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Levels of ICT Governance in the Zambian banks

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This research seeks to broaden and strengthen the holistic understanding of ICT and Security governance effectiveness by specifically examining how ICT and Security governance practices provide a structure for banks to ensure that IT investments support business objectives. ICT and Security governance is one of these concepts that suddenly emerged and became an important issue in the information technology area. To address this objective, we investigate the operations of the banks, analyze IT governance practices and design an ICT and Security governance model and Information Security Strategy model that aligns Information Technology and Information Security with the corporate governance of the banks. Corporate Governance is the type of governance system that covers the organization's operations holistically. Corporate governances are cascaded to ICT and Security governance that covers and aligns IT strategy to the corporate business objectives. Therefore, Control Objectives for business-related technologies (COBIT) is one of the frameworks that is used for the implementation of ICT and Security governance in organizations. ICT and Security governance has been implemented by several organizations globally with the view of aligning IT to business requirements so that the shareholders may realize benefits from the investments. Locally, the Bank of Zambia has directed all the banks to implement good corporate governance. The republic of Zambia has also directed and mandated all the parastatal companies to formalize the implementation of the COBIT framework. In 2015, the auditor general indicated that all parastatal ICT audits were based on COBIT framework.

Keywords — ICT Governance, Strategy, Banks, model, framework

INTRODUCTION

Currently, Zambia has 17 registered banks and of these, 12 were locally incorporated subsidiaries of foreign banks, 2 were partially owned by the Government of the Republic of Zambia and 3 were locally owned (BoZ, 2017). Banks in Zambia use Information Communication Technology as the driver for product innovation and delivering services to the customers through branch network interconnections (Santha Vaithilingam, 2006). Through the use of Information Technology, banks are able to come up with innovative products and services hence gaining a competitive advantage over other banks. The rapid advancement of technology and the increase of use of ICT has introduced threats like mismanagement of resources, misalignment of IT to needs with business objectives and Poor performance. As a way to address challenges in the banks, appropriate processes and procedures needs to be put in place to measure the performance of IT systems and its alignment to the business objectives. Information Technology (IT) has to be aligned with the business strategy and objectives. One way to align IT services to business strategy is through ICT Governance. ICT Governance is set rules that run the organization through policies, standards and procedures that effectively manage external legal, regulatory and contractual compliance requirements relating to bank's use of information and technology (ISACA, 2012). A policy is a deliberate system of principles to guide decisions and achieve rational outcomes. However, policies are implemented as a procedure or protocol. Policies are generally adopted by the Board of or senior

governance body within an organization. Procedures are step by step sequence of activities on how to execute the policies. Procedures are developed and adopted by management (Hare, 2001). A standard is a repeatable, harmonized, agreed and documented the way of executing activities. Standards contain technical specifications or other precise criteria designed to be used consistently as rules. Many standards and frameworks have been developed to evaluate the maturity of the ICT governance in the organisations. Control Objectives for business-related technologies (COBIT) is one of the frameworks that is used for the implementation of ICT governance.

LITERATURE REVIEW

A. The use of ICT in the banking Sector

Rapid advancement in ICT has had a profound impact on the banking sector and the wider financial sector over the last two decades and ICT has now become a tool that facilitates banks‟ organizational structures, business strategies, customer services, and other related functions (Dr.G.Tulasi Rao, 2015). Effective use of ICT is assisting banks to be more customers centric in their operations by building a more solid foundation in the customer relationship management system. ICT supports banks grow a range of products/services while mitigating fraud levels and improving risk management, broaden the customer base, reduce transaction and operational cost and also help gain a competitive advantage over competing banks (WESUTSA, 2010). The application of IT within banks is manifested through Networked branches, Automated teller machines, Point of Sale Banking, Mobile Banking, and Payment Transfers e.g. RTGS and SWIFT.

All the banks in Zambia are integrated into the Payment Settlement System. BoZ Central Securities Depository System Rules Jan-20160 observes that Real-time gross settlement systems are specialist funds transfer systems where the transfer of money or securities takes place from one bank to another on "real-time" and a "gross" basis (S M Kundishora, 2008). All Participants that are not classified as Bank shall appoint a Settlement Agent. Notification of the appointment of a Settlement Agent shall be made in Writing to BoZ by both the Participant and the Settlement Agent.

