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Obstacles to good IT governance in the University environment in South Africa

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Title

Obstacles to good IT Governance in the university environment in South Africa

Student name

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

There has been global emphasis on improving corporate governance including ability of universities to cope with the challenges of the next industrial revolution. Most organisations including universities are found to be flouting the rules of governance. This report focuses on the obstacles to good ITG (Information Technology Governance) in the university environment in South Africa. The report will be based on a case study that is focused on university of Witwatersrand (Wits) as an institution of higher learning to study the obstacles to good ITG in a university environment.

Various literatures were used as the basis of finding out what were the obstacles to good ITG. Common obstacles from these literatures emerged with top ten obstacles identified. Interviews were conducted on 11 participants representing a sample from a population of 150 at Wits University's ICT department.

A qualitative research methodology was used with thematic content analysis of interviews conducted on the responses. The thematic content analysis identified top five themes. The common themes identified from all respondents led to a better understanding of the obstacles and the impact thereof. Some common obstacles from literature review and the themes emerged from the interview process.

The researcher chose to be part of this research project as it met the needs and aspirations of conducting a study in the ICT economic sector. Some of the key findings and obstacles to good IT in this research were, lack of measurement of value of IT services, lack of proper skills within ICT to execute Governance mandate, bureaucracy in approval of ITG policies and enforcement, resistance to change in adopting new governance controls and proper governance approval. Contrary to one's belief based on the key findings, it was found that the university has well-established policy approval committees. Conclusion and recommendations were sought and form part of this report.

DECLARATION

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

Lonia Pudikabekwa Mathinya

Signed at Parktown

On the 29th day of March 2019

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This research report is dedicated to my family, my husband Norman my children Tumi, Naledi, Rebone, and Matodzi. I was able to resign to study fulltime because I was sure about your support. The days which I was studying at night, you never complained when I came back home late but instead you encourage me to persevere. To Norman, you are one unique husband. You were there for me from day one until the end. MBA strengthened our marriage because of your understanding and constant support.

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of the study is to identify obstacles to good Information Technology Governance (ITG) in the university environment in South Africa.

1.2 Context of the study

In today's competitive global information-based economy, there is pressure on the university to produce graduates capable of functioning in the new world economic and societal environment that is technologically inclined (Aniedi & Effiom, 2009). In order to meet up with societal demands, universities around the world are moving rapidly to incorporate information and communication technologies (ICT) into all aspects of their core business of teaching and learning (Bates, 2001; Ryan, Scott, Freeman & Patel, 2000).

ITG has emerged as a fundamental organisational imperative and as such, organisations understand that it is key to realising IT business value (Peterson, 2006). Furthermore, an aligned function of IT with the enterprise's strategies requires a balanced integration approach of ITG frameworks (Wessels & Loggerenberg, 2006). The dependence on IT is vitally important in our knowledge-based economy, where organisations are using technology in managing, developing and communicating intangible assets such as information and knowledge (Van Grembergen & De Haes, 2008).

ITG has become more important within universities because of the important role that IT plays in adding to organisational value in the University (Brynjolfsson & Saunders, 2010). Universities are more dependent on IT and that has turned ITG into a real challenge (Bianchi & Souza, 2015).

This research was based on a case study that was focused on University of the Witwatersrand (Wits) as an institution of higher learning to study the obstacles to good ITG in a university environment.

Wits has about 38 000 students composed of local and international students with over 1000 employees (Wits, 2017). It is ranked number one in South Africa on the global academic ranking of world universities (Wits, 2017).

The institution has one of the largest IT infrastructures in South Africa that provide services to all academic and non-academic staff, including students using cutting edge technologies in a modern academic world (Wits, 2017). The impact of IT Infrastructure plays an important role in the university's mandate to deliver academic service to its constituencies. It is against this background that this research was conducted to understand the subject topic.

1.3 Problem statement

1.3.1 *The objective of the study*

The objective was to identify obstacles to good ITG in the university environment in South Africa. The study was conducted at Wits University.

1.3.2 *Research problem*

Leedy and Ormrod (2010) assert that a research problem is the heart of the research process and that the statement must first be expressed with the utmost precision. The link between ITG and corporate strategies is a key concern in organisational leadership because IT has always been perceived to be a support function with a reduced ITG performance effect (Kutsikos & Bekiaris, 2007). Researchers further highlight that challenges have also been presented in the way in which universities are governed, managed and held accountable (Asiimwe & Steyn, 2013).

It is evident that many universities and other organisations have become very reliant on IT for their organisational success (Bianchi & Souza, 2015). Therefore, organisations recognised that IT is one of their main organisational assets (Perreira & da Silva, 2012). Universities are complex organisations that require an adequate IT infrastructure and information systems to fulfil their mission (Bianchi & Souza, 2015).

It is on this premise that the study was undertaken to qualitatively uncover the obstacles that Wits university experience in their effort to implement good ITG.

1.4 Significance of the study

The research fills a gap in that a review of the literature was found to be rather limited in its ability to identify obstacles to good ITG. A significant amount of literature does, however, focus on obstacles that are experienced because of weak measurement of IT performance, lack of top management support and lack of skills at the IT department (Lapao, 2013; Von Solms, 2001).

The purpose of the research was to identify the obstacles to good ITG at Wits. The study identified themes that emerged from the interview questions which were administered to 11 participants in the study. This is considered important as the study will uncover the reasons for these obstacles that are a hindrance to the implementation of good ITG. The research provides guidance on how Wits could avoid these obstacles and the consequences of allowing them to fester.

Finally, the results of the research will be of value to academia. The study of obstacles to good ITG is relatively new and therefore more of interest should be developed to curb the behaviour that is detrimental towards implementation of good ITG. More importantly, this research may result in providing a better understanding of the issues related to good ITG and could be expanded further to add to the body of academic knowledge.

1.5 Delimitations and limitations

1.5.1 *Delimitations*

The research will have the following delimitations:

- The research was limited to exploring the phenomenon from the perspective of Wits University Senior Management only.
- The research did involve university students and other stakeholders.
- The research took place at Wits University's two campuses in Johannesburg, Parktown, Gauteng Province.
- Only face-to-face interview were conducted and no other instrument was used.

1.6 Definition of terms

ITG is defined as strategic alignment of IT with the business such that maximum business value is achieved through the development and maintenance of effective IT control and accountability, performance management and risk management (Webb, Pollard & Ridley, 2006).

The following are key terms used in the research report and are as follows:

- Business Intelligence (BI) – refers to computer-based techniques that use technologies, processes, and applications to analyse and disseminates information (Cebotarean & Titu, 2009).
- Senior Manager – Responsible for the day-to-day running of a department.
- Chief Operations Officer (COO) – Executive Manager responsible for operations at Wits.
- Chief Information Officer (CIO) – Executive Manager accountable for IT service provision.

- SET (Senior Executive Team) – Executive team for Wits responsible for the decision-making and monitoring of capital projects.
- ICT – Information Communication and Technology.
- Obstacles – A thing that hinders progress (Oxford Dictionary, 2019).

1.7 Assumptions

The following assumptions underpinned the research conducted:

- Research respondents were assumed to have an interest and a willingness to participate in the research. However data and consistency of answers may arise as a result of not meeting this assumption.
- Research respondents were assumed to understand the ICT terms and basic understanding of the word obstacles. If not, the answers to the understanding of the impact of obstacles might have affected the quality of the answers.
- It was assumed that, although research respondents presented subjective answers, they would be honest in the content of these answers. If a subject had lied and/or exaggerated, this would have degraded the value of the answers.
- The researcher was consistent throughout the research interview process as well as the accuracy and thoroughness of the interview note taking. If this did not happen, the data would have been compromised.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In this literature review, the aim is to outline the literature that was used to derive the phenomenon against which the research will be conducted.

The section commences with a definition of ITG and analysis of the literature on obstacles to good ITG. The focus will mostly be on institution of higher learning using the university environment as the basis for the research. The section then continues by specifically linking the organisation‘s corporate strategy and ITG as well as describing the obstacles to good ITG implementation. A brief analysis of how management and employees view ITG is discussed in detail. A framework base is therefore set for the proposed research to be conducted.

2.2. Information Technology Governance (ITG) defined

According to Webb et al. (2006), ITG is defined as strategic alignment of IT with the business such that maximum business value is achieved through the development and maintenance of effective IT control.

ITG is the process by which organisations seek to ensure that their investment in IT facilitates strategic and tactical goals (Debreceny, 2013). Furthermore, Debreceny (2013) argues that ITG is a subset of broader corporate governance, focusing on the role played by IT within the organisation.

ITG is further defined as an instrument to control and manage the IT resources such as infrastructure technology and people in any kind of organisations, including universities (Bajgoric, 2014; De Haes & Van Grembergen, 2009; Hicks et al., 2012).

In addition, Yanosky and Caruso (2008) explain that ITG is a “collection of management, planning and performance review policies, practices and

processes with associated decision rights, which establish authority, controls and performance matrix over investments, plans, budgets, commitments, services, major changes, security, privacy, and compliance with laws and organisational policies."

2.3. ITG overview

The literature review clearly indicates that there is renewed interest in the governance of universities and an increasing demand from governments and communities to improve the quality and accountability of universities (Asiimwe & Steyn, 2013). Central to the literature review, there is a need to understand the obstacles that hinder the adoption of good ITG in the universities environment because there is an increasing attention to how IT is managed in higher education institutions because of their impact in the running of the universities (Yanosky & Caruso, 2008).

Research studies have shown that for an organisation like a university to meet its obligations, there should be policies and rules that are established in terms of accountability and transparency, hence ITG (Gberevbie & Excellence-Oluye, 2014). Good ITG without unmanageable obstacles is recognised as essential for the success of any organisation (Jindal, 2014). The concept and practice of good governance in a university demands that there should be constructive mechanisms and procedures that will enable implementation of ITG and pose a question on the obstacles to good ITG (Jindal, 2014).

In the recent years, the trend has been to ensure that tertiary systems are of high quality hence the need for ITG to ensure compliance (El-Khawas, 1998). Researchers have indicated that there are several important dimensions of ITG and arguably the most important element of ITG is the design of decision rights and organisational structures (Debreceny, 2013).

Given that institutions are now held accountable and having a unique position to train the nation, quality assurance plays central role in the ITG compliance structure (Debreceny, 2013). The universities systems output should be of high quality with accuracy thereby implying that as institutions compete for awarding degrees of high quality (Morley et al., 2006; Geiger, 2004), they should be backed up by IT systems that comply to good ITG. This means university records should be of highest quality and integrity as adapted from Von Solms (2007).

Von Solms (2007) citing Ward and Peppard (2002) points out that the challenge confronting organisations is to ensure that information is of the highest quality possible. According to the ITG Institute (ITGI) as quoted from Von Solms (2007), data integrity means unimpaired or unmarred condition meaning representational faithfulness of the information to the condition or subject matter represented by the information (ITGI, 2004). The table below illustrates the information integrity attributes in accordance with ITGI (2004) and Bovee, et al. (2003).

Table 1: Information integrity attributes Bovee., et al. (2003) ITGI (2004)

Bovee et al. (2003)	**ITGI (2004)**
Accuracy	Accuracy
Completeness	Completeness
Consistency	Currency
Existence	Validity

The accountability to confer high quality degrees also positions the institution at the top level and reputation means everything to the survival of the university with IT systems being one of the functional support structures to maintain good position (Kutsikos & Bekiaris, 2007).

The researchers report that certain minimum standards of quality assurance should be met to improve the reputation in the sector; hence, corporate governance is important to provide direction in crafting the ITG strategy (Leedy & Ormrod, 2012).

2.4. The link of ITG to corporate governance

2.4.1 Corporate governance

Corporate governance is defined as the system by which companies are directed and controlled and starts from organisation's top management giving the company direction (Toolkit for the Company Director, KPMG, 2018). Furthermore, corporate governance is described as an overall structured system of principles from which the enterprise operates, organised, managed, and controlled (Kutsikos & Bekiaris, 2007). This system comprises a set of relationships between a company's management, its board, its shareholders, and other stakeholders (Toolkit for the Company Director, KPMG, 2018).

Governance formalises and clarifies oversight, accountability and decision rights for a wide array of IT strategy, resource and control activities (Yanosky & Caruso, 2008).

2.4.2 The composition of ITG

There are three critical foundations for effective ITG as depicted in Figure 1. Sackey (2007) advises that the presence of all three elements is required as ITG would be ineffective or compromised if any of them is missing as depicted in the figure below.

Figure 1. Three foundations for effective governance (Sackey, 2007, p.9).

