New Zealand (Nicho & Al Mourad, 2012:28);
- An **increasing awareness for corporate governance** in higher education institutions in South Africa with specific focus on IT governance as stipulated in Chapter 5 of King III;
- Traditional service delivery in information technology support departments has changed from a *no, because* to a *yes, but* attitude due to **users taking more control of new technologies** and their own personal mobile devices;
- Time and money are invested in Information Technology Infrastructure Library ITIL accredited remedy systems at higher education institutions and employees are encouraged to get ITIL certified. It needs to be established whether institutions **ever get to the point** where it can be said that ITIL processes have been **successfully implemented**.

Another important causal factor for this study was the fact that corporate governance needs to be adhered to and implemented in IT service delivery departments in higher education institutions whilst providing end-user assistance and access to corporate resources to users at any time and from anywhere via their chosen devices. Governance frameworks and process vehicles such as ITIL may need to be adapted or a new IT governance framework may need to be devised to accommodate these needs.

#### **1.4 IMPORTANCE OF THIS STUDY**

The study of information governance frameworks in higher education in South Africa is first and foremost necessary due to very little research available on this topic for this geographical area. Difficulties experienced worldwide in implementing ITIL processes as a governance framework as well as social media and mobile devices demanding new IT support strategies urge a new approach towards IT service delivery without jeopardising corporate governance adherence. This study attempted to identify the paradigm shift needed.

#### **1.5 PROBLEM STATEMENT**

IT support departments in the higher education sector in South Africa constantly strive towards improved and more efficient customer service levels. Several best practice improvement methodologies such as ITIL are often explored and implemented to meet the increasing demand from users. Money is spent on planning ITIL processes but when it needs to be implemented, it fails due to several reasons:

- ITIL processes are not properly mapped to the technology solution such as remedy or action request systems;
- Not enough time and money are budgeted for to cater for knowledge transfer and empowerment;

- Only the basic functions of complex remedy or action request technological solutions are utilised and no proper information is built into it or grows in it to harness the possible advantages of ITIL processes and knowledge management.

At the ITIL in higher education constituency group meeting at Educause in Anaheim in 2010 most participants stated that they were very keen to explore the value of ITIL to an organisation and how to plan for and implement ITIL processes. Many participants, however, stated that no efforts to implement or adopt ITIL best practices have been started at their institutions due to:

- Reluctance to change attitudes from staff members;
- The lack of adequate tools to assist in the implementation of ITIL;
- The lack of existing models and case studies about successful ITIL implementations in higher education institutions (Educause, 2010).

Organisations find it difficult to adapt to IT governance frameworks such as ITIL and often expect employees to adopt these frameworks in the same way as they would adopt a new process or technology solution. However, due to the ever-changing demand from users, IT departments now focus more on demand management than merely supplying tools and processes to add value to core business. *Abundance* as applied in the provisioning of large mail boxes for email or large amounts of disk space for shared network drives is now often the key in IT service delivery strategies. Explorative research is needed to find out whether an IT governance framework such as ITIL is still applicable (Rivard, 2011).

Have IT governance frameworks such as ITIL become mere *fashion*; does it really work; is it a kind of *magic wand* that will quickly solve IT services delivery problems; does it still fit in with the new, changed IT service demand culture – does it still have a place in the higher education sector in South Africa or should a new IT governance framework be designed and adopted?

## 1.6 RESEARCH OBJECTIVES

The research objectives of the study are split into primary and secondary objectives:

### 1.6.1 Primary objective

The primary objective for this study is to investigate whether ITIL as an IT governance framework is still applicable and relevant to a changed service delivery context in IT service delivery departments in the higher education sector in South Africa.

### 1.6.2 Secondary objectives

To achieve the primary objective of this study, the secondary objectives to be realised are:

- 1.6.2.1 To investigate whether or not IT departments at higher education institutions in South Africa experience a shift in service delivery from managing the supply of IT tools and solutions through traditional, restrictive service delivery practices to business (a *no, because* attitude that prescribes to business what tools and solutions to use) to a more open attitude, that is, the alignment of a portfolio of tools and services with the demand from business (a *yes, but* attitude allowing business users to demand and prescribe IT services);
- 1.6.2.2 To investigate the implementation status and relevancy of ITIL in IT support departments in the higher education sector in South Africa;
- 1.6.2.3 To investigate possible alternatives to ITIL as a governance framework, *per se*.

Exploratory research will be done to establish whether IT governance frameworks such as ITIL are successfully implemented at public higher education institutions in South Africa and whether the new user demand culture can be aligned with good corporate governance and specifically with ITIL as a best practice process vehicle.

## **1.7 RESEARCH METHODOLOGY**

### **1.7.1 Literature and theoretical review**

A literature and theoretical survey on the areas of corporate governance, governance in the higher education sector, IT governance and IT governance frameworks, with specific focus on ITIL as well as the changing IT service delivery sphere, was conducted. Special attention was given to IT service delivery in a new context, that is: demand from users to access enterprise content from anywhere at any time via their own devices and to utilise social collaboration tools for business use.

### **1.7.2 Empirical research**

To accomplish the research objectives of this study, empirical research was done among higher education institutions in South Africa. All (23 in total) public higher education institutions were approached to participate in this study. Requests were sent out to all higher education institutions mentioned above to establish the participating institutions and the target group were participants in managerial positions in IT service delivery departments.

Primary data was then collected in the form of results from quantitative and qualitative questionnaires sent out to the target group at participating institutions. The questionnaires were formulated as to receive independent responses from the individuals surveyed.

Data was analysed to research the context of IT service delivery at higher education institutions in South Africa as well as the implementation and relevancy of ITIL as a traditional IT governance framework implemented and utilised at IT support departments. An attempt will also be made to establish whether any correlation between the challenges or difficulties experienced in the implementation of ITIL processes in a new changing IT service delivery context exists.

The results of the data analyses were then used to establish whether new IT governance frameworks should be developed.

### **1.7.3 Limitations**

#### **1.7.3.1 Sources**

The literature and theoretical review is limited to sources that are readily available on the Internet at the time, as well as publications readily available in libraries in South Africa until 30 September 2012.

#### **1.7.3.2 Research**

This study does exploratory research in IT governance frameworks, limited to:

- Information technology service delivery and support departments;
- Public higher education institutions in South Africa participating in this study.

## **1.8 LAYOUT OF THE STUDY**

The mini-dissertation is divided into four chapters, which will be presented as follows:

### **CHAPTER 1: Orientation and problem statement**

This chapter discusses the background, context of and causal factors to the study as well as the problem statement. It also presents an overview of the research design and layout of the next chapters.

### **CHAPTER 2: Literature review**

This chapter investigates, through a literature review, the basic elements of corporate governance with specific focus on IT governance frameworks as well as concepts of IT service delivery in higher education institutions.

### **CHAPTER 3: Empirical study**

This chapter presents the research methodology by discussing the sampling methods used as well as the compilation of the survey instrument, namely a questionnaire, the study participants and the data collection. The results of the investigation are also presented and discussed.

### **CHAPTER 4: Conclusions and Recommendations**

The conclusions of the study based on the literature review and empirical investigation as well as recommendations for further study are presented in this final chapter.

## **1.9 CONCLUSION**

Good corporate governance has, in recent years, been placed on centre stage worldwide and several frameworks have been put in place to enable organisations as well as higher education institutions to adhere to effective IT governance with regards to IT service delivery and support. Demand from users

for access to corporate resources with their own personal devices other than desktop or laptop computers and options such as cloud computing, social media and mobility have converged into a renewed driving force influencing all IT decisions regarding service delivery and support, whilst higher education institutions attempt to comply with governance regulations.

## **1.10 CHAPTER SUMMARY**

The aim of this study was to establish the context in which IT support departments in the higher education sector deliver services to users in a changed era where mobility, amongst other factors prescribes users' demand for support. The relevancy of ITIL as a governance framework to public higher education institutions in South Africa in this changed context was also assessed and a proposal was subsequently put forward with regards to **a paradigm shift** regarding ITIL as a set of best practices and a changed view on IT governance frameworks in the current service delivery context in higher education in South Africa.

# **CHAPTER 2**

## **LITERATURE REVIEW**

### **2.1 INTRODUCTION**

The Control Objectives for Information and related Technology (COBIT) and the Information Technology Infrastructure Library (ITIL) are two of the best known and widely used information technology (IT) standards and best practice frameworks worldwide. Both of these governance frameworks are also relevant to IT service management and IT support in the higher education sector.

IT service delivery departments in all sectors are currently characterised by non-traditional activities: Ten years ago IT support departments still prescribed the hardware and software users had to use, but in recent years new and rapidly evolving content management, collaboration, social business and mobile technologies as well as increased demand from users to access enterprise content from anywhere and at any time have forced IT support departments to rethink their service delivery strategy and explore innovative means to comply with governance requirements.

This study attempts to establish whether a new and changing IT support context exists and focuses on the relevancy of ITIL as an IT governance framework in the higher education sector in South Africa. The author also attempts to establish whether seamless processes in IT service delivery and support throughout the higher education organisation as prescribed by ITIL best practices are still practical and feasible in a new and changing IT support context.

The study of literature contained in this chapter firstly provides an overview of corporate governance in general and in higher education institutions in South Africa. Secondly, it defines IT governance and related frameworks with specific

focus on COBIT and ITIL. Thirdly, it clarifies how all of these concepts fit in with the delivery of IT services and the challenges existing in the implementation of the COBIT and ITIL governance frameworks. Lastly it provides an overview of the current rapidly changing context in which service delivery takes place in IT support departments.

## 2.2 GOVERNANCE OVERVIEW

The word *governance* is derived from the Latin word “*gubernare*”, which, in the maritime sense, means *to steer*. The general purpose of governance is not only the association to board or directors’ meetings, but to ensure that an organisation has the means to envision and design its future, implement the design and sustain this process over time. Governance will enable organisations to achieve strategic goals but needs to be distinguished from *management* which involves daily decision-making. *Good governance* is about control and guidance by the governing bodies of an organisation to protect stakeholder groups and subsequently accomplishing business outcomes with integrity (CISR, 2012; Griseri & Seppala, 2010:246-248; Hanson, 2011:94; Oxford, 2012; Short, Nunno & Caldwell, 2012:3; Solomon, 2010:xix).

Takieddine (2011:3) defined governance as

*“A system through which the performance of institutions is guided and supervised so as to achieve the required objectives”.*

For the purpose of this study, governance is defined as:

The **accountability** of institutions to their **stakeholders**

Stakeholders within the context of higher education institutions in South Africa refer to amongst others, students, staff and faculty members as well as the government.

### **2.3 CORPORATE GOVERNANCE WORLDWIDE**

The importance of corporate governance and its recognition cannot be overemphasised. Reviews of corporate governance and guidelines for the improvement thereof have been spawned by massive corporate collapses due to weak corporate governance systems. Enron and Arthur Andersen in the United States of America (USA) and the Health and Racquet club (LeisureNet Ltd) in South Africa are examples of companies led to legal and financial ruin due to unethical activities, conflict of interests and excessive focus on return on investment (ROI). No devices for detecting fraud and misdoing were in place at any of these firms. The fall of Enron and subsequent falls of large companies such as Parmalat in the United Kingdom (UK) in December 2003 contributed to the acceleration of corporate governance reform worldwide (Raghupathi, 2007:94; Solomon, 2010:xxiii, xvix, 28, 33, 40; South Africa, 2011:2).

The Sarbanes-Oxley act (also called SOX, a rules-based approach issued in the USA during July 2002) attempted to address the accurate assessment of the financial condition of public companies through regulation (a *comply or else* regime). In the UK, the Higgs and Smith reports were published in response to corporate governance failures and as the recent financial crisis during the years 2008-2009 could largely be contributed to corporate governance weaknesses, recommendations for improvements such as the Turner and Walker reviews were published in the UK in 2009. The UK has however persisted with its cultural predisposition to shape the governance patterns of firms by codes of practice rather than formal legal requirements (Raghupathi, 2007:98; Smith & Lenssen, 2009:17, USA, 2002:1).

In South Africa, the Institute of Directors (IoD) and the King Commission published the King Report on Corporate Governance in South Africa in 2009 (also known as King III). King III has been effective from 1 March 2010 and has worldwide been recognised as the “*most forward-looking and progressive approach to corporate governance adopted by any code of practice*”. It attempted to bring South African principles of corporate governance in line with the new **Companies Act** (71 of 2008) with the focus on sustainability as well as the changing trends in corporate governance internationally, as discussed previously (King, 2009:10-18; Solomon, 2010:341).

The focus of King III was not to force executives to comply with the recommended best practice principles. It followed a principle-based approach and remains a recommendation for a course of conduct only, namely to *apply or explain* the triple bottom-line of corporate governance which accounts for social and environmental, as well as economic and financial issues. By not complying with King III and exercising their duty of care, skill and diligence, a board of directors or individual director would be liable at law. King III referred to *stakeholders inclusive* when considering the lawful interests and expectations of stakeholders in the best interest of an organisation (also see §2.2) (King, 2009:10-18; Solomon, 2010:341).

Other **statutory regulations** applicable to corporate governance in South Africa are:

- **The Promotion of Access to Information Act** (2 of 2000, mandated by Section 32 of the Constitution); and
- **The Promotion of Administrative Justice Act** (3 of 2000).

Corporate governance practices, codes and guidelines such as the SOX in the USA and King III in South Africa introduced accountability, mitigated risk, improved corporate agility, fostered ethical behaviour, leveraged technological investments and lifted the bar as to what is regarded as appropriate standards

of conduct. Unfortunately, overwhelming governance processes and controls as well as confusion surrounding compliance have led to ineffective governance practices prohibiting many organisations from achieving their strategic objectives (Short *et al.*, 2012:4).

