

ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE

SCHOOL OF INFORMATION SCIENCE

ASSESSMENT OF INFORMATION TECHNOLOGY GOVERNANCE MATURITY AT ETHIOPIAN AGRICULTURAL BUSINESS CORPORATION

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JUNE 2018

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A Thesis Submitted to School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Science in Information Science

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Declaration

I declare that this thesis is my original work and has not been submitted for any Degree in any other University. I have undertaken the study independently with the guidance and support of the research advisor.

Signature: _____

Yohannes Ayalew

This thesis has been submitted for examination with my approval as university advisor.

Advisor_____

Getachew Jemaneh (Ato)

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Abstract

Today in many organizations in the public sector, the use of IT has become crucial in sustaining and extending the organizations' strategies and objectives. Such use of technology has caused a critical dependency on IT thus a call for specific focus on IT governance

The aim of this study was to investigate maturity of IT Governance in Ethiopian agricultural business corporation. Mainly survey methodology was employed to investigate the perceived importance and maturity of IT Governance practices in Ethiopian agricultural business corporation in terms of IT Governance structure, processes and relational mechanism. The geographical coverage of this research was limited to Addis Ababa where the head office EABC is located. The data was gathered from IT and business managers and from senior business and IT expertise at the head offices and branch offices in Addis Ababa. A combination of stratified, simple random and purposive sampling was used to select sample respondents. Stratified used to subgroup business managers and IT expertise, Purposive sampling specifically expert sampling was used to select senior and higher IT experts while simple random was used to select sample from business managers to participate in the study. This research primarily used closed-ended self-administered questionnaire to collect data from IT/ Business managers and Senior business experts and IT professionals.

Regarding data analysis, the quantitative data was analyzed using SPSS and MS-Excel and the qualitative data was presented based on predefined themes. Finally, the survey result was complemented and triangulated with interview result and document analysis to answer the research questions.

Importance of IT Governance in Ethiopian agricultural business corporation was rated 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree). This shows that there is a strong consensus on the Importance of IT Governance practices but the actual IT Governance maturity on average was rated 0.7 (between level 0 and 1) based on generic maturity scale from 0(non-existence) to 5(optimized) i.e. some IT Governance issues were not applied at all and some were recognized and implemented in an informal and ad hoc basis with little or no evidence of standardization. Among IT Governance mechanisms, relatively IT Governance relational mechanisms was rated as more important as well as mature than that of IT Governance structure and Governance process.

Based on the result it can be concluded that IT governance maturity in Ethiopian Agricultural business corporation is between non-existent and initial stage. So, to reach desired level of IT Governance maturity and to get the best out of IT investment, recommendations are forwarded to start implementing formal IT Governance which fits to their business strategy using the existing frameworks.

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List of Acronyms

BSC	Balanced Score Card
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CIO	Chief Information Officer
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
COBIT	Control Objectives for Information and Related Technologies

COO	Chief Operation Officer
EABC	Ethiopan Agricultural Business Corporation
ERP	Enterprise Resource Planning
FDRE	Federal Democratic Republic of Ethiopia
GTP	Growth and Transformation Plan
ICT	Information Communication Technology
IEC	International Electro technical Commission
IS	Information Systems
ISACA	Information System Audit and Control Association
ISO	International Organization for Standardization
IT	Information Technology
IT BSC	Information Technology Balanced Score Card
ITAG	Information Technology Alignment and Governance
ITGI	Information Technology Governance Institute
ITIL	Information Technology Infrastructure Library
ITIM	Information Technology Infrastructure Management
ITSM	Information Technology Service Management
KGR	Key Goal Indicators
KPI	Key Performance Indicators
KRI	key Risk Indicators
ROI	Return on Investment
SISP	Strategic Information System Planning
SLA	Service Level Agreement

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CHAPTER ONE

Introduction

1.1Background of the study

The use of IT has become imperative for many organizations to meet and extend organizational objectives due to increasing demands for more efficient and cost-effective service delivery. Effective ITG provides many benefits to organizations including reduced costs and risks, increased security, enhanced business/IT alignment, organizational competitiveness, increased profit or value for shareholders and improved services and customer satisfaction. Successful enterprises recognize the benefits of information technology and use it to drive their stakeholders' value. These enterprises also understand and manage the associated risks, such as increasing regulatory compliance and critical dependence of many business processes on information technology (ITGI, 2005).

The need for assurance about the value of IT, the management of IT-related risks and increased requirements for control over information are now understood as key elements of enterprise governance. Value, risk and control constitute the core of IT governance.

This pervasive use of technology has created critical dependency on IT that calls for a specific focus on IT Governance. "IT Governance consists of the leadership & organizational structures and processes that ensure that the organization's IT sustains and extends its business strategy and objectives" (ITGI, 2005).

IT governance is the responsibility of executives and the board of directors, and consists of the leadership, organizational structures and processes that ensure that the enterprise's IT sustains and extends the organization's strategies and objectives (Grembergen ,2004).

The International Standard for Corporate Governance of ICT extends this definition to identify that IT governance is "the system by which the current and future use of ICT is directed and controlled. It involves evaluating and directing the plans for the use of ICT to support the

organization and monitoring this use to achieve plans. It includes the strategy and policies for using ICT within an organization" (ISO, 2008)

According to Institute of IT Governance (2003) ITG is "the responsibility of executives and the board of directors, and consists of the leadership, organizational structures and processes that ensure that the enterprise's IT sustains and extends the organization's strategies and objectives.

With the increase in the reliance on IT and the associated growth of IT expenditure, the notion of IT governance has become an increasingly common and prominent ideal within most organizations to ensure prudent and value-based investment in the technology (Grembergen, De Haes, 2009)

Lack of effective IT Governance will have adverse impacts on organizations in the form of its inability to comply with regulatory requirements, runaway of IT projects (Cost and/or schedule overrun), poor quality IT product/service delivery, business loss and disruption, damaged reputations, weakened competitive position, business/IT misalignment and customers' dissatisfaction to mention a few (Selig, 2008).

The Ethiopian Agricultural Businesses Corporation is a newly established corporation as a Federal Government Public Enterprise by Council of Minister Regulation Number 368/2015 in 22nd December 2015. The corporation was formed by merging five owned Enterprises; namely Ethiopian Seed Enterprise, Agricultural Equipment and Technical Services Share Company, Agricultural Inputs Supply Enterprise, Natural Gum Processing and Marketing Enterprise and Agricultural Mechanization Service Enterprise.

EABC is organized into seven main operational sectors of which four are led by Agricultural Inputs Supply D/Chief Executive Officer and the rest three are under Machineries supply and Engineering D/Chief Executive Officer. The four support giving units are directed by Corporate Human Resource D/Chief Executive and the remaining eight corporate support giving units are directly report to chief Executive Officer and there are also 19 Branches and 6 sub-Branches located in different administrative regions of the country (Ethiopian Agricultural Business Corporation , 2016)

1.2 Statement of the Problem

The use of IT has become imperative for many public-sector organizations to improve and sustain public service delivery and meet and extend organizational objectives and strategies. This critical use of IT demands for a special focus on effective IT governance in these organizations. One way to assess the IT governance success is the use of maturity measurements.

It is widely accepted that IT governance directly influences the benefits generated by organizational IT investments. Companies with effective IT governance have 20% higher profits than other companies pursuing similar strategies (Weill & Ross, 2004)

Firms with above average IT governance following a specific strategy had 20% higher ROA (return on asset) than firms with poorer governance following the same strategy (Weill & Ross, 2004).According to Weill and Ross (2004) IT governance performance measure is statistically significantly correlates with several three-year average measures of financial performance.

Bogale et.al. (2015) a survey result on 21 banks and insurance companies Showed that, IT Governance performance is strongly correlated with organization performance.

Tagel (2016) also found out that "IT Governance maturity in both private as well as public financial institutions in Ethiopia is at initial stage (level 1) and suggests future research on other IT intensive sectors. Peterson (2004) describes IT governance structure as the existence of decision making function such as a structure that includes CIO in the Board, IT steering committee, IT strategy committee, IT leadership committee.

However, as indicated in organizational structure of EABC, CIO is not in the board in EABC's organizational structure. Thus, the exclusion of CIO from the board and not considering IT as a strategic partner rather a supporting unit has triggered the research motivation. The other motivation for the study is that EABC has started implementing Enterprise resource planning which is a huge investment and needs effective IT governance for its success.

According to Debreceny and Gray (2009) Conventional ITG research mainly deals with exercise of IT arrangements or locus of decision making authority such as factors that influence these arrangements or decision rights, design and implementation of ITG mechanisms of structures, processes and strategic alignment or business/IT alignment enablers, inhibitors or critical success factors of ITG and ITG performance measurement. Little academic empirical research has conducted on ITG maturity.