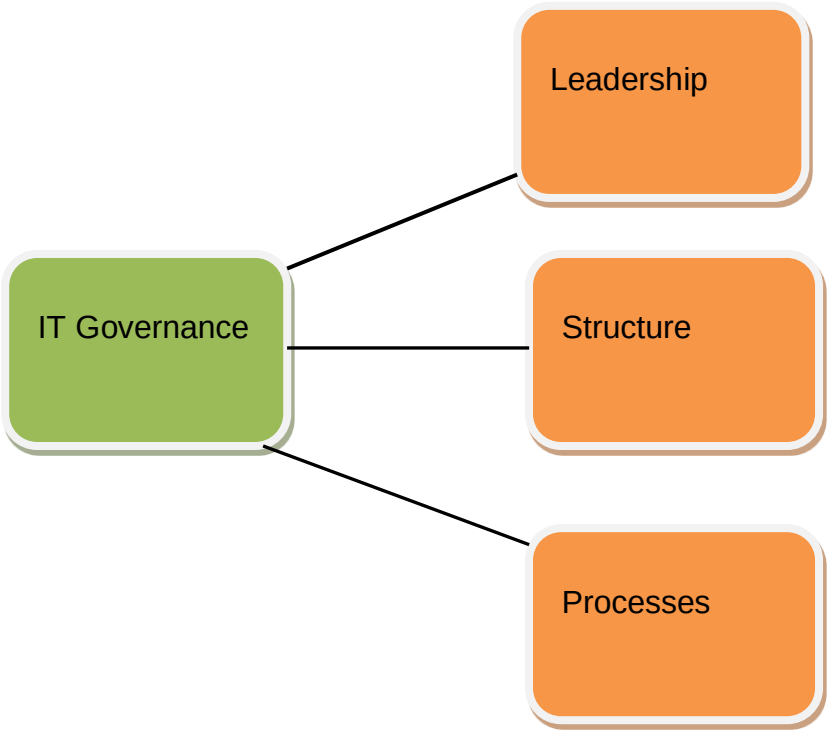


Figure 1 indicates that ITG is the responsibility of senior organisational leadership with structures and processes for planning and organising the delivery, support, and monitoring of IT performance (Kutsikos & Bekiaris, 2007). IT organisations should adhere to ITG practices once the governance structure set the tone of what is expected on the implementation of ITG (Swansson, Mow & Bartos, 2005). ITG focuses on the IT-related aspects within a corporate governance framework (Kan, 2003), which means ITG should not be implemented separately from corporate governance (Exler, 2003).

De Haes and Van Grembergen (2004) deduce that ITG is the organisational capacity exercised under the organisation's senior management to control the formulation and implementation of IT strategy.

2.4.3 Risk management and ITG

Risk management plays an important role in the essence of ITG and is described as the identification, assessment and prioritisation of risks (Van Grembergen & De Haes, 2008). Van Grembergen and De Haes (2008) further describe risk management as effect of uncertainty on objectives whether positive or negative followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events or to maximise the realisation of opportunities.

ITG also involves IT security whereby standards and policies are developed and implemented to curb the vulnerability that could potentially be brought about different stakeholders in the organisation, i.e., the major IT dependency implied high vulnerability that is inherently present in IT environment (Duffy, 2002b).

The risk factor is also accompanied by wide spectrum of external threats such as errors, abuse, omissions, cybercrime, and fraud (Duffy, 2002b). It is further stated that the controls that drive compliance described conformance to legislation, internal policies, and audit requirements as described by De Haes and van Grembergen (2004).

Both senior leadership which include Board Directors and Executive Management should be aware of their evolvement in the ITG (Duffy, 2002b). Their tasks depend on the information for which they are accountable and hence the need to strengthen ITG in close relation to corporate governance for the assumption of central role in today's organisation management (Kutsikos & Bekiaris, 2007).

2.5. How management and employees view ITG

In many cases and especially on board and other senior management level, issues of ITG are seen as technical, which must be delegated to the IT section and forgotten about (Von Solms, 2001).

The mistake which most employees including management commit is that they view ITG as a means to address external regulatory pressures (Ross & Weill, 2004).

It is stated that the main objective of ITG is to make organisations better, faster and cheaper, and beneficial to all employees (De Haes & Van Grembergen, 2004). Therefore, ITG is the responsibility of the Board of Directors and the Executive Management. ITG forms an integral part of the enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives (De Haes & Van Grembergen, 2004).

When designing ITG for an organisation, it is important to recognise that it is contingent upon a variety of sometimes conflicting internal or external factors in order to balance the views of the people (De Haes & Van Grembergen, 2004).

The evidence as described by Pereirra et al. (2012) indicates that IT is mostly being badly managed and governed and as such, it influences the success of implementing strong ITG. The research indicates some of the benefits of ITG in relation to the organisation in the absence of obstacles. Tjong and Kosala (2017) describe the following benefits but not limited to:

- Improvement of alignment between IT, organisation's purpose and accountability;
- Improvement of decision making for better direction in organisation and able to develop important IT strategies and policies;
- Improvement of effective use of IT resources in an academic environment; and
- Reduced the incident / failure of systems.

Ross and Weill (2004) argue that in order to limit employees' uncertainty on issues of governance, there are dimensional requirements of leaders to be transparent, ethical and honest in dealing with any organisational matters.

A necessary (but not sufficient) requirement for good ITG is the availability of a proper security policy and adherence to it, and promotion of good governance that should generally be mentioned in standard employment contracts and, more importantly, made part of staff induction training (Kutsikos & Bekiaris, 2007).

Researchers further highlight that challenges have also been presented in the way in which universities are governed, managed and held accountable (Asiimwe & Steyn, 2013). Organisations recognised that IT is one of their main organisational assets, which should be elevated to prominence in the organisation in order to get confidence and support of the employees' (Perreira & da Silva, 2012). It is on this premise that should there be no transparent effort in organisational matter; ITG shall always be viewed as an external compliance tool.

2.6. Obstacles and challenges of ITG

In this literature review, various literature articles were analysed pertaining to obstacles to good ITG and its associated challenges. Table 2 below summarises the list of obstacles gleaned from literature. It also indicates the list of authors whose literature was consulted. Only top ten authors were chosen based on a summarised view of what was perceived to be the common themes in terms of obstacles. The table further indicates the trend with their severity level indicating the level that most authors believe to be priority obstacles which hinders ITG.

The top ten obstacles mentioned were observed by different authors perceived to be common themes in terms of obstacles. In addition to the summary table, each identified obstacle will be explained in detail.

The legend depicts the severity in terms of level of agreement between the various authors of up to ten with red representing major obstacle, amber, moderate and green, minor obstacles.

The ten authors mainly advised that they identified these top obstacles on the basis that they represent the most impacting effect of ITG and pose a threat to the successful implementation of ITG. Good ITG implementation effort will be successful in the absence of these top identified obstacles (Nicho & Muammar 2016; Von Solms 2005; Jairak et al. 2008; Teo et al. 2013; Perreira &d Silva 2012).

Table 2: Top ten obstacles and ten authors

Authors Obstacles of good IT Governence	Nicho & Muamaar (2016)	Kutsikos and Bekiaris (2007)	Von Solms (2005)	Bianchi & Souza (2015)	Jairak et al., (2015)	De Haes & Van Grembergen (2008)	Teo et al. (2013)	Kutsikos & Bekiaris (2007)	Perreira and da Silva. (2012)	Lapao (2013)	Total
1. Weak measurement of the value of IT performance to the organisation	1			1	1	1	1	1	1	1	8
2. Lack of top management support	1		1			1		1	1	1	6
3. Multiple overlapping ITG process frameworks and standards	1		1	1				1		1	5
4. Lack of clear top IT strategy	1	1						1	1	1	5
5. Competency of IT staff on ITG matters	1				1	1	1	1			5
6. Cost of new requirements	1			1				1	1		4
7. Inadequate define IT roles and responsibilities	1		1		1	1					4
8. Culture	1			1				1	1		4
9. Compatibility with existing ITG Frameworks	1							1	1		3
10. Innovation and rapid technological adaptation				1		1			1		3

Legend
Major Obstacles
Medium Obtacles
Minor Obsatcles

2.6.1 Obstacle 1: Weak measurement of the value of IT performance to the organisation

This obstacle can best be described as the absence of methods to measure the realisation of the value of IT's performance (Aniedi & Effiom, 2009). To further elaborate on this obstacle, the following literature was reviewed.

Some of the obstacles hindering the adoption of ITG at the universities include weak measurement of IT performance and value to business (Lapao, 2013).

One of the parodies of value of ICT is its impact in the organisation and the cost value of such impact (Lapao, 2013). ICT is necessary in the organisation to get the organisation competitive in their service offering but it costs money (Duffy, 2002b).

Zhang and Chulkov (2001) explain that measuring value of ICT is cumbersome given the levels that may be involved to understand the value infused in the organisation. This statement indicates that the value and measurement of ICT performance is not dependent on one layer of the organisation but overall organisation based on the varying scope hence difficult to measure (Lapao, 2013).

This obstacle scored eight out of ten as depicted on the table and confirms that 80% of the authors agree that this was the highest obstacle to good ITG. Some researchers underscore that the starting point from which one can argue is to accept that the universities are increasingly becoming difficult places to govern, manage and lead (Mabelebele, 2013). ITG will need to play pivotal role in establishing its true and value sense to the organisations' strategic support that it can be seen to be a good measure of IT performance (Svensson & Hvolby, 2012).

Universities operate in volatile environment coupled with a need to comply to ITG requirements hence measure of IT value is a necessary imperative (Nicho & Muamaar, 2016; Mabelebele, 2013).

2.6.2 Obstacle 2: Lack of top management support

The obstacle can best be described as low commitment by university's top management. The following literature corroborates the obstacle description. Various authors like Von Solms (2005); De Haes and Van Grembergen (2008); Kutsikos and Bekiaris (2007); Perreira and da Silva (2012) reported on challenges of ITG implementation.

This includes lack of support from top management, communication, inadequate resources, centralisation, formalisation, vendor support and regulatory compliance with associated benefits, (Nicho & Muamaar, 2016).

It is deduced from researchers that the top management believe that they support ITG implementation however literature indicated that their commitment is low due to ITG framework complexity and the required skills to execute ITG policies (Wessels & Loggerenberg, 2006).

In addition, ITG implementation requires a need to restructure the organisation which have potential of been viewed negatively by employees (Nicho & Muamaar, 2016). This appears to have an influence how top management support the implementation of ITG. The obstacle scores a 60% of the overall ten authors who believe that the obstacle is highly regarded as a factor that impede the implementation of good ITG.

Researchers like Zhang and Chulkov (2011) advise that most business value directly emanates from effective ITG and should be supported by top management as per study conducted by Massachusetts Institute of Technology. The research indicated that firms with superior ITG have at least 20% higher profits than firms with poor governance, given the same strategic objectives. This view indicates that not only top management should support the ITG at university but should be part of the implementation thereof.

Governments invest more public money in tertiary institutions and require a high level of support to the effective running of the institution. Therefore, it is imperative that the stakeholders are assured of quality of output from their systems in order to support the universities financially (Alderman & Brown, 2007). Teo et al. (2013) accentuate that the ultimate outcome of successful ITG is the effective delivering of four objectives, namely, cost, growth, asset utilisation, and organisation flexibility as part of top management mandate. One could argue that top management could be seen to play a role in the market and strategy formulation.

Part of the cost is the investment required the up-skilling the practitioners of the ITG function. For example, Teo et al. (2013) explain that formal education provides foundational knowledge.

2.6.3 Obstacle 3: Multiple overlapping ITG process Frameworks and standards

The obstacle represents an institution of higher learning with multiple ITG frameworks. Many research studies have been conducted and posit that some of the obstacles in implementing ITG are many organisations trying to implement multiple overlapping process frameworks and standards like COBIT and TOGAF (Cater-Steel, Tan & Toleman, 2006). This is due to the increasing demands of the industry compliance requirements that have forced organisations to implement and integrate multiple frameworks and standards (Alderman & Brown, 2007).

For example, according to Gehrmann (2012), IT management must comprise a combination of two sets of frameworks among IT best frameworks used in improving business and achieving goals. Resistance to integrate other frameworks emanates from most staff not welcoming the change because of the need for additional work; specialised skill and knowledge regarding new frameworks (Nicho & Muamaar, 2016). Nicho and Muamaar (2006) further state that the different terminologies which comes as a result of multiple frameworks used in the different ITG frameworks make integrated ITG implementation a difficult task.