The banks in Zambia are using technology as the driver for the business (World,2013). Since 1996, the Bank of Zambia has been reaffirming the importance of having a well-functioning payment that positively contributes to the financial stability of the country and the well-functioning of the country's economy (Payment, 2007). BoZ further states that a payment system is a system used to settle financial transactions through the transfer of monetary value and consist of the various mechanisms that facilitate the transfer of funds from one party (*the payer*) to another (*the payee*). Conversely, the Bank of Zambia realizes the important catalytic role that Digital Financial Services (DFS) can play towards the increased usage of electronic payment mechanisms by the general public (Matthew K. Luka, 2012).

The interest of network effect is significant in utilizing an Automated Teller Machines (ATMs) Kamyalile Simuchimba, BA (2011). Milne (2006) also encourages and supports the notion. Interestingly, Alhaji Abubakar Aliyu, Rosmaini Bin HJ Tasmin (2012) investigates the influence of the ICT evolution on the profit and cost effectiveness of the banking industry. Further (Alhaji Abubakar Aliyu, Rosmaini Bin HJ Tasmin 2012 states that similar in Kansas USA, Sullivan (2000) also found no systematic evidence that multi-channel banks in the 10th Federal Reserve District were either helped or harmed by having transactional web sites (Muhammad, 2013).

The use of ICT in the banking industry enables global economies to setup a financial system before first establishing a fully functioning financial infrastructure. Electronic banking to be cheaper and reduces processing costs for providers and less search and switching costs for consumers, banks can promote their services and products involving smaller transactions to lower-income borrowers, even in remote areas (Shirley J. Ho, 2006).

The modernization of ICT sets the stage for extraordinary improvement in banking procedures throughout the world. For instance, the development of worldwide networks has considerably decreased the cost of global funds transfer (Alawode, 2011). Banks that are using ICT related products such as online banking, electronic payments, security investments, information exchanges, financial organizations can deliver high-quality customer service delivery to customers with less effort (Stella E. Igun, 2014).

B. Governance in the banking Sector

Governance is defined as Establishment of policies, and continuous monitoring of their proper implementation, by the members of the governing body of an organization. It includes the mechanisms required to balance the powers of the members (with the associated accountability), and their primary duty of enhancing the prosperity and viability of the organization (C.L.Parmo, 2009). ICT and Security governance is a formal framework that provides a structure for organizations to ensure that IT investments support business objectives.

The board has not paid much attention to IT matters hence creating serious problems over the two decades, Information Technology has moved largely a support back-office to becoming the key enabler and enabler business (ITGI ,2008). IT is not only critical in its support of key business processes, but also transformational to the business at large. In a study conducted by PwC, it was found that while most organizations worldwide identify the importance of ICT and Security governance and most do not have a holistic view that considers all its dimensions (ISACA, 2006). The concept of ICT and Security governance as a main framework encompassing a wide spectrum of provisions, including the measurement of benefits, has yet to emerge. The alignment IT to the business objectives needs placed at the highest as a rated driver and desired outcome of ICT and Security governance practices (Ettish, 2017). The importance of IT alignment to deliver sustainable business results, and feel ICT and Security governance is one of the best means to achieve this (Michael Broudy, 2016).

The focus of ICT governance initiatives is still very narrow by focusing mainly on risk and control (Ettish, 2017). The initiatives are not considering ICT governance from a holistic perspective that can be used to enhance the value of IT for the organization. Without proper ICT and Security governance in banks, ICT systems can lose integrity with serious implications on the performance of a bank and can also result in a breach of client confidentiality (Rao, 2015).

