Principles used by companies in South Africa to manage information technology governance

Mamello Mark Mafisa*

*WITS Business School, University of Witwatersrand, Johannesburg, 2050, South Africa

779118

A research article 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

February 2018

Protocol number: WBS/BA779118/392

* Corresponding author.
E-mail address: mamello.mafisa@wits.ac.za (M.M. Mafisa)
Postal address: Private Bag 3, Wits, 2050, South Africa
Tel: (+27) 011 7171112;

DECLARATION

I, Mamello Mark Mafisa, 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.

Signed at ……Braamfontein……

On the ……26….. day of ……February… 2018…..

SUPPLEMENTARY INFORMATION

Nominated journal:	International Journal of Accounting Information Systems
Supervisor / Co-author:	Sean Riley
Word count †:	12443
Supplementary files:	Sample interview questions; Interview transcripts

ABSTRACT

This paper evaluates the Information Technology Governance (ITG) standards and frameworks used, how IT-Business alignment was achieved, the enablers and inhibitors experienced by organizations in South Africa within the public and private sectors. The study addresses IT governance from a qualitative perspective in order to provide researchers and practitioners with rich insight. The increasing usage and reliance on IT requires boards to manage the risks posed by IT in supporting and sustaining business. Enterprises have to balance IT and business strategies by using committees at various levels in the organization to prioritize IT investments and align to business goals. A number of enterprises in different industries have a mixture of standards and frameworks to govern IT, through a combination of effective process, structure and communication mechanisms. Control Objectives for Information and Related Technologies (COBIT) and IT Infrastructure Library (ITIL) seemed the dominant frameworks implemented for governing IT in the majority of the organizations.The lack of effective ITG have been linked to inhibiting factors like insufficient ITG training, poor planning and budgeting, lack of effective process measurements and bad management. Some of the ITG failures that an organization can experience are breach of data security and system downtime, which can lead to loss of sales, reputation and legal damages. As business environment, legislation, and technology evolve, organizations face challenges of maintaining alignment and compliance. Great effort is required to implement and sustain ITG, but the benefits to the organization is invaluable.

Keywords: Information technology; South Africa; Governance; IT governance

* Corresponding author.
E-mail address: mamello.mafisa@wits.ac.za (M.M. Mafisa)
Postal address: Private Bag 3, Wits, 2050, South Africa
Tel: (+27) 011 7171112;

1. Introduction

This study investigates principles used by businesses in South Africa when implementing Information Technology (IT) Governance. Most companies employ IT to support their business process, it has therefore become a critical enabler and requires good governance to realize these IT investments, reduce costs and improve business process.

1.1 Purpose and significance of the study

The King report on corporate governance, King III, was released in 2009 to strengthen and ensure good corporate governance by boards of companies listed on the Johannesburg Stock Exchange (King, 2009). The adoption of King III within the private sector has been significant and through this exploratory study, we seek to investigate how businesses have tackled the successful implementation of IT governance. The King IV report was revised for public comments in 2014 with the aim of making it more accessible to all types of entities across sectors.

The lack of proper IT governance presents risks of inappropriate investment, failure of services, and noncompliance with regulations (Juiz & Toomey, 2015). With the increase in cybercrime, businesses need to reduce and manage IT risks. The Fourth Industrial Revolution will see greater adoption of technology in business with a growing trend toward digital transformation. Uber's on-demand taxi service is an example of how digital technology has disrupted traditional business models. Hence, the need and importance of IT governance will increase as enterprises strive to maintain their sustainability and reputation.

The significance of this study lies in that listed companies have to adhere to good corporate governance as guided by King III. In addition, changes in the South African (SA) legislation on Protection of Personal Information (POPI) act will mean that businesses could face steep penalties if proper steps on IT governance are not in place to safeguard information in critical IT systems. According to Calder & Watkins (2008), data or information is at the centre of the

modern 21st-century organization, therefore its availability, integrity confidentiality and how it is processed are fundamental to the long-term survival of any organization. These issues fall under the IT governance and the board will need to respond to them appropriately. The Harvey Nash/KPMG 2016 CIO Survey revealed that only 44% of large enterprises have an enterprise-wide digital vision and strategy for disruptive technologies (such as social media, mobile, analytics & data, and cloud) that are digitally disrupting business models, organizations and even entire industries (KPMG, 2016). To embrace these technologies, enterprises must implement effective change management strategies.

The research study will be limited to a few organizations in the public and private sectors where interviews can be secured to explore how IT governance has been implemented within the SA context since the introduction of King III. The assumption is that orgarnizations have some IT governance framework in place. Based on reviewed literature, most researchers have approached IT governance from a quantitattive perspective.

2. Overview of IT Governance

There are numerous accepted definitions of IT governance (ITGI, 2003; Weill & Ross, 2004; Webb, Pollard & Ridley, 2006; Lee, Lee & Jeong, 2008; Van Grembergen & De Haes, 2009, Trautman & Altenbaumer-Price, 2011) in the literature and the preferred definition used for the study is:

> *Enterprise governance of IT is an integral part of corporate governance in an enterprise, exercised by the board, overseeing the definition and implementation of* ***process, structures and relational mechanism*** *in the organization that enables both business and IT people to execute their responsibilities in support of* ***business/IT alignments*** *and the creation of business value from IT-enabled business investments.*

Although IT governance definitions differ in some aspects, the emphasis is on decision-making rights and responsibilities, achieving strategic alignment between IT governance structures and governance mechanisms or associated processes (Lee et al., 2008). IT governance is often confused with IT management. According to Van Grembergen and De Haes (2009), IT management tends to focus on the internal effective supply of IT services and products to ensure optimal functioning of present IT operations in the business.

Weill and Ross (2004) emphasized that through a combination of practices and IT investments, top-performing enterprises generated more than 20% profits compared to competitors. Therefore, as shown in Figure 1 that the implementation of process, structures and relational mechanism in IT governance is vital for the sustainability of the enterprise, because any misalignment in business and IT can affect the performance of the organization.

	Structures	Processes	Relational mechanisms
Tactics	• IT board of directors • Committees	• Making strategic IT decisions • Monitoring the IT strategy	• Participation of all concerned (*stakeholders*) • Business-IT association • Strategic Dialogue • Shared learning
Mechanisms	• Roles and responsibilities • Organizational structure of the IT • IT director on the Management Council • IT strategic committee • IT management committees	• Strategic planning of Information Systems • IT balanced scorecard (*IT BSC*) • Economic Information • Service level agreements • COBIT and the ITIL • IT Governance maturity models	• Active participation of those primarily concerned • Collaboration between those primarily concerned • Compensation and incentives for business-IT association • Joint business- IT siting • Shared understanding of the business and the IT objectives • Active conflict resolution (not avoided) • Inter functional business-IT training • Inter functional business-IT job rotation

Figure 1. Structures, Processes and Mechanisms of Relation for the Implementation of IT Governance. Note. From Strategies for Information Technology Governance, p. 35, by W. Van Grembergen, 2004, Hershey, PA: IGI Global.

Process mechanism focuses on the implementation of IT management techniques and procedures in compliance with established IT strategies and policies, while structural arrangements consist of the organizational units and roles responsible for making IT-related decisions (Bowen, Cheung, & Rohde, 2007). The relational mechanisms cover the active participation of business and IT to foster collaborative relationships through advocates, channels and education efforts (Van Grembergen & De Haes, 2009). The research willl seek to understand which structures, processes and relational mechanism are in place within organizations to support effective IT governance. Gottschalk (2006) notes that all enterprises have IT governance, but the difference is how it is actively-designed through mechanisms that encouraging behaviors consistent with the organization's mission, strategy, values, norms, and culture.

2.1 Value of IT governance

The purpose of IT governance is to support the business in achieving its strategic goals. In past decades, board members did not get involved in overseeing the governance of IT (Smallwood, 2014). Today, technology and information play such a critical and strategic role in the business that it receives attention at board level.