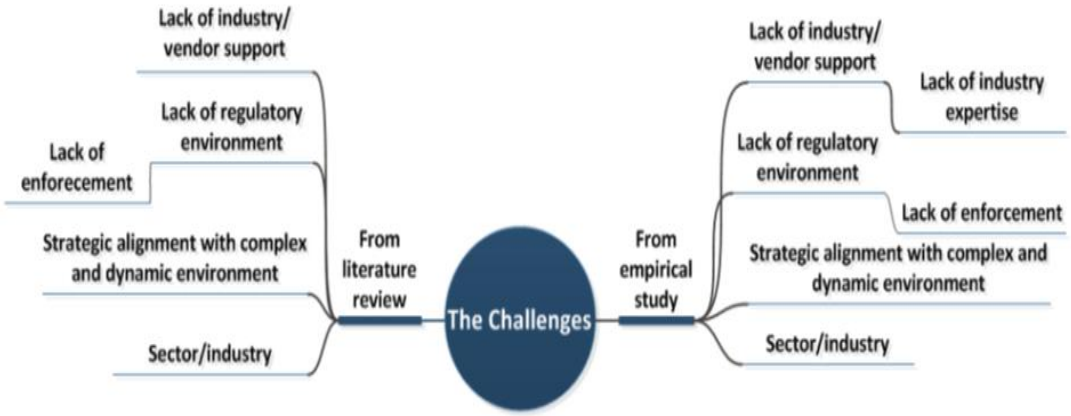
According to Năstase and Lonescu (2009), they identified some of the top frameworks used in the industry as follows but not limited to;

- ***Infrastructure Library (ITIL);***
- ***International Organization for Standardization (ISO); and***
- ***The International Electro Technical Commission (IEC).***

Năstase and Lonescu (2009) further advised that these frameworks are being widely adopted worldwide as they have been integrated owing to the overlapping nature of their control mechanisms.

One of the researchers advised that some of the challenges in implementing ITG frameworks separately relate to the environmental context as depicted on figure 2 below;

Figure 2. Challenges in implementing ITG frameworks separately (International Information Management Association, 2016).



Many authors agree that COBIT, ITIL, TOGAF, and ISO are the most valuable, popular, and widely adopted frameworks currently being used for business growth and success and represent a multi-framed ITG organisation (Chatfield & Coleman, 2011; Sahibudin, Sharifi, & Ayat, 2008; Ula, Ismail, & Sidek, 2011).

Since ITG frameworks overlap, it leads to implementation difficulties preventing organisations from adopting them (Pereira & Mira da Silva, 2012). A high degree of overlapping functions among members including different frameworks is to the detriment of ITG (Lapao, 2013).

There are many obstacles at universities' IT Systems that hinder the adoption of good ITG because of variety of applications, different platforms, academic systems, and cloud applications, which are heterogeneous in nature (Bianchi & Souza, 2015).

The critical challenge comes when choosing the best integrated framework from the numerous IT frameworks (Von Solms, 2005) with structures that are responsible for defining roles and responsibilities (De Haes & Van Grembergen, 2008). It is therefore deduced that without an effective integrated framework, one cannot have a good ITG.

2.6.4 Obstacle 4: Lack of clear top ITG strategy

The obstacles denote lack of strategic direction from university to provide leadership on ITG matters. It is firmly elaborated that that researchers also found that obstacles concerning implementation challenges at universities were related to organisations' internal and external factors, such as organisational strategy, trust and ethics (Nicho & Muamaar, 2016).

Von Solms (2001) reports that one of the major challenges in implementing good ITG and more security governance lies in the universities' council members being unable to perform their responsibilities and deduced as lack of strategic support from the top echelons of the organisation. However, according to the Higher Education Act, (No.101 of 1997), management of the university governance is the responsibility of the Council (section 27 HEA).

Sackey (2007) advises that it is imperative that describing the IT strategy should start at the top leadership of the organisation to clarify the imperatives that will feed into the ITG strategy thereby aligning IT and business strategies. The author explained the following process to arrive to a strong good ITG:

- Corporate Mission – Business Goals – IT Strategy;
- Requires involvement from many levels and activities within the Organisation; and
- Strong ITG contributes toward proper alignment.

OECD (2014) postulates that the board should fulfil certain key functions, including reviewing and guiding corporate risk policy as well as ensuring that appropriate systems for risk management are in place and comply with the law and relevant standards. It is however noted with great concern that in most universities, council members take no responsibility for information governance as they mostly delegate it so low down in the organisation because it is deemed a technical issue that they have no idea about (Von Solms, 2001).

Sackey (2007) further cautions that lack of alignment lead to adverse organisational issues. Zhang and Chulkov (2011) underscore that ITG is the responsibility of executives and the board of directors, and consists of the leadership, organisational structures and processes that ensure that the enterprise's ITG sustains and extends the organisation's strategies and objectives.

2.6.5 Obstacle 5: Competency of IT staff on ITG matters

Teo et al. (2013) further explain that ITG initiatives in organisations require skills with specific strategies, objectives and processes. Investment costs are required to improve the knowledge of the practitioners (Teo et al. 2013). This can be achieved through formal or informal training initiatives (Nicho & Muamaar, 2016).

It is also advisable that people who represent the university should be at the appropriate senior level with high level of competence and authority on ITG matters (Kutsikos & Bekiaris, 2007). It is on this premise that only they can adequately defend their ITG requirements within the university committees. That would also ensure that all university representatives are regularly updated on ITG issues including the status of major ICT initiatives and investments in the organisation (Zhang & Chulkov, 2011).

It is advised that if there are committees, they should be highly skilled and chaired by an executive manager with relevant authority (De Haes & Van Grembergen, 2004). This would ensure that inputs and views of the executive management are brought into the discussions, and at the same time, executive management will be made aware of strategic value and importance of ITG (Zhang & Chulkov, 2011).

2.6.6 Obstacle 6: Cost of new requirements

It is stated that effective ITG at the corporate level cannot be achieved without a clear indication of the total ICT costs spent by the organisation (Kreitner & Kinicki, 1995). These costs should include the cost implications of proposed future IT investment and initiatives (Zhang & Chulkov, 2011). The authors further stated that this approach will ensure that effective ITG is based on a strategic, results-based and cost-effective approach (Zhang & Chulkov, 2011).

The research further explains that complexity in understanding IT framework, associated cost of new requirements compounded with politics, play a role in the resistance to change (Nicho & Muamaar, 2016). Institutions are expected to enhance the responsiveness of their systems and demonstrate value for money (Goedegebure et al., 2007; Vroeijenstijn, 1995a; van der Wende, 1999; Woodhouse, 1999).

There is a shrinking financial assistance from governments and as such, universities are expected to offer better programmes using better facilities and come up with research outputs that could better impact on economic development using the little they have (Asiimwe & Steyn, 2017). The authors further explain that this has an impact on the way universities accept certain financial requirements, which come because of conformance to ITG.

An example of impact is when universities are supposed to comply with requirements of compliance nature where they need to upgrade their IT systems to the latest systems version without the financial support.

The trend to contain various ICT operational costs is leaning towards centralisation of ICT in some organisations (Zhang & Chulkov, 2011). It is on this premise that this would lead to a more transparent costs measures, as such cost would, to a great extent, correspond to the programme budgets of the organisations' ICT departments.

Zhang and Chulkov (2011) advise that some organisations have adopted or are in the process of preparing ICT cost catalogues for their basic ICT services in order to curb the ITG cost measure transgressions. Some researchers advise that in today's universities, the IT baseline costs are significant and rising, prompting them to take a closer view of their ITG (Webb, Pollard & Ridley, 2006). In addition, Webb et al. (2006) report that the IT costs make up about a sizeable amount of the operating budget and represent approximately four percent (4%) of gross revenue of universities.

Universities require a detailed information cost approach on ICT, including the total annual ICT costs incurred, recurring and ad hoc annual ICT costs, and a breakdown of costs for certain ICT activities, specific systems and projects (Zhang & Chulkov, 2001).

Nicho and Muamaar (2016) further explain that internal and external decision-makers must have information on ITG cost implications to better consider those cost factors in their decision-making and prioritisation process.

The argument of other researchers like Nicho and Muamaar (2016) is that if all cost analyses are not transparent the implications are clearly defined, it impairs on accountability and transparency of ITG.

2.6.7 Obstacle 7: Inadequate defined IT related roles and responsibilities

Inadequately defined IT-related roles responsibilities and insufficient staff members with insufficient IT skills and competency have an impact on the implementation of good ITG (Othman et al., 2011b). Furthermore, lack of accountability adds to the complexity of the implementation of ITG (Von Solms, 2001).

Zhang and Chulkov (2011) caution that "ICT management framework should clarify how decisions are made, who provides inputs for the decisions, who is accountable and how ICT activities are coordinated. The authors further maintain that key stakeholders must take on the appropriate roles and responsibilities to clearly and effectively guide the management of the Organisation's ICT activities and resources."

2.6.8 Obstacle 8: Organisational culture

The culture of an organisation is defined as basically its personality and encourages employees to work collectively to achieve organisational goals (Corriss, 2010). Culture is arrangement of different attributes that express an organisation and differentiate the firm from other one and is known as "normative glue" means to hold the overall organization together (Shahzad, Fakhar, Luqman, et al., 2012).

Culture is further explained as the social glue that binds the members of the organisation together to implement ITG processes (Cabrera, Cabrera, & Barajas., 2001). It is argued that if culture has an impact on organisation' performance, so do it influence on what the organisation wants to achieve on other spheres of the organisation.

This statement is influenced by fact that culture has a combination of values, sets, beliefs, communications, and simplification of behaviour which gives direction to peoples and can be adapted to influence ITG implementation (Mashal & Saima, 2014).

The influence of culture on ITG deduces that the successful implementation of ITG mechanisms depends heavily on the prevailing organisational culture (Aasi, Rusu & Han, 2014). According to Cabrera et al. (2001), culture has shown to play a significant role in ITG management processes. The good organisation culture encourages employees to work together and can achieve good ITG implementation and maintenance.

The culture of learning environment should be encouraged as it becomes a good breeding ground for employee's cooperation including that it impact positively on ITG matters (Aasi, Rusu & Han, 2014). Some researchers advise that in order for better university governance, all responsible employees should be encouraged to be part of the positive organisational culture that influences good systems implementation (Asiimwe & Steyn, 2017).

If organisations and managers are willing to get employees commitment, this can lead to improved productivity, meaning good ITG plan can be implemented without hindrance (Shahzad et al., 2012). Some of the key risks associated with lack of proper ITG with respect to culture are as follows; hence, universities are recognising the need for increased control of IT via ITG with improved cultural cohesion:

- IT-related failure or breach that can precipitate a significant financial loss (profitability) or the development of serious legal risks and issues for the university (Webb, et al., 2006).
    - Integrity of student data comprised due to unauthorised access
    - Operating instability caused by deteriorating infrastructure

- Impact on university's competitive advantage, efficiency, effectiveness, growth, and innovation and support of university goals (Sackey, 2007).

- University information ending up in the wrong hands owing to loss of assets like laptops and USB (Universal Serial Bus) devices (Carolissen & Habib, 2018).

- Cybercrime threat – Systems and Networks downtime has become too costly for any organisation these days as doing business globally has become the standard (Van Grembergen & De Haes, 2008).

2.6.9 Obstacle 9: Lack of compatibility with existing frameworks

Kutsikos and Bekiaris (2007) argue that despite the development of frameworks and control models that help ITG to thrive, there are still challenges to address. For example, current ITG frameworks, like COBIT, aim to define rigorous ways of control methodologies, resulting in the delay of the implementations, taking more time, effort and money before companies realise their investment returns (Kutsikos & Bekiaris, 2007).

The Protection of Personal Information Act (POPI) is an Act promulgated in 2013 and it is described as the promotion of the protection of personal information processed by public and private bodies. The Act introduces certain conditions to do the following:

- to establish minimum requirements for the processing of personal information;
- to provide for the establishment of an Information Regulator to exercise certain powers and to perform certain duties and functions in terms of this Act and the Promotion of Access to Information Act, 2000;
- to provide for the issuing of codes of conduct; to provide for the rights of persons regarding unsolicited electronic communications and automated decision making;

- to regulate the flow of personal information across the borders of the Republic; and
- to provide for matters connected therewith (Protection Of Personal Information Act 2013, 2018).

It is on this premise that while the company has its existing framework, adoption of another ITG framework only compounds the problem of implementation if not properly aligned (Von Solms, 2001).

2.6.10 Obstacle 10: Innovation and rapid technological adaptation

The researchers further suggest that as much as universities are complex and decentralised organisations, their challenge is that they have to review their ITG mechanisms to deal with innovation and changes in their environment and adapt to new technologies (Hicks et al., 2012 cited from Bianchi & Souza, 2015).