## 2.4 GOVERNANCE IN HIGHER EDUCATION IN SOUTH AFRICA

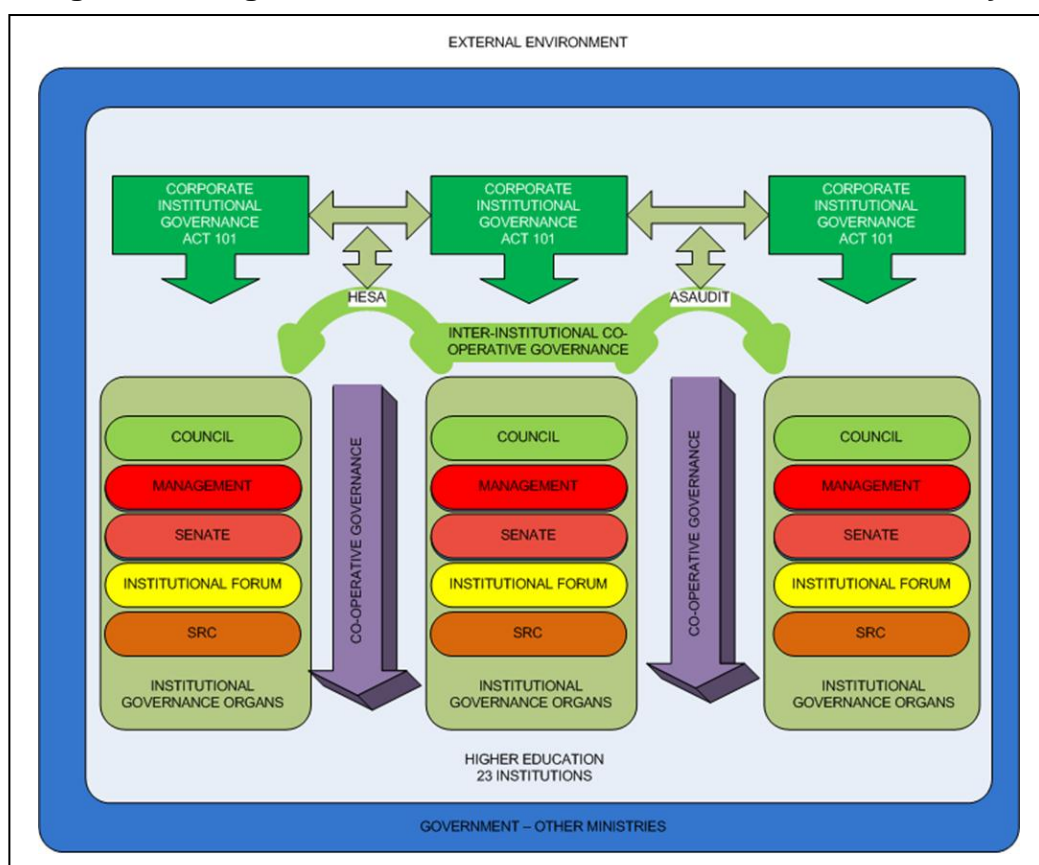
In South Africa, any public higher education institution is considered to be a higher education institution when it is established, deemed to be established or declared as a public higher education institution under the **Higher Education Act** (101 of 1997), as amended. This act constitutes the primary legal framework for higher education institutional councils in South Africa. A public higher education institution is therefore a legally independent corporate institution (a juristic person) and its governing bodies are just as compelled to adhere to good corporate governance and accountability as any other organisation. Procedures should be put in place to ensure they comply accordingly (DHET, 2012b:2).

The agency and stakeholder theories are two theoretical views that govern the discussion on modern corporate governance. A director of a company acting on behalf of share- or stakeholders is not likely to take as much care with the business they are entrusted with as someone who actually owns it, leading to the so-called *agency problem*. The stakeholder theory, however, applies to higher education institutions where students, staff, faculty members and the government are, amongst others, all stakeholders of the higher education institution (also see §2.2). All parties should thus be encouraged to participate in promoting corporate governance and implementing processes or controls to ensure ethical behaviour (Griseri & Seppala, 2010:251; Takieddine, 2009:8).

Figure 2.1 depicts the higher education sector in South Africa as a system of cooperative institutional governance structures such as the council, management, senate, the institutional forum and the student representative

council (SRC) as contemplated in the Higher Education Act (101 of 1997), as amended. To improve cooperative governance, inter-institutional governance structures such as Higher Education South Africa (HESA), its communities of practice and the Association of South African University Directors of Information Technology (ASAUDIT) have also been created, although these structures are not required in terms of the Higher Education Act. (HESA is a unified body of leadership that has represented 23 vice chancellors of public universities since 2005 in facilitating informed higher education public policy development as well as cooperation amongst role-players such as higher education institutions, government and the IT industry in South Africa. ASAUDIT, on the other hand, focuses on IT support at higher education institutions and encourages collaboration between member institutions) (ASAUDIT, 2012; HESA, 2012; Johl, 2012:8).

**Figure 2.1: Higher education institutions in South Africa as a system**



**Source:** Adapted from Johl (2012:8)

The Regulations for Reporting by higher education institutions which were drafted in terms of the Higher Education Act (101 of 1997) as amended, regulated and prescribed reporting by public higher education institutions. During the first quarter of 2012, the Department of Higher education and Training (DHET) embarked on a process to revise these regulations to, amongst others, update the regulations with the recommendations of King III. These regulations, although still only in draft format, will compel public higher education institutions to exercise their fiduciary and managerial responsibilities in a transparent manner, to implement systems that will ensure good corporate governance and to give regular account of the results of exercising their delegated powers. The highest management bodies at universities must hence ensure that the institution for which they are responsible for, as far as is relevant to public higher education institutions, complies with the content and recommendations of King III (DHET, 2012b:6; Parker, 2012:2).

It is therefore clear that public higher education institutions are not excluded from corporate governance or any part or section in King III. Governing bodies should explain fully to the stakeholders of the institution if it has decided not to apply a specific principle or recommendation (PricewaterhouseCoopers, 2009:2).

## **2.5 INFORMATION TECHNOLOGY (IT) GOVERNANCE**

Severe security breaches in higher education in recent years have contributed to highlighting IT governance due to potential disasters. Gartner's 2011 risk management discipline survey results supported this view and highlighted overall IT governance as the top (42%) IT-related audit deficiency that requires the most remedial effort (McCredie, 2006:7; Pratap, 2012:1).

The application of governance in the area of IT and the subsequent concept of *IT governance* emerged due to the importance of IT to the operational management of any organisation and the need of organisations to monitor and

control IT activities to remain accountable to all stakeholders. It has since become a function of corporate governance and thus a fundamental business imperative. IT governance is the responsibility of a board of directors in an organisation and should form a fundamental part of the governance structures within a company to ensure expansion of its strategic objectives. *Effective IT governance* is therefore not a separate set of activities to be carried out by specialists and should not be practiced in isolation. It is the integration of the IT aspect in an organisation's governance processes and thus the enterprise management system through which an organisation's portfolio of IT systems is directed and controlled. It ensures that IT is aligned with the business, that IT manages resources, risks and performance and serves as the most important indicator of the value created by IT in an organisation (Peterson, 2004; Wijsman, Neelissen & Wauters, 2008:3; Woertman, 2006:4-5).

Traditionally, IT governance relied on coordinated and standardised vertical processes; however, this provided only a limited ability to govern IT effectively. A key challenge in IT governance remain to meet business demands and those of its key stakeholders while transforming IT to be ready for new and emerging demands of its IT users (Peterson, 2004:9; Pfauser & La Chapelle, 2011:1).

Numerous definitions for IT governance and the importance thereof for any organisation exist:

**Table 2.1: IT governance definitions**

MIT Sloan Centre for Information Systems Research (CISR, 2012)	“ ... a <b>framework</b> for decision rights and accountability to encourage desirable behaviour in the use of IT”
Forrester Research, Inc (Symons, 2010).	“ ... the <b>process</b> by which decisions are made around IT investments”
Gartner (Gartner, 2012b; Wijsman <i>et al.</i> , 2008:4).	“ ... the <b>processes</b> that ensure the effective and efficient use of IT in enabling an organisation to achieve its goals”
The IT Governance Institute (ITGI, 2011)	“ ... an integral part of enterprise governance and consists of the <b>leadership and organisational structures and processes</b> that ensure that the organisations’ IT sustains and extends the organisation’s strategies and objectives”

The MIT Sloan Centre for Information Systems Research (CISR, 2012) distinguished between IT governance and IT management by defining IT management as:

*“The daily decision making and implementation activities around the firm’s use of IT”.*

In the USA, Section 302 of SOX has been the driving force behind IT governance to assess and report on the effectiveness of an organisation’s internal controls and King III addressed the pervasive nature of IT and the necessity of effective IT governance in South Africa in Chapter 5. Information systems were previously used as an enabler of business only, but are now built into the business strategy of an organisation due to the significant additional risks it introduces (USA, 2002; King, 2009:16).

For the purpose of this study, the following definition for IT governance has been adapted from the ITGI:

IT governance is the **responsibility** of executives to remain **accountable** to all stakeholders by leveraging **IT resources** to ensure sustainability and extension of the **organisation's strategies and objectives**. This should be done by directing, measuring and evaluating the use of an organisation's IT resources through leadership, **organisational structures and processes** (ITGI, 2011:8).

The implementation manual for Reporting by Public Higher Education Institutions in South Africa, notes that one of the governance responsibilities of council and management is that these entities should be responsible for IT governance and the implementation thereof. They should therefore be able to report that systems are designed to promote ease of access for all users and the systems are sufficiently integrated to minimise duplication of effort and ensure minimum manual intervention and reconciliation procedures (DHET, 2012a:11).

## 2.6 INFORMATION TECHNOLOGY (IT) GOVERNANCE FRAMEWORKS

IT governance has now also been incorporated in Chapter 5 of King III as mentioned above. In Principle 5.6 the protection of information, the protection of personal information processed by an organisation as well as the availability of information and information systems in a timely manner, were highlighted. The definition of a framework, according to the Oxford Dictionaries is “*a basic structure underlying a system or concept*” (Oxford, 2012). Principles 5.1 and 5.3 in King III directed management to insist upon an internal IT control framework and IT governance frameworks:

*“The board should ensure that an **IT internal control framework is adopted** and implemented and that the board receives independent assurance of the effectiveness thereof”,*

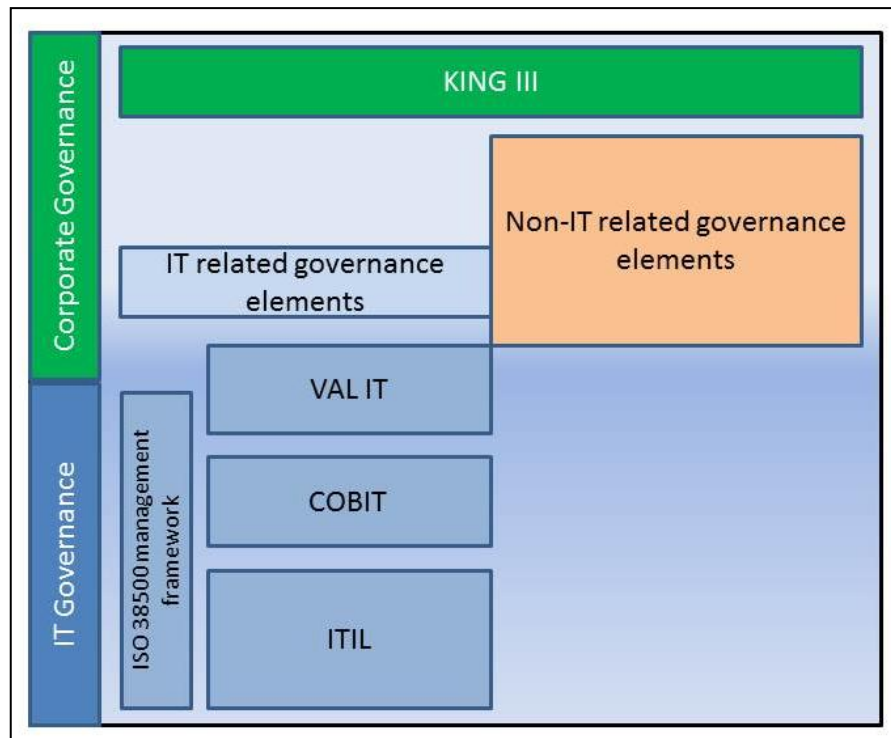
and:

*“**Effective IT frameworks and policies**, as well as the processes, procedures and standards that these involve, **should be implemented** to reduce IT risk, deliver value, ensure business continuity, and assist the company to manage its IT resources efficiently and cost effectively” (King III, 2009:82-83).*

King III, in Principle 5.3 is supported by Gartner’s 2012 Hype Cycle for education: This Hype Cycle depicted a state of technical chaos at educational institutions worldwide. Gartner admitted that the ability of these institutions to make accurate decisions quickly was not a strong trait and advised that *“IT governance leverage capabilities”* should be represented by more formal frameworks (King, 2009:83; Lowendahl, 2012b:3).

COBIT, ITIL, the Value IT Framework (Val IT) and the ISO 38500 standard are all IT governance relevant frameworks, standards and best practices publications. Badenhorst (2009b:9) suggested the above-mentioned governance frameworks to be applied as follows in figure 2.2:

**Figure 2.2: IT Governance frameworks, standards and best practices**



**Source:** Adapted from: Badenhorst (2009b:9)

The ISO 38500 standard published jointly from the International Standards Organisation (ISO) and the International Electrotechnical Commission (IEC) in April 2008 provides a framework to executive management members, IT specialists and IT auditors in an organisation to assist in achieving the maximum productivity with minimum wasted effort or expense on the acceptable use of information, communication and technology (ICT) services within the organisation. COBIT, on the other hand, provides an overall control framework on what to control and monitor, whereas ITIL describes specific best practices on how to implement the processes identified by COBIT. Val IT complements COBIT and provides organisations with the means to “*measure, optimise and monitor*” business value derived through IT investments. By wrapping process, people and technologies together, ITIL with COBIT and the ISO 38500 can give IT support the governance and reference framework necessary for governing its operations. It still, however, depends on the

institution whether the relevant goals are achieved (Badenhorst, 2009a:28; ISO/IEC, 2008:5; ITGI, 2003:6).

*For the purpose of this study, the evaluation of IT governance frameworks and the relevance thereof on IT service delivery in higher education institutions will be limited to ITIL; however, a more in-depth discussion on ITIL will not be complete without a short introduction to COBIT.*

### **2.6.1 Control Objectives for Information and related Technology (COBIT)**

The first, second and third editions of COBIT were published in 1994, 1998 and 2000 respectively and is currently owned by ISACA (the Information Systems Audit and Control Association). This broad governance and management framework is maintained and supported by the ITGI and although it is intended to suit every organisation and is to some the most commonly applied IT governance tool that guides the achievement of an organisation's goals by its investment in IT, COBIT 4.1 (published in 2005) is still regarded by some primarily as a *management* rather than a *governance* framework. COBIT 5 was released on 10 April 2012 with very little mapping to COBIT 4.1 and is no longer only a simple audit tool. It now guides organisations in assessing and potentially improving IT governance through risk management and increased IT investment value from a strong controls objective (Lowendahl, 2012b:24-25; Mingay, Spafford & Wheeler, 2012:1; Wijsman *et al.*, 2008:4, 10).