Effective IT governance is the single most important predictor of value an organization generates, and IT has the potential to not only support existing business strategies, but also to shape new strategies (Weill & Ross, 2004; Van Grembergen & De Haes, 2009). IT governance focus primarily on five main areas (ITGI, 2008b):

- Strategic Alignment
- Value Delivery
- Risk Management
- Resource Management
- Performance Measurement

Most listed SA business reports to shareholders have measures in place concerning IT governance. A commitment from the board is critical to the effectiveness of governance in business because without clear accountability, there is a risk that IT investments will not yield the benefits to sustain the organization. The key IT governance decisions that an enterprise must address encompass: IT architecture, business application needs, IT infrastructure, IT investment and prioritization (Weill & Ross, 2004).

2.2 Research focus

The study intends to probe methods SA corporates use in the implementation of successful IT governance. The research project scope (see Figure 1) of the study will address three research questions based on structure, process, and relational mechanism:

1. What principles do businesses adopt to implement IT governance?
2. Which factors enable and impede successful adoption of IT governance in the organization?
3. Which mechanisms establish and maintain alignment between business and IT strategy to ensure sustainability of the enterprise?

2.2.1 What principles does business adopt to implement IT governance?

Frameworks like Control Objectives for Information and Related Technologies (COBIT) and Information Technology Infrastructure Library (ITIL) have evolved as tools for assessing IT governance, but have a low business adoption in practice (Smallwood, 2014; Moeller, 2013). Currently there is no standard for governing IT and the implementation may differ based on the businesses. Although there is no single best model of IT governance, there are certain principles that promote effectiveness in designing and implementing an IT governance initiative (Applegate, Austin & Soule, 2009).

Tiwana, Konsynski and Venkatraman (2014) argued that there was limited focus directed to how organizations must govern the use of successful implemented systems to realize their value. IT standards and best practices (like ITIL, COBIT and ISO/IEC 27002) are driven by business requirements for improved performance, transparency and increased IT control (ITGI, 2008a). According to Chaudhuri (2011), the application of ISO/IEC 38500 is not limited by size, design, purpose, and structure of the organization. An opportunity gap exists to investigate business and IT decisions that drive the adoption and implementation of an IT governance framework in an enterprise.

2.2.2 Factors which enable and impede successful adoption of IT governance in the organization?

A number of factors have an impact on the successes and failures of IT governance implementation within enterprises. Lee et al. (2008) acknowledged there are few studies that identified potential obstacles in IT governance implementation. This view was supported by Debreceny (2013), who noted that IT governance research is absent in in-depth case studies of IT governance directions, successes, and failures.

Prior studies considered specifically the implementation of ITIL's critical success factors (Cater-Steel & Tan, 2005; Pollard & Cater-Steel, 2009) in companies. In contrast, research by Nfuka and Rusu (2010) focused on critical success factors for effective IT governance in the public sector. The study by Alreemy, Chang,

Walters and Wills (2016) focused on critical success factors of IT governance during pre-implementation, implementation and post-implementation stages in different sectors. A significant change management activities are required by enterprises to embed IT governance processes.

2.2.3 How to establish and maintain alignment between business and IT strategy to ensure sustainability of the enterprise?

IT-Business alignment is the fit and integration among business strategy, IT strategy, business structures, and IT structures (Van Grembergen & De Haes, 2009). Governance frameworks reduce costs, streamline processes and increase business value when decisions in resource prioritization and investment are aligned with strategic corporate goals (Lee et al., 2008).

Moreover, there is no common way to measure IT-business alignment in the literature and each measurement model has its own approach, which makes it very difficult to compare results of alignment studies (Van Grembergen & De Haes, 2009; Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010). The digitization of business strategy in companies will require frequent assessment of privacy, security, robust IT governance mechanisms, and alignment with IT strategy (Luftman & Brier, 1999; Coltman, Tallon, Sharma, & Queiroz, 2015). This could have a significant impact on IT-Business alignment. However, there is little literature on comprehensive and integrated IT-business alignment, planning, execution and governance approach (Selig, 2015).

Regular IT-Business alignment check by enterprises is key to remain sustainable and competitive. An IT Balanced Scorecard was one of the most effective ways used by board and management for aligning IT with business (ITGI, 2003). When organizations minimize factors that inhibit IT governance, and align the IT and business, a sustainable and successful implementation prevails. This study seeks to address the gap that exists between empirical research and theoretical frameworks used in IT governance.

3. Research Method

The suggested research strategy was composed of two methods: semi-structured interviews and literature research. Benefits derived from IT governance are more qualitative than quantitative (PWC, 2006). The best approach in gathering data was through semi-structured interviews. According to Cooper and Schindler (2014), qualitative research builds theory, but rarely tests it because the researcher wants to develop an understanding through detailed description. A qualitative research paradigm was followed.

The targeted respondents were Chief Information Officers (CIOs) in organizations, however, unfortunately we only managed to secure interviews with IT managers in the middle to upper management level involved in IT governance. The study participants consisted of Senior IT Managers involved in IT governance, as they are able to share their experience and best practice of implementing IT governance through interviews. A deductive approach seeks to use existing theory to shape the qualitative research process and aspects of data analysis (Saunders, Lewis & Thornhill, 2016). Indeed, a deductive approach was selected for this study.

The sample size was small, using a non-probability sampling design for interviews and it was terminated when there was no new knowledge and insight emerging from the study. Moreover, the benefit of a smaller sample size is prompt data findings, since insights are developed as the research progresses (Cooper & Schindler, 2014).

A semi-structured interview approach was adopted for data collection because an interview allows a researcher to understand the context and to probe for greater clarity. A sample of the interview questions was derived from reviews of past research literature on IT governance. The participant's responses were recorded during the interview and recording were transcribed for further examination.

Thematic analysis was used to analyse the data. This entailed reading, annotating the transcripts to identify themes, and coding the data based on the study research questions. According to Marks and Yardley (2004), the descriptive use of thematic coding is advisable when the sample size is small, and the codes flow from the principles that underpin the research and the research questions. Braun and Clarke (2006) noted that thematic analysis allows for either coding for a specific research question (which maps onto the more theoretical approach), or the specific research question can evolve through the coding process (which maps onto the inductive approach).

The study had limitations because it was done in six organizations within one country. Research study focused on business and IT participants that are involved and have implemented IT governance to share their experience. To ensure reliability and validity, interview recordings and field notes were kept to allow reviewing of themes in the research study. The respondents' position in the organization and extensive years of IT governance experience provided some reliability of the data. In addition, the annual reports of these organizations were reviewed to validate the reporting on IT governance by auditors. The reliability of findings derived from using semi-structured interviews is that they are not necessarily intended to be repeatable since they reflected reality at the time they were collected (Saunders, et al., 2016).

4. Results

South African participants in public and private sectors were interviewed on their experiences on IT governance and the frameworks employed. A codename for the organization was used for confidentiality.

4.1 Results of IT governance implementation

Table 1.
Summary of implemented process mechanism

Organization Codename	Industry	IT Governacne Experience	Number of Interview	Management work level	Standard & Frameworks used
LQ	Public service	>11years	1	Upper management	COBIT, EA, ITIL,ISO/IEC 38500
AK	Public service	>11years	1	Upper management	ITIL
KRN	Financial service	>11 years	1	Middle management	ITIL,COBIT,NIST,ISO27000
ONP	Retail	1 years	1	Middle management	ISO 27001
QS	Retail	5-10 years	2	Upper management	COBIT, ITIL, ISO 27000, PCI DSS, IT GC, SANS, CIS, King III
GK	Financial service	>11 years	1	Upper management	ITIL,COBIT,ISO

Table 1 summarizes the demographics of the interviewee, in terms of industry sector, years of IT governance experience, number of interviews conducted, work management level of the interviewee, and the standards and frameworks implemented by the organization. Organizations studied consisted of two public sector organizations and four private sector organizations. Only organization AK and ONP had implemented one framework process mechanism.