There is hierarchy at the university, which ties together the way the universities function. For example, there are formal chains of command, communication, organisational goals, or predetermined rules and regulations, which have an impact on how decisions are made, which impact on the decisions to innovate or adopt or adapt to the new technological requirements (Hall & Symes, 2005).

2.7. Conclusion

Literature clarified that indeed ITG is an important pillar that corporate organisations and universities alike seek to ensure that their investments in IT facilitates strategic and tactical goals Literature further explained that there is renewed interest in the governance of universities and an increasing demand from governments and communities to improve the quality and accountability of universities. It is important for universities to understand the obstacles that hinder the adoption of their good ITG because there is an increasing attention on how they use information for betterment of employees, students and communities.

It is important that policies that are established advocate for accountability and transparency when addressing the ITG aspects of operation. There should be a link between corporate governance strategy and ITG as a subset owing to their closeness and the influence. In order for ITG to work properly, it is important that the three strategic pillars work in concert e.g. process, leadership and structure.

Various authors have described obstacles to good ITG which must be observed and corrected in order to curb their influence in hindering the implementation of good ITG (Von Solms, 2001; Sackey 2007; OECD 2014; De Haes & Van Grembergen, 2008; Kutsikos & Bekiaris, 2007; Perreira & da Silva, 2012). While there are top ten obstacles, notable ones like lack of top management support and lack of top clear strategy plays a big role in how employees perceived the management's effectiveness.

Literature stated that most organisational value is derived from effective ITG and should be supported by top management (Zhang & Chulkov, 2011). One can deduce that there is a renewed need for top management to clarify their position in relation to the development and support of ITG in universities as postulated by Nicho and Muamaar (2016). The paradox of top management, according to researchers, is that they believe that they support ITG implementation, however with limited commitment. The complexity of the ITG frameworks and the need for extra time, resources, and skills requirement add to the obstacles to good ITG implementation (Wessels & Loggerenberg, 2006).

Literature revealed that there are many ITG frameworks that add to the list of obstacles and implementation of good ITG. This statement is corroborated by Cater-Steel, Tan and Toleman (2006) who echo that while there is increasing demands of compliance requirements forcing organisations to implement and integrate overlapping frameworks and standards. However caution must be taken to avoid failure of ITG as a result of multiple frameworks adoption. Furthermore the rapid adoption of overlapping ITG frameworks in universities and the need to integrate them has presented universities with challenges that pertain to choice and acceptable frameworks (Nicho & Muamaar, 2016).

CHAPTER 3: RESEARCH METHODOLOGY

The objective of this study was to identify obstacles to good ITG in the university environment in South Africa. This section covers the overall methodology that was used in the study. The methodology selected for the proposed research is qualitative as a result of its exploratory nature (Creswell, 2003). Furthermore, since the research aims to identify the obstacles from literature and in comparison, with the multiple perspectives of different individual participants of Wits University, it is therefore a suitable methodology to employ as it is concerned with understanding (Leedy & Ormrod 2005).

3.1 Research methodology /paradigm

According to Polit and Hungler (2004), research methodology refers to ways of obtaining, organising and analysing data where the methodology decision is dependent on the type of questions. The research study methodology described how the research was conducted including its logical sequence.

The main characteristic of qualitative research is that it is mostly appropriate for small samples while its outcomes are not measurable and quantifiable (Leedy & Ormrod, 2010). Ormrod (2005) advise that qualitative research studies typically reveal the characteristics or qualities of people with related, processes, relationships, systems, and even situations. Furthermore, it will allow the researcher to test the validity of certain claims, theories or generalisations (William, 2007).

Some of the weaknesses of qualitative research include the following characteristics (Leedy & Ormrod 2005; Miles 1979; Yin 1994);

- lack of objectivity, structure in large samples, numerical data, established guidelines and clear data analysis conventions.

3.2 Research design

Research design refers to the overall strategy that a researcher chooses to integrate the different components of the study in a coherent and logical way and constitutes the blueprint for the collection, measurement, and analysis of data effectively addressing the research problem (Leedy & Ormrod, 2010).

The methodological approach that was adopted was a semi-structured interview which enabled the researcher to get the views and opinions from the interviewees. The research adopted a case study design (Leedy & Ormrod, 2010) conducted with participants from Wits University. The intention was to develop an understanding of the respondent's perspective on what they regarded as the obstacles to good ITG.

The interview process consisted of 11 interviews with the various representatives of Wits University. The interviews included senior managers of governance, finance, accounting and risk, information systems, lecturer, and business intelligence. Each interview session was recorded and the result transcribed for future reference should they be required.

A summary of their responses was deduced by drawing inferences about the obstacles for a good ITG from this particular sampled department using interview questions on Appendix A. The advantage of interviews is that they provide flexibility and the ability to manage the line of questioning process according to Creswell (2003).

However, the drawback of interviews is the limitations it has on perceptions by respondents as articulated by Hussey and Hussey (1997). Furthermore, the authors showed that the risk of interviews is the lack of self-articulation by the respondents with researcher presence biased responses, location, and the provision of "indirect" information by respondents (Hussey & Hussey 1997).

3.3 Population and sample

The research was based on a case study that is focused on Wits University as an institution of higher learning to study the obstacles to good ITG (ITG) in a university environment. The university is located in Johannesburg's Braamfontein and Parktown campuses and serves approximately 38 000 students and employs over 1000 staff (Wits, 2017).

It is ranked number one in South Africa on the global academic ranking of world universities (Wits, 2017). There are five (5) faculties which include Commerce, Law and Management, Engineering and the Built Environment, Health Sciences, Humanities, and Science (Wits, 2018). The university has 33 schools offering 3000 courses (Wits, 2018).

Wits ICT Service Delivery is the central point of contact between the student user, staff and the ICT department. Currently, 150 IT employees have been employed of which four of them are dedicated to ITG. The IT budget varies according to the financial year and in relation to the planned projects and operational needs. However, the average budget is between R150 and R200 millions per year.

3.3.1 Population

Population is defined as the category of people about whom researcher intends to write in the report and from which a sample can be drawn (Davies, 2007). The population chosen for this research is 150 ICT employees at the university. The population represent the main campus, faculties and department ideal for this research. The attributes of race, gender, age, work experience and educational background were not considered to define the population. It is however noted that the participating employees would have been more than 5 months in their current positions.

3.3.2 Sample and sampling method

A sample is defined as a representative and a subset of the population from which results are obtained to make generalisation about entire population (Leedy & Ormrod, 2010). There were a total of 15 sampled participants however only 11 responded as depicted in table 3. Sample members were selected based on their knowledge, relationships and expertise regarding a research subject matter (Langkos, 2014). Accordingly, purposive and or convenient sampling was used in this study because the participants are conveniently located in the same institution in which this study was conducted (Creswell 2003), i.e., Wits University.

Most importantly, it will be easier to negotiate entry to the research site because the researcher is acquainted with the gatekeepers and to minimise travel expenses. The study sample will consist of senior managers of governance, finance, accounting and risk, information systems, lecturer, and business intelligence.

Table 3: List of respondents

No	Respondent	Department	Date
1.	ICT Governance Manager	ICT Governance	13 Nov 2018
2.	ICT Risk Manager	ICT Risk	30 Jan 2019
3.	CIO	ICT	11 Feb 2019
4.	Snr Lecturer	SLLM	05 Feb 2019
5.	HR IS Manager	HR-IS	14 Feb 2019
6.	COO	ICT	22 Feb 2019
7.	Business Intelligence Manager	Business Intelligence	15 Feb 2019
8.	Management Accounting & Assets Risk Director	Management Accounting & Assets	18 Feb 2019
9.	Director finance	Finance Directorate	18 Feb 2019
10.	Financial control (Audit) Manager	Financial Audit department	19 Feb 2019
11.	Financial Information Systems Manager	Financial Information Systems	25 Feb 2019

3.4 The research instrument

A semi-structured interview was conducted with the researcher working from a list of questions to be covered. The respondents were provided with ample time and flexibility to respond (Bryman 2004).

3.4.1 Interview

According to Burns and Grove (2003) and De Vos (2002), interviews have the following further advantages and can yield a great deal of useful information (Leedy & Ormrod, 2010):

- Flexible technique as it provides the researcher with opportunity to explore meaning in depth than other techniques;
- Interpersonal skills attribute can be a useful tool to extract more information.

For the purpose of this research, face-to-face interviews were used as the main method of data collection. Interviews are personal and unstructured whose aim is to identify participant's emotions, feelings and opinions regarding a particular research subject (Yin, 2012). The preferred method was to conduct face-to-face interviews with the relevant participants using semi-structured questions to obtain an in-depth understanding of a phenomenon (Yin, 2016).

Prior to conducting interviews, a pilot study was conducted with a few participants to test the interviews schedule items to eliminate any ambiguous questions. These participants were not included in the final sample. Interviewing stopped when data saturation has been reached and no new information emerges from the participants (Yin, 2016; Leedy & Ormrod, 2010).

One of the problems experienced was the delay caused by participants in meeting the telephonic meeting schedules. Follow-up telephonic calls were established to the participants who forgot to honour their meeting schedules.

All collected data from participants were manually captured on the record interview sheet and recording instrument by the researcher.

The interview commenced with a formal introduction of the researcher followed by the background of the research with its associated objectives. The respondents were allowed to discuss the topic of obstacles to good ITG and provide responses accordingly. Their responses were based on their perspectives of what they believe were contributing obstacles hindering implementation to good ITG at their university.

In instances where deemed appropriate, the researcher employed a few specific probing questions in order to get more clarity to the questions which were not sufficiently responded to. According to Fisher (2005), the main advantage of personal interviews is that they involve personal and direct contact between the interviewers and interviewees, as well as eliminate non-response rates.

Fisher (2005) further cautions that interviewers need to have developed the necessary skills to successfully carry an interview. A sample of the actual research instrument is included in Appendix A.

3.4.2 Ethics

According to Yin (2012), one needs to uphold a critical personal attribute that is a strong sense of ethics because of the numerous discretionary choices made by researcher, especially as this research will be employing qualitative method.

It should also be noted that ethical clearance form for the research was obtained from Wits University by the supervising department led by the lecturer to uphold the highest level of ethics (MBA project report ethical clearance form - 2018, refer Appendix B). More importantly, this research has been approved by the university faculty's higher degrees committee (MBA: Approval of title letter, refer Appendix D)

The researcher was also provided with information on the importance of Wits research ethics. The ethics clearance letter was shared with participants to ensure that the project was above board. The researcher advised participants that they would not be exposed to any harm because of participating in this research. The researcher emphasised the issue of confidentiality to protect the participants from reputational harm and dignity impairment.

3.4.3 Measurement instrument

Measurement instrument provides the basis on which the entire research effort rests (Babbie, 2010). De Vos (2002) asserts that the interview enables the researcher to be part of the research instrument. A measure of perceived ITG obstacles and the effectiveness thereof were derived from the participants 'responses to the interview schedule.

The instrument used for the research was questionnaire, which was constructed and administered by the researcher. According to Seidu (2007), when researchers administer questionnaires to an assembled group of persons or respondents, it builds confidence and gives the researchers the opportunity of establishing rapport. In order to validate our question items besides the complete literature review, the plan was to map the question item with current theories and also use the results of a series of interviews.

3.5 Procedure for data collection

Data collection refers to the process in which precise information relevant to the research problem is systematically gathered (Burns & Grove, 2003). This process uses methods such as interviews, case histories, observation, focus group discussions, and narratives (Burns & Grove, 2003). Leedy and Ormrod (2010) explain that methods of collecting data could be done through appropriate written documents, audio-visual material, interviews, and observations.

Researchers start by deciding the strategy of the sources of where and whom data would be collected from (Burns & Grove, 2003). The researcher initially attempted to contact the potential respondents by telephone. The telephonic contact was to inform respondents about the purpose of the study, process to follow, expectations of the outcome and the duration of the interview.

Once it was established that the potential respondents were willing to participate a follow up telephonic communication was initiated to thank them, confirm the venue and time of the interview. More importantly, respondents were assured of the confidentiality of the interview.

The interviews took place at the university premises as it was the most convenient place for the respondents. The researcher requested permission to record the interview sessions and once consent was granted each interview session was recorded. Upon consent of the individual respondent, each interview was recorded thereof. It was expected that respondents would become alarmed because of being recorded (Bryman 2004).

In addition, handwritten notes were taken during the interviews. Upon returning from the interview, the researcher transcribed the recording immediately as well as filled in any gaps in the written notes. The interview transcriptions were not provided as an Appendix C to the current research report but will be stored for future reference. The researcher never leaded the respondents but all efforts were made to facilitate an open atmosphere of fairness and discussion around the questions.