According to Selig (2008), lack of effective IT Governance will have adverse impacts on organizations in the form of inability to comply with regulatory requirements, runaway of IT projects (Cost and/or schedule overrun), poor quality IT product/service delivery, business loss and disruption, damaged reputations, weakened competitive position, business/IT misalignment and customer dissatisfaction to mention a few

Having a clear picture about the current state of IT Governance maturity level relative to industry standards enables an organization to formulate a strategy either to maintain or improve its current position by identifying the gaps and taking remedial actions (De Haes & Van Grembergen, 2004). Therefore, the main purpose of this paper was to assess the ITG maturity in the context of EABC which is previously unexplored.

In line with the above the following research questions are formulated:

- What is the maturity level of IT governance practices at EABC?
- What is the perceived importance IT governance practices at EABC?

1.3 General objective

The general objective of the research is to investigate the perceived importance and maturity of IT Governance practices at EABC in terms of IT Governance Structure, Processes and Relational Mechanisms.

1.3.1 Specific objectives

- To assess the decision making right and accountability practices (Governance structure).
- To assess the level of standardization and institutionalization of IT Governance practices (Governance Processes).
- To assess the level of formal communication and cooperation between IT Governance stakeholders (Relational Mechanisms).

1.4 Significance of the study

The output of the research will help EABC in the implementation and improvement of the current IT Governance practice. The FDRE Ministry of Public Enterprises can use the findings to introduce ITG directives to other public enterprises under its Authority. The finding also can serve as a benchmark to assess IT Governance maturity in other sectors and it will also add value to the existing body of knowledge on IT Governance.

1.5 Scope and Limitation

The scope of this research was to investigate the perceived importance and maturity IT Governance in Ethiopian Agricultural Business Corporation in terms of IT Governance structure, processes and relational mechanism. Due to time and other limitations only, head office and branch offices in Addis Ababa was considered.

One of the limitations of the study was board of directors were not included in the study, beside it would have been interesting if it were multi case study of similar corporations and ministry of Government public enterprises were incorporated because evidence and findings from multiple case studies are more convincing than one case study and enhance the confidence in the results and possible replication

1.6 Organization of the research

This paper is organized into five chapters. The first chapter presents introduction, the problem statement, the objective, significance and scope of the study. In the second chapter, literature reviews on theoretical concept and related works has been presented. Chapter three describes the research methodology that this study has followed while the study findings, analysis, and presentation of the result has been discussed in the Fourth chapter. Finally, in chapter Five, conclusions and recommendations have been discussed along with suggestion of future research directions on the topic.

CHAPTER TWO

LITERATURE REVIEW AND RELATED WORKS

2.1 Overview

The purpose of this chapter is to review the related literature in IT governance. This chapter covers both theoretical and empirical literature review on IT governance, relationship between IT governance and IT management, evolution of IT governance, ITG frameworks, Importance and focus areas of ITG, ITG maturity and ITG in Ethiopia

2.1.1 Information Technology Governance (IT Governance)

In many organizations', information technology (IT) has become crucial in the support, sustainability, and growth of the business. This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT governance. IT governance consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and objectives (ITGI, 2001; Van Grembergen, 2001).

In recent years, a lot of IT governance definitions were developed. In this paper we retain the definitions of (Grembergen W. V. (2002) and ITGI (2001):

- The organisational capacity to control the formulation and implementation of IT strategy and guide to proper direction for the purpose of achieving competitive advantages for the corporation
  The Ministry of International Trade and Industry (1999)
- IT Governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives.
  IT Governance Institute (2001)
- IT Governance is the organisational capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT.
  Van Grembergen (2002)

Table 1. Definitions of IT Governance Van Grembergen (2004)

2.1.2 Evolution of IT Governance

Information Technology (IT) has been serving the enterprise as a technology provider helping businesses to perform more efficiently and to expend into new directions since its early stages. Over the years, IT has become the backbone of businesses to the point where it would be impossible for many to function without it.

According to Salle (2004), when evolving from technology providers into strategic partners, IT organizations typically follow a three-stage approach as depicted in Figure 2. Each evolutionary stage builds upon the others beginning with IT infrastructure management (ITIM). During this stage, the IT organizations focus on improving the management of the enterprise infrastructure. Effective infrastructure management means maximizing return on computing assets and taking control of the infrastructure, the devices it contains and the data it generates. The next stage, IT service management (ITSM), sees the IT organizations actively identifying the services its customers need and focusing on planning and delivering those services to meet availability, performance, and security requirements. In addition, IT is managing service-level agreements, both internally and externally, to meet agreed-upon quality and cost targets. Ultimately, when IT organizations evolve to IT business value management (IT Governance), they are transformed into true business partners enabling new business opportunities. In that stage, IT processes are fully integrated with the complete lifecycle of business processes improving service quality and business agility.

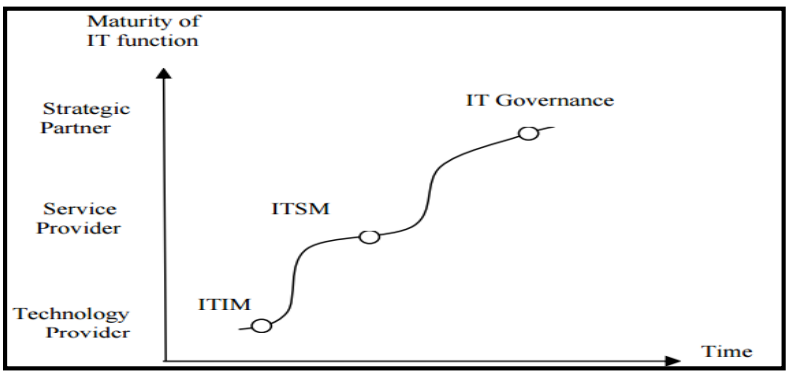


Figure 1. Evolution of IT functions within the organizations (source: Salley (2004)

2.1.3 Relationship between Corporate and IT Governance

The definition of IT Governance as proposed by the IT Governance Institute (Table1) expresses that IT Governance is the responsibility of the Board and Executive Management and that IT Governance should be an integral part of enterprise governance. How can we explain this relationship between IT Governance and Corporate Governance (Enterprise Governance)? Enterprise Governance is the system by which entities are directed and controlled. The business dependency on information technology has made it the enterprise governance issues cannot be solved without considering Information Technology. As shown in the first part of Figure 3, enterprise governance should therefore drive and set IT Governance. Information Technology in its turn can influence strategic opportunities as outlined by the enterprise and can provide critical input to strategic plans. In this way, IT Governance enables the enterprise to take full advantage of its information and can be seen as a driver for enterprise governance.

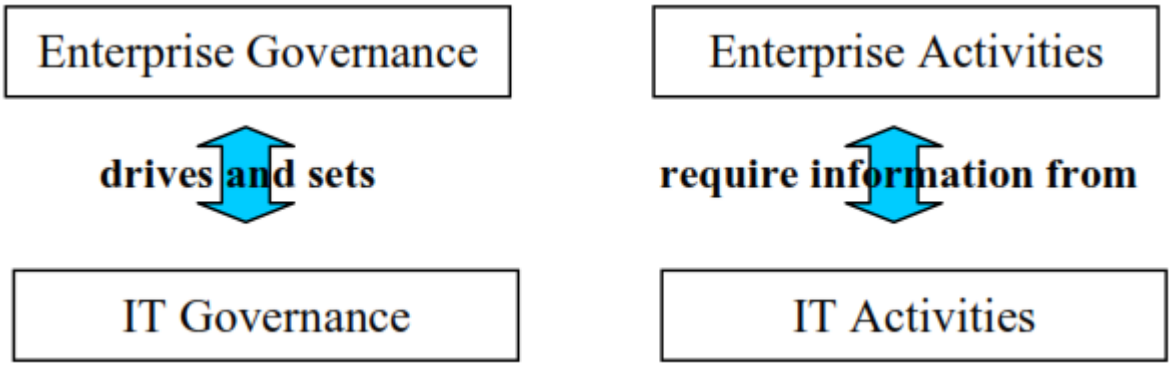


Figure 2.Enterprise Governance and IT Governance ITGI (2000)

2.2.4 Importance of IT Governance

2.2.4.1 Strategic Alignment

Henderson & Venkatraman (1993) states that, the role and impact of information technology (IT) on today's organizations has significantly changed over the last decade now, across a wide spectrum of markets and countries, Information Technology is transcending its traditional “back office” role with the potential not only to support chosen business strategies, but also to shape new business strategies.