4.2 Results of enablers and inhibitors

Summaries of IT governance enablers and inhibitors given by respondents were collated in Table 2 as follows:

Table 2.
Summary of Enablers and Inhibitors of IT governance

Enablers	Inhibitors
• Systems consisting of people, processes and technology • Continuous improvement of all aspects of IT/business optimization. • Policies and the IT governance frameworks • Board level and top management buy-in and top down approach. • Simplicity is key so we endeavor to engineer efficient and effective processes that do not create ambiguity • Change management plays a huge role when dealing with changes to end user processes • Effective training to all affected stakeholders • Technology enhanced transparency for stakeholder reporting	• People without the necessary knowledge and skills • Inefficient planning and budgeting • Bad management practice • People feeling that you restrict them with rules • Lack of effective process measurements. • People who are not knowledgeable about IT governance at top level. • If thing are not coordinated properly, especially in a big environment

4.3 Results to IT-Business alignment

Table 3 displays the organization name, size of the organization (based on staff headcount), IT governance structure and maturity level used by organization. An organization can govern IT through various organization structure/design, such as centralized, decentralized or federal (combines centralized and decentralized). IT maturity level of the organization is scaled from one to five (optimized) to show the level of process maturity based on Capability Maturity Model Integration (CMMI).

Table 3.
Summary of IT-Business alignment organization structure

Organization Codename	Company Size	IT Maturity Level	IT goverenance Structure/Design
LQ	Large	3	Centralized
AK	Large	3	Unknown
KRN	Large	3	Federal
ONP	Medium	3	Decentralized
QS	Large	4	Federal
GK	Large	3	Federal

IT maturity level of the organization was scaled from zero to five to measure the level of process maturity based on capability maturity model integration as follows (De Haes & Van Grembergen, 2008b):

- (0) Non-existent -Management process are not applied at all;
- (1) Ad hoc -Processes are ad hoc and disorganized ;
- (2) Repeatable -Processes follow a regular pattern ;
- (3) Defined process -Processes are documented and communicated ;
- (4) Managed and measurable -Processes are monitored and measured;
- (5) Optimised -Good practice are followed and automated.

5. Discussion

A number of themes have emerged from the interview scripts and will be discussed in line with the research questions. In the organizations interviewed, it is evident that a mixture of frameworks and best practices were applied. Each organization had a set of IT governance practices that were suited to their industry, culture and organization size. The study revealed the structures, processes and relational mechanisms used by the enterprises to facilitate effective and successful IT governance. According to Weill and Ross (2004), the three effective governance mechanism types are: decision-making structures, alignment processes and communication approaches.

5.1 IT governance implementation

5.1.1 Adoption of IT governance

Governance aims to ensure that managers and employees translate strategies into operational initiatives (such as service quality, cost control, project delivery time, and process improvement) throughout the organization, that they protect organizational assets and use them efficiently, and that they comply with laws and regulations (Applegate et al., 2009). These are some of the reasons given by study participants as to why they adopted IT governance practices in their organizations:

> *"…We are in the finance industry and are regulated. One of the biggest benefit of implementing IT governance is that South African Reserve Bank and auditors are okay and happy."*

> *"As a financial institution we would have our licence revoked if we are not able to prove that we managed our IT in a best practice … And we would lose money because people would do whatever they like."*

“It provided and confirmed focus of effort, solutions and budgets with a timeline that was fully aligned with business imperatives.”

“In a nutshell, we have seen benefits in the operations, service delivery, and information security components of IT. We are encouraging business to begin adopting the similar alignment and focus towards governance. There have been efficiencies which directly contributed to business strategy and targets.”

“The major benefit is that we are able to benchmark against existing standards in what we do. We are able to leverage and learn from other system that are already there.”

Some of the participants in the study came from subsidiaries of listed companies, which tend to have regulatory and stakeholder pressures. Respondents mentioned the realized benefits for the organization as the following: cost saving, aligning business with IT strategy, regulatory compliance, reputation, service delivery and security. The enhancement in security of data assets have been a key focus area for IT governance as enterprises move into digitization.

A public sector interviewee cited a lack of resources as a limiting factor in terms of what they can accomplish from a governance perspective. The interviewee explained: “...*we are trying. ... Although budget are not enough, but we are trying our best*.” It is not that the public sector organization does not take IT governance seriously, but in the private sector organizations, the stakes are a lot higher. According to Juiz and Toomey (2015), stakeholder pressure drives the need for effective governance of IT in commercial organizations, more so than in some public services entities.

5.1.2 IT governance frameworks used

Two respondents acknowledged the use of a vendor to assist with IT governance implementations because internal skills were lacking within the company, while the majority of respondents use in-house skilled resources.

External IT governance consultants were contracted to provide guidance at various levels of the organization during implementations from time to time.

"We used PWC. Dimension Data helped with the ITIL side. So, there has been multiple contracts over the years." This was supported by another interviewee who mentioned that "*…we do have an external consultant that currently works with us...*" The external support from IT governance vendors was instrumental to the functioning of governance initiatives.

Most respondents were in the post-implementation phases of their IT governance initiatives. A respondent explained that they were improving existing frameworks to the latest versions, thus ensuring sustainability within the organization.

> *"We implemented ITIL and COBIT a long time ago. We then just iterate it through continuous improvement over the years."*

The respondent observed that IT governance required continuous improvements as and when standards and frameworks are updated.An interviewee emphasized the use of a mixture of frameworks because no particular framework or standard covers IT governance fully. *"Incorporating the relevant frameworks and models that includes: COBIT, EA, ITIL, and ISO 38500… This is important as no single framework provides the total solution. It has to appropriately incorporate the essence of each framework recognising the uniqueness of the organization involved."* It would seem that organizations can start IT governance with any framework because they are mutually exclusive. According to Chaudhuri (2011), the ISO/IEC 38500 standard and COBIT frameworks complement each other to achieve IT- Business alignment and IT governance.

At times, the parent company dictated to subsidiaries on which IT governance frameworks to implement. An interviewee explained: *"We do not use other frameworks because it is not a requirement from our parent company. They are happy with ISO 270001 at the moment."* Most organizations had implemented ITIL and COBIT frameworks, and were supplemented with various ISO standards. Furthermore, most of the interviewees in the middle and upper

management level of large organizations had extensive IT governance experience of more than 11 years as shown on Table 1.Multiple standards and frameworks were implemented concurrently and often overlapped to provide greater coverage in IT governance.

5.1.3 IT governance steering committee

Steering committees were composed of business and IT people focusing on prioritising IT investments, IT-related risks and managing IT projects. The respondents supported the view that the effectiveness of the steering committees brought success to IT governance implementations. An active participation of knowledgeable and key staff at all levels played a role in the delivery of a successful IT governance. Large organizations tend to have a number of governance boards contributing to IT governance, as one participant stated:

> *"Every major change has to go through the architecture, solution, and project authorization board. There are all these governance structures so that you are not choosing something that is going to ruin our reputation and cause disruptions… Or cause us to be reliant on external vendors to support it for the next 20 years because we do not have the skills inside."*

The board provided oversight of IT investments, in line with business objectives of the organization. According to Niemann (2006), enterprise architecture creates transparency with respect to potential risks, cost, and availability, by documenting the links of business goals, business processes, department requirements, projects, IT applications, IT platforms and IT infrastructure. Most respondents were in agreement that they would not outsource IT governance, but would rather build internal skill capacity in their organizations.