3.6 Data analysis and interpretation

Leedy and Ormrod (2010) suggest that data analysis in a case study typically involves the following steps:

- Organisation of details about case
- Categorisation of data
- Interpretation of single instances

- Identification of patterns
- Synthesis and generalisation.

Preliminary conclusions are likely to influence the kinds of data collected in later parts of the study with possible convergence (Leedy & Ormrod, 2010).

Thematic analysis was employed in which themes and categories emerging from the findings were identified. Thematic analysis is a method for identifying, analysing, organising, describing and reporting themes found between data sets (Nowel, Norris, White & Moules, 2017).

A thematic analysis looked to identify common and recurring themes in the data (Burns, 2000). The analysis from the in-depth semi-structured interview transcriptions was examined systematically in order to identify patterns, and themes (Leedy & Ormrod, 2005).

All information was analysed after each interview from written notes and audiotape of the interview. The identified themes were tabulated and matched with literature. The data from all the interviews were synthesised into identified themes. The common themes were highlighted which emerged across all respondents, and enabled the researcher to interpret the results.

3.7 Validity and reliability

Validity and reliability increase transparency and decrease opportunities to insert researcher' bias (Mohajan, 2017). Validity refers to the ability of the measurement instrument, and in this research it is through structured interview schedule (Leedy & Ormrod 2005).

Conversely, reliability refers to measurement that supplies consistent results with equal values and measures consistency, repeatability and trustworthiness of research (Mohajan, 2017). Therefore, it was important that validity and reliability was factored in to give this research the quality that can be relied upon.

3.7.1 External validity

External validity relates to the extent to which the results of research conducted are applicable to situations beyond the immediate research and can be generalised to other contexts (Yin 2003). Since the research encompassed responses from a limited number of respondents who are not randomly selected, it is not possible to generalise findings; but it may be that the findings from the research will be of value and applicable to universities in South Africa.

3.7.2 Internal validity

Leedy and Ormrod (2005) define internal validity as the extent to which the research design and data results enable the researcher to draw accurate conclusions about cause and effect and other relationships within the data. In order to enhance internal validity and ensure that the findings of the research are congruent with reality, sources of the data involves 11 individuals that were all independent of each other.

It is for this reason that the interviews were conducted at the university premises which is where the respondents work. The researcher was objective in analysing the data, including the interview technique. The objective is for the researcher to conduct the interview in a neutral manner and not lead the respondent to answer in a specific manner.

3.7.3 Reliability

Reliability refers measurement that supplies consistent results with equal values and measures consistency, repeatability and trustworthiness of research (Mohajan, 2017). Leedy and Ormrod (2005) define reliability as: "... the consistency with which a measuring instrument yields a certain result when the entity being measured has not changed." It must be noted that same set of questions were administered to respondents without alteration. All interviews were conducted by the researcher by utilising the same interview instrument structure.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

The chapter will present the findings and deduce the themes stemming from the list of structured interview process. It should be noted that results and discussions chapters are combined to avoid repetition of information. A list of research questions (refer Appendix A) were derived from the literature review from which the research was conducted. The researcher's main aim was to identify obstacles to good ITG at Wits University and the results and discussions coming from the research have been presented in no particular order from the sample of respondents.

In order to determine the factors perceived by respondents to be obstacles to good ITG, respondents answered to a same set of questions and thereafter the top five common themes were deduced based on commonalities of answers to the questions. However, the interview response provided a far more and rich information beyond drawn up commonalities and can be deemed to provide more that the scope of this research. Each theme is discussed in detail from interview discussion perspective with further arguments from literature review.

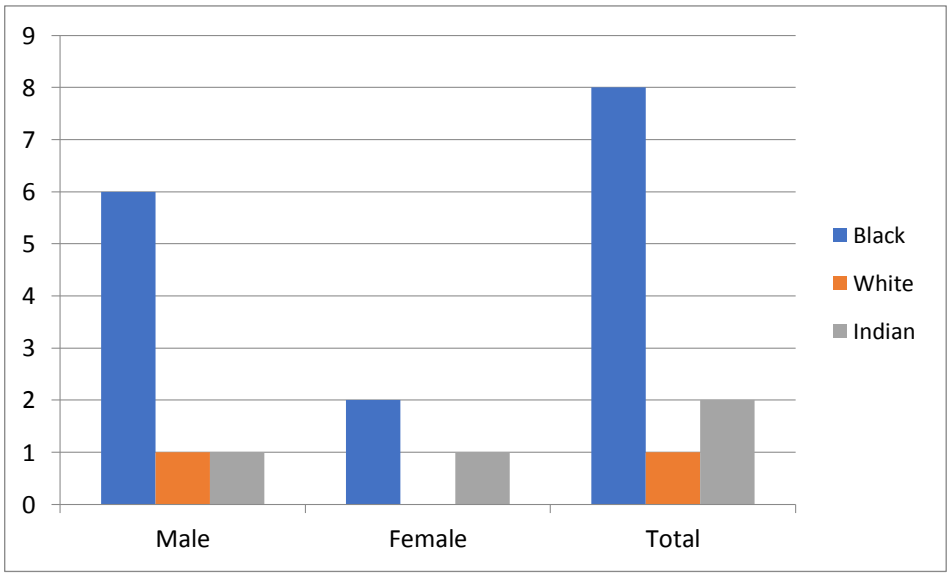
4.2 Demographic profile of respondents

About 15 university respondents were sample target however only 11 interviews were conducted at the university premises. Three (3) of the 15 participants informed the researcher that they were unfortunately unable to participate in the study owing to variety of reasons. Another one advised that he was not willing to participate due to viewing the research as not falling in the area of his responsibility.

The respondents strictly advised the researcher that they wanted to remain anonymous and therefore their wish has been respected by excluding their actual names.

The following demographic chart representation of the interviewees was produced.

Chart 1: Interview demographic representation



In order to conceal their identity, the names of the 11 respondents were replaced with their corresponding titles. The 11 interviews were conducted on the agreed official appointment (Refer table 3).

All the interviews took place at the university's different sites, i.e. Parktown and Braamfontein Johannesburg campuses. The interviews were conducted against the research instrument as included in the corresponding Appendix A. Interview meetings with willing respondents were scheduled through telephonic conversations. Prior to conducting the interview, participants confirmed their willingness to be recorded. However, they strictly advised against disclosure of their name identities. All meetings were recorded on audio instrument including Microsoft Word sheet.

A copy of the individual audio transcripts and Microsoft Word will only be made available upon request. It is to be noted that the transcript is a mixture of audio records and typed notes refer to Appendix C.

4.3 Identified themes

The findings from literature review identified ten obstacles, which were identified as hindrance to good ITG (Refer Table 2). Literature review summarised the obstacles with their corresponding authors and the level of priority. All 11 respondents' answers were collated with specific view to determining themes that could emerge compared to the literature as depicted in table 2.

Five key themes emerged from the interview process against the instrument that relates to the obstacles to good ITG. Table 4 below compares what the literature review identified as obstacles with corresponding themes that emerged from response from the respondents against the research instrument.

The themes that emerged came because of thematic code analysis from the data consolidated from the 11 respondents. A subject to note is that most of these themes were similar to the obstacles identified on the literature. Table 4 shows the comparison between literature obstacles and the themes that emerged from the interview discussions.

The themes that emerged from the interview process were as follows:

- Lack of measurement of value of IT services;
- Lack of proper skills within ICT to execute Governance mandate;
- Bureaucracy in approval of ITG policies and enforcement;
- Resistance to change in adopting new governance controls; and
- Proper governance approval committees well-established within university.

Table 4: Literature versus Interview

No	Literature review:		Interviews: Themes
1.	Weak measurement of the value of IT performance to the organisation		Lack of measurement of value of IT services
2.	Lack of top management support		
3.	Multiple overlapping ITG process frameworks and standards		
4.	Lack of clear top IT strategy		
5.	Competency of IT staff on ITG matters		Improper skills within ICT to execute ITG mandate
6.	Cost of new requirements		
7.	Inadequately defined IT-related roles and responsibilities		Bureaucracy in approval of ITG policies and enforcement
8.	Organisational Culture		
9.	Compatibility with existing ITG Frameworks		Resistance to change in adopting new governance control
10.	Innovation and rapid technological adaptation		Proper governance approval committees well-established within university

4.3.1 Theme 1: Lack of measurement of value of ICT services

Obstacle to good ITG identified in this theme is that the Senior Lecturer, HRIS Manager and Financial Information Systems Manager advised that they believe that there was value in ICT services. However, there appears to be misinformation about the value that IT provides in the university. These respondents' perception is that they believe lack of understanding of the systems under IT management plays a role in discounting ICT department to a mere support structure with less relevant tools to measure their value (Respondents, Senior Lecturer, HRIS Manager & COO, 2019).

Senior Lecturer and Financial Control (Audit) Manager clearly deduced that only SIMS (Student Information Management Systems) seem to take priority over any other systems. In addition, they reported that this plays a role in the university perception that as long as SIMS is running, then the involvement of ICT in strategic discussion is reduced to support function hence lessened value and role they play.

The view of the respondents supports the findings of the other three authors below. The authors argue that there is some degree of theoretical consensus about existence of a positive relationship between ICT value creation and the performance and perception of the users (Gargallo-Castel, Galve-Gorriz & Zaragoza, 2007). The authors' further assert that the implementation of ICT should provide more value creation. Therefore, it is on this premise that value of ICT should be elevated to the rightful level of acceptance, meaning should be visible.

There was a strong sense from the discussion with respondent who is Senior Manager Financial Information Systems that lack of quantifying the value of ICT performance and the costs is what makes ITG to be misunderstood.

Undoubtedly, this sentiment by Financial Information Manager concurs with the literature review from authors Gargallo-Castel et al. (2007) which states that "although there are different explanations for the absence of a relationship between ICT and performance, it was as a result of difficulty of measuring cost, value and benefits".

The lack of measurement of IT value is problematic given that cost and quality seems inherently valuable. However, many organisations and especially many universities' IT organisations have little or no idea about what their services cost are, what the customers perceive the quality to be, and in some cases, organisations do not even have a systematic understanding of what their own services are (Peebles, Stewart, Voss, Workman, 1999).

There was great emphasis by Senior Lecturer, HRIS Manager and Financial Control (Audit) Manager on the tools needed to ensure that ICT is visible to strategic decision makers to claim their value add. One can deduce that the value of ICT is also linked to their capacity to deliver on the basic function. This sentiment was shared strongly by Senior Manager of Finance who mentioned that "as part of the induction, was not later given the insight of IT not been trained to understand its process relative to his job". Most respondents shared this sentiment by articulating that "they did not understand the role which ICT played in the university except to providing Students Registration System – (SIMS)".

The respondents perceived ICT as dormant to keep up with the trend that will excite and enhance the university operational needs and processes, (Senior Lecturer, HRIS Manager, COO & Financial Control (Audit) Manager, 2019). Finance Director advised that "the value of ICT is also dependent on whether the ICT department understands their role in the provision of service under the ever increasing and high technologically paced environment".

This respondent articulated that "current technologies require highly skilled personnel to cover a variety of topics around cutting edge technologies to ensure that the university competes with its peers globally".

Furthermore, Finance Director advised that “He felt that ICT’s limited capacity to provide and articulate on the latest software support is testament to their inability to provide high level of service provision and therefore limit their appreciation of the value of ICT efforts”.

The observation of Finance Director concurs with the literature review that universities operate in volatile environment (Mabelebele, 2013), coupled with compliance and demanding requirements get returns from their IT investments (Nicho & Muamaar, 2016). Therefore, universities have to constantly embrace change and adapt to emerging trends and dynamics with compliance being one of their strategic pillars (Bianchi & Souza, 2015).

These sentiments can be deduced that ICT value adding effort can be attributed to their adaptability to volatile technological environment. One could imagine the size of IT budget that is required to maintain these infrastructures, including the maintenance of ITG to maintain the university’s flagship status as the highly global ranked university (Wits, 2017). The dependence of organisations on IT is resulting from a pervasive use of technology (Teo, Manaf & Fong Choong, 2013).

The pervasive use of technology by universities has its challenges, which potentially results in organisations being unable to maintain their ITG including uncontrolled cost escalations (Teo, et al. 2013). Many higher education institutions, especially universities from many countries, are also realising that ITG helps their institutions value creation, which include development of strategy and achieving financial objectives, goals and mission (Bianchi & Souza, 2015). Therefore, they have increasingly recognised the importance of ITG and ICT value in general and lack of value of ITG is mainly linked to IT department’s support within the environment in which it operates (Jairak et al., 2015 cited from Bianchi & Souza, 2015).