COBIT provides an overall control framework based on an IT process model suitable for every organisation and comprises the following focus areas: Strategic alignment, Value delivery, Resource management, Risk management and Performance management. ITIL, on the other hand, describes how to go about implementing these processes to monitor and control. COBIT and ISO 27002, which is more specific to security, along with ITIL form the basis of a blueprint for IT risk and security governance (Greenfield, 2007:1).

COBIT takes the perspective of business audit and control and despite the expansion into COBIT 5 still does not replace ITIL because ITIL focuses on service management. Gartner stated that although COBIT does not provide any useful guidance on sustainability, it is still in a better position to achieve a strategic business approach to manage IT operations governance. Service improvement programs often lack a strategic or business context when leveraging ITIL. COBIT complements ITIL, assists in plying ITIL processes to organisational needs and provides a mechanism to manage and measure IT operations governance and high-level risks as well as continual improvement. (Lowendahl, 2012b:24; Mingay *et al.*, 2012:1; Wijsman *et al.*, 2008:10).

### **2.6.2 Information Technology Infrastructure Library (ITIL)**

In the latter half of the 1980s the Information Technology Infrastructure Library (ITIL) was developed by the Central Computer and Telecommunications Agency in the UK (the CCTA), due to the UK government's disapproval with the way in which IT was delivered in government. Since then the CCTA has been incorporated in the Office of Government Commerce (OGC), a branch of the British Government, which produces ITIL today. ITIL is regarded by some as the most comprehensive structured process approach for IT service delivery available today. It ensures current and practical guidance to organisations and is well-known as mechanism for the improvement of quality in IT service delivery in the education sector world-wide. ITIL regards service delivery as a means to align the business demands with the IT services delivered and is designed to improve quality and efficiency by providing guidance on the full span of “*defining, developing, managing, delivering and improving IT services*”. It also provides guidance to organisations on how to use IT as a tool to facilitate business change, transformation and growth. To achieve these objectives, ITIL attempts to empower IT support staff members to assist users in using services, addressing incidents, monitoring service performance and managing change (Lowendahl, 2012a:69).

The current release of ITIL, namely ITIL 2011, was published on 29 July 2011 and is the first updated version of version 3 (v3) that was introduced in 2007. ITIL v3 is embedded in the formal service management standard of ISO 20000 and is structured into five main books, namely: Service strategy, Service design, Service transition, Service operation and Continual service improvement. In ITIL 2011, Strategy management, Business relationship management and Design coordination in service design have also been included, thus now addressing all aspects involved in IT service delivery. These core modules take a holistic approach to the entire ITIL service and utilise functional technological elements and processes as well as human resources needed to deliver and maintain those elements and continual improvement to meet business objectives and delivering benefits (Barafort, Di Renzo, Lejeune, Prime & Simon, 2005:3; Lowendahl, 2012b:38; Spafford, Head & Bandopadhyay, 2011:3).

## **2.7 IT GOVERNANCE FRAMEWORK CHALLENGES**

### **2.7.1 COBIT**

Gartner's 2012 Hype Cycle for education predicted the unlikelihood that COBIT will be adopted widely. Although it is relevant to the education sector and well-established amongst auditors, it still lacks significant interest and impact on IT governance and management in the education sector worldwide. This could be due to:

- COBIT 5 remaining focused on the *what* and not the *how*;
- A lack of interest towards COBIT amongst the education sector;
- Additional controls required to address the division between operational and information technology, and;
- As a governance framework COBIT does not usefully address sustainability (Lowendahl, 2012b:24; Mingay *et al.*, 2012:2; Wijsman, *et al.*, 2008:10).

## 2.7.2 ITIL

Although ITIL is seen as the *de facto* standard for Information Technology Service Management (ITSM), it can contribute substantially to better control of IT and add value to business and the organisation as such, many institutions face adoption challenges and full implementations are rare. Some success factors for ITIL implementations have been recorded; however, recent research pointed out that ITIL implementation issues still remain unchanged, due to:

- Attempts to implement ITIL as a whole right from the start of a project;
- The ITIL framework offering partial solutions at the operational level of IT service delivery only;
- The root causes of structural problems in the IT area often residing at the strategic planning and control levels (Head & Brooks, 2012:1, 5; Mann, 2012:1; Wijsman *et al.*, 2008:2).

Expectations for the impact of ITIL implementations are often not met due to:

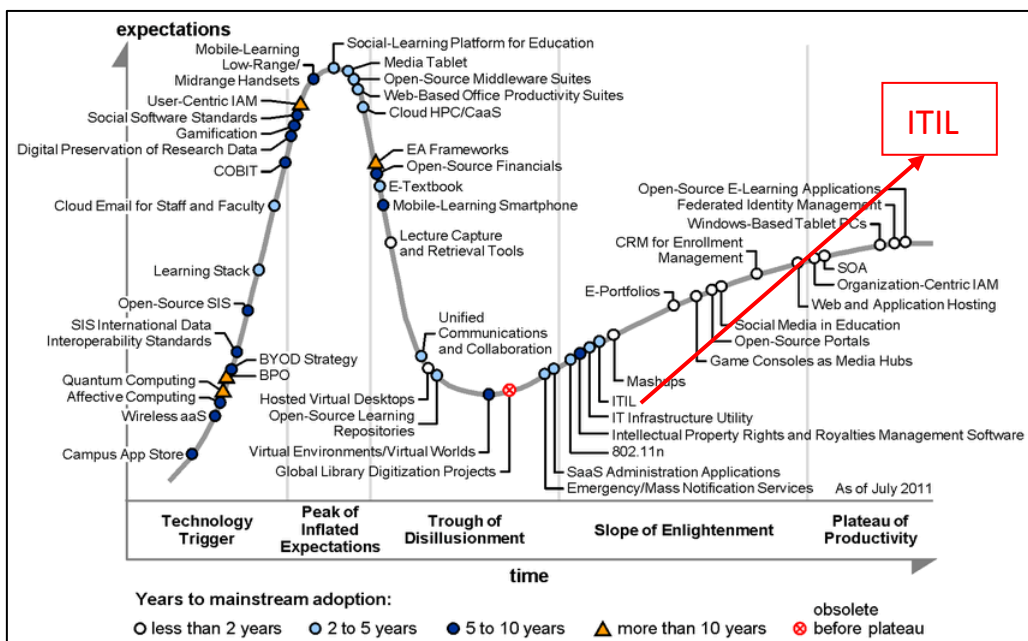
- The way these implementations are designed and implemented;
- The way the impact is measured (Pfauser & LaChapelle, 2011:1).

The Annual Sponsor Research Forum from the MIT Centre for Information Systems Research (CISR) concluded that the reliability and efficiency of IT service provision remains the critical success factor in any IT service delivery department and that this may still not be possible – no matter how much ITIL proficiency a company boasts (MIT, 2011:2).

The Gartner 2012 Hype Cycle for education which is used by clients to compare emerging technologies in the context of their industry with those already dominating the market, depicted that ITIL has moved backwards from a *slope of enlightenment* (the area in the hype cycle where the technology becomes more widely understood) to a *trough of disillusionment* (the area in the hype cycle

where it displays waning interest from customers) when compared to Gartner's Hype Cycle for education of 2011 (figures 2.3 and 2.4 below). The 2012 Hype Cycle also illustrated the relatively immature implementation of ITIL in the education community with a much longer time to mature to a full ITIL implementation when compared to other industries. A limited number of institutions progressed further than the implementation of fundamental ITIL processes and the establishment of a service catalogue (Gartner, 2012a:1; Lowendahl, 2012b:4-6).

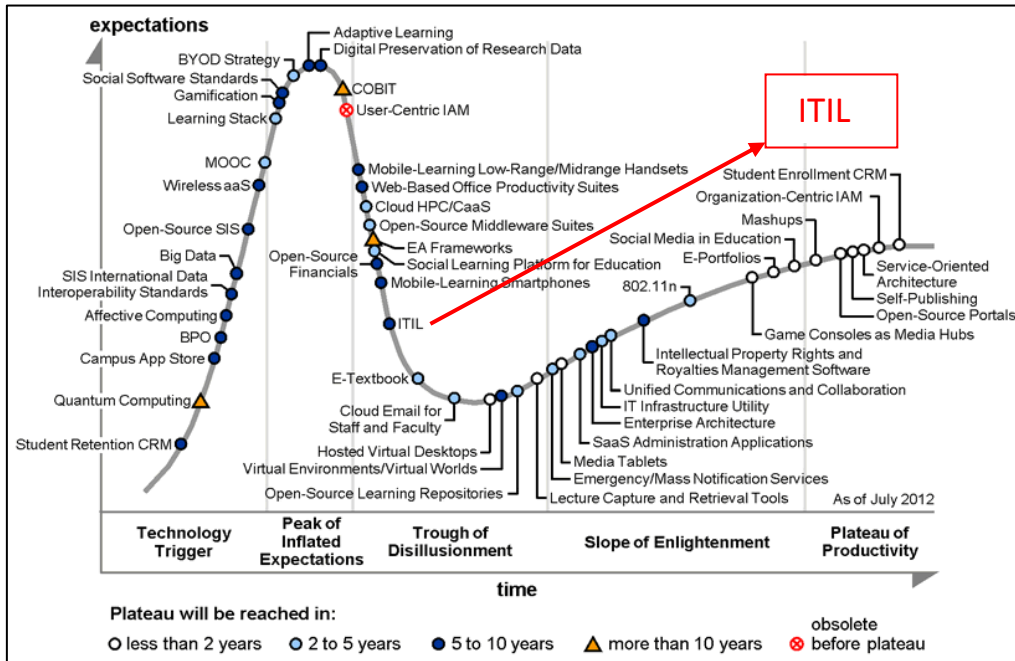
**Figure 2.3: ITIL's position on the Hype Cycle for education, 2011**



**Source:** Adapted from Lowendahl (2012b:71)

Gartner agreed that ITIL is now a well-known alternative for IT service delivery quality improvement in education institutions and that many institutions are in the basic level action phase and sending employees on training for certification; however, although institutions have now gained valuable insight into what ITIL can do for a higher education IT organisation, full implementation of all ITIL processes is rare and may take institutions three to seven years to complete (Lowendahl, 2012a:70).

**Figure 2.4: ITIL's position on the Hype Cycle for education, 2012**



**Source:** Adapted from Lowendahl (2012b:5)

Pfauser and LaChapelle (2011:1) in their analyses reported that ITIL initiatives often fail due to the way they have been designed and implemented leading to organisations struggling to quantify the benefits of the changes they have implemented. Many organisations only attempt a pilot study which can then be rolled out, however, the pilot studies often does not contain an effective mechanism to assess and communicate the impact and benefits of process changes, nor does it provide for all scenarios, devices and technologies users now demand support for. For ITIL to be successful an integrated, enterprise-wide approach with a strategic plan for the adoption of ITIL is essential. An all-at-once approach may also fail to deliver the necessary benefits. Geographical, technological and functional silos may hinder process consistency. A new emerging demand from users for pervasive access to enterprise content and social collaboration tools via mobile devices may add to multiple development and support teams, multiple distributed platforms and added complexity (Head & Brooks, 2012:1).

Gartner noted that higher education institutions may not have the need to fully implement ITIL and although ITIL includes some demand governance elements, it is better suited for supply governance. Implementing COBIT may then contribute to a better alternative for strategic alignment and demand governance (Lowendahl, 2012a:70).

An effective ITIL approach is characterised by a phased, process-by-process implementation, such as incident management, then change management and then release management and will minimise the direct contact between end users and the second-level support teams. Users often phone the so-called *IT heros* directly and this can result in processes and procedures being ignored. ITIL should, however, never be done only for the sake of it, or only for certification of compliance purposes (Head & Brooks, 2012:2).

## **2.8 THE 2008 TENET AND ASAUDIT SURVEY ON THE STATE OF ITIL AT HIGHER EDUCATION INSTITUTIONS IN SOUTH AFRICA**

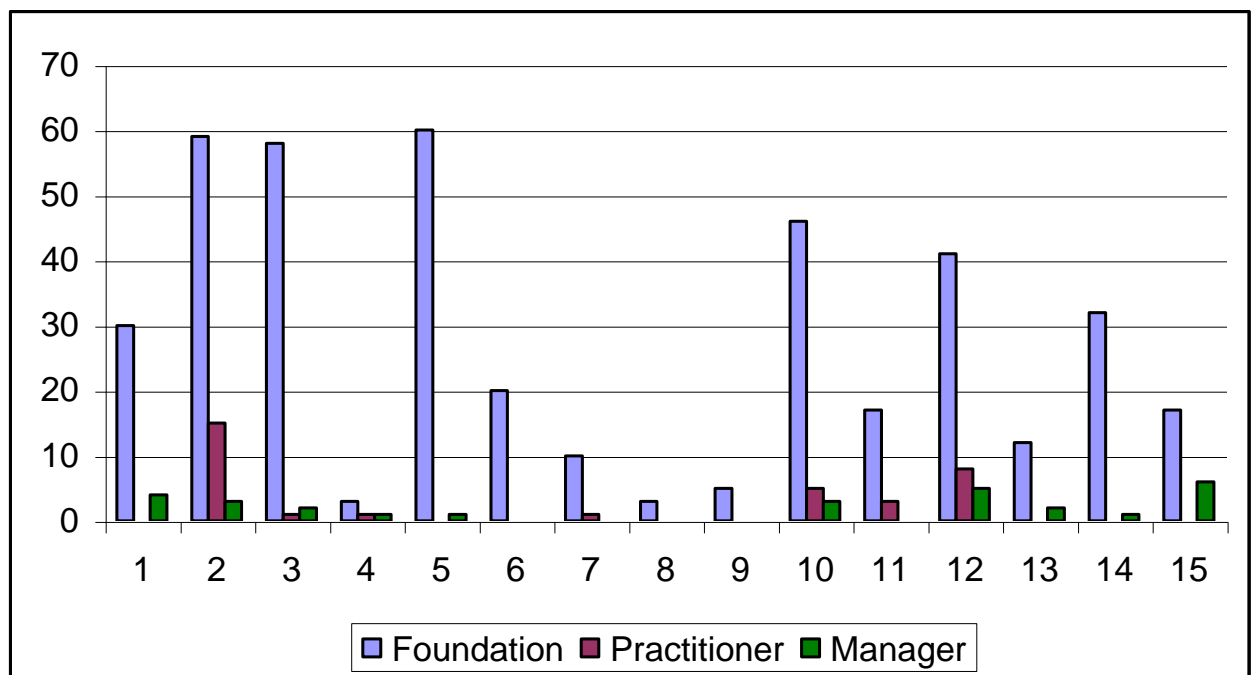
In 2008, TENET (The Tertiary Education and Research Network of South Africa) in collaboration with ASAUDIT embarked upon a survey to establish the state of ITIL at higher education institutions in South Africa. Fifteen institutions participated, namely:

- Central University of Technology (CUT);
- University of Kwazulu-Natal (UKZN);
- Mangosuthu University of Technology (MUT);
- Nelson Mandela Metropolitan University (NMMU);
- North-West University (NWU);
- University of Fort Hare (UFH);
- University of the Free State (UFS);
- University of Johannesburg (UJ);
- University of South Africa (UNISA);

- University of Venda (Univen);
- University of Limpopo (UL);
- University of Pretoria (UP);
- University of Stellenbosch (US);
- University of the Western Cape (UWC); and
- WITS.