A Business Information Security Officer explained: *"We have a couple of committees because we are a big group. Whether some are effective or not, it really depends on whether the mandate is agreed and the chairman is*

effective..." Steering committees seemed to be effective structures for directing IT governance as illustrated by participants' comments below:

> *"In my experience, there has been oversight provided by the steering committees. Each of the member of the steering committee comprise of representative from the critical and relevant areas of the business. This is beneficial for us in delivering an end product that meets the business requirements, is efficient and effective for use by the end users.It must have an acceptable level of security attached to it and must be cost effective to the business."*

> *"Yes, there is a steering committee and I think it is effective. There is different committees looking a different things within the IT governance space. Whether it is security or change management. We need to improve new processes."*

One public sector participant could not confirm the effectiveness of the steering committees, citing that it was dominated by representatives from business rather than IT. *"So there are governance structures. Whether they are optimal or not, is another thing. But, they are there."* Having governance structures would not necessarily translate into effective IT governance and thus must be reviewed periodically and staffed accordingly.

An interviewee from LQ found the investment committee to be useful in supporting budgeting processes, as he explained: *"Yes, it is an integral part of the departmental planning and budgeting process"*. The budgeting committee enabled the prioritization of IT investment linked to the business goals. Although IT governance gets delegated to steering committees structures in the organization, the board still carried the fiduciary responsibilities for oversight.

5.1.4 IT governance policies and procedures

Respondents noted that policies were used for monitoring and enforcing the standards in IT governance, and where exceptions occurred these were documented and agreed with business and IT. An interviewee explained how

exceptions to policies were motivated to the committee: "*For example, they look at things like exceptions where there is a policy...*" Governance facilitated learning by formalizing exception processes and by creating mechanisms through which the organization can debate IT value (Gottschalk, 2006). Most of the organizations had IT governance policies, procedures and processes. The comments made by a number of the respondents included:

> *"We have a whole registry of policies and procedures. For project governance there is project management office that has minimum standards for projects. There are lots of standards such as standards for secure coding, for SDLC, Windows and for Linux. There are lots of standards at a group level."*

> *"Actually, developing the regulative governance elements consists of policies, procedures, standards, methodologies and reporting arrangements. This assists with control elements for continuous improvements."*

At the ONP organization, the ISO standard is used to simplify and improve IT compliance processes. *"…the policy is straight-forward as it tells you this is what you can and can't do. If you do this then this will happen."* To change user behaviour in governance, penalties were used to enforce compliance in a similar way to rewards. Simplifying process policies at a level that employees can comprehend is important for a successful IT governance. Some respondents noted that although policies are standardized at group level, they allowed for customization at subsidiary level based on the unique business requirements. An interviewee explained: "*…we work from the policies of [ONP]. Everything is centralized and we adapt it to our company*". For example, embedding processes and procedures of standards for development and project management into daily operations of the organization proved to be an effective way of managing IT governance.

5.1.5 IT governance awareness and training

IT governance required effective communication and awareness campaigns so that objectives are understood and the practices are complied to. All respondents had a communication strategy for running IT governance, and the interviewees shared the following views:

> *"… presently it is emails and intranet. We will be doing an awareness for the approved policies. I think we might do banners…"*
>
> *"It not easy, it is a process and you need buy-in from a lot of stakeholders. You need to educate people as to why it is relevant to them."*
>
> *"So, we have lots of emails, newsletters and net presenter, which pops up on the screens around the floors...So, all these stuff are awareness and training. There is mandatory training that everyone has to do."*
>
> *"We do email, security awareness, and general governance training. Plus policies are communicated and have to re-sign the user code of conduct."*
>
> *"We look at standard policies, process or we draft them. We implement them…we make sure the guys are aligning to it and are complying"*
>
> *"From an information security perspective, we have video-based training and regular newsletters and security bulletins."*

The most popular way of raising IT governance awareness was through email, newsletters, policies, banners, web and video-based training. As cybercrime increases, the organizations will have to strengthen their security awareness campaigns. Various communication mechanisms are used by organizations in order to keep users informed of new policies and security changes. The training and development of staff on IT governance was important so that IT resources

are connected with the priorities of the organization. Successful IT governance execution required good project management and mechanisms to check that policies and procedures are complied with throughout the organization.

Constant training and communication is recommended for IT governance to be successful. An interviewee explained the level of IT governance education and awareness in the public sector organization: "*Fairly comprehensive, but fluctuates with new appointments that break institutional continuity*". However, a financial sector interviewee noted the following: "*There is training, for example before you join the bank, and even after you have joined the bank. When there is a new thing they normally devise training. It is recorded, you must pass and get seventy percent. They keep a report to check who has done it and who has not done it*". The monitoring of IT governance training proved to be an effective way to maintain and educate the employees at all levels in the organization and ensured continuity when employing new staff.

5.1.6 Performance reporting

The participants expressed their views about the performance reporting and auditing on IT governance. Auditing played a vital role in identifying key risks, weak controls and complying with regulatory requirements. According to the interviewees, performance reporting for IT governance was done as follows:

> *"Yes, we have key risk indicators that we report on a quarterly basis."*

> *"…they get internal reporting that is discussed at the meetings. South African Revenues Bank comes in to do an audit. Then internal and external auditors review it and produce a report on gaps that they see."*

The board involvement in IT governance ensured that enterprises are able to sustain and execute future strategies as recommended by King III. An interviewee elaborated on the role of the board as follows: "*The board always has sight of the measurements from the different audits and assessments that we undergo annually...The board is committed to ensuring we as IT are equally*

committed to meeting these requirements…" Tracking business and IT metrics in IT governance enhanced learning in the organization and most respondents regularly reported to the board on the progress of the IT governance initiatives. The IT governance manager stated:

> *"On our side we use key risk indicators. So what we do is discuss at a group level what the key things we want to measure. We would say what we would need to improve on, focus on, and how we must manage risk. Then we include them as part of key risk indicators… we do the Cobit assessment as well to check where we are"*

Regular reporting to the board is done and this shows commitment and accountability from the board to oversee IT governance in the organization. An interviewee from QS explained how regular IT risks are communicated to the board: "*Yes, this is done through the risk committee*". Various metrics are utilized by organizations to assess the effectiveness of IT governance in meeting business objectives and goals. Most respondents used internal and external auditing to identify gaps and rectify these to improve their IT governance processes. IT auditors played a significant role in auditing the IT and business alignment for assessing the effectiveness of IT governance and maturity (Chaudhuri, 2011). An interviewee stated: "*The true test of a successful IT governance implementation are the results achieved by external examination of the IT processes*." Therefore, auditors act as an independent layer for improving IT and business controls and processes.

An interviewee from LQ mentioned that the optimizing of IT governance processes based on performance measuring results was not happening. While another interviewee stated: "*IT and IT governance are evolutionary components of business. There will always be room for continuous improvements*." The annual reports of the listed companies from which interviewees came, also provided review updates from the board on IT governance undertaken in the organization as part of disclosures to stakeholders.

5.1.7 Risk management

The management of IT risks is critical to an organization, and comprise of the following: assessing IT risk, monitoring internal control and implementing control to reduce IT risks. IT risk-management which forms part of IT governance was seriously attended to and addressed by organizations. A participant from the financial sector stated: *"Yes, very important, especially in a financial organization because the whole business is driven by IT".* The ICT Governance Manager explained how risk was managed: *"Very, very important. We have identified the risks in our inherent system, whether it is strategic or operational. But, we have to identify the risks and come up with mitigating plans."*

A proactive risk management strategy facilitated a competitive advantage for the organizations. An IT Risk Manager stated: "*This is a top priority and focus for us. Risk is always something that we are aware of and we are constantly working to keep risk at an acceptable and tolerable level."* Furthermore, risk management is not a once-off event, but a continuous process. Risk management practices were embedded in most business operations of the organizations. An interviewee stated: *"…on the IT security, we used to help the guys in instilling on them that they must always think of security in their daily processes*."

A responded explained how outsourcing was critically assessed to minimize risk for the organization:

"So, part of the process is to get to the point where you are going to outsource this component to that vendor to supply. Included in that process has to be a risk assessment to make sure you are not exposing to bigger risk than if you did it in-house … So, it is part of assessment to ask, Is the technology right? Does it fit into our architecture? Is the security offering correct and does it fit in with our security framework? Is the cost right? And are we exposing ourselves to risk and what is the risk? Are we mitigating the risk or are we increasing risk?"