2.1.5 IT Governance vs. IT Management

The distinction between IT governance and IT management becomes too ambiguous, enterprise executives may conflate the two terms. According to Weill and Ross (2004), governance determines who should make what decision(s), whereas management is the process of making the actual decision. IT Management is focused on the internal effective supply of IT services and products and the management of present IT operations. IT Governance in turn is much broader and concentrates on performing and transforming IT to meet present and future demands of the business (internal focus) and the business' customers (external focus) (Peterson, 2003). "This does not undermine the importance and complexity of IT management, …, but whereas elements of IT Management and the supply of (commodity) IT services and products can be commissioned to an external provider, IT Governance is organization specific, and direction and control over IT cannot be delegated to the market" (Peterson,2003)

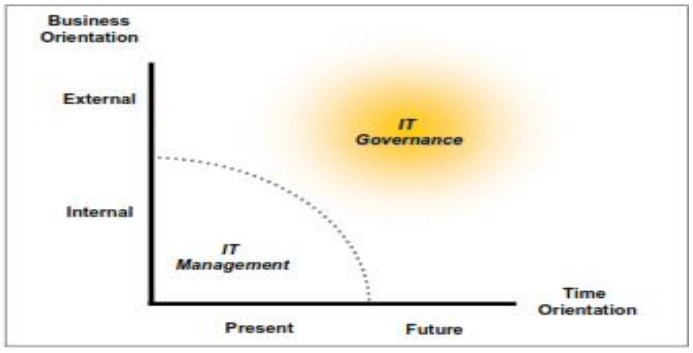


Figure 3. IT management and IT Governance Peterson(2003)

2.1.6 Focus areas of IT Governance

IT Governance is concerned about two fundamental things: IT's delivery of value to the business and mitigation of IT related risks i.e. creation and protection of values using IT. The former is driven by strategic alignment of IT with business and the latter is driven by embedding accountability in to the enterprise. Both need to be supported by adequate resources and measured to ensure that the results are obtained. According to ITGI (2008) IT Governance has five focus areas: Strategic alignment between business and IT, Value delivery, Resource Management, Risk Management, and Performance Measurement.

Strategic alignment- Achieving the goals and strategies of an enterprise through the coherent undertaking of activities by the different governance structures or management levels within an enterprise. A culture of business and IT partnership should be developed, supported by IT's interest in and understanding of the business, and sharing of technology-related issues and opportunities.

Value delivery—Creating new value for the enterprise through IT, maintaining and increasing value derived from existing IT investments, and eliminating IT initiatives and assets that are not creating sufficient value for the enterprise. The basic principles of IT value are delivery of fit-for-purpose services and solutions on time and within budget and generating the financial and non-financial benefits that were intended.

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

Resource management—Ensuring that the right capabilities are in place to execute the strategic plan and sufficient, appropriate and effective resources are provided. Resource management ensures that an integrated, economical IT infrastructure is provided, new technology is introduced as required by the business, and obsolete systems are updated or replaced. It recognizes the importance of people, in addition to hardware and software, and, therefore, focuses on providing training, promoting retention and ensuring competence of key IT personnel.

Performance measurement—Tracking the achievement of the objectives of the enterprise's IT-related services and solutions and compliance with specific external requirements. Without establishing and monitoring performance measures, it is unlikely that the previous focus areas will achieve their desired outcomes. It provides a link back to the other focus areas by monitoring that the required direction is being followed and creates the opportunity to take timely corrective measures, if needed.

2.1.7 IT Governance Frameworks

How can enterprises pragmatically implement IT Governance in an organization is one of the hot topics in IT Governance research. When designing IT Governance for an organization, it is

important to recognize that it is contingent upon a variety of sometimes contradictory internal and external factors. Determining the right IT Governance mechanisms is complex, what works for one company may not necessarily work for another even if they are in the same industry (DeHeas & Van Grambergn, 2008).

Though there is no single, complete, off-the-shelf IT Governance framework, there are a number of well-known frameworks available that can serve as useful starting point to tailor a framework that can fit one's organization strategy and culture. As a result, organizations can develop their own IT Governance models by mixing-and-matching complimentary practices from existing frameworks. Currently there are different IT Governance frameworks and standards that are tested, accepted and implemented successfully in many enterprises globally. Some of the well-known IT Governance frameworks like COBIT, ITIL and ISO 27000 are discussed briefly and comparison also made between them.

2.1.7.1 Control Objectives for Information and related Technology (COBIT)

Control Objective for Information and related Technologies (COBIT) is a standard which is developed by the Information Systems Audit and Control Association (ISACA). It was originally released in 1996 and has different versions since then. COBIT version 4.1 organizes IT Governance objectives and good practices by four domains (Plan & Organize, Acquire & Implement, Deliver & Support, and Monitor and Evaluate), 34 high-level control processes, and more than 300 corresponding practices. In addition, the framework has key performance indicators, critical success factors and maturity evaluation model for each activity.

- **Plan and Organize.** This domain covers a whole range of topics. Included are the strategy and tactics used by Information Technology to achieve business objectives, strategy planning, strategy management, strategy communication, risk management, and resource management, which insures that the required infrastructure and human capitals are in place.

- **Acquisition and Implementation.** For IT to realize its strategy, it must identify, develop or acquire, and implement solutions to business processes. In addition, it must manage the lifecycle of existing systems through maintenance, enhancements, and retirements.

- **Delivery and Support.** IT delivers services to its customers (users). This domain focuses on service and support issues including security, performance, and training.
- **Monitor and Evaluate.** All IT processes need to be periodically assessed for their quality and compliance with control requirements. This domain addresses management's oversight of the institutions controls processes.

Though COBIT is becoming de-facto IT Governance framework, there is a relatively little academic literature that has been published investigating its utilization (Ridley, Young, & Carroll, 2004). In addition, some researchers (Simonsson, Johnson, & Wijkström, 2007) think that one of the biggest disadvantages with COBIT is that it requires a great deal of knowledge to understand the framework before it could be applied as a tool to support IT Governance or to assess the IT organization's performance. There are also other weaknesses, such as lacks of guidance, complex structures and the limited number of case studies on COBIT.

2.1.7.2 IT Infrastructure Library (ITIL)

ITIL is a consistent and comprehensive best practice for IT service management, promoting a quality approach to achieving business effectiveness and efficiency in the use of IT. It is commissioned by the British Government's Central Computing and Telecommunications Agency (CCTA) to reduce IT costs and improve performance and efficiency. ITIL provides the foundation for quality IT service management. It gives comprehensive best practices of how to plan, design and implement effective service management capabilities, and describes detailed approaches, functions, roles and processes upon which organizations may base their own practices. Organizations can increase the availability of services (this leads to increase revenue) and customer satisfaction by implementing ITIL. ITIL focuses more on continuous service improvement rather than strategic aspects of the business.

2.1.7.3 ISO/IEC 38500;2008

ISO/IEC 38500 was prepared by Joint Technical Committee ISO/IEC JTC1, Information technology, SC40, IT Service Management and IT Governance. The objective of ISO 38500 is to provide a structure of principles for directors (including owners, board members, directors, partners and senior executives) to use when evaluating, directing and monitoring the use of IT in

their organizations. This standard provides a structure for effective governance of IT to assist those at the highest level of organizations to understand and fulfill their legal, regulatory and ethical obligations regarding their organizations' use of IT. The scope of the standard is to provide guiding principles for directors of organizations on the effective, efficient and acceptable use of IT within their organizations. It is applicable for all organizations, from the smallest to the largest, regardless of purpose, design or ownership structure.

2.1.8 Elements of IT governance

Information Technology governance is an instrument to control and manage the IT resources such as infra-structure, technology and people in any kind of organizations (De Haes and Van and Grembergen, 2009). Besides, IT governance helps the corporate governance of the organization assisting the strategy and achieving objectives, goals and mission. A framework of IT governance may be deployed with a set of the mechanisms such as structures, processes, and relational mechanisms (De Haes and Van Grembergen 2009; Peterson 2004; Weill and Ross 2004). The aim of IT governance mechanisms is to enhance business/IT alignment with the positive association of IT governance performance.

As proposed by work from amongst others Peterson (2003), Weill and Ross (2004), Van Grembergen (2008), IT governance can be deployed using a mixture of various structures, processes, and relational mechanisms.

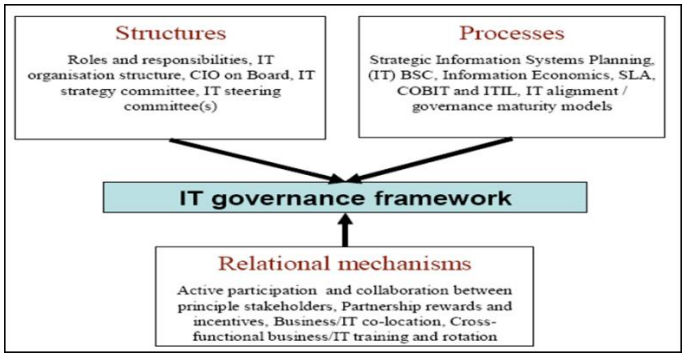


Figure 4. Necessary elements of IT Governance Framework De Haes & Van Grembergen (2008)

IT governance consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and objectives (ITGI, 2003).

2.1.8.1 IT Governance Structure

IT governance structures include “structural (formal) devices and mechanisms for connecting and enabling horizontal, or liaison, contacts between business and IT management (decision-making) functions (Peterson, 2003) (e.g. Steering committees).