C. Corporate Governance in the Banking Sector

A typical organization has corporate governance, IT governance and IT management is present. IT governance focuses on the IT-related areas within an enterprise corporate governance framework (Kan, 2003). Corporate Governance Is The Set Of Responsibilities And practices exercised by the board and executive management to provide strategic direction, ensure that objectives are achieved, while evaluating the risks applying appropriately controls and verifying that the enterprise's (N.C.Centre, 2005)resources are utilized effectively. ITGI (2009) notes that the terms „governance", „enterprise governance" and IT governance" may have different meanings to different individuals and enterprises depending on (amongst others) the organizational context (maturity, industry and regulatory environment) or the individual context (job role, education

D. IT Strategy in the Banking Sector

A strategy is defined as the direction an enterprise chooses to reach its goal. Goals are a description of the desired future condition, and strategy is the intentions of actions to realize the goals (N.C.Centre, 2005). The organisation strategy needs to consist of a set of main beliefs or formulas that are used to satisfy a company´s purpose (C.L.Parmo, 2009). These values are usually general directives for reaching some business goals. Strategies are plans that can be associated with project deployment and are defined from the overall business strategy, "Enterprise Architecture, IT Strategy and IT Governance (Orandi Mina Falsarella, 2017). An effective IT Strategy will benefit a company to achieve improved system solutions, from the upper management, precise resource estimations on IT-investments. An example IT Strategy covers the enterprise´s direction and strategy (mission, vision, goals, knowledge strategy), persons (competence needs), organization (future organization and control of the IT function), and an IT platform (computers, networks, databases, and applications) (CLARKE, 2014).

E. COBIT

COBIT 5 is a business framework for the governance and management of enterprise Information Technology (IT) (Pasquini, 2013). COBIT stands for Control Objectives for Information Business Process, and it is the invention of a global task force and development team from ISACA, a nonprofit, independent association of more than 140,000 governance, security, and risk and assurance professionals in 187 countries (ISACA, 2018).

COBIT aims at delivering value through good governance and management of information and technology (IT) assets to the stakeholders. Enterprise boards, executives and management are the stakeholders that have to embrace IT as part of the business and maximize value from the investment (ISACA, 2012). COBIT is an effective tool for managing external legal, regulatory and contractual compliance requirements interrelated to enterprise use of information and technology. COBIT 5 standard provides a complete framework that supports enterprises to achieve their goals and deliver value through functioning governance and management of enterprise IT (George, 2014).

COBIT 5 processes are split into governance and management areas. However, the two (2) process areas contain a total of 5 domains and are called principles. The COBIT 5 domains are broken down into 37 processes (Krishna Seeburn, 2014). COBIT 5 provides a comprehensive framework that supports the organization in realizing its business objectives for the governance and management of IT systems (Vyas, 2016). COBIT 5 enables IT resources to be governed and managed holistically, taking in a full end to end business processes in an organization.

METHODOLOGY

In Figure 1 we show our research design. The research was split between quantitative and qualitative research. Relevant published, Internet and unpublished materials aged less than 15 years were consulted in the study.

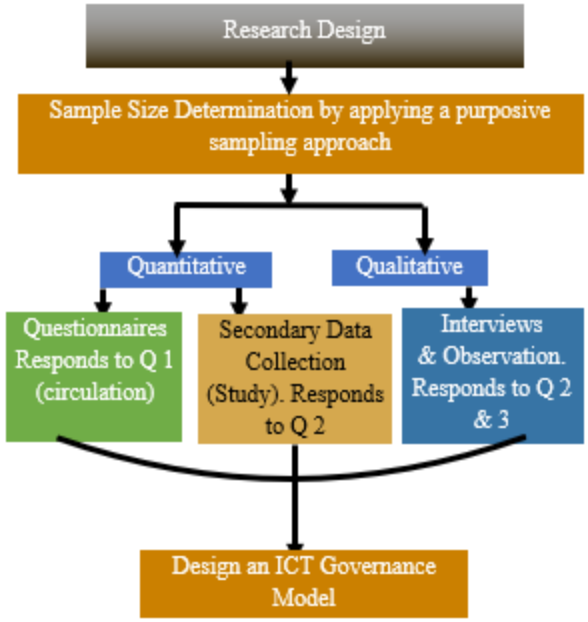

Figure 1. Research Design

A. SAMPLE SIZE

Data was collected from 37 participants from the 17 commercial banks. The research targeted a population of 255 and the sample size of 35 participant's working in the IT department for various commercial banks. The study was also done through direct observation and interview visits to various commercial banks

$$n_r = \frac{4pq}{d^2}$$

Where;

n_r = *required sample size,*

p = *proportion of the population having the characteristic,*

q = *1 – p and*

d = *the degree of precision.*

The proportion of the population (p) may be known from prior research or other sources; if it is unknown, use p = 0.5, which assumes maximum heterogeneity (i.e., a 50/50 split). The degree of precision (d) is the margin of error that is acceptable. Setting d = 0.1 0, for example, would give a margin of error of plus or minus 10%. Applying this formula to this research;