When transferring the IT risk to another service provider, a comprehensive assessment of the IT governance maturity level of the service provider is

essential. Moreover, having a proper service level agreement (SLA) with the service provider is key to measuring service delivery levels.

5.1.8 Change management

Business continuity was seen as valuable to the organizations. Boards have to keep abreast with local and international regulations changes (such as information protection, data retention and disaster recovery) depending on the geographical locations of the enterprise's business operation. One interviewee noted information security as being a critical component for IT governance:

"It depends on which element you are focussing on. If it is information security, the baseline is very broad and covers these elements: physical and logical access, system configuration, operating system, application, event monitoring, malware prevention, network security, traffic analysis, vulnerability management, and testing of control effectiveness through penetration testing…"

An IT security & support technician explained: *"Yes, IT is the core of the business nowadays. If your IT is not up to date then your company will not perform as it should."* The biggest challenge for organizations is keeping up with security patches, as one interviewee elaborated: "*I guess patching is one of the most and biggest headaches because patches come out all the time. And you continually have to patch. There seems not to be enough time to test each and every application with every patch before the next one comes out."* The IT systems must be upgraded against security threats posed by weak control, viruses and hackers.

One participant provided the following example of a minimum baseline for IT governance:

> *"For IT governance, process, is the most important. Then technology and people. If you have defined process, you can force people to follow them and can put technology in to support the process…If you think of change management as an example, you need a process and a policy for change*

management that forces the people to follow the change management process. And you can put a system to manage changes, but you have to define the process first."

Calder & Watkins (2008) emphasised that an essential component of maintaining business continuity plans was through effective change management. A respondent from AK mentioned that they intend implementing a robust business continuity plan for the organization.

According to an interviewee, the primary reason for change management was: "*Yes, we a continuously assessing where we are and what we can do better. Where we could improve and where the gaps are, as well as what the industry doing ...*" It helps to keep track of industry trends that impact IT governance because legislations are updated frequently. An interviewee explained how some of the current legislations that could impact the organization adversely: "*…Data is becoming a big thing, the whole data protection, POPI, and GDPR...Remember that POPI regulator will be self-funding and will find somebody to fine because it is self-funding. The GDPR states that if you have any data that has any European people information in it then you are directly impacted. The fines are big."*

IT governance is a continuous journey because frameworks, regulations, products and systems change all the time and this may cause misalignment between IT and business. At LQ, the IT Officer stated: "*It was a steep learning curve for all both IT people and users*." Most participants acknowledged that IT governance demanded commitment and coordinated mechanism at all levels of the organization, starting from the top senior leadership.

It is imperative that an organization adjust IT strategy based on the enterprise strategy to avoid misalignment. As the IT Risk & Compliance Manager explained*:* "*I don't think that anyone can firmly state that IT* governance *is in place, as IT is continuously evolving. We have numerous elements where IT governance has been tested to be in place. At the end of the day, we have achieved an acceptable level of IT* governance. *And we are continually raising the bar as the IT governance frameworks evolve*."

A combination of standards and frameworks were used by enterprises in governing IT. It is clear from our findings that principles adopted by an organization for IT governance implementation vary, however, COBIT and ITIL seem to be the dominant frameworks adopted in most of the organizations.

Most participants felt that the performance of IT governance is functioning well, but there is always room for improvement. IT processes were audited internally and externally in these enterprises. IT governance focuses on control, compliance and IT management. Each organization has key indicator metrics that are used to gauge performance of IT governance. A number of respondents used a combination of frameworks to manage IT governance to cover it more holistically.

The steering committee has both business and IT people and the IT governance policies are enforced from the top-down in the organization with some allowance to adjust at subsidiaries according to the business environment. One participant mentioned that it took a number of years to implement an IT governance framework effectively in the organization. This was supported by other interviewees who acknowledged that implementing IT governance was not an easy task. Most participants were in agreement that improving IT value and reducing risks were essential for sustainability of the enterprises.

What this study showed was that IT governance practices are known and applied, but not universally so in various organizations. A number of standards and frameworks complement each other. Two of the seven organizations interviewed had not implemented the COBIT framework, but one indicated that it was still being debated internally whether to fully adopt it as a framework. Furthermore, organization AK and ONP had only one framework implemented. The utilized best practices and frameworks depended on what the organization was trying to achieve in terms of IT governance. For example ISO35000 had a security focus, while ITIL had a service improvement focus. It seems that ITIL and COBIT are used extensively in practice to govern IT in organizations.

A number of respondents saw the need and value to have multiple frameworks to have greater coverage, but this depended on having internal resources and skills. IT governance steering committee seems to an effective way of managing governance, however it must be supplemented by policies, training awareness and performance reporting. Governace of IT reporting in annual reports is done to inform stakeholders. The management of information security still continues to be top priority in most enterprises and the management of risk is on the agenda of boards.

5.2 IT governance enablers and inhibitors

5.2.1 Enablers of IT governance

The leadership and IT-Business relationships in organizations tend to rank high among the enablers and inhibitors of IT governance**.** According to Luftman and Brier (1999), strategic alignment were enabled by the following: senior executive support for IT, IT involved in strategy development, IT understands the business, business-IT partnerships, well-prioritised IT projects, and IT demonstrates leadership. An interviewee described IT governance enablers as follows:

> *"Systems consisting of people, processes and technology. These are informed and guided by good regulatory and directive governance, with robust controls for sustained solutions, and continuous improvement of all aspects of IT-business optimization."*

But in contrast to another interviewee from KRN, who mentioned that users are not enablers because of the risks they introduced to business:

> *"Enablers are not necessarily people because people are your biggest risk. People always try to find a shortcut. If the process is onerous or they know they are doing something wrong then they try to shortcut the process. So people are always your biggest risk…"*

According to Trautman and Altenbaumer-Price (2011), about half of data breaches are not caused by hackers or viruses, but by a lack of internal controls and processes. In as much as people play a critical role in IT governance, they can weaken internal controls when they do not follow procedures. The IT governance manager supported the view that technology helps with IT governance: *"On the enablers, technology helps us to be more transparent."* The transparency brought by the technology and clear accountability assists with IT governance in the organization.

5.2.2 Top-down stakeholder involvement

IT governance is situated at multiple layers in the organisation (De Haes & Van Grembergen, 2008b): (1) strategic level where the board is involved, (2) management level within the C-suite layer and (3) operational level with IT and business management. Top level buy-in, change management, simplicity and training were cited as important enablers for IT governance, as described by QS:

> *"Number one will always be board level buy-in and top down approach. Simplicity is key, so we endeavour to engineer efficient and effective processes that do not create ambiguity. Change management plays a huge role when dealing with changes to end user processes. Effective training is required to all affected stakeholders."*

An interviewee from a financial sector described the following situation:

> *"Stakeholder involvement support and senior executive support has to be key because if you do not have stakeholder alignment and decide that I am going to put this in then nobody is going to use it. Then your value proposition is never going to be realized..."*

Stakeholder alignment between business and IT plays a role in the IT governance implementation by facilitating decision-making and setting priorities

on IT investments. Senior management needs to support IT governance, as the lack of top management visibility can hamper the creation and delivery of IT value within the organization.

Having clear goals and roles are important success factors when planning and coordinating activities of IT governance. Selig (2015) supported the view that top performing companies have in place multi-disciplinary business-IT steering and governance boards and working committees, with clear roles and responsibilities, to ensure appropriate commitments, sponsorship, escalation, ownership, more effective communications and more formal visibility and commitment of the board, executive management and other stakeholders.