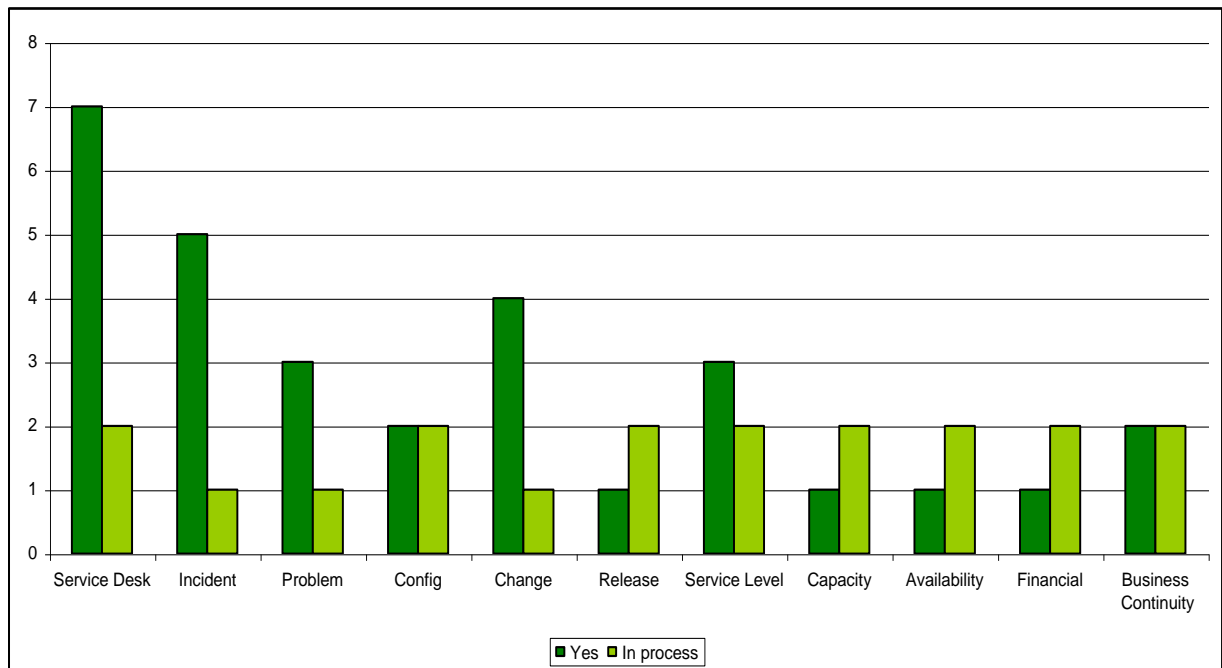
The survey was conducted using an open-ended questionnaire that was electronically distributed to all IT directors and managers that were members of ASAUDIT in 2008. Some of the results of this survey are displayed graphically in figures 2.5 and 2.6 (Oosthuizen, 2012).

**Figure 2.5: TENET and ASAUDIT survey: Staff training**



**Source:** Adapted from Oosthuizen (2012)

**Figure 2.6: TENET and ASAUDIT survey: Process implementation**



**Source:** Adapted from Oosthuizen (2012)

The results of the survey displayed that all participating universities had at least one staff member trained in ITIL Foundation. Five institutions had trained more than 40 staff members; however, staff members from only ten institutions passed the ITIL Foundation examinations. Seven institutions had less than eight staff members trained on the ITIL Practitioners level and only five institutions had qualified ITIL Practitioners employed. Ten institutions had trained up to six staff members on ITIL Managers level and only three institutions reported on qualified ITIL Managers.

This survey served to illustrate that many higher education institutions in South Africa embarked on ITIL certification during 2008, but less than 50% (7) of all participating institutions indicated that they had implemented or were busy implementing at least one ITIL service process. The most implemented process was the ITIL Service Desk and only five institutions indicated that they have implemented five ITIL processes at the most.

## **2.9 THE SERVICE MANAGEMENT PROFICIENCY INDEX (SMPI) OF THE INFORMATION TECHNOLOGY SERVICE MANAGEMENT FORUM IN SOUTH AFRICA (itSMFsa)**

The Information Technology Service Management Forum in South Africa (itSMFsa), an internationally recognised professional body dedicated to the development of best practice standards in IT Service Management (ITSM) commissioned the Service Management Proficiency Index (SMPI) in 2009. The SMPI is an on-going programme and aligned to King III to assess the maturity of and aids South African companies in continuously improving best practice standards in IT service management. This proficiency index covered the processes, functions and activities in ITIL v3's Service Management guides, namely:

- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Service Improvement

Figure 2.8 displays the rating scale used to gauge the extent to which certain criteria was applied or adopted within an ITIL v3 process or function.

Six universities participated in the SMPI assessment conducted by Digiterra (Pty) Ltd. during 2010 and 2011, namely:

- North-West University (NWU);
- University of the Free State (UFS);
- University of Cape Town (UCT);
- University of Pretoria (UP);
- University of the Witwatersrand (WITS);
- University of Stellenbosch (US).

The assessments were done face-to-face through group interviews with participating universities. All ratings and comments were captured and uploaded to the SMPI application to generate reports. The SMPI assessment also consisted of a King III module to assess compliance (Cronk, 2012).

**Figure 2.7: The rating scale used to gauge the extent to which certain criteria was applied or adopted within an ITIL v3 process or function**

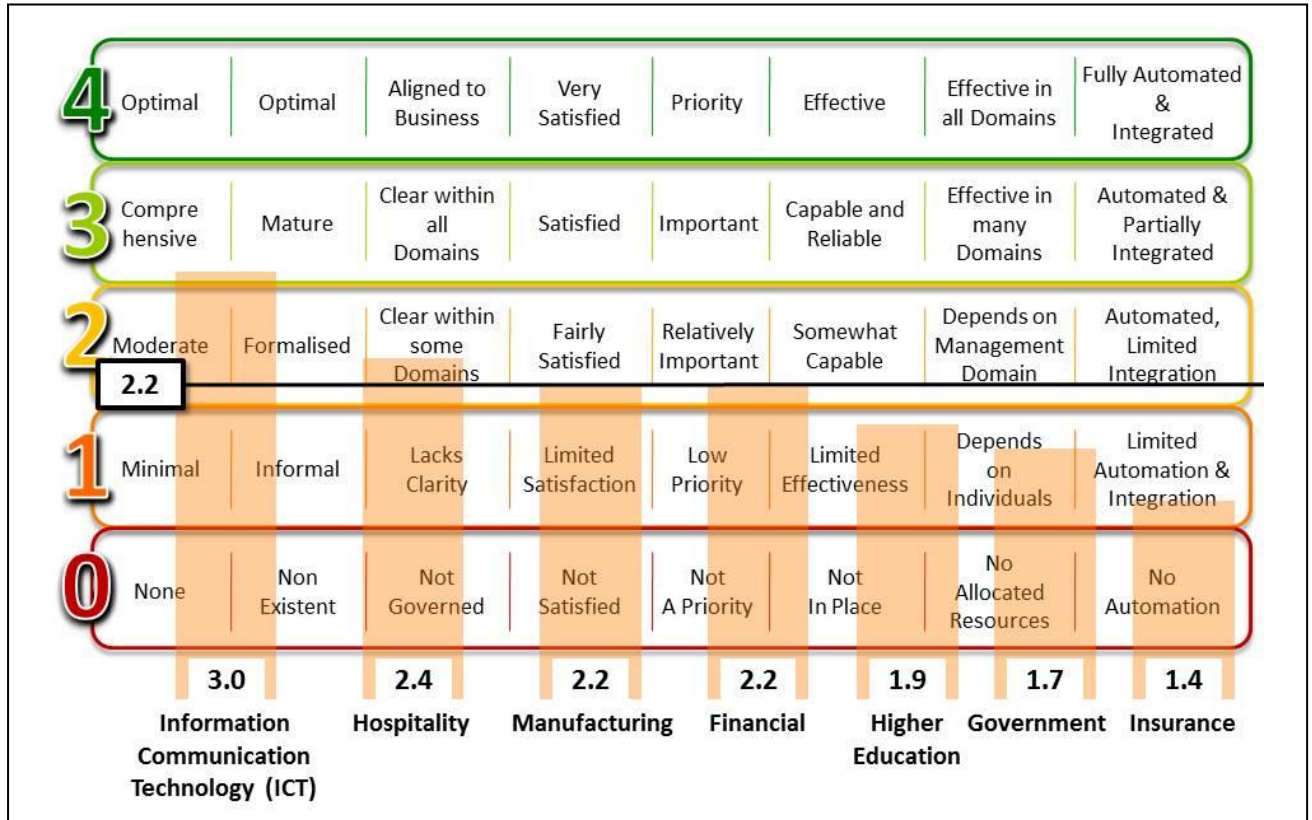
LEVEL	OPERATION	GOVERNANCE	SATISFACTION	PRIORITY	EFFECTIVENESS	RESOURCES & EFFECTIVENESS	AUTOMATION & INTEGRATION
0	None	Non Existent	Not Governed	Not Satisfied	Not A Priority	Not In Place	No Allocated Resources No Automation
1	Minimal	Informal	Lacks Clarity	Limited Satisfaction	Low Priority	Limited Effectiveness	Depends on Individuals Limited Automation, No Integration
2	Moderate	Formalised	Clear within some Domains	Fairly Satisfied	Relatively Important	Somewhat Capable	Depends on Management Domain Automated, Limited Integration
3	Comprehensive	Mature	Clear within ALL Domains	Satisfied	Important	Capable And Reliable	Effective In many Domains Automated & Integrated within Domain
4	Optimal	Optimal	Aligned to the Business	Very Satisfied	Priority	Effective	Effective In all Domains Automated & Integrated within Enterprise

**Source:** Cronk (2012)

*Note: Due to the confidentiality of the results of these assessments, the author is not permitted to disclose the relationship between the universities and specific results.*

The following figure (2.8) displays the relation of ITIL maturity in the higher education sector to other industries in South Africa, following the SMPI assessment:

**Figure 2.8: Overview of the SMPI survey results obtained from the higher education sector and how it compared with the rest of SA's industry**



**Source:** Fielies (2012)

General comments on the results of the SMPI assessments:

- From the assessments it could also be derived that the implementation of COBIT at higher education institutions in South Africa institutions are due to an **audit** approach whereas implementation of ITIL tend to be more a **suggested** approach for service management;
- There was a definite tendency towards strain on the implementation of ITIL processes due to user demands such as *“the latest trends that are used by students”*. The latter was mainly addressed by a focus on capacity management and budgets for information technology hardware or software to cope with demand and throughput (Cronk, 2012).

This survey served to illustrate that although most higher education institutions in South Africa embarked on ITIL certification during 2008, major universities struggled with the implementation of ITIL processes afterwards.

## **2.10 A RAPIDLY EVOLVING IT SERVICE DELIVERY CONTEXT**

*“The notion that enterprises can control all the technology that workers use to build and share information is flawed” (Shegda & Drakos, 2011:2).*

This statement is underpinned by numerous statements and references in the literature: The context in which IT services and support has to be delivered has changed dramatically and has increasingly become challenging during the last few years due to the pervasive nature of mobile devices and user demands to utilise social collaboration tools for business purposes. A new IT strategy, namely BYOD (Bring Your Own Device) allows users to select their own personal devices to utilise enterprise applications and to access enterprise content. Several speakers at the IT Management Symposium Africa 2012 at the Sandton Convention Centre in Johannesburg on 4 September 2012 agreed on this. Changing technologies such as cloud, mobile and social business as well as new business and consumer demands are leading to new pressures on IT to deliver highly mobile, always on, socially connected applications at lowest cost. IT support departments have less control over the selection of tools and users will not hesitate to find their own flexible and more intuitive solutions to access enterprise resources. *“Strong support for mobile devices and browsers have become critical”* (CA technologies, 2012:1; LeHong & Fenn, 2012:9; Osborne, 2012; Shegda & Chin, 2012: 2; Shegda & Drakos, 2011:1).

Educational institutions are beginning to acknowledge the rapid and widespread adoption of social networks in their extended learning environments by

exploring the collective knowledge and expertise of colleagues in- and outside their organisation by encouraging students to support collaborative learning environments on social networks. Gartner predicted that by the end of 2012, smartphones will constitute 34% of devices sold world-wide during 2012 and should reach 60% to 80% of total devices sold in mature markets such as Western Europe. The ubiquity and advanced features will make these devices preferred mobile learning tools in the future and will lead to new challenges regarding IT service delivery at higher education institutions (Lowendahl, 2012b:34, 36).

Gartner also predicted that effective service delivery in IT departments will remain challenging through 2015 due to a confused mobile and wireless market that drives significant behavioural changes in employees or users and that the BYOD phenomenon is growing worldwide and is set to become the “*dominant practice in higher education in the First World*”. Employees or users as consumers now demand a wider choice of devices as well as applications from app stores. With diversity increasing substantially in the near future, users will use many devices and platforms with no platform or technology necessarily dominating. Until 2015, at least 60% of information workers will interact with their content applications via a mobile device (Lowendahl, 2012b:21).