2.1.8.2 IT Governance Processes

IT governance processes refer to “formalization and institutionalization of strategic IT decision making or IT monitoring procedures” (Peterson, 2003) (e.g. IT balanced scorecard). The relational mechanisms finally are about the active participation of, and collaborative relationship among, corporate executives, IT management, and business management” (Peterson, 2003) (e.g., training). According to Weill and Ross (2004) IT governance Processes refer to planning and strategic decision making of IT based on practices from ITIL, COBIT or Balanced Scorecard to name some examples, including techniques and appropriate tools to align business and IT for a good performance

2.1.8.3 IT Governance Relational Mechanisms

Relational mechanisms include the participation and interaction between IT and the business. An appropriate communication and knowledge sharing with learning and coaching is important (De Haes and Van Grembergen 2008; Weill and Ross 2004). Moreover Peterson (2003) states that relational mechanisms are all about the active participation and collaborative relationship among, corporate executives, IT management, and business management

2.2 IT Governance Maturity

Development and maintenance of the capability to perform key IT processes is one aspects of IT Governance. The IT function, working with other business units, has to build a variety of capabilities to meet organizational strategy and objectives (Debreceny & Gray, 2009). A maturity model provides a pragmatic and structured means of measuring how well developed the processes are against a consistent and easy-to understand scale. However, according to ISACA (2006) IT Governance is not being properly managed and measured. In many instances the desired benefits of IT Governance are not clearly defined upfront, which makes it difficult to measure them and

challenging to gain acceptance for changes that are required to introduce better IT Governance practices. Formalized methods for the identification and development of process maturity have been in existence for many years through the work of the Software Engineering Institute's Capability Maturity Model (CMM) and Capability Maturity Model Integration (CMMI). The original CMM is a process improvement framework developed at the Carnegie-Mellon Software Engineering Institute that was designed to describe the level of maturity of a software development process (ITGI, 2005). The CMM was developed further into CMMI. The original Maturity Model has five levels ranging from level 1 (initial) to level 5 (Optimized). COBIT version 4.1 adapted CMMI terminologies in its six levels of IT Governance maturity, by adding Level 0 (Non-existent), (See Figure 6 and 7).

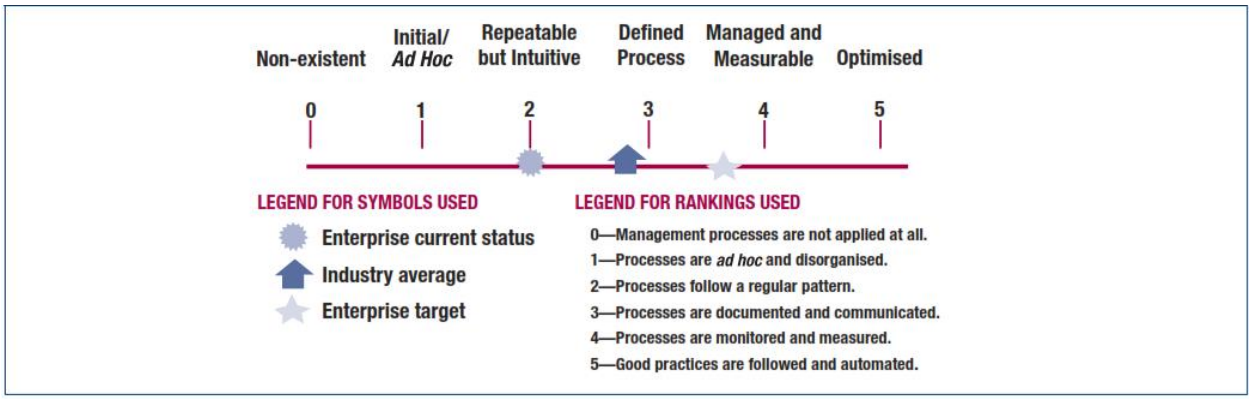


Figure 5. Scale of ITG Maturity Model ITGI (2005)

0 Non-existent—Complete lack of any recognisable processes. The enterprise has not even recognised that there is an issue to be addressed.

1 Initial/*Ad Hoc*—There is evidence that the enterprise has recognised that the issues exist and need to be addressed. There are, however, no standardised processes; instead, there are *ad hoc* approaches that tend to be applied on an individual or case-by-case basis. The overall approach to management is disorganised.

2 Repeatable but Intuitive—Processes have developed to the stage where similar procedures are followed by different people undertaking the same task. There is no formal training or communication of standard procedures, and responsibility is left to the individual. There is a high degree of reliance on the knowledge of individuals and, therefore, errors are likely.

3 Defined Process—Procedures have been standardised and documented, and communicated through training. It is mandated that these processes should be followed; however, it is unlikely that deviations will be detected. The procedures themselves are not sophisticated but are the formalisation of existing practices.

4 Managed and Measurable—Management monitors and measures compliance with procedures and takes action where processes appear not to be working effectively. Processes are under constant improvement and provide good practice. Automation and tools are used in a limited or fragmented way.

5 Optimised—Processes have been refined to a level of good practice, based on the results of continuous improvement and maturity modelling with other enterprises. IT is used in an integrated way to automate the workflow, providing tools to improve quality and effectiveness, making the enterprise quick to adapt.

Figure 6. Generic Maturity Model from ITGI (2007)

2.3 Related works

Most studies on IT Governance focuses on how organizations can implement IT Governance. To the best of the researcher knowledge there is no study conducted locally which addressed maturity of IT Governance in the Public sector of Ethiopia. However, there are studies which were conducted locally as well as internationally which addressed some aspects of this study.

Liu and Ridley (2005) conducted a study on "IT Control in the Australian public sector: an international comparison". The aim of the research was to establish a reference benchmark on IT Control and Governance maturity in Australian public-sector organizations and to compare the result against international benchmark. They used 15 most important IT Governance processes. senior IT/IS managers to self-assess the level of IT governance maturity in their respective organization.

The result showed that IT Governance maturity level in Australia public sector was between 2.5 and 3.5 based on a generic maturity scale from 0(non-existence) to 5(optimized). Since the international benchmark fluctuates between 2 and 3, the researchers concluded that, the Australian public sector performed better than the international benchmark.

In a related study Ali and Nisar (2015) conducted a study on "The existing state of Governance Maturity in the Public-Sector Organizations of Less Developed Country: A case of Pakistan". The aim of the study was to investigate IT governance maturity in the selected six Pakistani Public-Sector organizations through case study research using 15 most important IT processes of COBIT framework and compare with the public sector of a developed country (Australia), a developing country (Tanzania) and the public sector international benchmark. The main data collection technique was the focus groups discussion and interview involving senior managers representing both business and IT management. A total of 28 respondents participated in the focus group sessions and interviews. The results indicated that the Pakistan public sector organizations performed better than the developing country but poorer than the developed country and the international benchmark.

Nfuka and Rusu (2010) conducted a study on "IT Governance Maturity in the Public Sector Organizations in a Developing Country: The Case of Tanzania". The aim of the study was to assess

IT process maturity level in Tanzanian public sector organizations and to compare the result with similar benchmark in public sector in a developed country like Australia done and internationally in a range of nations by ISACA.

Five public sector organizations were selected for the case study and the data collection was done through structured interview using focus group discussion where business and IT people involved in each organization. The researchers used the 15 most important COBIT IT governance practices which were used in the previous research along with Generic maturity model.

The result showed that, the average IT Governance maturity of Tanzanian public sector organizations was 1.95 based on a generic maturity scale 0(non-existence) to 5(optimized). The IT Governance processes maturity level ranges between 1 and 2.3 with most (60%) below 2 (Repeatable). This shows that IT Governance maturity level in Tanzanian public sector organizations was found between initial and repeatable stage.

As compared to the previously done case studies in both Australia and Internationally in a range of nations, IT Governance maturity in Tanzania public sector organizations was relatively small. On average the IT Governance maturity in Australia and internationally were 3 and 2.5 respectively, where as it was around 1.95 in Tanzanian public sector organizations. This shows that the variation with the public sector in Australia is mostly 1 (a full maturity level) and internationally is above 0.5 (a half maturity level). According to the generic maturity model.

DeHeas and Van Grambergn (2008) conducted a study "Information Technology governance best practices in Belgian Organizations". The aim of the research was to investigate how organizations are implementing IT Governance and its impact on business/IT alignment. It is an in-depth research executed on 10 Belgian financial institutions at the Information Technology Alignment and Governance (ITAG) Research Institute.

The research used triangulation of literature research, pilot case research, Delphi method research, benchmark and extreme case research. An expert panel composed of 22 consultants, senior IT and business professionals are asked to rate "perceived effectiveness", 0=not effective, 5=very effective and the "perceived ease of implementation", 0=not easy, 5=very easy of a predefined set of IT Governance practices. They were also asked to provide the top ten most important Information Technology Governance practices, which are in their opinion crucial elements or a minimum baseline of an optimal IT governance mix.