Since the researcher does not know, Gogtay (2010) recommends the researcher to assume = 0.5, and the value of q is = 1- p, d is to 90% accuracy; therefore

P = 0.5

q = 0.5 and
d = 0.1, margin of error of ± 10%.

Therefore, the sample size is calculated with a confidence level of 90%, to be.

$$n_r = \frac{4pq}{d^2}$$

$$n_r = \frac{4 * (0.5) * (1 - 0.5)}{0.1^2}$$

The sample size is calculated with a confidence level of 90%, to be $n_r = 100$

The questionnaire was grouped into four (4) sections consisting of eleven (11) questions in total. The first section, Section A, Bio Data - Please tick in the box as appropriate; Section B General Information (Please tick as appropriate); Section C, IT Governance issues; Section D challenges may have hindered successful adoption of appropriate IT governance framework. Sixteen (17) commercial banks organizations with a sample size of 285 were targeted for the questionnaires with 39 respondents from 12 commercial banks responding.

A Likert scale was used to evaluate the level of agreement or disagreement with weights ranging from 1 - 5. This was used by respondents to evaluate the level of agreement or disagreement 5(100-80%),4(80-60%),3(60-40%),2(40-20%) and 1(20-0%) Percentages were used to find the level of agreement (sum of respondents for strongly agree and agree), disagreement (sum of respondents for strongly disagree and disagree), and neutral. The collected data were checked for completeness, and then coded, captured, and analyzed using Microsoft Excel. Descriptive statistics used included tables, frequencies, weighted mean, standard deviations, and percentages.

One of the limitations of this study is that it is highly dependent on the technical people who have hands-on experience in the field. Less than twenty individuals at each targeted organization in this research could provide complete and valid information, and the researcher relied heavily on interviews as a backup method of collecting data from the heads of departments to confirm that the data collected from the respondents were valid. Having an alternative method for collecting empirical knowledge could be a way to overcome this limitation. Other limitations are related to the scope of this study.

RESULTS AND FINDINGS

A. MATURITY OF ICT GOVERNANCE

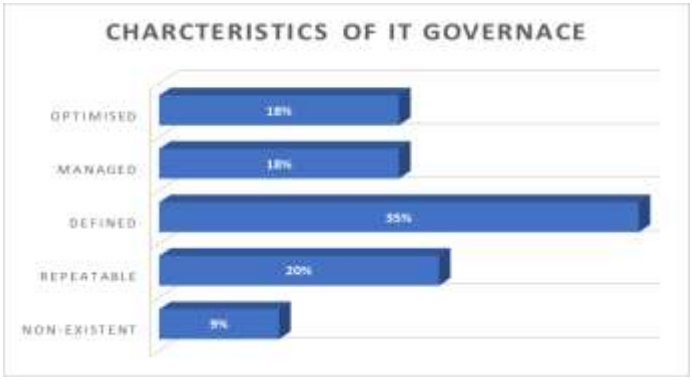

Figure 2. maturity level

Process Assessment Model tool was used to assess the maturity of ICT governance in the banks. on ISO/IEC 15504 process rating scale of (Not Achieved 0 to 15%; Partially 15% to 50% ; Largely Achieved 50% to 85% and Fully 85% to 100%). Therefore, the maturity of governance can be computed from ISO/IEC 15504 process rating scale by totalling 3 levels Defined (35%), Managed (18%)and Optimized (18%) and the total 71% . The computed 71% total falls between 50% and 85% on ISO/IEC 15504 process rating scale meaning that ICT governance is largely achieved but not fully achieved as per COBIT process as shown on figure 2 above.