Proliferation of mobile devices increases demand from users for connections to business networks from their personal smartphones, tablets and other mobile devices from anywhere and at any time, placing company networks, confidential data and consumer privacy at serious risk. New communication and collaboration technologies may improve efficiency, but has left organisations with fragmented applications and places new demands on IT service delivery and support departments. Users are likely to start using inexpensive cloud collaboration and storage services, presenting significant risk in data leakage or misuse of organisational information. Without proper IT governance regulatory compliance and the protection of information, proprietary data could be impacted (Drakos, 2012:2).

Due to users now using personal devices and laptops to access enterprise resources, company data gets stored on mobile devices and personal laptops. To ensure security and protection of data, information will have to remain on enterprise servers and be accessed seamlessly from mobile devices. This serves as another example of how the IT service delivery environment is changing. IT should take on a more advisory role as broker of services to point people in the right direction and control what applications to use whilst making sure the company's internal applications work effectively on the most popular devices. Users must be able to access the data but not to walk away with it (Hiner, 2012).

A major challenge regarding IT governance is to transform IT to meet the new demands from business and the question that remains is whether ITIL as governance framework is still applicable today in this new changing IT environment (Peterson, 2004:9). Should ITIL be adopted to be able to manage service delivery processes, will it suffice as it is or is a complete new frame of mind necessary?

## **2.11 CONCLUSION**

The importance of corporate governance and its recognition worldwide cannot be overemphasised. Higher education in South Africa has not been excluded from adhering to good governance and the draft Regulations for Reporting by higher education institutions have been updated with the recommendations of King III which, for the first time, addressed IT governance and insisted on management to implement an IT governance framework. COBIT and ITIL are two widely used governance frameworks utilising organisational structures and processes to direct, measure and evaluate the use of an organisation's IT resources. ITIL's position as a technology on the Gartner Hype Cycles for education for 2011 and 2012, however, displayed a move backwards from

being widely understood to a display of waning interest amongst institutions in the education sector worldwide.

A survey jointly done by TENET and ASAUDIT in 2008 indicated excitement towards ITIL training and certification; however, the SMPI from the itSMFsa in 2009 indicated that higher education in South Africa experienced strain on the implementation of ITIL processes and a lower ITIL maturity index than other industries such as the Hospitality, Manufacturing and Financial sectors.

A confused mobile and wireless market that drives significant behavioural changes in employees or users and a worldwide growing BYOD phenomenon compelled Gartner to predict challenges in effective service delivery in IT support departments through 2015.

## **2.12 CHAPTER SUMMARY**

In this chapter various concepts relating to corporate governance were firstly defined. Secondly, King III, IT governance and IT governance frameworks, with specific focus on COBIT and ITIL and its relevancy to higher education in South Africa were discussed. Thirdly, the study of literature highlighted several challenges with regards to the implementation of these frameworks and surveys done by TENET and ASAUDIT in 2008 and the itSMFsa in 2009 indicated that although higher education in South Africa embarked upon a huge ITIL training and certification exercise in 2008, the industry sector experienced strain on the implementation of ITIL processes in 2009.

Fourthly, the user-defined context in which services in IT support departments need to be delivered in a new mobile environment with easy access to social and cloud-based business technologies are discussed.

# **CHAPTER 3**

## **RESEARCH METHODOLOGY AND FINDINGS**

### **3.1 INTRODUCTION**

The literature review in Chapter 2 of this study provided an overview of corporate governance concepts as well as the context in which information technology support departments currently operates. Specific attention was given to information technology (IT) governance and IT service delivery in the higher education sector. Numerous sources indicated that the hype surrounding the implementation of the Information Technology Infrastructure Library (ITIL) as an IT governance framework in higher education institutions is waning and that the context in which IT support and service delivery takes place is changing dramatically.

The focus of this chapter was on the research methodology followed to assist in meeting the research objectives as laid out in Chapter 1. The investigation procedures, data analyses as well as the results are described in this chapter. All statistical analyses were done by the Statistical Consultation Services at the North-West University on the Potchefstroom campus, using the software package, SPSS (2011).

### **3.2 PROCEDURE AND SCOPE OF THE QUANTITATIVE RESEARCH**

The empirical study focused on IT support departments in all public higher education institutions in South Africa. After determining the demographic profile of the respondents, the study attempted to establish whether staff members in management positions in IT service delivery departments are currently experiencing changes in users' support demands. Thirdly, the implementation of the ITIL governance framework in IT support departments in the higher education sector in South Africa was investigated in an attempt to establish

whether ITIL is still applicable and relevant. Lastly, the empirical study attempted to establish whether a relationship between the implementation of ITIL and a rapidly changing IT service delivery context exists and whether a new frame of mind regarding the implementation of ITIL as a governance framework and governance frameworks in higher education in general is necessary.

### **3.3 PROCEDURE AND SCOPE OF THE QUALITATIVE RESEARCH**

Respondents in the study were also asked to elaborate on specific answers to questions. These comments were analysed in a qualitative manner to add value to the results obtained from the quantitative research in this study.

### **3.4 SAMPLE GROUP AND SIZE**

The total group of potential participants in a research study to whom a researcher would want to generalise the results of an empirical study is called the population (Welman, Kruger & Mitchell, 2010:55). For the purpose of this study the population was **heads of IT support departments** at all (23 in total) public higher education institutions in South Africa as well as other **staff members in managerial positions** in IT support departments known to the author. A dependency with respect to the universities existed in the data.

The calculation of a sample size is important to ensure scientific and statistically significant results during the quantitative research process; however, it would have been cumbersome and not feasible to get all staff members of all higher education institutions in South Africa to participate in the study. A probability sample was not necessary as the author wished to perform exploratory research to achieve the objectives in §1.6 and it was assumed that the targeted staff members, being in managerial positions would have been knowledgeable about IT governance and IT service delivery in their various departments. The author thus decided to take a **non-probability convenience sample** from the

study population. A convenient sample refers to data collection from members of the study population conveniently available to participate in the study and was chosen by the author as the best way to collect the data quickly and efficiently due to very little variation in the study population (Sekaran & Bougie, 2009:276; Welman *et al.*, 2010:70).

**Self-selecting sampling** was also used in this study, because the need for respondents was expressed in an email invitation sent to the study population as described above (see annexure A). Individuals then had to express their desire to take part in the study and the data was subsequently collected from those who responded to the invitations. This sampling method was chosen to ensure **voluntarily representation** from higher education institutions in South Africa (Levine, Stephan, Krehbiel & Berenson, 2008:256; Sekaran & Bougie, 2009:272; Welman *et al.*, 2010:69).

Equation 3.1 represents the equation generally used to calculate a sample size required to be representative of the population in a research study when random sampling was used. Since the author used a non-probability convenience sample in this study, Equation 3.1 is thus not relevant as some members of the study population had no chance of being selected (Welman *et al.*, 2010:67). *It will, however be established that the sample used in this study was representative of the population due to the demographic profile of the sample.*

### **Equation 3.1: Sample size**

$$n = \frac{Z^2 \pi (1 - \pi)}{e^2}$$

Where:

$n$  = the sample size required for the given parameters

$Z$  = the number of standard deviations for the given accuracy

$\pi$  = the proportion of sample of interest (a value of 0.5 maximises the sample size, therefore minimising the error)

$e$  = the error allowable, for instance, 10% (Levine *et al.*, 2008:303)

All institutions were asked to complete at least one questionnaire and the questionnaires were subsequently sent out to 47 potential respondents, representing 23 institutions. A total of 34 questionnaires (representing 14 institutions) were returned of which 32 were used to base the analyses on. Two questionnaires were discarded due to the respondents having technical difficulties in answering the survey and not completing it. A subsequent **response rate of 68%** was achieved for the questionnaires and 60.87% regarding the participating institutions.

Non-responses were expected and could have been due to:

- The inability of the author to locate the respondents due to wrong email addresses;
- The inability of respondents to respond due to being very busy and not having the time to respond due to their job positions and responsibilities or being absent from work and unreachable via email;
- Refusal of respondents to answer without reasons (Welman *et al.*, 2010:73).

### **3.5 SURVEY INSTRUMENT**

Two schools of thought exist for the capturing of research information, namely quantitative and qualitative approaches. The quantitative method is an objective approach and seeks precise measurement and analysis of the target concept. It is also less time consuming. The qualitative research approach is a descriptive form of research and is subjective in the sense that the researcher interprets the

data such as the answers to open-ended questions made by participants in this study (Welman *et al.*, 2010:207).

The author chose a quantitative as well as a limited qualitative approach. Both approaches were followed to meet the research objectives as set out in Chapter 1 objectively. Due to the nature of the positions of the target group of respondents at their various institutions, the author anticipated that their time would be limited to respond to the study and decided that the quantitative approach would be the best to get the maximum number of results in the available timeframe. A limited qualitative approach was also followed by analysing the comments respondents made to the open-ended questions in the survey.

The survey instrument used was a **questionnaire** because it was an inexpensive instrument that was easy to administer and quick to deliver and the respondents could answer at their own convenience. Ethical clearance was obtained from the Ethics Committee in the North-West University Research Support office. The questionnaire was developed using Drupal's web forms to ensure ease of use. (Drupal is an open source web content management platform that is built, used and supported by an IT community worldwide. *Webforms* is the Drupal module used to build surveys (DRUPAL, 2012)). The survey was distributed by the author through **electronic distribution** by sending an email which included a link to the web address of the relevant web form. A letter including the ethical clearance and code with an explanation of the purpose of the study was also attached (please see Appendix A). Ten days were allowed to complete the form and a reminder was sent after a week.

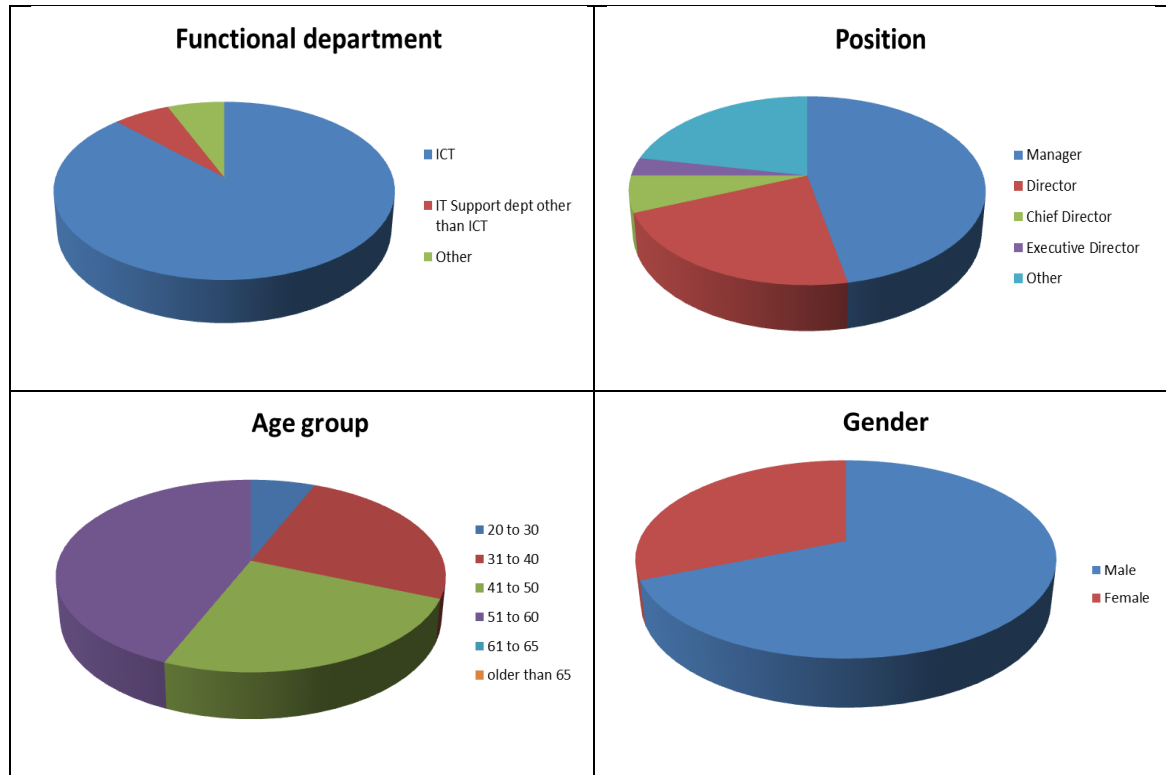
The questionnaire was **constructed by the author** herself and was **based on the literature study** conducted and reported on in Chapter 2. The questionnaire consisted of 52 questions of which Questions 20, 27, 50 and 52 were open-ended questions which reflected subjective comments. These will be reported on in a qualitative research manner below. Questions 19, 23, 35-39

and 49 were simple yes/no questions and in Questions 24 and 25 the respondents were asked to specify the number of ITIL processes partially or fully implemented at their institutions. The remaining 40 questions were selection type questions with the answering of the questions in the form of a 5-point Likert scale with a scale from *Strongly disagree* (1) to *Strongly agree* (5). In certain questions provision was made for respondents who could not select any of the answers. In these cases the respective questions were recorded and the last option in the selection was interpreted as missing and subsequently omitted in the calculations of the means and standard deviations. The questionnaire consisted of three parts, namely questions to determine the demographic profile of the respondents (Questions 1 to 4), the context in which IT services and support are currently rendered in higher education in South Africa (Questions 5 to 20) as well as the relevancy of ITIL as a governance framework in IT support departments in higher education (Questions 21 to 50). Question 51 was included to establish whether any relationship between the implementation of ITIL and a rapidly changing IT service delivery context exists. The questionnaire is included in Appendix A.

An explorative preliminary investigation was done before distributing the survey. Staff members in the Information Technology Central (ITC) department at the North-West University who were all ITIL certified and involved in delivering IT support to users, were involved. After some amendments were made, the survey was distributed to the potential participants.

### 3.6 DEMOGRAPHICAL PROFILE OF RESPONDENTS

Figure 3.1: Demographical profile of respondents



Of the 32 respondents that completed the survey, 87.5% (28) were from ICT departments. Only 21.9% (7) of the respondents were not in managerial positions and this could be contributed to the fact that some managers decided to forward the questionnaire to other staff members at the IT Service or Help desks involved with the implementation of ITIL processes. Due to the respondents being mainly in managerial positions, 43.8% (14) of them were between the ages of 51 and 60 and 68.8% (22) were male.

It can therefore be concluded that the demographic profile of the sample used in this study was **representative of the population** due to the corresponding demographic profiles as most heads of ITC departments in South Africa at the time when the study was conducted, were male and between the ages of 51 to 60 (Theron, 2012).