After measuring alignment in 10 Belgian financial service organizations, result turn out to be the overall business/IT alignment maturity is 2.69 on a generic maturity scale 0(non-existence) to 5(optimized). Their findings further suggest that perceived effectiveness of IT Governance structure and process are generally equal. IT Governance structure was rated as easier to implement than process. It also appeared that relational mechanisms are very important in the beginning stages of an IT Governance implementation project and become less important when the IT Governance embedded into day-to-day operations.

In a related study Kaur, et.al (2012) conducted a research entitled: "The Importance and Effectiveness of Information Technology Governance Practices: A Malaysian Private Organizations Perspective". The purpose of the study was to investigate how private organizations in Malaysia perceive IT Governance practice and its effectiveness.

The researchers used cross sectional survey involving senior IT personnel (CIO or IT Directors) from various industries. The survey question was mailed to respondents to self-assess the level of IT Governance importance and effectiveness using a seven-point Likert scale with "perceived effectiveness" (1=very in effective, 7=very effective) and "perceived importance" (1= not at all important, 7= very important).

The result showed that the average level of observed importance and effectiveness of IT Governance in Malaysian private organization was 5.28 and 4.91 respectively on scale of 1 to 7.

Among IT Governance mechanisms (Structure, Processes and Relational mechanism), on average IT Governance Structure ranked as more important as well as effective followed by IT Governance processes and Relational Mechanism.

It would be more interesting if the study compares the level of IT Governance importance and maturity between different sectors.

Tagel (2016) conducted a research entitled "Maturity of Information Technology Governance in the Financial Sector of Ethiopia; a Comparative Study". The aim of the research was comparing IT Governance maturity between private and public financial institutions. The study used mainly survey methodology and used self-administered questionnaires for data collection targeting senior business and IT leaders along with Interview of selected IT leaders for complement and triangulation purpose. Regarding data analysis, the quantitative data was analyzed using SPSS and the qualitative data was presented based on predefined themes.

The result shows that Importance of IT Governance in the financial sector of Ethiopia was rated 4.2 based on a scale from 0(strongly disagree) to 5(strongly agree). This shows that there is a strong consensus between business and IT leaders on the Importance of IT Governance practices. however, the actual IT Governance maturity was rated 1.2 (level 1) based on generic maturity scale from 0(non-existence) to 5(optimized) i.e. IT Governance issues were recognized but practiced in an informal and ad hoc basis with little or no evidence of standardization.

The survey result also shows that, relatively privately owned financial institutions rated (1.3) reached better level of IT Governance maturity than that of publicly owned (0.94) similarly though IT Governance maturity was rated at initial stage (level 1) in the financial sector of Ethiopia, the banking sector (1.4) reached better level of maturity than the insurance sector (0.7) based on generic maturity scale from 0(non-existence) to 5(optimized).

Mario Spremic and Hrvoje Spremic (2011) conducted a research in title "Measuring IT Governance Maturity – Evidences from using regulation framework in the Republic Croatia".

The aim of the study was to investigate the impact of national IT Governance regulatory requirements and regular IS audit on IT Governance initiatives in Croatia. To mitigate IT related risks, Croatian National Bank (CNB) obliged all credit institutions (Banks) to perform both internal and external IS auditing regularly and to report the result both to the regulator (CNB) as well as the company's board. Credit institutions are expected to implement all recommendations forwarded by external IS auditors.

The researchers conducted a serious of in-depth interview with responsible experts (CIOs and board members) in five selected small Croatian Banks for consecutive three years between 2008 and 2010.

The result showed that, based on a generic maturity scale from 0(non-existence) to 5(optimized), on average IT Governance maturity improved from 2.4 (repeatable) in the first year to 3.0 (defined) in the third year. The researcher concluded that national IT Governance regulatory framework and regular IS audit can help IT Governance maturity.

The research considered only five smaller credit institutions (banks). It would be better to take representative sample from medium as well as large credit institutions to make the result credible.

Senait (2011) on her thesis in titled "IT Governance in Ethiopian Financial Sector: a case Analysis of Commercial Bank of Ethiopia" uses qualitative research method to investigate the status of IT Governance at Commercial Bank of Ethiopia (CBE) using COBIT framework with regard to strategic alignment, risk management , IT resource management and performance measurement. She found that IT Governance status at CBE is at a very low level even though there is awareness; practically there is no standardized way of governing IT. Regarding alignment of IT with business there is visible gap (misalignment of IT with business); there is also a gap in managing IT resource and risks. Furthermore she pointed out the absence of objective performance measurement methods like IT BSC. There is no key performance indicators (KPI), key goal indicators (KGI) and key risk indicators (KRI) defined a head to measure as well as to monitor the performance of IT.

The title clearly demonstrates that it is a case study on CBE; regarding maturity of IT Governance at CBE the result is presented as “very low” which is vague and subjective to interpret (it does not say anything whether it was at initial , not-existent or repeatable stage?). It would be more comprehensible if it was represented objectively using generic maturity scale 0 (non-existent) to 5(optimized) which makes it easy to compare with competitors or industry average (benchmark).

Guldentops, et al. (2002) conducted an international survey to establish a reference benchmark on IT Control and Governance maturity of public and private sector organizations. By interviewing 20 senior IT and audit practitioners they have selected 15 most important IT Governance processes out of the 34 COBIT processes. Web-based survey methodology was used to collect data from a wide array of organization (in terms of size, sector and geographical location) across the world. As a result 168 valid responses were received.

The survey concluded that, financial institutions and multinational (global) companies showed a better IT control and Governance maturity between 2.5 (repeated) and 3(defined) respectively than the average maturity of all enterprises which floats between 2 and 2.5 based on a generic maturity scale from 0(non-existence) to 5(optimized). In terms of size: smaller companies were at lower maturity level compared to larger companies. For large companies, the maturity levels of the processes hovers around 3, where as for small companies the maturity level is situated around 2. In terms of business sector: the financial sector has in general a relatively high maturity level compared to others. Since financial institutions can’t afford down time ensuring secured and continuous service processes showed high maturity relative to other processes.

Author	Objective	Method	Finding	Remark
DeHeas & Van Grambergn (2008)	The impact of IT Governance on business and IT alignment in Belgian financial institutions.	Mixed approach	The overall business IT alignment maturity in Belgian financial institution is between repeatable (2) and defined (3) stage on a scale of 0 to 5.	It would have been better if these results were compared with some other sectors in Belgium or in similar sector internationally in a range of nations.
Nfuka and Lazar (2010)	To Analyze IT Governance Maturity in Tanzania Public Sector Organizations and to compare it with previously done research internationally and in Australia	Mixed Approach	IT Governance maturity of Tanzanian public sector was rated1.95 which is way behind as compared to Australia (3) and international (2.5).	Only public sector was considered in the study, private institutions should have been incorporated.
Tagel (2016)	To Assess IT Governance maturity between private and public financial institutions in Ethiopia.	Qualitative and Quantitative research	Privately-owned banks have higher IT Governance and process maturity than that of publicly-owned banks.	It would be more interesting if results were compared with international benchmarks
Kaur, et.al (2012)	To investigate how private organizations in Malaysia perceive the importance of IT Governance and its current effectiveness (maturity)	Quantitative research	The average level of observed importance and effectiveness of IT Governance in Malaysian private organization was rated 5.28 and 4.91 respectively on a scale of 1 to 7.	It would be more interesting if public sector is incorporated and comparison is made between different sectors.
Amanat Ali and Asim Nasir (2015)	To assess IT governance maturity in the selected six Pakistani Public-Sector organizations.	Qualitative	Pakistan public sector organizations performed better than the developing country but poorer than the developed country and the international benchmark.	Only public sector was considered in the study, private institutions should have been incorporated.
Senait (2011)	To examine IT Governance status at CBE in terms of strategic alignment, risk management , IT Resource management and performance measurement.	Qualitative research	Very low IT Governance status at CBE. There is also misalignment between business and IT, IT risk and resources are not managed well.	The result does not show objectively IT Governance maturity at CBE (whether it is at initial or repeatable stage).
Mario Spremic and Hrvoje Spremic (2011)	To investigate the impact of national IT Governance regulatory requirements on IT Governance initiatives	Qualitative research	Due to national IT Governance regulation compliance and regular IT audit, IT Governance maturity of Croatian banks substantially improved.	It would be more interesting if the results were compared with the other sector.

Table 2 Summary of Related works

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter covered the research design, research approach (methodology), the target population and sampling method, method of data collection, development and validation of the research instrument, and method and tools of data analysis.

3.1 Research Design

Research design is a blue print to conduct a research study, which describes what research approach (methodology) to follow, the target population, sample size and method, and tools of data collection and analysis used to answer the research question. In general, the function of a research design is to ensure that the evidence obtained enables the researcher to answer the research questions as unambiguously as possible (Kotari, 2004). In this research descriptive research specifically survey research was used, because it enables the researcher to describe the current state of IT Governance maturity at the selected setting.

3.1.1 Research Methodology/ Approach

The selection of research approach depends on the research problem, research questions and the objectives of the research. According to (Kothari, 2004) there are three approaches to conduct a research: qualitative, quantitative and mixed approaches

In this research descriptive research specifically, survey research was used, because it enables the researcher to describe the current state of IT governance in terms of the perceived importance and maturity IT governance at the selected Public institutions.