B. LEVEL OF ICT GOVERNANCE

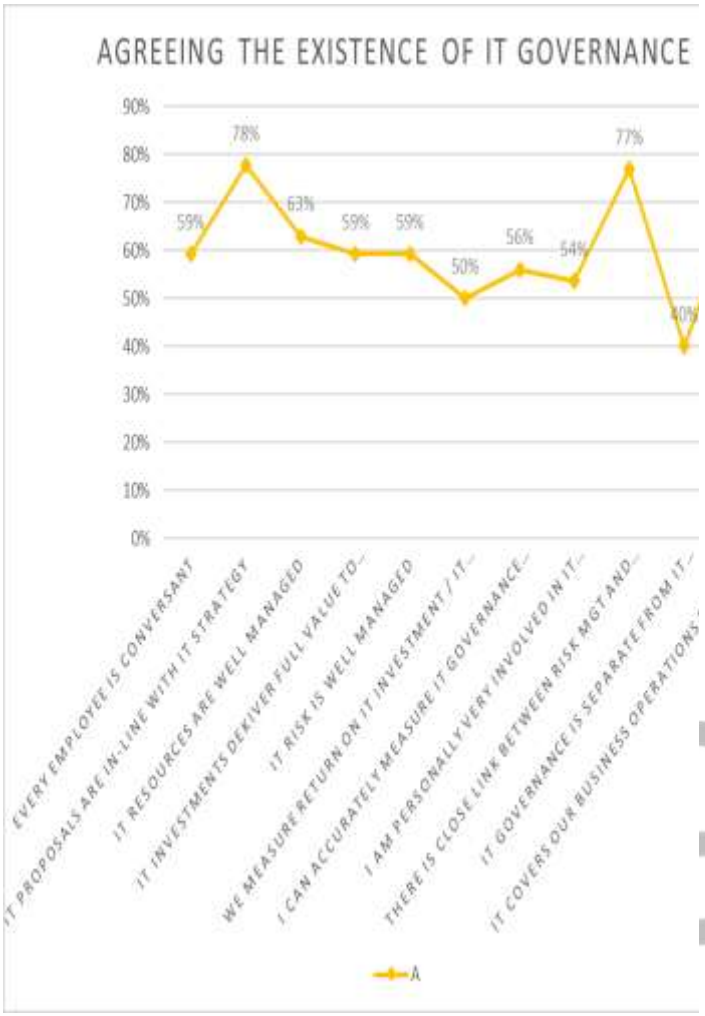

Figure 3. ICT governance level

As depicted from the figure above. ICT Governance level is above 50% except for the domain of separating management from governance. The level of governance was computed from ISO/IEC 15504 process rating scale of (Not Achieved 0 to 15%; Partially 15% to 50% ; Largely Achieved 50% to 85% and Fully 85% to 100%). Therefore, computing 50% in the scale meant that ICT governance is largely achieved but not fully achieved as the research also found that respondents were able to accurately describe ICT governance at their institution with a mean representation of 60%.

C. CORPORATE GOVERNANCE OF BANKS

Figure 4 shows the current corporate governance structure of banks in Zambia as far as ICT Governance is concerned.

As can be seen in Figure 4 all Banks do not have a Chief Information Security Officer.

	Governance Practice	Board	Chief Exective Officer	Chief Financial Officer	Chief/Director Information Officer	Chief Operations Officer	Chief Information Security Officer	Chief Risk Officer	Chief Retail Officer	Chief/Head Audit Officer	Chief/Head of Legal	Chief/Head of Compliance	Information Security Managers	Head of IT
	Structures of Banks													
1	Access Bank Zambia Limited	✓	✓	✓		✓		✓						
2	Atlas Mara Bank Zambia Limited	✓	✓	✓		✓		✓	✓	✓	✓			✓
3	Bank of China Zambia Limited	✓	✓	✓		✓		✓						
4	Barclays Bank of Zambia	✓	✓	✓		✓		✓		✓	✓	✓		✓
5	Cavmont Bank Limited	✓	✓	✓		✓		✓	✓					✓
6	Citibank Zambia Limited	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓
7	Ecobank Zambia Limited	✓	✓	✓		✓		✓					✓	✓
8	First Alliance Bank Zambia Limited	✓	✓	✓		✓		✓						✓
9	First Capital Bank Zambia Limited	✓	✓	✓		✓		✓	✓	✓	✓			✓
10	First National Bank of Zambia Limited	✓	✓	✓		✓		✓						✓
11	Indo-Zambia Bank Limited	✓	✓	✓		✓		✓	✓					✓
12	Investrust Bank Zambia Limited	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		
13	Stanbic Bank Zambia Limited	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		
14	Standard Chartered Bank Zambia Plc.	✓	✓	✓		✓		✓	✓	✓	✓	✓		
15	United Bank for Africa Zambia Limited	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	
16	Zambia Industrial Commercial Bank Limited	✓	✓	✓		✓								✓
17	Zambia National Commercial Bank	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓
	Bank of Zambia	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	