5.2.3 Collaborative culture

A cohesive view of IT governance is required across the whole organization so that IT and business can work in partnership to define, monitor and control governance initiatives. The following quotations described how collaboration can facilitate IT governance though committees or boards at various levels in the organization:

> *"…there are collaborations between business and IT."*

> *"…clarity of ownership, collaboration, and transparency through well-coordinated structures and management forums."*

Governance works best when there is a well-balanced mixture of business and IT representatives. An interviewee attested that: *"Get all role players and stakeholders involved that have firm knowledge and skills base."* The partnership between business and IT is vital in ensuring business and skills sharing in order to break down a silo-mentality. This view was supported by an interviewee from LQ: *"Knowledge and skills, clarity of ownership, collaboration, participation, and transparency".* When there was clear ownership, then transparent decision-making could be facilitated by IT governance.

A respondent noted that a collaborative attitude amongst employees was rewarded in the organization. "*Yes, people get rewarded on how collaborative*

they are." The use of incentives and penalties encourage user behaviour to align with enterprise business goals. When rewards are not aligned to organizational goals then IT governance becomes ineffective. According to Weill (2004), successful IT governance needs the following critical success factors: (1) transparency, (2) actively designed, (3) infrequently redesigned, (4) education about IT governance, (5) simplicity, (6) an exception-handling process, (7) governance designed at multiple organizational levels, and (8) aligned incentives. Most respondents felt that IT and business are effectively aligned. These critical success factors came strongly to the fore from the respondents as the mechanisms used when implementing IT governance.

When IT governance is transparent and understood by staff, it promotes desired IT behaviour in the organization. All the active stakeholders' involvement, effective change management, collaboration and IT governance training played a big role in successful IT governance implementations.

5.2.4 Inhibitors of IT governance

IT governance should create awareness and training in organizations. One interviewee suggested: *"People who are not knowledgeable of IT governace at top level...And if thing are not coordinated properly, especially in a big environment like this one."* The lack of IT governance training can be an obstacle when rolling out IT governance initiatives. An inhibitor to IT governance as stated by an interviewee was: *"For me, there one that stand out the most is the lack of effective process measurements."*

Another interviewee explained how change management is critical to IT governance: *"It is not easy due to insufficient understanding of the paradigm pertaining to a holistic approach and the level of resistance to change from members who hold a specific function or concept dear. This also refers to the incorrect perception that the adoption of a holistic approach might threaten jobs or positions or power bases."* This view was supported by another interviewee: *"IT is challenging because when people hear the word governance they think you are there to restrict them, rather than enable them."*

Effective IT governance committees need constant communication to dispel myths and negative perceptions about IT governance when dealing with user resistance. An interviewee stated, *"Resistance to change and own agendas."* Hence, organizational politics must be monitored and addressed so that it does not impede IT governance implementation.

According to Lee, et al. (2008), the obstacles of IT governance implementation are: culture, resistance to change, lack of appropriate communication, internal politics, resistance to acceptance of standard/policies, resistance to accept accountability and obtaining sufficient business involvement in governance initiatives. In comparison to literature, the respondents revealed: *"It is mainly people feeling at times that you are trying to restrict them with rules rather than technology..."* This suggests that technology was an enabler rather than an inhibitor of IT governance because of the transparency it provided.

Some of the inhibitors were summarized by an interviewee as follows: *"People without the necessary knowledge and skills, inefficient planning and budgeting, lack of regulative governance, and little control or consequences for unacceptable performance and non-compliance. Bad management practices…"*

According to Luftman and Brier (1999), the top inhibitors were: IT/business lack close relationships, IT does not prioritize well, IT fails to meet its commitments, IT does not understand business, senior executive does not support IT, and IT management lacks leadership. A respondent noted that education of board members on IT governance was paramount in an organization. Boards of organizations are becoming more knowledgeable of their responsibilities from an IT governance perspective, which could be due to adherence to King III and other frameworks.

Regular communication and marketing strategy helps in communicating the objectives and benefits of the IT governance in order to reduce resistance in the organization. The lack of resources and poor awareness came forth strongly from public sector enterprises as critical inhibitors when implementing a sustainable IT governance.

Some of the new inhibitors revealed in Table 2 that were not in IT governance literature were: lack of process measures, coordination and IT governance knowledge by leadership. This suggests that organizations that minimize inhibitors tend to have successful IT governance implementations, but it must be actively designed through process, collaborative culture, policies, top-down user involvement, and business-IT partnerships.

5.3 Aligning IT and business

5.3.1 IT and business alignment

In order to achieve IT and business alignment, a clear mandate from the board drives this process, as described in the following quote: *"… they are aligned because the head of IT is on the board with other senior executives where strategic objectives are discussed and agreed. And IT becomes an enabler of those strategic objectives. So, if the strategic objective for the next five years is to expand into Africa then IT needs to say how it can facilitate business to achieve it."* The commitment and involvement of IT and business leadership at executive level in the organization is valuable in driving and implementing IT governance.

Respondents from four organizations were at subsidiary level and often cited a need to constantly be in alignment with the parent company at group level when managing IT governance so that business and IT strategic goals are realised. An interviewee described this situation as follows: *"… it is a continuing journey. It is not like you tick the box and it is over. It is an ongoing thing and being part of a bigger group there is always an alignment that need to happen as part of the bigger group"*

IT governance was able to increase transparency so that IT expenditure can be matched to business goals for effective benchmarking. When IT investments are in sync with business objectives, it allows IT to enable new business models. The CIO plays a critical role in advising the business on how IT can be a strategic enabler to the business at an executive level. The following quote

shows the value of business and IT partnership when setting strategic goals in the organization: *"Everytime when there is a new strategy they give us the strategic objectives from the business. As IT, the CIO looks at it and say what IT needs to do ..."*

The presence of the CIO at a strategic level is recommended by King III to help the board address IT governance. CIOs interpret the business strategy in terms of IT requirements to maximize IT value for the organization. De Haes and Van Grembergen (2004) posited that a Strategic Alignment Model (SAM) has two types of functional integrations: (1) Strategic integration which is the link between business strategy and IT strategy, and (2) Operational integration which covers the internal domain and deals with the link between organizational infrastructure and processes and IT infrastructure and processes.

IT and business strategic plans are cascaded and translated in the various steering committees to align with operational goals of the organization. From an operational perspective, to ensure effective change management and business continuity, the processes must align to the organization's objectives. The interviewee shared views on this aspect: *"Align your process to meet your objectives. And your objectives are to manage change in a safe and secure manner to reduce disruptions"*.

IT governance positions IT as a partner to business and helps cultivate good relationships with key stakeholders in order to respond to market opportunities. The reason for alignment is to ensure enterprise sustainability to meet current and future business objectives, as explained by an interviewee from LQ: *"Focus on the business objectives to provide appropriately optimised solutions that enable and enhance business within acceptable sustainability..."*

Most respondents agreed that IT investments have created value in the organization when IT governance was implemented because business objectives were aligned to IT solutions and systems. An interviewee stated: "*Strongly agree, as IT evolves and matures, the investment in robust tools, resources, services and people definitely adds value back to business.*" There is a view that in order to improve the performance of enterprise, IT-Business

alignment should be regularly re-examined and a low alignment maturity between business strategy and IT strategy was one of the main reasons enterprises failed to exploit the full potential of their IT investment (Luftman et al., 2010).

5.3.2 IT governance decision rights and model

An interviewee at LQ indicated: "*By ensuring that the definition and allocation of roles and responsibilities reflects an overall well-coordinated functions across the full value chain of IS/IT management in support of organizational imperatives.*" By having clearly defined business and IT roles that are aligned toward the business objective is vital for sustaining IT governance initiatives. As IT governance is driven from the top-down, interviewee from AK stated that: "*There are governance structures already in place. The top of them all is the council… When I was talking about the policies, they have to be approved at that level."* Most respondents agreed that there are clear accountability in their organizations and that the board actively drives IT governance through various structural mechanisms. Having the right IT and business participants with authority for making decisions is vital for maintaining alignment.