This research has employed a mixed-method approach, which combines quantitative and qualitative methods or techniques, Primary data was collected using self-administered structured questionnaire and semi-structured interview. The quantitative data which was collected using questionnaire was analyzed using Statistical package for social science (SPSS version 20) and complemented with data from interview and key document review to answer the research questions.

3.1.2 Study Setting

The geographical coverage of this research is limited to Addis Ababa where the head office EABC is located. The data was gathered from IT and business managers and from senior business and IT expertise at the head offices and branch offices in Addis Ababa.

3.1.3 Target Population and Sampling Method

The sample frame of this research was EABC Head office and Branch offices in Addis Ababa. A combination of stratified, simple random and purposive sampling was used to select sample respondents. Stratified used to subgroup business managers and IT expertise, Purposive sampling specifically expert sampling was used to select senior and higher IT experts while simple random was used to select sample from business managers to participate in the study.

Sample size was determined by Yemane (1967) sample size determination formula with 95% confidence level and .05 precision level. This formula is chosen because it is appropriate and commonly used formula to determine sample size for both large and small population

$$n = N/(1 + N(e^2))$$

As a result, 36 senior IT and business experts were purposively selected and 34 business managers were selected randomly and asked to fill the self-administered questionnaire within one month (from March 25 to April 25, 2016). Once the questionnaire was distributed after a brief discussion with respondents, follow-up was made through telephone using contact person at each branch office.

3.1.4 Data Collection Method

Both primary as well as secondary source of data were used to conduct the research. Primary data was collected using self-administered questionnaire and semi structured interview. Secondary source of data, like IT organization structure, Corporate governance structure, job descriptions, IT strategy plan, policies, procedures and annual reports were used to triangulate as well as complement the survey result. Since multiple ways of gathering information can supplement each other and hence boost the validity and dependability of the result.

Primary data were collected using self-administered structured questionnaire and semi-structured interview. The quantitative data which is collected using questionnaire was analyzed using SPSS

and complemented with data from interview and key document review to answer the research questions.

3.1.5 Data Collection Instrument Development and Validation

3.1.5.1 Instrument Development

As it was mentioned in the method of data collection part, this research primarily used closed-ended self-administered questionnaire to collect data from IT/ Business managers and senior business experts and IT professionals. Questionnaire was preferred because it is an efficient and economical way of gathering data from a large number of respondents anonymously (encourage respondents to provide genuine information) as well as relatively easy to analyze the data (Kotari, 2004).

The self-administered questionnaire contains forty-three closed-ended items, of which thirty-seven of them were adopted from DeHeas and Van Grambergn (2008), one additional questions which were recommended by expertise during content validity also incorporated in to the list. Regarding the adopted questions, the researcher contacted the authors of the instrument through email address and received a permission to use the survey instrument (See appendix).

The questionnaire uses six-point Likert scale (0 to 5) to collect respondent's opinion on the importance and maturity of IT Governance practices in their organization. Regarding importance of IT Governance, the scale was 0(Zero) being the lowest score, 'strongly disagree' and 5(Five) the highest score, 'strongly agree'. Regarding maturity of IT Governance practices, the scale was 0(Zero) being the lowest score "nonexistence" and 5(Five) the highest score, "Optimized" (ITGI, 2005). In addition to the questionnaire, semi-structured interview questions were developed from IT Governance related literature to complement and triangulate the findings of the survey. Semi-structured interview was preferred because it enables the researcher to elicit a great amount of firsthand data from knowledgeable key informants like CIO or parallel position

3.1.4 Validity and Reliability of the instrument

The draft questionnaire was distributed for academicians and experts to modify unclear/ ambiguous questions, and also to get rid of unnecessary questions and include additional questions if any. And pilot test was conducted to test the reliability of the instrument.

Reliability is concerned with the ability of the data collection instrument to provide consistent result (Kotari, 2004). Once the final data collection instrument was approved by the advisor, a pilot test was conducted using 20 respondents. According to Connelly (2008), a pilot study sample should be at least 10% of the sample projected for the study. In this research 29% of the sample size was used to test the reliability of the instrument (questionnaire).

The value of alpha normally ranges between 0 and 1. The closer the Cronbach's alpha coefficient is to 1 the greater the internal consistency of the items. According to George and Mallery (2003) alpha coefficients above 0.70 are considered acceptable. As shown on Table 2, the internal reliability analysis of the test produces Cronbach's alpha coefficients of .798 which confirms that the survey instrument was reliable and can produce consistent results.

Case Processing Summary					
		N	%	Reliability Statistics	
Cases	Valid	20	100.0	Cronbach's Alpha	N of Items
	Excluded[a]	0	0.0	.798	37
	Total	20	100.0		
a. Listwise deletion based on all variables					

Table 3. Cronbach's alpha result of the pilot test (Source: reliability test 2018).

3.1.6 Methods of Data Analysis

The quantitative data which were collected through questionnaire was analyzed with descriptive statistics using statistical package for social scientists (SPSS version 20). The qualitative data which were collected from IT leader through interview was coded and analyzed using closed coding method based on predefined themes (thematic analysis). Then the result was verified by the respondent and presented under the theme: IT Governance structure, processes, relational mechanism and Business/IT alignment. To sum, the survey result, analysis of the qualitative data and key documents were triangulated and complemented each other to answer the research questions.

3.1.7 Summary of the Methodology

The purpose of the study was to investigate IT Governance maturity in Ethiopian Agricultural Business Corporation (EABC). Mainly a survey research approach was employed to answer the research questions. Primary data was collected using self-administered questionnaire and semi-structured interview. The quantitative data which was collected using questionnaire was analyzed using SPSS and MS-Excel and complemented and triangulated with data from interview and key document review to answer the research questions.

CHAPTER FOUR
DATA PRESENTATION AND INTERPRETATION

4.1 OVERVIEW

A total of 70 self-administered questionnaires were distributed to collect data on the perceived importance and maturity of IT Governance from business and IT executives/professionals. Out of the 70 questionnaire, 64 returned and six of them failed to return. This shows that response rate of 91% achieved.

Regarding Demographic information (Gender, Age, Educational Status, Work Experience, Position and IT Governance related training and/or certificates) of respondents were summarized & presented in a table and interpreted accordingly. The perceived importance and maturity of IT Governance was presented based on IT Governance Structure, Processes and Relational Mechanisms using chart and frequency table. The most and least mature IT Governance practices also discussed.

Then findings of IT Governance maturity were discussed alongside with related works done previously by other researchers

4.2 Data Presentation

4.2.1 Demographic Data Presentation

Six demographic variables namely Gender, Age, Education Status, Work Experience, Position and IT Governance related training /certificates were used to collect respondent's profile from thesample.

		Frequency	Percent	Valid Percent
Gender	male	49	76.6	76.6
	female	15	23.4	23.4
	Total	64	100.0	100.0
Age	25-30 years	8	12.5	12.5
	31-40	25	39.1	39.1
	41-50	20	31.3	31.3
	more than 50 years	11	17.2	17.2
	Total	64	100.0	100.0
Education level	Bachelor Degree	34	53.1	53.1
	Master's Degree	30	46.9	46.9
	Total	64	100.0	100.0
Current job position	CIO/IT Director	1	1.6	1.6
	IT Professional	11	17.2	17.2
	Business Manager	31	48.4	48.4
	Business Professional	21	32.8	32.8
	Total	64	100.0	100.0
Work Experience	< 2 years	5	7.8	7.8
	Bewteen 2 and 5 years	13	20.3	20.3
	Between 5 and 10	24	37.5	37.5
	> 10 years	22	34.4	34.4
	Total	64	100.0	100.0
IT Governance Related Trainings/certificates	ITIL	6	9.4	9.4
	none	58	90.6	90.6
	Total	64	100.0	100.0

Table 4. Respondents' Demography (source survey results 2018)

The findings as presented in Table 3, Male formed 76.6% of respondents and Female 23.4%. This shows that there is gender gap at the management and senior positions in EABC. Regarding Age, majority of the respondents (39% of them) fall in the age between 31 and 40 followed by 31 % of them between the age of 41 and 50. Considering education 47 % of them had master's degree and 53% of them had bachelor degree. When it comes to work experience 35% of respondents have between 5 and 10 years of experience and only 9% of the respondents have training on ITIL. Furthermore, the table shows that 48% of respondents were either business managers followed by business professionals (33%).

Respondents were also presented with six-point Likert scale questionnaire, where 0(Zero) being the lowest and 5(Five) the highest score and asked to choose the level that best describe the perceived importance and maturity of 14 IT Governance Structure, 12 IT Governance Process and 11 IT Governance Relational Mechanisms questions at their institutions. Then the survey result was complemented and triangulated with semi structured interview with IT leaders and the result is presented below.