## 3.7 EMPIRICAL STUDY: RESULTS

The frequency analysis, descriptive statistics, reliability and internal consistency of the selected constructs as well as correlations between constructs and selected questions were tested using the SPSS software packages and will be discussed below:

### 3.7.1 Frequency analysis and descriptive statistics

#### 3.7.1.1 A changing IT service delivery context

Table 3.1 displays all the frequencies and descriptive statistics of the first section, namely the context in which IT support are currently delivered (Questions 5-18). Although respondents had a more neutral attitude towards IT responsibilities and they felt that these **responsibilities had not necessarily moved towards users** themselves (Question 12 with a mean of 3.22 and a standard deviation of 0.94), means of between 3.53 and 4.25 were obtained for all the other questions in this section with standard deviations lower than 1.0.

The majority (87.5% or 28) of the respondents confirmed in Question 19 that the **context in which IT services and support are delivered is changing** and this response is also consistent with the responses to the rest of the questions in this section.

The literature study done in Chapter 2 supported these findings and leads to the conclusion that staff members in managerial positions in IT support departments at higher education institutions in South Africa agreed that a **changing relationship** between IT support departments and users exists. IT tools and solutions are no longer a mere enabler of business. Users are more knowledgeable regarding their personal mobile devices and demand access to corporate content with more flexible and intuitive technological solutions. This again, is leading to IT support departments **having less control over the**

**technologies used by users** (Question 7 with a mean of 3.84 and a standard deviation of 0.88) and having to focus more on what users want than merely supplying prescribed tools and solutions.

### 3.7.2 ITIL implementations

Table 3.2 displays frequencies and descriptive statistics for the challenges regarding ITIL implementations at the institutions that formed part of the study sample group. Missing values were treated as missing and Questions 28 to 34, 45 and 51 were recorded with the last option in the selection interpreted as missing and subsequently omitted in the calculations of the means and standard deviations. From the answers to Questions 21, 22 and 43 it can be derived that a tendency towards **ITIL as a valued governance framework** exists. The means for these questions were between 3.5 and 3.68 with standard deviations of between 0,95 and 1.16. The respondents also indicated that staff members displayed **a resistance to change** attitude, making the implementation of ITIL difficult for IT support departments (illustrated in the responses to Question 28 with a mean of 3.59 and a standard deviation of 0.98) and although answers to Question 26 with a mean of 3.91 and standard deviation of 0.82 displayed that the respondents found it **difficult to implement ITIL successfully**, they did not find it difficult due to any of the reasons stated in the survey. Most of the latter responses ranged between means of 2.75 and 3.59 with large standard deviations of between 0.84 and 1.21. *The responses used in the qualitative analysis in §3.10 indicated other possible reasons for the difficulties in implementing ITIL at higher education institutions in South Africa.*

Respondents agreed on Questions 44 (a mean of 3.84 with standard deviation of 0.74) and 45 (a mean of 3.74 with a standard deviation of 1.00), leading to the assumption that **ITIL will need to be adapted or changed** to make it less difficult for institutions to implement in the new changing IT service delivery context.

### 3.7.3 COBIT implementations

Only 21.9% (7) and 9.4% (3) of the respondents indicated in their answers to Questions 38 and 39 that their institutions have implemented COBIT 4 or 5 respectively. Although implementation of Val IT and ISO 38500 were not tested in this study, the lack of interest in COBIT as displayed in the responses to the questions on COBIT implementations is still alarming as it is specifically mentioned in literature that although there is not a *'one size fits all'* IT governance framework, the ITGI, ISACA and the ISO authorities gave guidelines towards the use of COBIT, Val IT and ISO 38500 respectively to be used as frameworks for IT governance. It does not appear as if higher education institutions in South Africa are making an effort of this.

**Table 3.1: Service delivery context – Frequencies and descriptive analyses**

Q #	Question	N	SD	D	N	A	SA	Missing	Mean	Std. Dev.
Q5	C1: IT tools and solutions have become pervasive to business as an operational asset	32	0	3	1	13	15	0	4.25	0.92
Q6	C1: More "technology-savvy" users have an impact on the relationship of IT to information consumption	32	0	1	2	21	8	0	4.13	0.66
Q7	C1: IT service delivery departments no longer have full control over IT tools and solutions provisioning	32	0	4	3	19	6	0	3.84	0.88
Q8	C1: Users now demand more flexible and intuitive IT tools and solutions	30	0	2	2	17	9	2	4.10	0.80
Q9	C1: Users themselves take more control of new technologies with personal mobile devices	32	0	4	4	20	4	0	3.75	0.84
Q10	C1: ICT decisions regarding IT service delivery and support is influenced by users making use of mobility	32	0	3	2	22	5	0	3.91	0.78
Q11	C1: More "technology-savvy" users have an impact on the relationship of IT to service delivery	32	0	4	0	22	6	0	3.94	0.84
Q12	C1: Former IT responsibilities have moved to users themselves	32	0	9	9	12	2	0	3.22	0.94
Q13	C1: ICT decisions regarding IT service delivery and support is influenced by users making use of social media	32	0	5	6	20	1	0	3.53	0.80
Q14	C1: ICT decisions regarding IT service delivery and support is influenced by users making use of the cloud	31	0	1	11	15	4	1	3.71	0.74
Q15	C1: IT tools and solutions are no longer ONLY utilised to enable business	31	1	0	7	22	1	1	3.71	0.69
Q16	C1: IT service delivery departments now focus more on demand from users than merely supplying tools and processes	31	0	1	3	26	1	1	3.87	0.50
Q17	C1: Traditional service delivery in IT departments has changed from a 'no, because' to a 'yes, but' attitude (with more responsibility on the users themselves)	32	0	2	8	20	2	0	3.69	0.69
Q18	C1: 'Abundance' is the key practice nowadays in IT service delivery strategies (lesser restrictions on shared disk space etc.)	32	0	3	5	23	1	0	3.69	0.69

*Legend: SD - Strongly disagree; D - Disagree; N -Neutral; A - Agree; SA - Strongly Agree; C1: Construct 1- Service delivery context*

**Table 3.2: ITIL implementation context – Frequencies**

Q #	Question	N	SD	D	N	A	SA	Missing	Mean	Std. Dev.
Q21	C2: Your institution values ITIL as an IT governance framework	32	2	5	3	16	6	0	3.59	1.16
Q22	C2: Your institution adopts ITIL best practices	32	0	8	2	20	2	0	3.50	0.95
Q26	C3: Your institution finds it difficult to implement ITIL processes successfully	32	0	2	6	17	7	0	3.91	0.82
Q28	C3: Your institution finds ITIL process implementation difficult due to a resistance to change attitude amongst staff members	32	0	5	9	12	6	0	3.59	0.98
Q29	C3: Your institution finds ITIL process implementation difficult due to a lack of tools for successful implementation	30	2	8	8	1	0	2	3.00	0.98
Q30	C3: Your institution finds ITIL process implementation difficult due to a lack of existing models for successful implementations	32	1	12	9	7	3	0	2.97	1.06
Q31	C3: Your institution finds ITIL process implementation difficult due to lack of existing case studies of successful implementations	32	1	13	11	7	0	0	2.75	0.84
Q32	C3: It is more difficult for staff members to adapt to ITIL processes than to adopt new technologies	30	3	5	4	16	2	2	3.30	1.15
C33	C3: Your institution finds ITIL process implementation difficult due to a changing IT service delivery and support context	31	0	12	8	10	1	1	3.00	0.93
Q34	C3: Your institution finds ITIL process implementation difficult due to it being a cumbersome and complex IT governance framework	28	3	11	3	9	2	4	2.86	1.21
Q40	C3: An higher education institution can move from a non-existent state regarding IT governance to a managed, measurable and optimised state in less than 3 years	31	0	13	6	11	1	1	3.00	0.97
Q41	ITIL takes into account the gap between the demand from users and the implementation of IT solutions	31	0	6	9	15	1	1	3.35	0.84
Q42	Time and money are invested in ITIL accredited remedy / action request systems at your institution	31	1	3	4	20	3	1	3.68	0.91
Q43	C2: Employees at your institution are encouraged to get ITIL certified	31	2	4	1	20	4	1	3.65	1.08
Q44	C4: ITIL as a governance framework needs to be adapted	31	1	0	5	22	3	1	3.84	0.74

Q45	C4: ITIL as a governance framework needs to be adapted to accommodate a changing IT context	31	1	3	5	16	6	1	3.74	1.00
Q46	C3: Not enough time is allowed for training and empowerment when ITIL processes has been implemented	31	0	5	12	14	0	1	3.29	0.74
Q47	Only basic functions of complex IT service delivery remedy / action request systems are utilised at your institution	30	0	2	3	4	5	2	3.57	0.86
Q48	IT service delivery remedy / action request systems' functionalities are only partially mapped to ITIL processes at your institution	31	1	4	4	22	0	1	3.52	0.85
Q51	If your opinion is that ITIL is not relevant anymore, can this be contributed to a changed IT service delivery context?	30	3	4	4	19	0	2	3.30	1.06

*Legend: SD - Strongly disagree; D - Disagree; N -Neutral; A - Agree; SA - Strongly Agree*

*C2: ITIL is valued; C3: ITIL implementation is difficult; C4: ITIL needs to be adapted*

The opinions of the respondents who confirmed that their institutions implemented ITIL processes (those who answered affirmatively to Question 23) were investigated in terms of the possible adaption of ITIL processes to accommodate a changing IT service delivery context (Questions 44 and 45): Most (71.9% or 23) of the respondents have indicated that **their institutions have implemented ITIL processes** and of those the majority **agreed on the adaptation or change of ITIL as a governance framework** with means of 3.74 and 3.64 for Questions 44 and 45 and standard deviations of 0.81 and 1.09 respectively (see Table 3.3).

**Table 3.3: Implementation ITIL processes and possible adaption**

Q#	Construct	Mean	Std. Dev.
Q44	ITIL as a governance framework needs to be adapted	3.74	0.81
Q45	ITIL as a governance framework needs to be adapted to accommodate a changing IT context	3.64	1.09

### 3.8 RELIABILITY AND INTERNAL CONSISTENCY

Cronbach's alpha is a measure of reliability and internal consistency and indicates whether items and subsets of items in the measuring instrument are highly correlated. Cronbach's alpha ( $\alpha$ ) is therefore a coefficient of reliability of items in a survey instrument and has to do with the quality of the measurement. If, for instance, an instrument such as a questionnaire produces different scores every time it is used under the same conditions, it will have low reliability. A value of  $\alpha > 0.7$  is considered to be acceptable and a value of  $\alpha > 0.8$  is considered to be good and is often used as evidence of an underlying or latent construct (Field, 2007:666; Sekaran & Bougie, 2009:325; UCLA, 2012:1).

The following formula can be used to calculate Cronbach's alpha:

### Equation 3.2: Cronbach's alpha coefficient

$$\alpha = \frac{k}{k - 1} \left[ 1 - \frac{\sum_1^k \sigma_{Y_i}^2}{\sigma_X^2} \right]$$

Where:

$\alpha$  = Cronbach's alpha coefficient

$k$  = number of items in the construct

$\sigma_{Y_i}^2$  = variance of item,  $i$ , where  $i = 1$  to  $k$

$\sigma_X^2$  = variance of the observed total item scores

To establish the Cronbach's alphas for the study, constructs and not the individual questions will be analysed.

#### Example:

The Cronbach's alpha coefficient for the construct *ITIL is valued* was calculated as follows using Equation 3.2:

$$\alpha = \frac{3}{3 - 1} \left[ 1 - \frac{((1.16)^2 + (0.95)^2 + (1.08)^2)}{6.40} \right]$$

Therefore  $\alpha = 0.69$  , confirming the value calculated by using the SPSS software as tabulated in Table 3.2 below:

**Table 3.4: Cronbach's alpha values for selected constructs**

C #	Construct	Questions	Cronbach's alpha	Mean	Std. Dev.
C1	Service delivery context	Q5 - Q18	0.82	3.81	0.42
C2	ITIL is valued	Q21, Q22, Q43	0.69	3.58	0.83
C3	ITIL implementation is difficult	Q26, Q28 – Q34, Q40, Q46	0.73	3.18	0.52
C4	ITIL adaption or changes	Q44 – Q45	0.82	3.78	0.80

*Service delivery context* (C1) displayed good reliability ( $\alpha = 0.82$ ) and *ITIL adaption or changes* (C4) consisted only of two questions and also displayed **good reliability** ( $\alpha = 0.82$ ). This is excellent since more questions in this construct (C4) could have inflated the value. Constructs C2 and C3 displayed **acceptable reliability** ( $\alpha = 0.69$  and  $0.73$  respectively) and can therefore also be used in the study. All four constructs should thus render the same results if the survey was to be done at another time under the same conditions.

*Service delivery context* (C1) displayed a high mean of 3.81 with a standard deviation of 0.42. This again confirmed that the respondents agreed on the **changing service delivery context** at higher education institutions in South Africa; however, there was a neutral mean response of 3.18 with a standard deviation of 0.52 towards the reasons given for *finding ITIL implementations difficult* (C3). **ITIL is also still valued** (C2), although it may not be valued as a governance framework as such, but rather a set of best practices or guidelines. *ITIL implementation is difficult* (C3) resulted in a neutral response from the participants (a mean 3.18 and standard deviation of 0.52). Although ITIL implementations were seen as being difficult, the respondents did not agree as to the reasons as described in the questionnaire. *ITIL adaption or changes* (C4) confirmed that **ITIL may need to be adapted** (a mean of 3.78 and standard deviation of 0.8) due to a changing IT service delivery context.

### 3.9 CORRELATIONS

Spearman's rho ( $\rho$ ) correlation, also called Spearman's rank correlation coefficient, is a nonparametric equivalent of the Pearson correlation and a procedure that measures the linear correlation between two variables. A negative correlation between two constructs implies that as the one construct increases, the other one decreases (Welman *et al.*, 2010:234).