4.3.2 Theme 2: Improper skills within ICT to execute ITG mandate

The second theme that emerged from the interviews was lack of proper skills by ICT department to execute their functional mandate. The main function of ICT within the university is to provide technological and ICT-related systems to support the university mandate. Finance Director, Financial Control (Audit) Manager and Financial Information Systems Manager responded that they felt that ITG was failing because the ICT department lacks the necessary skills to fully perform the ICT function and this is essentially a hindrance in provision of good and reliable ITG.

The statement by ICT Governance Manager, ICT Risk Manager and CIO concurs with the findings by Franklin, Stam and Clayton (2009) on a research paper titled 'ICT impact assessment by linking data'. The authors argued that while IT investment is associated with increased firm productivity, impacts depend on contingent factors.

One of the contingent factors linked to this research paper is indicating that the returns to IT investment are also influenced positively by a firm's level of skills and has to be measured by the employees (Franklin et al. 2009). One could infer from the sentiment that the respondents' views of the ICT department is been regarded as having low skills and therefore viewed as a hindrance to implementing good ITG.

There was a sense from Financial Control (Audit) Manager that the university spends a great deal of money to establish projects that remains unfinished. Therefore, this attests to ICT's lack of proper skills to execute the projects successfully including disregard for good IT project governance.

The respondents argued this sentiment based on the following observations:

- ICT projects are not properly managed and most create cost overruns – Financial Control (Audit) Manager mentioned an example of a cabling contract that was meant to be implemented and completed in 2018 and unfortunately, the project was still running. In addition, Financial Control (Audit) Manager further mentioned that there is no clarity on why there should be perpetual project cost overrun when they have a dedicated Financial Project Manager.

- The respondent felt that it is either there is no accountability on the part of the Financial Project Manager or there are no adequate skills to manage the financial part of the projects. In addition, there is culture of no consequence for cost overruns.

- Poorly managed projects – projects are under-resourced with very little support structure of governance (ICT Risk Manager & COO, 2019). The respondents postulated the same project of cabling, which did not have the checks and balances including respect for project end date.

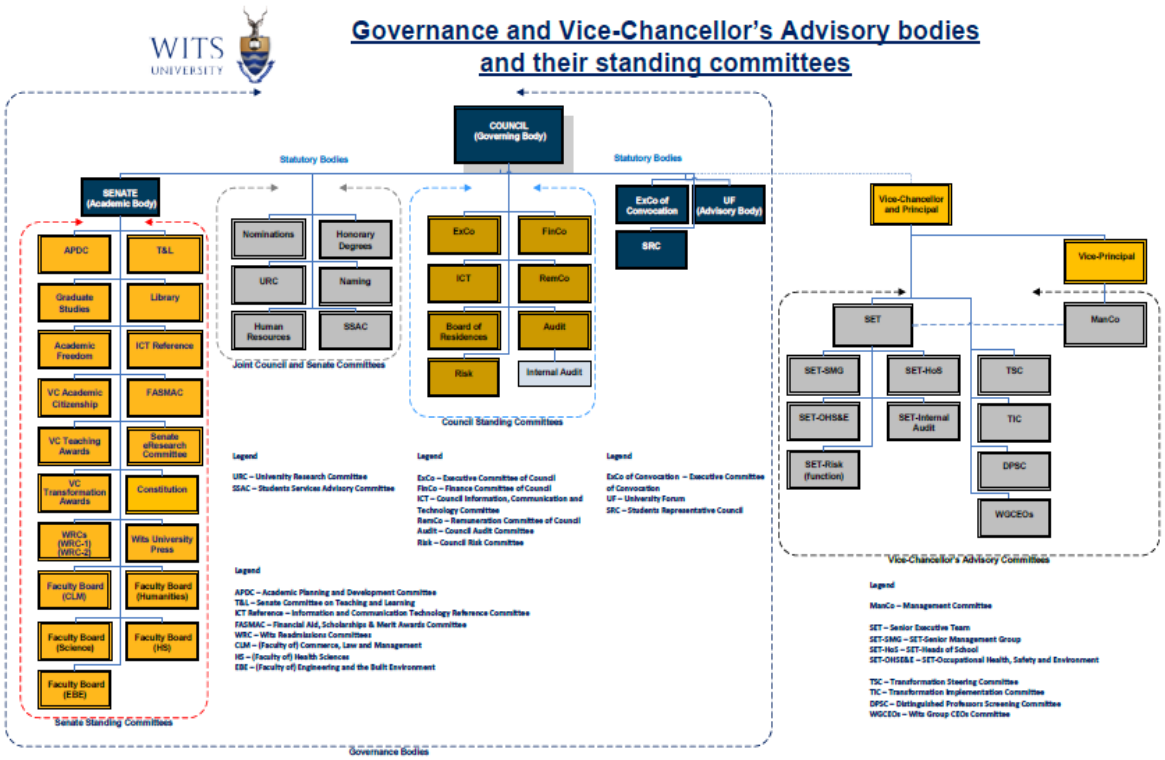
Management Accounting and Assets Risk manager, COO and Financial Control (Audit) Manager advised that the university went as far as establishing an ICT management sub-committee (SET – Senior Executive Team) chaired by CIO, which is meant to address the university key projects which included ITG performance contracts (Refer to Figure 3).

The subcommittees hold their meetings on a monthly basis in order to instil a sense of project management governance. The other main objectives of this sub-committee are to discuss strategic projects and progress on strategic objectives.

Although this intervention by the subcommittee improved the overall compliance to project governance requirement, there were still problems experienced in the project governance environment.

Moreover, according to the COO and Financial Control (Audit) Manager, this has further prompted the sub-committee to start recruiting skilled resources.

Figure 3. Governance advisory body Committees (Wits integrated report, 2017, p.65).



Another example given by Financial Information Systems Manager was lack of monitoring of systems performance in line with expectation of the university – This statement is attested below using an example of SIMS systems.

The respondent stated the he deduced “failure of SIMS during students’ registration to inadequate skills in ICT as the crash took longer than anticipated to restore the service” (COO, 2019). The responsibility to restore this service was the sole responsibility of ICT and their corresponding sub-contractor.

However, it appeared that the ICT department was left in no position to activate all the necessary backup systems. This issue is indeed a governance failure, which ICT failed to observe (Senior lecturer, 2019).

Another example cited by Financial Information Systems Manager was that there are currently weak governance measures to check the project execution. The respondent believes if governance measures were to be implemented by skilled personnel, it will create a harmonious environment that will eliminate the ‘blame game’. Financial Control (Audit) Manager advised that the current ICT department’s lack of skills has prompted the university’s CIO to consider recruiting more skilled people to address the skills shortage. In line with Teo et al. (2013), the author further explains that ITG initiatives in organisations require skills with specific strategies, objectives and processes.

It is further corroborated that investment costs are required to improve the knowledge of the practitioners to execute their mandate with diligence. Financial Control (Audit) Manager (2019) advised that he believes that while ICT seem under-resourced, the other initiative to address the skills gap will be to train the human resources. This argument resonates with the statement which says, ‘the gap of low skilled workers can be improved through training in formal or informal training initiatives (Nicho & Muamaar, 2016).

Financial Control (Audit) Manager indicated the frustration of having an ICT department which is not up to standard given their limited tools to diagnose any potential threats in the overall university systems architecture. Although one could take his statement as not fully substantive and more toward generalisation, the fact is that ICT staff should undergo training to improve their standing in the Senate.

The respondent's frustration is exacerbated by fact that ICT department annually receive a budget to address all the factors that degrade its service provision. However, it is also an annual problem of being unable to match the service the university receives and the cost incurred. The respondent advises that there are many open queries on the university audit report which pertains to audited findings and these are because of having unskilled people.

4.3.3 Theme 3: Bureaucracy in approval of ITG policies and enforcement

The third theme that emerged during the interview sessions what the purported bureaucracy in the approval of ITG policies by approval committees which results in delayed implementation (ICT Governance Manager, ICT Risk Manager & CIO, 2019).

The respondents further explained that the result of this delayed approval creates an environment where no enforcement of these policies can be meted out. Respondents lamented that further to this delay that the university runs the risk of having obsolete policies by the time they get approved and therefore denotes lack of accountability (ICT Governance & ICT Risk Manager, 2019). The apparent effect of bureaucracy on educational administrative system has brought about public ridicule in university and organisations (Pajibo, 2009) and this could be the same feeling of Wits towards its management.

Pajibo (2009) stated that most bureaucratic structures result in delays in the administrative procedures and slowness in the transaction delivery and approval process as observed. Since ITG is an important pillar of the university, one of the respondents (COO) advised that ICT could also be helpful if they were to write fully coherent policies to avoid them rejected by the approving committees.

There is a general consensus amongst scholars that the bureaucratic nature in the universities could be owing to the fact that the universities operate a centralised system of administration and management whereas most of the educational reforms advocate decentralisation (Pajibo, 2009).

The rejection of policies because of incoherent statements adds to the overall delay in the implementation of these policies and brings about reduction in productivity. COO felt that this is the area that ICT needs to improve to gain more traction in the approval process. The respondent further felt that there was no strong relationship between ICT policy developers and approval committees. He advised that a network of relationships between the ICT department and the corresponding committees needs to be strongly forged.

Furthermore, there is a need for management of the university to remove delays, slowness, laziness, inefficiency, and ineffectiveness from the system (Kene, et al., 2015).

The COO, Business Intelligence Systems Manager and HRIS Manager mentioned that they believed that some of the written policies needs to be flexible to accommodate the larger student community. There is a notion that since some of the policies has to be approved by the academic community, it requires being flexible enough to avoid them rejected by the same committee members who may not be in favour to approve a rigid policy and be then unable to deliver the course work material to the students.

COO mentioned that he believes that lack of consequence in the enforcement of policies add to the already challenging situation of trying to avoid project time overrun. He gave an example of a project of Wi-Fi, which was supposed to have been completed by end of 2018, but it is still running with three-month delay. The delay of this project means that there will be no full services of network, however with no consequence. This means that there was no real ITG to observe the service provision and enforcement for policy transgression perhaps linked to bureaucracy.

There appears from the interviews with ICT Governance Manager, ICT Risk Manager and CIO, that there are relevant committees to approve policies as depicted in Figure 2. Various committees periodically meet to approve many policies that require their intervention.

However, the COO strongly suggested that the observation of ICT Governance Manager, ICT Risk Manager and CIO should have full calendars of different approval committees so that they can target the dates of submissions ahead of time. The only challenge according to the COO is the bureaucratic nature of the approval process. It takes long time for a policy to reach the apex of approval.

However, the COO alludes to the fact that the university comprises many levels of approval committees, which is different from the corporate environment. The different committees between corporate and university environment is the number of stakeholders that needs to be satisfied before they can grant final approval of policies (COO, 2019). The university has five special approval committees, which represent five layers of authority to approve; hence, they add to the bureaucratic nature and delay of the approval process (COO).

Figure 3 shows how the approval process works in the committees under the leadership of SET (Senior Executive Team) chaired by the CIO. In addition, the COO advised that effectiveness of the approval committees is also dependant on whether the members form the quorum to approve a given policy. However, the COO suggested that in the future, other representatives would be made available as a stand-in if the main members are not available to approve.

Financial Control (Audit) Manager lamented that policy enforcement is lacking at the university. The respondent makes the assertion because his role is to ensure that an audit is in place to register any transgressions to compliance. It is understood that the current absence of strong enforcement mechanism is weakening the policies' adherence and therefore, bureaucratic culture fester. The respondent lamented that there are few cases of people been taken into tasks for their transgressions owing to lack of strong follow-up to the transgressions.

There is no full auditable information that would suggest that policies are enforced and adhered to (Financial Control (Audit) Manager). Some researchers like Kene et al. (2015) advise that the effect of bureaucracy is obviously pervasive in the administrative systems of the universities and might result in inefficiencies, which has characterised most public sector organisations, corporations and educational institutions including public universities.

4.3.4 Theme 4: Resistance to change in adopting new governance controls

Respondents were unequivocal in describing a situation of resistance by the employees of the university to change to new adopted policies and procedures.

Senior Lecturer, HRIS Manager, Business Intelligence Manager, and Financial Information Systems Manager mentioned that resistance to change was attested by the lack of adoption of newer systems, which were proposed to better the effort to enhance the governance effort. The Financial Information Systems Manager mentioned that when newer controls are been suggested there were some resistance to change because employees try to maintain the status quo.

It was advised that while the university is promoting innovation to make it ready for the fourth industrial revolution, according to the Financial Information Systems Manager, there are no signs of quick adjustment to the new way of thinking. Furthermore, the Financial Information Systems Manager advised that some of the controls require readjustment and new way of working, however, creating a challenge for the users.