It has been proposed by Luftman and Brier (1999) that successfully aligned organizations focus on the following: allowing for IT and business capabilities to be weighed equally, developing the skills necessary to succeed, empowering workers in a team-based environment, gaining agreement on outcomes required from business processes instilling a sense of urgency in managing IT-enabled projects, leading in the deployment of IT to create customer value and nurturing a culture of open human communication. Therefore, Luftman and Brier's view agrees with this study because most respondents revealed that a collaborative IT-Business partnership fostered alignment and contributed toward joint strategy development, process optimization, and IT value-creation through prioritized project investments in the organization.

One organization used a centralized and one used a decentralized IT governance model, while one was unknown. Three organizations indicated that they used a federal model as it allowed for greater responsiveness and agility to

requirements of the business units. As the Business Information Security Officer explained: *"So, in some organizations you will have central IT structure and they do all the IT support for the business units. What we have done now is each of the business units has an IT section in them which delivers business specific solutions. The central IT is basically infrastructure. Each of the business units has a head of technology and some developers that look after and deliver specific solutions to that business unit. We have the bigger group and we align in strategy and objectives*."

In centralized IT organizations, decision rights involved in the acquisition, deployment, and support of technology belong to a central group reporting to a corporate executive. While in federated organizations, the decision rights are coordinated across the corporate IT group, the business units, and even the specific corporate functions (Andriole, 2015).

An interviewee from KRN that used a federal model stated:"*...The time to market is where you make the money because if you do not get to the market first then you are not going to get the biggest share of the business. So, time to market is very important in our line of business. PMO has been tailored to do agile deployments*." The speed to market, business autonomy, and flexibility appear to drive IT governance decision-making. This view was also held by Peterson (2004), that federal IT governance combines the benefits of synergy, standardization and specialization with the advantages of autonomy, innovation and flexibility.

Respondents revealed that hybrid project management methodologies are employed to manage IT governance implementations and acknowledge the difficulty to complete projects on time, budget, and within the scope. An interviewee stated: "… *we try, but with bigger projects, they are not on time or budget*."

In this research study, the IT maturity level in Table 3 of these organizations were rated a three by study participants. A number of organizations used maturity level benchmarking for continuous improvement in IT governance initiatives. This seem to agree with a study by De Haes and Van Grembergen

(2008a) which suggested that when an organisation wants to implement IT governance practices, a maturity level of at least two must be obtained to guarantee a positive business/IT alignment impact. To operate at level three maturity, the enterprise must have established and focused processes across the organization, underpinned by integrated architecture, skills, IT-Business partnerships, and good communication.

As one interviewee alluded to adopting frameworks to enable benchmarking, it also offers enterprises and the ability to set future improvement targets for the organization. Therefore, an important ingredient of IT governance is the level of process maturity and reliability of a myriad of business processes, organizational structures, and relational mechanisms (Debreceny, 2013). Furthermore, the disclosures of IT governance compliance in the annual reports suggested a higher level of maturity of boards in listed organizations.

5.3.3 IT governance failures

Although IT failures do occur in the business operation, IT governance tries to reduce the impact on business continuity of the organization. Poor governance may result in negative impact to the organization, thus the business continuity plan becomes critical in the sustainability of the company. An interviewee recalled the following incident where IT governance failed in their organization because of not following documented change management processes:

> *"A change that caused disruption to the business because someone had not followed proper change process. Following change process is part of IT Governance."*

Another respondent experienced a system failure incident in which online sales were missed during Black Friday as a result of high traffic volumes. A participant from SQ elaborated: "*We have had not anticipate high volumes of customers in our system to cater for Black Friday sales, but have put some mechanism in place now.*" The profits could be constrained by a weak control process or by inadequate system availability. An interviewee mentioned that sufficient system capacity was maintained at KRN: "…W*e generally do not have*

a lot of downtime on systems. We generally have a 98 and 99 percent availability. In most cases, we have high availability implemented."

The internal and external factors shape the business strategy of an organization, which needs to align to the IT strategy. When formulating the IT strategy to meet the business aims, the enterprise must consider the following factors (ITGI, 2003):

- Business objectives and the competitive environment;
- Current and future technologies and the costs, risks and benefits they can bring to the business;
- The capability of the IT organization and technology to deliver current and future levels of service to the business, and the extent of change and investment this might imply for the whole enterprise;
- Cost of current IT and whether this provides sufficient value to the business;
- The lessons learned from past failures and successes.

A number of South Africa's online retailers experienced system downtime because they had not prepared for the anticipated surge in site activity by turning on services based on demand into the cloud to manage the workload. According to Moeller (2013; p.4), "G*ood IT governance aligns an enterprise strategically to support the evolution of an IT architecture that delivers consistent and scalable business value*". Governing the cloud is a component of IT governance which offers IT-Business alignment by responding to demands of the business in providing system scalability and agility when supporting business goals.

One interviewee gave an example of data security breach by a SA company. *"…So for example, if we want to put this solution and it is a cloud solution. We need to assess whether or not the cloud vendor is secure? What data we are going to put there? Where the data is stored locally or internationally? Otherwise, you could have your customer details exposed like, Jigsaw. …outsourced the credit assessment of customers to a credit bureau that was hacked and all the details were exposed."* Data and information security was an

integral part of IT governance and was on most of the board's agendas due the rise in cybercrimes. Most respondents emphasized security as a crucial element of IT governance. Companies with more mature IT governance practices are less likely to have customer data stolen or lost, and often face significantly lower financial losses (Applegate et al., 2009).

The dominant IT governance decision structures used by organizations were federal, which is a combination of a centralized and a decentralized model. Most organizations have an IT governance maturity level of three and regularly performed continuous business process improvements in order to align business with IT.

Alignment of IT and business tend to be the driver for implementing IT governance projects within organizations. The findings indicated that IT governance was driven from the board level and cascaded down to users in the company. What became apparent from this study was that an IT governance initiative was not a "once-off" event but a series of continuous improvements. As the business environment changes, the board and IT steering committees must align business with IT strategy. IT and business alignment is time consuming and often requires much effort to sustain it, because business requirements change over time.

If strong communication between business and IT is lacking, misalignment will occur and this will have a negative impact on the enterprise. There are many variables that affect IT and business alignment in organizations because of the rapid changes in business and technology environments, thus business and IT alignment is dynamic. For example the decommissioning of legacy systems and replacement with new systems can affect the business alignment.

Most respondents were convinced that IT investments have added value to their organizations and that there were clear accountability. It emerged that key risk metrics are monitored and gaps are rectified by enterprises. The boards also regularly reviewed IT plans and IT processes were audited for effectiveness and efficiency. Monitoring of performance metrics existed in most of the organizations that participated in the study and this was validated in the annual

reports. Most respondents were in agreement that a culture of collaboration between business and IT was nurtured in their organizations. The organization used the past IT failures to learn from these mistakes, which in itself improved processes and policies.

It is critical that business and IT have well-developed partnerships so that processes and policies are monitored to achieve busines objectives. A maturity level greater than two is recommended for organization implementing IT governance. The ever changing business and technology development are also driving the adoption of agile methodology and continious improvements within enterprises.

6. Conclusions, future research and limitations

The focus of this paper was on three specific research questions and the conclusions are therefore organised according to these research questions. The results reported in the paper must be considered with caution, because of the small sample size within a few industry sectors, but it does however reveal insights for practitioners on how an organization can approach IT governance implementation, and ways to ensure that alignment is maintained between business and IT.

Regarding the first research question, the study revealed a diverse use of standards and frameworks by organizations in the management of IT governance. Standards and best practices are not solutions as their effectiveness depends on how they are implemented, tailored to business requirements and kept up to date (ITGI, 2008a). Policies must be simple, communicated and monitored for effectiveness though regualr audits to improve IT-Business performance. A balanced representation of business and IT stakeholders at strategic level is recommended as this enhances trust, shared learning and collaboration, which are vital for succesful IT governance. Regular training (both formal and informal) helps organization entrench a governance culture for employees and this must be supported by incentives that rewards collaborative behaviours.