Figure 4. Corporate governance structure

Based on this finding shown in Figure 4, we are convinced that without a Chief Information Security Officer in any of the commercial Banks, it becomes impractical for any bank to implement or introduce Governance at ICT level as no one can take responsibility or ownership of this very critical role that ensures compliance with ICT governance.

To overcome, this challenge identified the study we recommend the solution or framework highlighted in figure 5.

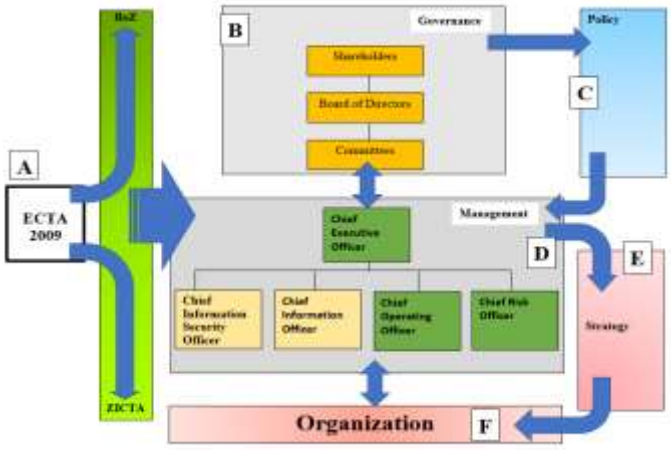

Figure 5. Proposed Bank Governance Structure Model

An explanation of this model follows. Sections highlighted by letters A – F shall be referred to as Module.

MODULE A: BoZ ACT

Through the guide of **ECTA [A]**, Central Bank (BoZ) issues a directive or ACT to compel the banks establish good corporate governance based on COBIT EDM01 process. The Board of Directors compels Management to include the Information Technology and Information Security in the Executive Management structure of the banks.

MODULE B: Governance

The proposed model bank governance aims at separating governance from management as per COBIT EDM01. Separating governance and management promotes accountability at all levels. In the context of the model, **governance** [B] is responsible for offering oversight and decision-making related to strategic direction, financial planning, and bylaws called the policies. **Policies [C]** are set of rules and laws that outline the organization's purpose, values, and structure. Governance provides a mechanism for good enterprise governance that focuses on stakeholder value by balancing performance and conformance. **Stakeholders** are the owners or shareholders and receives dividends when the organisation is making profit. Shareholders appoints the **Board of Directors** to oversight and strategic direction to Management through policies.

MODULE D: Management

Management [D] on the other hand, mainly involves controlling in alignment with the direction set by governance. The (executive) management team under the leadership of the **chief executive officer** or managing director is ultimately responsible for this. Again using the political system an illustration, it may imply the roles played by differing government parastatals, agencies and departments in Zambia. Management develops a **MODULE E** from the polices so that they may run routine decisions and administrative work related to the daily operations of the **MODULE F.**

CONCLUSION

In this paper we start by highlighting what banks do in Zambia and give a succinct explanation of the various elements of banking systems available and how they are run. We then showcase the ICT systems in use in Zambia and how these help banks to achieve their targets.

We have also shown the challenge at ICT Governance level for the banks in Zambia.

We have then concluded by showcasing the solution to overcome ICT Governance challenges in Zambia by showing our proposed framework of how the governance can be achieved. We hold the view that using this proposed model banks in Zambia can implement and achieve good corporate governance.

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