**Table 3.5: Spearman's rhos and p-values for selected constructs**

Correlations	C1	C2	C3	C4
C1: Service delivery context	1.00	-0.28	0.058	-0.35
p-value		0.12	0.75	0.05
C2: ITIL is valued	-0.28	1.00	-0.17	
p-value	0.12		0.34	
C3: ITIL implementation is difficult	0.058	-0.17	1.00	
p-value	0.75	0.34		
C4: ITIL adaption or changes	-0,35			1.00
p-value	0.05			

Table 3.5 reveals a negative practical significant or medium correlation of -0.35 between constructs *Service delivery context* (C1) and *ITIL adaption or changes* (C4). Squaring this correlation coefficient indicated that only 12.3% of the variance in the degree of change experienced in IT service delivery departments was explained by the need to change or adapt ITIL. Although respondents thus agreed that the IT service delivery context is changing and they also agreed that ITIL may need to be adapted, **ITIL may not need to be adapted purely due to the changing service delivery context.** The Spearman's rhos calculated for *ITIL is*

*valued (C2)* and *ITIL implementation is difficult (C3)* revealed no practical significant relationships with small Spearman rho values of below 0.1. A negative practical significant or medium correlation of -0.3 was also revealed for the correlation between the *Service delivery context (C1)* and *ITIL is valued (C2)*. This is **consistent with some of the literature** that considered ITIL as a **guideline of best practices** rather than a governance framework.

Remedy or action request systems are used by IT support departments to keep track of incidents and problems in IT support departments. A positive correlation between two constructs implies that as the one construct increases, the other one increases as well (Welman *et al.*, 2010:234). Table 3.4 displays a positive practical significance with a medium value of 0.37 between Questions 44 and 47. The fact that ITIL as a governance framework needs to be adapted and that action request systems are not utilised to their full potential are thus positively correlated with a medium value. *Recommendations regarding this phenomenon have been made in Chapter 4.*

**Table 3.6: Spearman's rhos and p-values for selected questions**

<b>Correlations</b>	<b>Q44</b>	<b>Q47</b>
Q44	1.00	<b>0.37</b>
p-value		0.045
Q47	<b>0.37</b>	1.00
p-value	0.045	

*Note: Since a convenient sample and not a random sample was used, the p-values are only reported for the sake of completeness and will not be interpreted.*

### 3.10 QUALITATIVE ANALYSIS

The open-ended questions analysed qualitatively was based on three themes, namely:

- A changing service delivery context;
- Difficulties experienced by institutions when implementing ITIL;
- The relevancy of ITIL in higher education in South Africa.

#### Question 20:

**Do you have any comments on the current IT service delivery and support context?**

A definite theme that stood out in the responses received to this question was that due to a changing service delivery and support context, **IT should expand or enhance the staffing contingent** in IT support departments according to the Skills Framework for the Information Age (SFIA). IT support staff should be up-skilled to keep up with the new challenges and opportunities brought about by the cloud, mobility and the BYOD phenomenon.

**IT service delivery or IT service management should be distinguished from the provisioning of tools and systems** as the focus in IT support departments' shift from the operational aspects in IT support towards innovation and development. Users are interested in value and *fit for purpose* rather than *fit for use* only. The role of IT should be more that of a broker of services such as the cloud where the technology is already taken care of.

**Question 26 and 27:**

**Your institution finds it difficult to implement ITIL processes successfully / If your answer in the previous question was 'agree' or 'strongly agree', please explain:**

ITIL's strengths that were pointed out, are:

- ITIL is the promotion of best practices through standard approaches to service support and service delivery activities;
- ITIL provides transparency towards service failures and successes and will lead to greater promotion of continual service improvement.

Respondents agreed on the following topics as the main reasons for finding it difficult to implement ITIL processes:

- The **inability and resistance of organisations to change** as well as the time it takes to map and change current processes to ITIL equivalents stood out as the main stumbling block when implementing ITIL (this is consistent with literature as well as the quantitative research done in this study);
- The **lack of executive buy-in** and the establishment of policies as well as insufficient budgets;
- **Lack of knowledge and understanding** of organisations and vendors to translate cumbersome, complex and costly ITIL processes into something useable;
- The **inability to sufficiently integrate processes across the traditional divide** of IT infrastructure or hardware provisioning departments to a fully service-focussed environment, independent of whether the IT support is self-delivered or service brokered;

- ITIL is a benchmark – an ideal and it is difficult to tell whether an organisation has accomplished it;
- Virtual ITIL roles should be built into **job descriptions** and KPIs.

#### **Question 49 and 50:**

**In your opinion, is ITIL relevant for your institution? / Why or why not?**

**Please comment:**

Responses to Question 49 in the quantitative survey indicated that 84.4% (27) of respondents confirmed ITIL as **still relevant to their organisations**. In the answers to the open-ended Question 50 it was however pointed out that by following ITIL as a best practice and not necessarily a governance framework, the quality of services rendered by an IT support department as a broker of services, can be enhanced. ITIL is useful as a reference framework but the focus should still be on IT service management. ITIL should thus not be a goal in itself.

A recommendation was made that the change in user demand should then subsequently be governed through a **tailored governance framework** which takes an organisation's culture in consideration.

#### **Question 52:**

##### **General comments:**

The theme that stood out in the answers to this question was that other frameworks such as the Calder-Moir framework and COSO may be better suited from a governance perspective than ITIL. Respondents also commented that an over complicated framework, such as COBIT will not necessarily be a solution, but rather a burden. The latter statement is contradictory to literature in general.

### 3.11 CONCLUSION

In this chapter the results of the empirical research study were presented and analysed. The explanation of the results started with the discussion of the demographic profiles of the respondents. These findings indicated that most of the respondents were from ICT departments and in managerial positions and most of them were males between the ages of 51 and 60 years. Secondly, it was found that although respondents were of the opinion that IT responsibilities have not necessarily moved toward users themselves, the context in which IT services and support are rendered in higher education in South Africa, is changing and that IT support departments have less control over the technologies used by users.

Thirdly, the results indicated that ITIL is still valued as a governance framework; however, staff members in IT support departments displayed a resistance to change and also found it difficult to implement ITIL processes. Fourthly, it was found that ITIL as a governance framework will need to be adapted or changed to make it less difficult to implement in higher education in South Africa; however, this is not primarily necessary due to a changing IT service delivery context. Fifthly, the findings indicated that ITIL should be considered as a set of guidelines and best practices and not a governance framework as such.

Findings resulting from the qualitative research indicated that the staffing contingent should be enhanced in IT support departments to keep up with the changing IT service delivery context and that the focus should be on service delivery as such and not necessarily the provisioning of IT tools and solutions. Comments also indicated that ITIL should not be a goal in itself but rather a reference framework or set of guidelines of best practices in IT service delivery.

### **3.12 CHAPTER SUMMARY**

This chapter focused on the research methodology and findings of the empirical study. The procedures and scope of the quantitative as well as qualitative research done in this study as well as the sample size and survey instrument (a questionnaire), were discussed. The demographical profile of the respondents was then analysed.

The frequency analysis, descriptive statistics, reliability and the internal consistency as well as correlations between selected constructs and questions were tested using the SPSS software packages. A changing IT service delivery context in higher education IT support departments as well as ITIL and COBIT implementation in this sector were reported on and the reliability and internal consistency of the constructs reported on were analysed. The last section of the quantitative analyses was the discussion on correlations between specific constructs as well as a few questions.

Lastly, the open-ended questions analysed as part of the qualitative research, were reported on.

## CHAPTER 4

### CONCLUSIONS AND RECOMMENDATIONS

#### 4.1 INTRODUCTION

The primary objective for this study was to investigate whether ITIL as an IT governance framework is still applicable and relevant to a changed service delivery context in IT support departments in the higher education sector in South Africa. The secondary objectives to be realised to achieve the primary objective were firstly to investigate whether the above-mentioned IT departments experience a shift in service delivery from managing the supply of IT tools and solutions through traditional, prescriptive and restrictive service delivery practices to a more open attitude towards business and user demands and secondly, to investigate the implementation status and relevancy of ITIL in IT support departments in higher education. The last secondary objective was to investigate possible alternatives to ITIL as a governance framework *per se*.

The literature review in Chapter 2, firstly, covered corporate governance concepts with the focus on higher education in South Africa and, secondly, pointed out the challenges experienced in the implementation of IT governance frameworks such as COBIT and ITIL. Thirdly, a survey done by TENET and ASAUDIT in 2008 as well as one done by the itSMFsa in 2009 were also discussed and indicated that although higher education in South Africa embarked on an enthusiastic ITIL training and certification exercise in 2008, the implementation of ITIL processes at these institutions did not follow the same trend in 2009. Lastly, the changing IT support and service delivery context was discussed. The findings regarding the empirical study as described in Chapter 3 were done in relation to the literature studied in Chapter 2.

In §1.8.4, it was stated that Chapter 4 would be devoted to drawing conclusions from the literature review as discussed in Chapter 2 and the empirical study as reported on in Chapter 3. Subsequent recommendations will be put forward for the more effective implementation of IT governance to accomplish better service delivery in IT support departments in a new and changed IT support environment in higher education in South Africa.

#### **4.2 CONCLUSIONS REGARDING INFORMATION GOVERNANCE AND A CHANGING IT SERVICE DELIVERY CONTEXT IN HIGHER EDUCATION IN SOUTH AFRICA IN TERMS OF STUDY OBJECTIVES**

The first secondary objective as discussed in §1.6.2.1 was realised as results from the literature as well as empirical studies indicated a definite change in the service delivery context as IT service delivery departments no longer have full control over IT tools and solutions provisioning with users taking more control of new technologies such as the cloud and with personal mobile devices. Focus in IT support has now shifted from traditional practices such as the mere supply of tools and solutions to adhering to the demand from knowledgeable IT business users.

The implementation status and relevancy of ITIL in IT support departments in higher education was investigated, thus realising the second secondary objective. The findings displayed two tendencies, namely:

- Results of the empirical study showed that ITIL is still relevant, applicable and valued in IT support departments in higher education in South Africa;
- Literature supported the empirical research results that found that institutions experienced difficulties in the implementation of ITIL processes and felt that ITIL as a governance framework needed to be adapted to accommodate a changing IT context.

The last secondary objective was to investigate possible alternatives to ITIL as a governance framework *per se* and will be elaborated on below.

#### 4.2.1 Comments

The results from the literature study indicated that **higher education institutions in South Africa are just as compelled to adhere to good corporate governance** by applying the guidelines set out in King III as any other organisation. IT governance should be implemented and executives should remain responsible and accountable to all stakeholders by leveraging IT resources to ensure sustainability and the extension of the organisation's strategies and objectives. This should be done by directing, measuring and evaluating the use of an organisation's IT resources through leadership, organisational structures and processes such as IT governance frameworks and will serve to reduce IT risk, deliver value, ensure business continuity, and assist the company in managing its IT resources efficiently and cost effectively (see definition of IT governance in §2.5).

The empirical results showed that participating IT managers in this study perceived the following as challenges in the implementation of IT governance frameworks such as COBIT and ITIL:

- Higher education in South Africa is faced with **little interest in implementing COBIT** versions 4.1 and 5 as well as a gap between IT governance (the '*what*') and how COBIT should be implemented;
- **Challenges in the implementation of ITIL** lie in attempts to implement the framework as a whole when only partial ITIL implementations would serve the purpose as well as a resistance to change amongst staff members. A need for ITIL to be adapted or changed due to the changing service context

was expressed and although ITIL is still valued, it should not be regarded as a set of exact instructions for compliance, but rather best practices to be adopted for IT service delivery in an operational IT support environment;

- **ITIL as a governance framework offers partial solutions** at operational level only whereas the root causes of IT problems often reside at the strategic planning and control levels.
- A definite **waning in ITIL implementations and interest** in the education sector world-wide was observed.

Although literature and empirical research strongly **confirmed a changing context for IT service delivery in higher education, this phenomenon does not contribute to the waning interest and difficulties in the implementation of ITIL**. IT support departments should, however extend and skill-up the human resource component to keep up with new challenges brought about by mobility, the cloud and the BYOD phenomenon. IT support should entail **service delivery as far as is fair, feasible and sustainable** and should be distinguished from the mere provisioning of tools and systems.

The primary objective for this study was thus realised as it was found that ITIL is still applicable and relevant but needed to be adapted to accommodate a changed service delivery context in IT support departments in the higher education sector in South Africa.

#### **4.3 RECOMMENDATIONS REGARDING INFORMATION GOVERNANCE AND A CHANGING IT SERVICE DELIVERY CONTEXT IN HIGHER EDUCATION IN SOUTH AFRICA IN TERMS OF STUDY OBJECTIVES**

A changed IT service delivery context in higher education in South Africa has been established and will pose, amongst others, the following challenges to institutions still adhering to prescriptive practices in their IT support departments:

- IT service delivery departments no longer have full control over IT tools and solutions provisioning;
- Users demand more flexible and intuitive IT tools and solutions;
- Users themselves take more control of new technologies with personal mobile devices.

IT support in higher education should be seen as a **broker of services as far as is fair, feasible and sustainable**. This changing environment is, however, not the primary reason for challenges with regards to the implementation of ITIL in higher education institutions in South Africa.

The implementation status and relevancy of ITIL in IT support departments in higher education was investigated, thus realising the second secondary objective. The findings displayed two tendencies, namely:

- Results of the empirical study showed that ITIL is still relevant, applicable and valued in IT support departments in higher education in South Africa;
- Literature supported the empirical research results that found that institutions experienced difficulties in the implementation of ITIL processes and felt that ITIL as a governance framework needed to be adapted to accommodate a changing IT context.

The last secondary objective was to investigate possible alternatives to ITIL as a governance framework *per se* and will be elaborated on below.