For example, the renewal of passwords and cybersecurity is not only limited to text input to the keyboard, but already biometric access control is becoming the new way of control mechanism.

Employees still prefer the traditional way of resetting the passwords and this is posing a risk of future non-conformance to the enhanced governance security controls (Financial Information Systems Manager, 2019).

The Business Intelligence Manager mentioned that in the olden days people used to depend on paper work with universities having to hire many people to carry on this job. However, with the introduction of Business Intelligence, many processes and alerts were digitally automated to reduce burden and costs of storage of documents. Although management was happy with these new developments owing to increased security and accuracy of information on many environments, there however have been challenges on the other hand with people linking this transition to loss of jobs, hence resisted to change.

It is understood from the discussions with the Senior Lecturer, HRIS Manager and Business Intelligence Manager, that lack of skills remains a challenge to the university given the transitioned new way of working. Accordingly, the university should embark on training the affected people to keep them relevant into their working space. The HRIS Manager mentioned the data capturers as some of the people that require training given the output linked to the skills they possess. Moreover, the Business Intelligence Manager clearly was not impressed when he mentioned the following as his observation “its garbage in garbage out” meaning what the user enters on their side will be reproduced or output the same information.

However, digitalisation is creating a new frontier of working. The Business Intelligence Manager gave an example that if what has been input into the system is wrong, Business Intelligence will send wrong information based on the wrong information base as input and this is where governance plays a major role requiring a change of working. Further information by the respondent explains that the current university Business Intelligence was been challenged by the people who did not want change claiming that owing to requirements of high level of information integrity, they did not think the automated application was necessary and secure to use.

This was owing to the way the responsible department used to work as they enjoyed manually consolidating various reports into one report for the DVC from various systems.

They felt they would have vetted the pride of ownership as the final report before the DVC could read it (Business Intelligence Manager). However, after this phase of manual intervention, BI has built an application (App) called '360 reviews of students', which keeps track of the student affairs on a push of a button and provides information like student marks, progress report and fees balance to the mobile devices of the DVC of academic.

Previously, the DVC used to send the same request to a service desk and receive the information within few hours or days. However, the current app provides information instantly. The people who were not in favour of this App are now forced to embrace it. The Business Intelligence Manager pointed out that the lack of support for this App could have been avoided by applying a proper change management process.

The CIO, Business Intelligence Manager, Financial Control Audit Manager and Financial Information Systems Manager mentioned that with some legacy systems, it is a bit of a challenge because there is a bit of resistance to change to move to the new environments for example cloud environment. People still feel that by migrating more services to the cloud, they stand to lose their jobs. The respondent's opinion still point to change management as a process to embrace and involve all affected parties to be part for the solution.

4.3.5 Theme 5: Proper governance approval committees well-established within university

The last theme that emerged from the interview sessions pointed toward ICT governance that is well structured and represented in the overall university management committees. Senior managers understood what process to follow in terms of governance. However, they did not fully participate in all the approval committees, which are one of the reasons why there was an obstacle to implementing good ICT governance.

Financial Manager pointed out all the committees that ICT department is represented at as depicted in Figure 3. Figure 3 indicates the level of what is a worldwide practice of defining who is responsible for the ITG. It is therefore explained that ITG is the responsibility of the Board of Directors and Executive Management (OECD, 2004). Furthermore, it is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategies and objectives (OECD, 2004).

The University Forum is a statutory advisory committee that includes management, academic staff, professional and administrative staff and students. It must be consulted on major policy decisions (Carolissen & Habib, 2018). Management of policy at the university is the responsibility of the Vice-Chancellor and Principal and the Senior Executive Team (SET). The affairs of the university's alumni are governed through the Executive Committee of Convocation" (Wits, 2019). The application of pertinent legislative requirements is as follows (Carolissen & Habib, 2018);

- "…Management of the university (as in Governance) is in the hands of the Council (s27 HEA);
- Academic and research functions are performed by Senate (s28 HEA);
- The Vice-Chancellor and Principal is accountable to Council (7)(4)Stat);
- The Vice-Chancellor and Principal is Chairperson of Senate (s26(4)(a) HEA);
- The Senate is accountable to Council (s28 HEA);
- The University Forum must advise Council on certain issues (s31(1)(a) HEA) and the university; and
- Forum must perform such functions as determined by Council (s31(1)(b)HEA)".

It is conceded that the university has good approval structures and the committees are as follows:

The university is comprised of the following committees:

I. ICT Management Operation committee

- Meet bi-monthly to discuss IT operational issues
- Attended by ICT technical resources

II. Wits ITC management group

- Managers of all Wits functional departments
- Meet quarterly to review strategic objectives

III. Risk management committee

- Attended by Wits risk representative from all functional departments
- Meet quarterly basis to review all internal audit reviews and risk registers

IV. ICT governing committee

- Meeting monthly
- Attended by ICT high level representative and reviews all project-related problems and issues of governance

V. Finance committee

- Attended by CIO, CFO and ICT Finance Manager - to review all financial aspect of the university

One can deduct from the above committee's structures that unless it is an organisational culture that is hindering the working of these approval committees, the structures are in place to curb any governance anomalies.

4.5 Summary of the results

The research question for the research study was:

- What are the obstacles to good ITG in the university environment in South Africa?

The table below summarises the answer to this question from the interview sessions.

Table 5: List of obstacles from interview process

Obstacles
1. Lack of measurement of value of IT services
2. Improper skills within ICT to execute ITG mandate
3. Bureaucracy in approval of ITG policies and enforcement
4. Resistance to change in adopting new governance control
5. Improper governance committees

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The research aimed to identify what were the obstacles to ITG in the university environment in South Africa. The answer to this question was synthesized from the various responses to the research instrument which was based on a semi structured list of questions.

The 11 respondents, as senior managers of their respective functional units, were interviewed and asked to provide, according to their own perspectives, their views on what they regarded as the obstacles to implementing good IT at Wits University. A same set of list of questions were administered to the respondents. Analysis of the interviews, as well as the obstacles identified by the respondents, provided the basis from which a final view of what is perceived to be the obstacles for good ITG could be concluded.

Table 5 summarised the obstacles to good ITG as an output of the interview process.

5.2 Conclusions of the study

The findings in this study revealed that people believe that most obstacles to ITG are linked to the performance of ICT department and its associated policies. The study further revealed bureaucratic nature of the management approval process, which is hindering the performance of ICT and the application of the good ITG policies. It is also found that the Wits' applications of good ITG were unpleasant owing to bureaucratic tendencies affecting the efficiency and effectiveness of ICT department and performance.

It was also noted that ICT department on the other hand should acquire skills and competences to enable them to improve their own capacity, productivity and visibility within the larger university community.

While there is a need to improve the application of good ITG, Wits University is not prone to criticism of the bureaucratic nature of the way universities works. It is further noted that while there is a need to balance between public expectations and legal regulations, management of Wits University need to exercise discretional judgement and skills in order to facilitate a timeous enforcement of policies with consequence. Wits management should be guided by the fact that Universities operate within the context of legally defined order.

This means that implicitly, Wits University must operate within the confines of those laws. Negative activities such as undue reluctance and unaccountability to take decisions, which interfere with performance in the university, should be eradicated and those transgressing the rules should be taken to task as part of policy enforcement without fear and or favour. Fortunately, the research revealed that there is a well-structured committees at Wits University to enforce the policy compliance however there is a sense that they are weak in their enforcement drive since some projects are lagging behind with no consequence.

5.3 Recommendations

- Perform the university's ICT department' skills level audit to assess their ITG skills competence and fill the gap where skills do not exist – Could be done through effective formal training – e.g. train relevant ITG members on policy writing or employ a policy expert on ITG.

    a. Senior managers advised that they feel that there are limited tools from ICT department to diagnose any potential threats in the overall university systems architecture and these impacts the ITG implementation;

b. Senior managers felt that there are capacity problems of delivery from ICT department which links to skills.

- A wider national awareness of the value of ITG in the university – this should include promotion of IT good governance on two ways:
    - By increasing transparency, information, and accountability; and
    - By facilitating accurate decision-making process.

  This recommendation will be in line with the observation of Kutsikos and Bekiaris (2007) when the mentioned that the link of ITG and corporate strategies is a key concern across organisational leadership and if awareness is not effective, ITG would still be considered just a support function.

- Implement an enforcement policy structure and remove red-tapesim with enforced policy transgression accountability.

- Senior manager felt that there is a culture of no consequence on projects that do not get completed on time.
- The Financial senior manager advised that there are currently weak governance measures to check the project execution at the university.
- Financial manager lamented that policy enforcement is lacking at the university.
- The ICT manager felt that there is bureaucracy in the approval of ITG policies by approval committees which results in delayed implementation and therefore;
- The Vice Chancellor should give more power of the established committee to monitor mechanisms for the implementation of their ITG strategies and ensure that all deliverables and policies are enforced. This could mean taking strong action against transgressors and removing bureaucracy.

- Emphasis on building user skills. End User education is a key to the appreciation of the ITG policy understanding. This recommendation concurs with the observation of finance Director who mentioned that “He did not value ICT highly since he was never inducted or given an on-boarding ICT Systems training”.

5.4 Suggestions for further research

Undoubtedly, with the rise of AI (Artificial Intelligence) and the move to the 4IR (Fourth Industrial Revolution), the requirements for ITG will become greater than ever. As such, a further research should be conducted taking into consideration this phenomenon.

One understands that the current whole concept of ITG and its associated obstacles still requires deeper understanding and expansion. The research study was conducted in order to understand the obstacles that are hindering the implementation of good ITG at the University of Witwatersrand. The following area is suggested for future research;

- Extending population to include other Universities in Gauteng

The current research study only included the views of Wits University, however opportunity exist to extend the research study to include other Universities in Gauteng. The objective would be to identify and correlate the findings from these Universities to the current findings and arrive at a comprehensive view of the obstacles affecting the implementation of good ITG at Universities in South Africa. Recommendations will be encompassing to all stakeholders and will be far reaching.

- Balance the response based on gender.

The current research only tackled the question based on a smaller sample with limited female gender participation. The objective to include more females' respondents could be enriching given that this report was mainly based on more male respondents.

REFERENCES

Aasi, P., Rusu, L. & Han, S. 2014. The Influence of Culture of IT Governance: a literature review, *47th Hawaii International Conference on System Science*.

Aniedi, A. I & Affiom, D. O. (2009). ICT in University Education: Usage and Challenges among Academic Staff. *An International Multi-Disciplinary Journal,* Ethiopia. Vol. 3 (2), January, 2009.ISSN 1994-9057 (Print) ISSN 2070-0083 (Online).

Asiimwe S. & G.M. Steyn (2013). Obstacles hindering the effective governance of universities in Uganda. *Journal of Social Sciences*, 34(1), 17-27, doi: 10.1080/09718923.2013.11893114.

Babbie, E. R. (2010). *Research designs: The Practice of Social Research*. (12th ed.) Belmont, CA: Wadsworth Cengage, 2010.

Bianchi, I. S., & Souza, R. D. (2015). ITG for public universities: Developing a model. Retrieved from: https://www.researchgate.net/publication/283734113.

Bovee, M.W. 2004. Information quality: a conceptual framework and empirical validation. [Online]. Retrieved from: www: http://www.bsad.uvm.edu/Research/FacPubs/details?author=265.

Bryman, A. (2004) Social Research Methods. (2nd ed.), Oxford: Oxford University Press.

Brynjolfsson, E., & Saunders, A. (2010). *Wired for Innovation: How Information Technology Is Reshaping the Economy*. Cambridge, MA: MIT Press.

Burns, N. & Grove, S.K. (2003). *Understanding nursing research*. (3rd ed.) Philadelphia: Saunders Company.

Cabrera, A., Cabrera, E. & Barajas, S. (2001). The Key role of Organisational Culture in a Multisystem view of technology driven change, International Journal of Information Management. Volume 21 Issue 3, June, 2001 Pages 245-26.

Carolissen, R., & Habib, A. (2018). University of Witwatersrand integrated report 2017 (p33 & 65). Governance.

Cebotarean, E. & Titu, M. (2009). Economics Essays Jkmeit plus, Special Issue December 2013. Journal of Knowledge Management, Economics and Information Technology. ISSN 2069-5934. Scientificpapers.org.

Corriss, L. (2010). Information Security Governance: Integrating Security into the Organizational Culture, Workshop on Governance of Technology, Information and Policies, ACM, New York.

Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. (2nd ed.) Thousand Oaks: Sage Publications.

Davies, M. B. (2007). *Doing successful research project: Using qualitative or quantitative methods*. New York. NY: Palgrave Macmillan.