In relation to the second research question, inhibitors and enablers of IT governance vary marginally between organizations with what is reported in the literature. It is important that planning, budgeting and IT governance training are in place to reduce inhibitors to IT governance. A top-down approach with clear leadership accountability is key for successful IT governance implementation as this promotes transparency, especially when clarifying exception handling processes. Marketing the benefits of IT governance and educating users on the value proposition must be supported by collaborative culture and measurable business metrics, enabling technologies and incentives. When an organization is weak at some enablers, they could potentially become inhibitors of IT governance.

The last research question showed that IT-Business alignment is an ongoing effort and requires a great deal of change management. Indeed, an organization that possesses a good collaborative culture will tend to fare better in implementing and sustaining IT governance within the organization. The use of IT steering committee assist with enabling partication of stakeholders from IT and business at the board and senior to middle management within the organization. IT governance should not be viewed as tick box exercise, but as a continuous improvement program that aligns to the goals of the enterprise.

Moreover, governance cannot be developed in isolation, but it is a joint effort from both business and IT, regardless of the IT design model that an organization may choose. The organization that governs well, will perform better than their competitors through maximum use and exploitation of IT investments to create value for the business.

Future research could look more closely at impact of group and subsidairy organization in the alignment business and IT governance especially when there are merger and acquisition of enterprises. IT governance requires a coordinated and focused approach led from the top through the board, as it impacts on all people at various levels of the organization. Thus for an organization to achieve IT and business alignment, a combination of processes, relational and structural mechanisms are required.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Sean Riley, Robin Drennan and Marietha Nel for their assistance with my research paper. The paper is dedicated to my wife, Nombulelo and sons, Thoriso and Thlolo for their support during my studies.

REFERENCES

Alreemy, Z., Chang, V., Walters, R., & Wills, G. (2016). Critical success factors (CSFs) for information technology governance (ITG). *International Journal of Information Management*, *36*(6), 907-916.

Andriole, S. J. (2015). Who owns IT? *Communications of the ACM*, *58*(3), 50-57.

Applegate, L., Austin, R., & Soule, D. (2009).*Corporate Information Strategy and Management: Text and Cases*, 8th ed., New York: McGraw·Hill Education.

Bowen, P. L., Cheung, M. Y. D., & Rohde, F. H. (2007). Enhancing IT governance practices: A model and case study of an organization's efforts. *International Journal of Accounting information Systems*, *8*(3), 191-221.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Calder, A., & Watkins, S. (2008). *IT Governance: a managers' guide to data security and ISO27001/ISO27002*. 4th ed., London, United Kingdom: Kogan Page Publishers.

Cater-Steel, A., & Tan, W. G. (2005). Implementation of IT Infrastructure Library (ITIL) in Australia: Progress and success factors.

Chaudhuri, A. (2011). Enabling effective IT governance: Leveraging ISO/IEC 38500: 2008 and COBIT to achieve business–IT alignment. *EDPACS*, *44*(2), 1-18.

Coltman, T., Tallon, P., Sharma, R., & Queiroz, M. (2015). Strategic IT alignment: twenty-five years on. *Journal of Information Technology*, *30*(2), 91-100.

Cooper, D. R., & Schindler, P. S. (2014). *Business research methods*.12th ed., New York, United States of America: McGraw-hill Education.

Debreceny, R. (2013).Research on IT governance, Risk, and Value: Challenges and Opportunities. *Journal of Information Systems*, 27(1), 129-135.

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

De Haes, S., & Van Grembergen, W. (2008a). Practices in IT governance and Business/IT alignment. *Information Systems Control Journal*, 2, 1-6

Haes, S., & Grembergen, W. (2008). An exploratory study into the design of an IT governance minimum baseline through Delphi research. *The Communications of the Association for Information Systems*, *22*, 443-458.

Gottschalk, P. (Ed.). (2006). *E-business strategy, sourcing and governance*, London, United Kingdom: Idea Group Publishing.

ITGI, I. (2003). *Board briefing on IT Governance*, *2nd ed.,* Rolling Meadows, United States of America: IT Governance Institute.

ITGI, I. (2008a). *Aligning CobiT 4.1, ITIL V3 and ISO/IEC 27002 for Business Benefit,* Rolling Meadows, United States of America: IT Governance Institute.

ITGI, I. (2008b). *Unlocking value: An Executive Primer on the Critical Role of IT Governance*, Rolling Meadows, United States of America: IT Governance Institute.

Juiz, C., & Toomey, M. (2015). To govern IT, or not to govern IT? *Communications of the ACM*, *58*(2), 58-64.

King, M. (2009). King code of governance for South Africa. *Institute of Directors of South Africa*.

KPMG. (2016). The Creative CIO's agenda: six big bets for digital transformation.

Lee, J., Lee, C., & Jeong, K. Y. (2008). Governance Inhibitors in IT Strategy and Management: An empirical study of Korean enterprises. *Global Economic Review*, *37*(1), 1-22.

Luftman, J., & Brier, T. (1999). Achieving and sustaining business-IT alignment. *California management review*, *42*(1), 109-122.

Luftman, J., Ben-Zvi, T., Dwivedi, R., & Rigoni, E. H. (2010). IT Governance: An Alignment Maturity Perspective. *International Journal of IT/Business Alignment and Governance*, *1*(2), 13-25.

Marks, D. F., & Yardley, L. (Eds.). (2004). *Research methods for clinical and health psychology*. London: Sage Publications.

Moeller, R. R. (2013). *Executive's guide to IT Governance: Improving systems processes with service management, COBIT, and ITIL*, Hoboken, New Jersey: John Wiley & Sons.

Nfuka, E. N., & Rusu, L. (2010). *Critical Success Factors for Effective IT Governance in the Public Sector Organizations in a Developing Country: The Case of Tanzania*. Paper presented at the ECIS.

Niemann, K. D. (2006). *From enterprise architecture to IT Governance,* Wiesbaden, Germany: Friedr. Vieweg & Sohn Verlag.

Peterson, R. R. (2004). Integration Strategies and Tactics for Information Technology Governance. *Strategies for Information Technology Governance*, 37-80.

Pollard, C., & Cater-Steel, A. (2009). Justifications, strategies, and critical success factors in successful ITIL implementations in US and Australian companies: an exploratory study. *Information systems management*, *26*(2), 164-175.

PWC, I. (2006). Governance in Practice. *Insight from Leading CIO's*.

Saunders, M., & Lewis, P., Thornhill, A. (2016). *Research methods for business students*, 7th ed., London, United Kingdom: Pearson.

Selig, G. (2015). *Implementing Effective IT Governance and IT Management*, 2nd ed., Zaltbommel, Nederland: Van Haren Publishing.

Smallwood, R. F. (2014). *Information governance: Concepts, strategies, and best practices*, Hoboken, New Jersey: John Wiley & Sons.

Tiwana, A., Konsynski, B, Venkatraman, N. (2014). Special Issue: Information Technology and Organizational Governance: The IT Governance Cube. *Journal of Management Information Systems,* 30(3), 7-12

Trautman, L. J., & Altenbaumer-Price, K. (2011). The Board's Responsibility for Information Technology Governance. *J. Marshall J. Computer & Infomation Law*, 28(3*)*, 313-341.

Van Grembergen, W. (2004). *Strategies for Information Technology Governance*. Hershey, PA: IGI Global. doi: 10.4018/978-1-59140-140-7

Van Grembergen, W., & De Haes, S. (2009). *Enterprise governance of information technology: achieving strategic alignment and value*, New York, United States of America: Springer Science & Business Media.

Webb, P., Pollard, C., & Ridley, G. (2006). Attempting to define IT governance: Wisdom or folly? *Hawaii International Conference on* System *Sciences*

Weill, P. (2004). Don’t just lead, govern: How top-performing firms govern IT. *MIS Quarterly Executive*, *3*(1), 1-17.

Weill, P., & Ross, J. W. (2004). *IT governance: How top performers manage IT decision rights for superior results*. Boston, Massachusetts: Harvard Business Press.