4.2.2 IT Governance Structure

As shown on Figure 8, 97% of respondents were either strongly agree or agree on the importance of IT Governance Structure practices. However, when it comes to IT Governance Structure maturity, 80% of respondents said that it is either at initial stage (level 1) or not recognized at all (level 0) in EABC. Only 10 % of respondents rated IT Governance structure maturity either at defined (level 3) or managed stage (level 4) in EABC based on a generic maturity scale from 0(non-existence) to 5(optimized).

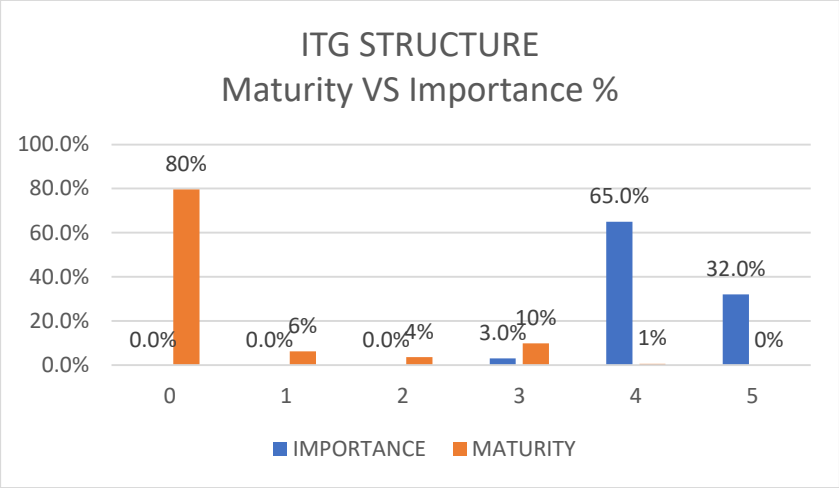


Figure 7. ITG Structure Importance vs Maturity at EABC (source: survey result 2018)

As shown on Table 4, the average perceived importance of IT Governance Structure practices was above 4 based on a scale from 0(strongly disagree) to 5(strongly agree), this shows that both business and IT managers as well as professionals strongly agree on the importance of IT Governance Structure practices. Besides, S1 (IT organization structure with clearly defined roles and responsibilities), S5 (CIO/IT Director is full member of executive team) were rated the most important IT Governance structure practice with a mean of 4.97 and 4.69 and standard deviation of 0.175 and 0.467 respectively where as S3 (IT Steering committee) and S12 (IT Audit committee), were rated the least important IT Governance structure practice with a mean value of 4.14 and 3.95 respectively,

Statistics															
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
N	Valid	64	64	64	64	64	64	64	64	64	64	64	64	64	64
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		4.97	4.16	4.14	4.23	4.69	4.28	4.23	4.23	4.22	4.2	4.23	3.95	4.19	4.22
Median		5	4	4	4	5	4	4	4	4	4	4	4	4	4
Mode		5	4	4	4	5	4	4	4	4	4	4	4	4	4
Std. Deviation		0.175	0.648	0.587	0.463	0.467	0.487	0.463	0.427	0.417	0.406	0.427	0.602	0.432	0.417

Table 5 Perceived Importance ITG Structure at EABC (Source: Survey result 2018)

Regarding maturity of IT Governance structure practices as shown on Table 5, out of the fourteen practices only two of them namely SM1 (IT organization structure with clearly defined roles and responsibilities), SM5 (CIO/IT Director is full member of executive team)were rated above repeatable stage (level 2) with a mean value of 2.80 and 2.67 respectively based on a generic

maturity scale from 0(non-existence) to 5(optimized). This shows that only four (14%) of IT Governance structure practices achieved a maturity level between repeatable (level 2) and defined stage (level 3) the majority were at nonexistence stage(level 0).

Statistics

		SM1	SM2	SM3	SM4	SM5	SM6	SM7	SM8	SM9	SM10	SM11	SM12	SM13	SM14
N	Valid	64	64	64	64	64	64	64	64	64	64	64	64	64	64
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		2.80	0.00	.03	.05	2.67	.72	.03	0.00	.02	0.00	0.00	0.00	0.00	.03
Median		3.00	0.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mode		3	0	0	0	3	1	0	0	0	0	0	0	0	0
Std. Deviation		.540	0.000	.175	.213	.644	.487	.175	0.000	.125	0.000	0.000	0.000	0.000	.175

Table 6. Maturity of ITG Structure at EABC (Source: survey result 2018)

Regarding the place of IT/IS in the institution, the interviewee said that

> *"IT/IS in EABC is organized centrally at head quarter and lead by IT Director who is reporting to the Deputy CEO.in addition IT director is a full member of the executive team. Furthermore, the roles and responsibilities of each position were clearly defined, documented and communicated to all stakeholders".*

Regarding the IT governance related committee, he said that

"There are no permanent committees like Audit, risk and compliance at board level But most of the time committees are temporarily formed to address a certain IT/IS related issue or to implement a certain project and dissolved soon after they achieve their goals."

4.2.3 IT Governance Process

Regarding importance of IT Governance processes, as shown on Figure 9, 94 % of respondents either strongly agree or agree on the importance (47% of them strongly agree and 47 % agree). However, when it comes to actual standardization and institutionalization of IT Governance practice (processes) maturity, 52% of respondents said IT Governance processes were not recognized at all (level 0), 41% of them said that they were recognized but practiced at ad hoc level (level 1) and only 7% of them said that though undocumented, there are IT Governance processes regularly practiced (level 2)

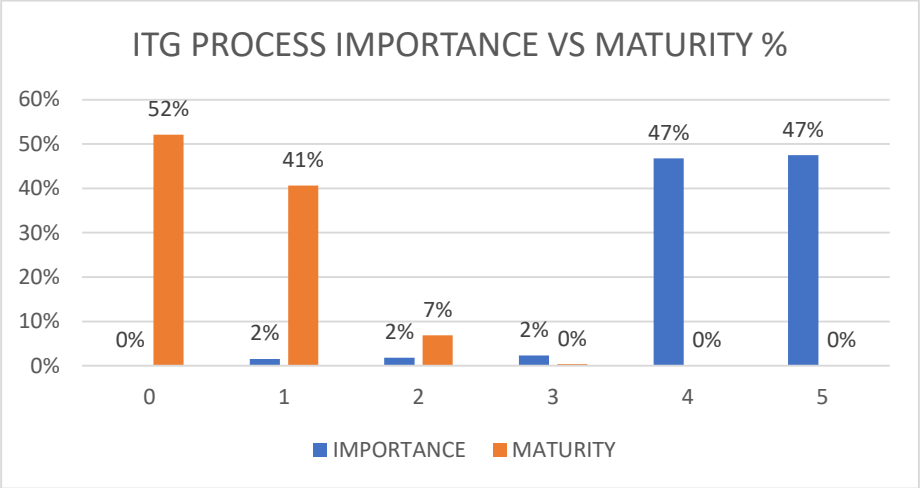


Figure 8. ITG Process Importance vs Maturity

As shown on Table 6, the average perceived importance of IT Governance process was above 4 based on a scale from 0(strongly disagree) to 5(strongly agree), this shows that both IT and business managers as well as Professionals a strongly agree on the importance of IT Governance process practices. Furthermore, the table depicts P12 (Disaster recovery and business continuity plan) and P7 (Service Level Agreement) were rated the most important IT Governance process with a mean of 4.88 and 4.78 respectively where as P8 (Chargeback arrangement practice) was rated the least important ITG process practice with a mean value of 2.94.

Statistics													
		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
N	Valid	64	64	64	64	64	64	64	64	64	64	64	64
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		4.41	4.41	4.41	4.41	4.45	4.44	4.78	2.94	4.19	4.33	4.8	4.88
Median		4	4	4	4	4	4	5	3	4	4	5	5
Mode		4	4	4	4	4	4	5	3	4	4	5	5
Std. Deviation		0.495	0.495	0.495	0.495	0.502	0.5	0.417	1.39	0.432	0.473	0.406	0.333

Table 7. Perceived Importance ITG Process

When it comes to maturity of IT Governance process practices, as shown on Table 7, out of 12 elements, only one of them namely P11 (Formal IT budget control and reporting practice) was rated the most mature IT Governance practice having a mean value of 2.58 based on a generic maturity scale from 0(non-existence) to 5(optimized). This shows that less than 9% of IT

Governance process achieved a maturity level between repeatable (level 2) and defined stage (level 3) the rest were either at initial level (level 1) or non-existence stage (level 0).