Debrecey, R. S. (2013). Research on IT Governance, risk, and value" Challenges and opportunities. *Journal of Information Systems*,27, (1). American Accounting association. doi:10.2308/ISYS-10339.

De Haes, S., & Van Grembergen, W. (2004). IT Governance and its Mechanisms. *Information Systems Control Journal* 1, 27-33.

Exler, R. (2003). IT governance frameworks. Fileden, J. (2008). *Global trends in university governance*. Education working paper number 9. World Bank. USA, Washington DC. Retrieved from http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/547664-1099079956815/Global_Trends_University_Governance_webversion.pdf.

Fisher, R. P. (2005). Psychology and law. An empirical perspective. New York: The Guilford Press.

Franklin M., Stam P. & Clayton T. (2009). ICT impact assessment by linking data. *Economic & Labour Market Review* | Vol 3 | No 10. UK Office for National Statistics. Retrieved from https://link.springer.com/content/pdf/10.1057%2Felmr.2009.172.pdf.

Gberevbie D.E., Oyeyemi A.I., & Excellence-Oluye N.O. (2014). The Challenges ofGood Governance, Accountability of Governmental Agencies and Development in Nigeria.ActaUniversitatis Danubius. Administration, 6, (2). (2014). Retrieved from http://journals.univdanubius.ro/index.php/administratio/article/view/2665/2597.

Gehrmann, M. (2012). Combining ITIL, COBIT and ISO/IEC 27002 for structuring comprehensive information technology for management in organizations. *Navus-Revista de Gestão e Tecnologia*, 2(2), 66-77.

Goedegebuure, L. & Hayden, M. (2007). Overview: governance in higher education – concepts and issues', *Higher Education Research and Development*, 26. Information -Technology (n.d.). Retrieved from: https://www.gartner.com/it-Glossary/it-information-technology.

Hall. M. & Symes A (2005). South African higher education in the first decade of democracy: from cooperative governance to conditional autonomy, Studies in Higher Education, 30:2, 199-212, DOI: 10.1080/03075070500043317.

Hussey, J. and Hussey, R. (1997) *Business Research: A practical guide for undergraduate and postgraduate students*, Hampshire: Palgrave MacMillan.

Jindal, N. (2014). Good governance: Needs and challenges. *International Journal of Scientific & Engineering Research*, *5*, (5), 113 ISSN 2229-5518.

Kan, A.R. (2003). Managing a multi-billion-dollar IT budget. Software Maintenance, September 2003.

Kene, E., Pajibo, D., Emmanuel,G., & Sarpong, O. (2015). Effect of Bureaucracy on Administrative Control Systems in the University of Education, Winneba. Research Journal of Education. 3. Retrieved from: https://www.researchgate.net/publication/279940292_Effect_Of_Bureaucracyon_Administrative_Control_Systems_in_the_University of_Education_Winneba.

Kreitner, R., & Kinicki, A. (1995). *Organizational Behaviour*. Chicago: IRWIN Inc.

Kutsikos, K., & Bekiaris, M. (2007). Perspectives and challenges for IT governance. MIBES (2007).

Langkos, S. (2014). Research methodology: Data collection method and Research Tools. Athens University of Business. DOI: 10.13140/2.1.3023.1369 . Publisher: University of Derby.

Lapao, L. V. (2011). Organizational challenges and barriers to implementing IT governance in a hospital. European Journal of Information Systems. IHMT, Universidade Nova de Lisboa, Portugal
Public Health & Tropical Medicine Associate Laboratory, Portugal.

Leedy, D. P. & Ormrod, E. J. (2005) *Practical Research: Planning and Design*, (8th ed.) Upper Saddle River: Merrill Prentice Hall.

Leedy, P. D., & Ormrod, J. E. (2012). *Practical Research: Planning and Design*. (9th ed.). New Jersey: Pearson Educational Inc.

Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

Mabelebele, J. (2013 15 October). Why governance, leadership and management in higher education matter?, *Paper presented at the occasion of HELM LEAD workshop* at Kopanong Hotel and Conference Centre in Benoni, Gauteng.

Mashal, A. & Saima, S. (2014). The Impact of Organizational Culture on Organizational Performance: A Case Study of Telecom Sector. *Global Journal of Management and Business Research*. 14, (3). Versio1.0.

Miles, M. B. (1979) Qualitative Data as an Attractive Nuisance: The Problem of Analysis, *Administrative Science Quarterly*, 24(4) Qualitative Methodology, pp. 590-601.

Mohajan, H. (2017). Two criteria for good measurements in research: Validity and reliability. Retrieved from https://mpra.ub.uni-muenchen.de/83458/ MPRA paper No. 83458.

Muijs, D. (2010). *Doing Quantitative Research in Education with SPSS*. (2nd ed.). London: Sage Publications.
Retrieved from
http://libguides.usc.edu/writingguide/researchdesigns.

Nasser, S. (2008). http://newtalk.org/2008/11/why-is-there-so-much-school-bu.php.

Năstase, P., Năstase, F., & Ionescu, C. (2009). Challenges generated by the implementation of the IT standards COBIT 4.1, ITIL v3 and ISO/IEC 27002 in enterprises. *Economic Computation & Economic Cybernetics Studies & Research*, 43(1), 16.

Nicho, M., & Muamaar, S. (2016). Towards a Taxonomy of Challenges in an Integrated IT Governance Framework Implementation. *Journal of International Technology and Information Management*, *25*(2): 2.

Nowell, L.S., Norris, J.M., White, D.E. & Moules, N.J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. doi10.11.77/1609406917733847.

OECD (2004).ICT Governance. OECD Informal ICT Management Workshop 20-21 October, 2004. Lester Rodriques, Head of Corporate Systems & Services Division, EXD/ITN, OECD.

OECD (2014), Risk Management and Corporate Governance, Corporate Governance, OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/9789264208636-en.

Pajibo, E. (2009). Higher Education, Unpublished Lecture Notes, University of Education, Winneba. Ghana.

Peebles, C. S., Stewart C. A., Voss B. D., & Workman S.B (1999). Measuring quality, cost, and value of it services. Services at Indiana University: A Case Study. New Directions for Institutional Research no. 102 (Summer 1999).

Pereira, R. & da Silva, M. M. (2012). ITG Implementation: The Determinant Factors Vol. 2012 (2012), Article ID 970363, 16 pages DOI: 10.5171/2012.970363.

Peterson, R. (2004). Crafting Information Technology Governance, Information Systems Management, 21:4, 7-22, DOI: 10.1201/1078/44705.21.4.20040901/84183.2.

Protection Of Personal Information Act 2013. (2018, November 15). Ensuring protection of your personal information and Effective access to information. Retrieved from: http://www.justice.gov.za/inforeg/docs/InfoRegSA-POPIA-act2013-004.pdf.

Ridley, G., Young, J., & Caroll, P. (2004). COBIT and its Utilization: A framework from the literature. 0-7695-2056-1/04.

Ross, J., & Weill P. (2004). Thorogood professional insights. Management overview. *Issue of CIO magazine* (page 68- 70).

Sackey, C. (2007). Using risk management to achieve good IT Governance. 2007 IT governance institute.

Shahzad, Fakhar & Luqman, Adeel & Rashid Khan, Ayesha & Shabbir, Lalarukh. (2012). Impact of Organizational Culture on Organizational Performance: An Overview. 3. 975-985.

Svensson, C. & Hvolby, H.-H. (2012) Establishing a Business Process Reference Model for Universities. *Procedia Technology*.

Swansson, J. A., Mow K.E., & Bartos, S. (2005). *Good university governance in Australia*. National Institute for Governance. The University of Canberra. *Refereed Proceedings of 2005 Forum of the Australasian Association for Institutional Research*.

Oxford dictionary (2019). Retrieved from.

https://en.oxforddictioneries.com>obstacle.

Teo, W. L., Manaf, A. A., & Fong Choong P. (2013). Perceived effectiveness of information technology governance initiatives among IT practitioners. *International Journal of Engineering Organisation Management*, 5 (3), 5-19.

Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48, 388–396. doi:10.1111/j.1365-2648.2004.03207.x.

Van Grembergen W., & De Haes, S. (2008). Implementing Information Technology Governance: Models, practices and cases. IGI publishing. USA, Hershey.

Von Solms, B. (2001). Corporate governance and information security. *Computers & Security*, 20(3): 215-218.

Von Solms, B. (2007). What constitutes information integrity? Computers & Security, Vol.9(4). December 2007.

Ward, J., & Peppard, J. (2002). Strategic planning for information systems. London: John Wiley & Sons.

Webb, P., Pollard, C., Ridley, G. (2006). Attempting to define IT Governance: wisdom or folly? *Proceedings of the 39th Hawaii International Conference on System Sciences* 0-7695-2507-5/06/$20.00 (C) 2006 IEE.

Wessels, E., & Loggerenberg, J. (2006). IT governance: Theory and practice.Paper presented at the Conference on Information Technology in Tertiary Education, Pretoria, South Africa.

Williams, C. (2007) Research Methods. *Journal of Business and Economic Research*, 5(3), 65-72.

White, K. (2018). What is TOGAF? An enterprise architecture methodology for Business. Retrieved from https://www.cio.com/article/3251707/what-is-togaf-an-enterprise-architecture-methodology-for-business.html.

Yanosky, R., & Caruso, J. B., (2008). Process and Politics. ITG in higher education. Education Centre for Applied Research. Retrieved from: www.educause.edu/ecar.

Yin, K. R. (1994) *Case Study Research, Design and Methods*, (2nd ed.), Thousand Oaks, California.

Yin, R. K. (2012). *Applications of case study research* (3rd ed). California:

Sage Publications.

Yin, R. K. (2016). *Qualitative research from start to finish* (2nd ed). New York: Guilford Press.

Zhang, Y. & Chulkov, N. (2011). *Information and communication technology (ICT) governance in the United Nations system organizations*. Joint inspection unit. UN. Geneva.

APPENDIX A

Interview schedule/Questionnaire

I would like to thank you for taking time to participate in my research interview. I am currently studying MBA programme with Wits WBS. The purpose of this interview is to establish your understanding on the elements that you consider to be obstacles to good IT governance (ITG).

ITG is a strategic alignment of IT with the business such that maximum business value is achieved through the development and maintenance of effective IT control and accountability, performance management and risk management. The dependency on IT is vitally important in our knowledge-based economy, where organisations are using technology in managing, developing, and communicating intangible assets such as information and knowledge around the globe.

The process I will be following is that I will ask a list of questions which I would like you to answer to the best of your knowledge freely without any felling of been coerced. Please feel free to stop when you do not understand the question and will appreciate your elaborative answers which will help a great deal to get as much information as possible to complete the picture. The interview will take approximately 40 minutes and all answers are confidential in the research report, no one will be identified by name or by specific title. Your responses will not be let left lying around and will be kept the strictest confidence.

The following questions require you to provide detailed responses.

1. Would you like to add anything about ITG?
2. How do you measure the value of IT performance?
3. What tools do you use to measure IT systems performance and how do you verify if the data is accurate?
4. Do you know council member responsible for ITG? If so, what is his/her name? To what extend do you receive correspondence, have you ever had a meeting
5. How often do you or your department review ITG strategy with top management?
6. Does your organisation discuss IT Governance at Exco level?
7. Do members of your council have interest in ITG matters?
8. Do you believe that they understand what good IT governance is? If so please elaborate.
9. When developing organisational strategy, does ITG form part of this strategy?
10. Do you understand the top IT strategy?
11. Who is responsible for ITG in your department/faculty?
12. Does he/she have ITG background?
13. People performing ITG roles, are they sufficient?
14. In your department/faculty, what are the main two ITG regulatory requirements?
15. How do you measure your departmental regulatory compliance?
16. In your department, how much is IT budget?
17. Is there any audit around how the above budget is spent?
18. Who in your organisation review major ICT investments and how often?
19. How do you communicate, enforce policies in your department/faculty?
20. How do you inform your departmental staff about cyber security crime matters?
21. How often do you have Risk management meetings or is there a Risk Champion in your department/faculty?
22. In your mind how does Internal or external auditors influence ITG?
23. How often does audit takes place in your ICT department?
24. What influence does ICT department have in developing the audit scope for IT?
25. What is the status of the audit reports for previous year(s)?
26. Are there any other perceived obstacles to good governance?

APPENDIX B

MBA Project report ethical clearance form - 2018

APPENDIX C

Interview transcripts

Interview transcripts are not provided in the current research report.

Transcripts will only be provided upon special request and the reader is kindly requested to contact the researcher: loniamathinya2@gmail.com

APPENDIX D

MBA: Approval of title letter