King III as such is a guideline and recommended set of best practices and together with the findings of this study guided the author towards the following discussion with regards to a combination of elements as pillars for a recommended practice

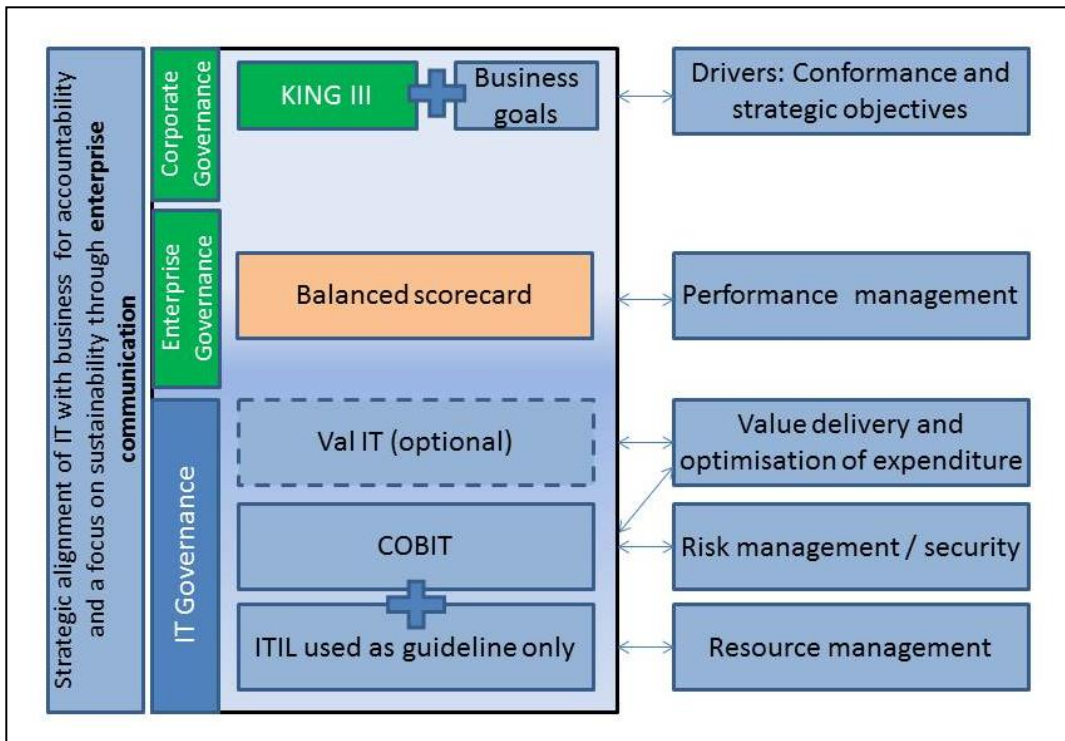
and conceptual IT governance framework in a changed IT service delivery context in higher education:

- IT governance frameworks should **fit the corporate culture of an institution** with the role of the CIO clearly defined;
- The IT governance framework adapted by an institution should first and foremost be **mapped to the institution's IT strategy** and the enterprise architecture (Pretorius, 2006:3);
- ITIL as such should not be adapted or changed, but **the guidelines for continuous service improvement through the implementation of a knowledge base for known errors as described by ITIL should be followed** and should, together with a service catalogue, form the foundation in a remedy system for service delivery in IT support departments in higher education (Head & Brooks, 2012:2);
- Furthermore, other **ITIL processes should be used as guidelines only** and not as a governance framework for compliance purposes as such. This will then serve as best practices to deliver service effectively without being prescriptive or restrictive in the operational IT support divisions such as service or help desks as well as the second or third levels of support such as former Incident and Problem management.

#### **4.4 A PARADIGM SHIFT**

McCredie (2006:8) as well as King III confirmed that *no "single best IT governance model"* existed. A recommendation was made in Chapter 2 regarding the implementation of various IT governance frameworks (see figure 2.2). The author, however, proposes the conceptual IT governance framework presented in figure 4.1 for higher education in South Africa. This proposed framework is loosely based on a model proposed by Woertman (2006:8):

**Figure 4.1: Proposed conceptual IT governance framework for higher education in South Africa**



The drivers towards IT governance in higher education institutions in South Africa are King III and the statutory regulations as discussed in §2.3 for conformance as well the business and strategic objectives of an institution as set out in its institutional or strategic plan. PricewaterhouseCoopers (2009:4) and the ITGI (2003:6) recommended four focus areas towards IT governance implementations, namely:

- **Strategic alignment** with business goals, including the triple-bottom line of corporate governance and accountability;
- **Value delivery** through optimised expenditure;
- **Risk management** by protecting IT assets, planning disaster recovery and ensuring service continuity; and
- **Resource management** by optimizing and utilising IT resources including human resource skills.

The ITGI (2003:6) also recommended:

- **Performance management** by improving the education level of IT support staff and business managers as well as the measurement of IT delivery of promised business value.

These focus areas are largely addressed in COBIT 5 (see §2.6.1) and to complete the conceptual framework it is recommended that a **balanced scorecard** be implemented to assess operational excellence, customer satisfaction, internal processes, innovation, learning and future orientation to assist in performance management (ITGI, 2003:6; Martin, Brown, DeHayes, Hoffer & Perkins, 2005:608).

As was discussed in Chapters 2 and 3 of this study, COBIT 5 fits in with and complements ITIL and other IT best practice frameworks and should be implemented as the overall control and audit mechanism for risk and as umbrella over ITIL for the information security of an institution. The author thus recommends that **a combination of COBIT and ITIL guidelines be adopted and used with a balanced scorecard** for *enterprise governance* as conceptual framework for IT governance at higher education institutions in South Africa. This will ensure effectiveness and efficiency of IT processes as well as accountability of management to all stakeholders.

ITIL should be used for resource management as IT is a responsible user of resources as well as the development of people to bring IT human resource skills in line with business and user demand. ITIL guidelines should be used as discussed.

#### 4.5 LIMITATIONS AND IMPLICATIONS FOR FURTHER RESEARCH

When making recommendations and conclusions in empirical research, the limitations and implications for further research must be identified and considered. Although IT managers and a few other staff members from IT support departments from 14 of the possible 23 public higher education institutions in South Africa participated in this study, the findings reported cannot be generalised to the higher education sector in general in South Africa, due to the use of a non-probability convenience sample.

Another limitation of this study is that the empirical research focused exclusively on ITIL with a limited focus on COBIT as governance frameworks. Further studies could investigate COBIT in depth as well as various other governance frameworks in higher education in South Africa.

Despite these limitations, this study has added to the empirical body of IT governance research in South Africa and based on the paradigm shift described in this chapter, the findings of this study present numerous challenges for further research.

#### 4.6 RECOMMENDED FURTHER STUDIES

This mini-dissertation is concluded by the identification of future research opportunities. Since not much research has been done with regards to IT governance in higher education in South Africa, many opportunities for further research exist. The comparison between **IT governance maturity levels** in higher education in South Africa and other industries such as the financial sector could be researched. A **new conceptual as well as a practical framework** with regards to IT governance in higher education in the changed service delivery context as recommended in this study could also be researched and devised. More academic

research in Information science departments at universities could be encouraged. ASAUDIT can then be approached by IT support departments in higher education to actively contribute to this research by launching a forum with representation from all institutions for research opportunities regarding this topic and coordinating such research projects to **establish a customised IT governance framework** that suits the general culture of IT support in South African higher education institutions.

#### 4.7 CONCLUSION

The aim of this study was to investigate whether ITIL as an IT governance framework is still applicable and relevant to a changed service delivery context in IT service delivery departments in the higher education sector in South Africa.

Exploratory research was done firstly to investigate whether or not IT departments at higher education institutions in South Africa experienced a shift in service delivery from managing the supply of IT tools and solutions through traditional, restrictive service delivery practices to business to a more open attitude; that is, the alignment of portfolios of tools and services with the demand from business. Secondly, the implementation status and relevancy of ITIL in IT support departments in the higher education sector in South Africa was explored. The findings of the survey conducted confirmed a changed IT service delivery context as well as a waning interest in ITIL implementations in the education sector.

Recommendations towards a paradigm shift regarding ITIL as a governance framework *per se* as well as a proposal towards a possible alternative conceptual IT governance framework incorporating only ITIL guidelines and best practices as well as COBIT for risk management were put forward and it can further be concluded that the research objectives as set out in §1.6 were satisfactorily met.

## 4.8 CHAPTER SUMMARY

In this chapter, the findings of the literature review as well as the survey used in the empirical research were summarised and conclusions and recommendations were made towards a paradigm shift regarding a new conceptual governance framework for higher education in South Africa in the new changing service delivery context.

Recommendations for the implementation of a Known Error Database (KEDB) as described by ITIL as well as the use of ITIL processes as guidelines only were made and five focus areas for the implementation of IT governance were identified. The introduction to enterprise governance by the implementation of a balanced scorecard for performance management was noted and a new conceptual IT governance framework for higher education in South Africa was proposed.

The limitations and implications for further research were discussed and suggestions were made towards further studies.

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# APPENDIX A: QUESTIONNAIRE



## **Information Technology Governance Frameworks in higher education in South Africa: A Paradigm Shift**

Dear Colleague

The aim of this study is to establish whether ITIL is still applicable as an IT governance framework and relevant to service delivery in information technology support departments in the higher education sector. The study will only be conducted amongst universities in South Africa and forms part of a mini-dissertation to be submitted in partial fulfilment of the requirements for the degree Master in Business Administration at the Potchefstroom campus of the North-West University.

Information technology directors or managers at public higher education institutions in South Africa have been selected on a random basis to assist with this investigation and you are kindly requested to complete the form on the web at: <http://quiz.nwu.ac.za/content/it-gov-frame> . It will require about 15 minutes of your time.

Your involvement and time set aside to contribute to this study is highly appreciated. All responses will be treated as strictly confidential and participation in the study is voluntary. The results of the study will be made available to you on request.

This study will contribute to studies regarding new IT governance frameworks for the higher education IT service delivery sector in South Africa.

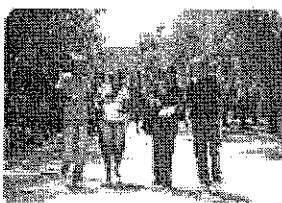
Ethical clearance has been obtained: **NWU-00067-09-A4**; *Information and Technology Management*; Expiry date 2014/11/13

**Will you please be so kind as to fill in the web form on / before the 12th of September 2012?**

Kind regards

<b>Researcher:</b> Mrs Elsabe Botha <i>email:20284888@nwu.ac.za</i> <i>Telephone:018 299 4622 / 082 463 1919</i>	<b>Supervisor:</b> Mr Johan Coetzee <i>email: 10306498@nwu.ac.za</i> <i>Telephone: 018 299 4012 / 082 821 7177</i>
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**1. Please state the department you are currently employed in at your institution: \***

- ICT
- IT support department other than ICT
- Other

**2. Please state your position at your institution: \***

- Manager
- Director
- Chief Director
- Executive Director
- Other

**3. Please state your age: \***

- 20 to 30
- 31 to 40
- 41 to 50
- 51 to 60
- 61 to 65
- older than 65

**4. Please state your gender: \***

- Female
- Male

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**5. IT tools and solutions have become pervasive to business as an operational asset:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**6. More " technology-savvy" users have an impact on the relationship of IT to information consumption:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**7. IT service delivery departments no longer have full control over IT tools and solutions provisioning:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**8. Users now demand more flexible and intuitive IT tools and solutions:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**9. Users themselves take more control of new technologies with personal mobile devices:**

- Strongly disagree
- Disagree

- Neutral
- Agree
- Strongly agree

**10. ICT decisions regarding IT service delivery and support is influenced by users making use of mobility:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**11. More "technology-savvy" users have an impact on the relationship of IT to service delivery:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**12. Former IT responsibilities have moved to users themselves:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**13. ICT decisions regarding IT service delivery and support is influenced by users making use of social media:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**14. ICT decisions regarding IT service delivery and support is influenced by users making use of the cloud:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**15. IT tools and solutions are no longer ONLY utilised to enable business:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**16. IT service delivery departments now focus more on demand from users than merely supplying tools and processes:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**17. Traditional service delivery in IT departments has changed from a 'no, because' to a 'yes, but' attitude (with more respo the users themselves):**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**18. 'Abundance' is the key practice nowadays in IT service delivery strategies (lesser restrictions on shared disk space etc**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**19. In your opinion, has the context in which IT services and support should be delivered changed in any way?:**

- Yes
- No
- Don't know


**20. Do you have any comments on the current IT service delivery and support context?:**

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**21. Your institution values ITIL as an IT governance framework:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**22. Your institution adopts ITIL best practices:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**23. Your institution has implemented ITIL processes:**

- Yes
- No
- Don't know

**24. How many ITIL processes have been partially implemented at your institution?:**

- None
- 1
- 2
- 3
- 4
- 5
- More than 5

**25. How many ITIL processes have been fully implemented at your institution?:**

- None
- 1

- 2
- 3
- 4
- 5
- More than 5

**26. Your institution finds it difficult to implement ITIL processes successfully:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**27. If your answer in the previous question was 'agree' or 'strongly agree', please explain:**

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**28. Your institution finds ITIL process implementation difficult due to a resistance to change attitude amongst staff membe**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**29. Your institution finds ITIL process implementation difficult due to a lack of tools for successful implementation:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**30. Your institution finds ITIL process implementation difficult due to a lack of existing models for successful implementati**

- Strongly disagree
- Disagree

- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**31. Your institution finds ITIL process implementation difficult due to lack of existing case studies of successful implement**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**32. It is more difficult for staff members to adapt to ITIL processes than to adopt new technologies:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**33. Your institution finds ITIL process implementation difficult due to a changing IT service delivery and support context:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**34. Your institution finds ITIL process implementation difficult due to it being a cumbersome and complex IT governance fr**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- My institution does not find ITIL process implementation difficult

**35. Your institution has implemented ITIL V2 processes:**

- Yes
- No
- Don't know
- Uncertain

**36. Your institution has implemented ITIL V3 processes:**

- Yes

- No
- Don't know
- Uncertain

**37. Your institution has implemented ITIL 2011 processes:**

- Yes
- No
- Don't know

**38. Your institution has implemented COBIT V4 processes:**

- Yes
- No
- Don't know

**39. Your institution has implemented COBIT V5 processes:**

- Yes
- No
- Don't know

**40. An higher education institution can move from a non-existent state regarding IT governance to a managed, measurable optimised state in less than 3 years:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**41. ITIL takes into account the gap between the demand from users and the implementation of IT solutions:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**42. Time and money are invested in ITIL accredited remedy / action request systems at your institution:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**43. Employees at your institution are encouraged to get ITIL certified:**

- Strongly disagree
- Disagree
- Neutral
- Agree

Strongly agree

**44. ITIL as a governance framework needs to be adapted:**

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**45. ITIL as a governance framework needs to be adapted to accommodate a changing IT context:**

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

ITIL does not need to be adapted

**46. Not enough time is allowed for training and empowerment when ITIL processes has been implemented:**

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**47. Only basic functions of complex IT service delivery remedy / action request systems are utilised at your institution:**

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**48. IT service delivery remedy / action request systems' functionalities are only partially mapped to ITIL processes at your**

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**49. In your opinion, is ITIL still relevant for your institution?:**

Yes

No

Don't know

**50. Why or why not? Please comment:**

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**51. If your opinion is that ITIL is not relevant anymore, can this be contributed to a changed IT service delivery context?:**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- I think ITIL is still relevant

**52. General comments:**

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