Statistics													
		PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM9	PM10	PM11	PM12
N	Valid	64	64	64	64	64	64	64	64	64	64	64	64
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		0.98	0.94	0.02	0.55	0.02	0	0.89	0	0.02	0.75	2.58	0.94
Median		1	1	0	1	0	0	1	0	0	1	3	1
Mode		1	1	0	1	0	0	1	0	0	1	3	1
Std. Deviation		0.519	0.467	0.125	0.502	0.125	0	0.362	0	0.125	0.436	0.612	0.531
Variance		0.27	0.218	0.016	0.252	0.016	0	0.131	0	0.016	0.19	0.375	0.282

Table 8. IT Governance Process Maturity Statistics (source: Survey result 2018)

Regarding presence of SISP and its alignment to the business strategy, the interviewee said that:

> *"Currently we have no strategic information system plan (SISP) but we do have short term and midterm (tactical) IS plans which enable us to achieve the goal set by GTP II. We are trying our best to satisfy the ever-increasing expectations of our customers by introducing new IT based services like ERP. Furthermore, Since IS plan is cascaded from the corporation plan all IT related initiatives/investments are aligned with our business strategy.*

Concerning the presence of IT/IS performance measurement and monitoring mechanisms, the interviewee said that:

> *"For the time being we have no mechanisms in place to measure and monitor performance of IT in our corporation. Currently there is a project in progress which aimed at extending BSC to IT units; we hope this initiative will bring transparency on the role IT in general and each unit in particular." Furthermore, he said that "Recently we have facilitated training on ITIL framework for most of senior IT expertise as an initiative for capacity building and to improve the quality of IT services continuously"*

Regarding implementation of formal IT Governance framework, the interviewee said that:

> *"There is no formal IT Governance in place in our corporation but recently we have trained senior IT professionals and IT leader on ITIL Governance frameworks to facilitate the implementation of formal IT Governance as an extension of Corporate Governance."*

Regarding IT Governance standardization and institutionalization (processes), the survey result completely agrees with the interview. On average maturity of IT Governance processes was rated 0.46 which is between non-existent (level 0) and initial stage (level 1). The interview result also shows that most important IT Governance processes like SISP, performance measurement and monitoring and formal IT governance practices were practiced at ad hoc basis with little or no standardization.

4.2.4 IT Governance Relational Mechanism

As shown on Figure 10 below, respondents overwhelmingly agree (94% of them) on the importance of strategic partnership between business and IT (IT Governance relational mechanism). Nonetheless, when it comes to actual implementation, on average 41% of the respondents said that IT Governance relational mechanisms practices were not recognized at all (level 0), 34% of them rated IT Governance process at initial stage (level 1) and 26% of respondents rated IT Governance relational mechanisms at either repeatable (level 2) or defined stage (level 3).

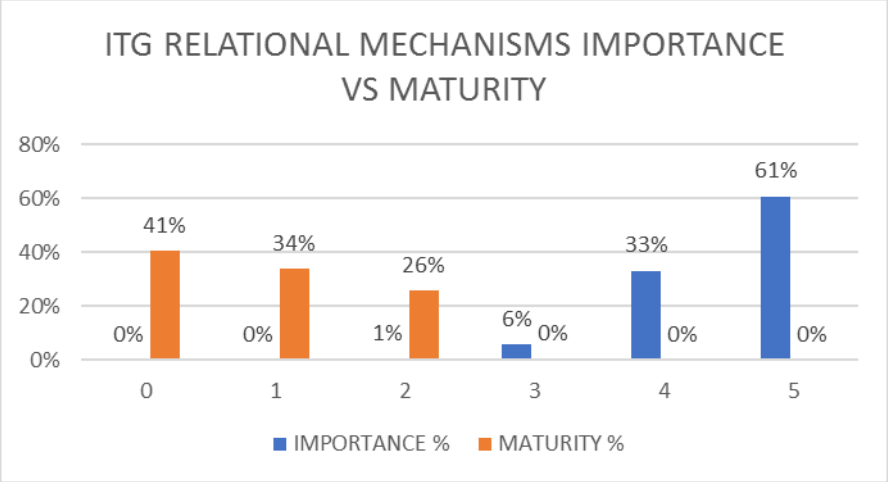


Figure 9. IT Governance Relational Mechanism importance vs maturity (source: Survey result 2018)

Concerning communication and collaboration between business and IT leaders (IT Governance relational mechanism), the interviewee said that:

"There is limited partnership and understanding between business & IT managers. Business managers are not that much interested to participate in IT related decision-making process even if it affects their day to day operation significantly. Furthermore, most business managers believe that, IT related decisions are technical issue and have to be addressed by Technical people (IT)"

Statistics												
		R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
N	Valid	64	64	64	64	64	64	64	64	64	64	64
	Missing	0	0	0	0	0	0	0	0	0	0	0
Mean		4.84	4.84	4.81	4.75	4.84	4.78	4.61	3.66	4.28	4.38	4.16
Median		5	5	5	5	5	5	5	4	4	4	4
Mode		5	5	5	5	5	5	5	3	4	4	4
Std. Deviation		0.366	0.366	0.393	0.471	0.366	0.417	0.581	0.84	0.548	0.519	0.57

Table 9. Perceived Importance of ITG Relational Mechanisms (source: Survey result 2018)

Regarding importance of IT Governance processes, as shown on Table 8, R5 (Mutual understanding between Business and IT) , R2 (Regular communication between CIO,CFO and CEO) and R1(IT leadership) were equally rated the most important IT Governance relational mechanism with a mean value of 4.84 where as R8 (Cross-functional Job-rotation) were rated the least important IT Governance practices with a mean value of 3.66 based on a scale from 0(strongly disagree) to 5(strongly agree).

Descriptive Statistics					
	N	Minimu	Maxim	Mean	Std. Deviation
RM5	64	1	2	1.7	0.46
RM3	64	1	2	1.67	0.473
RM1	64	1	3	1.53	0.534
RM2	64	1	2	1.53	0.503
RM4	64	0	2	1.2	0.477
RM6	64	0	2	1.09	0.426
RM7	64	0	2	0.98	0.218
RM11	64	0	2	0.7	0.728
RM9	64	0	1	0.05	0.213

Table 10. ITG Relational Mechanism Maturity (source: survey result 2018)

When it comes to maturity R5 (Mutual understanding between business and IT) and R3 (Regular communication between CIO, CFO and CEO) were rated the most mature IT Goverance relational mecanisms with a mean value of 1.7 and 1.67 respectively based on a generic maturity scale from 0(non-existence) to 5(optimized).

Regarding IT Governance relational mechanism (communication and collaboration between business and IT leaders), the survey result completely agrees with the interview. On average maturity of IT Governance relational mechanism was rated 1. or at initial stage (level 1). The interview result also confirms that there is limited strategic partnership and communication between business and IT.

Concerning maturity between IT Governance mechanisms, on average IT relational mechanism (1) was relatively more mature than that of IT Governance process (0.46) and IT Governance structure (0.45) in Ethiopian Agricultural Business Corporation.

4.3 IT Governance in EABC

In the previous sections the perceived importance and maturity of IT Governance practices in EABC was presented in detail in terms of IT Governance structure, processes and relational mechanisms. This section presents the cumulative perceived importance and maturity of IT Governance practices. As shown on Figure 11 below, the aggregate perceived importance of IT Governance practices was 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree) i.e. respondents overwhelmingly agree on the importance of IT Governance practices.

However, when it comes to actual IT Governance implementation, the average maturity of all IT Governance practices was 0.7 based on a generic maturity scale from 0(non-existence) to 5(optimized). Even if there is strong consensus on the importance of IT Governance practice, the actual implementation was far behind.

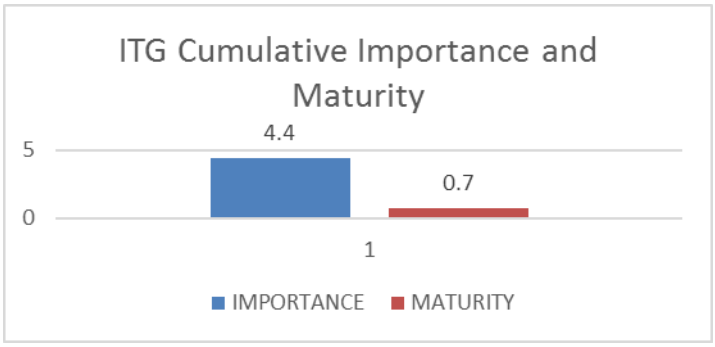


Figure 10. ITG Cumulative Importance vs Maturity (Source: Survey result 2018)

4.4 Discussion

In the previous section the perceived importance and maturity of IT Governance practices were presented in terms of IT Governance Structure, Processes and Relational Mechanism at EABC. In addition, the survey result was triangulated and complemented with interview with the IT Director and review of key documents such as Corporate Governance structure, IT Organization structure and job description of IT directorate. Furthermore, overall comparison of IT Governance maturity and importance was made.

In this section the results were discussed in light of the research questions set out in chapter one. The first research question was what is the perceived importance of IT governance practices at EABC? In relation to this, almost all respondents (business and IT) strongly agree on the importance of IT Governance practices. On average IT Governance importance was rated 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree). The result shows that there is strong consensus among respondents both from business and IT on the importance of IT Governance practices. Furthermore, Respondents show no significant difference in their preference of one IT Governance mechanism from the other i.e. IT Governance structure, processes and relational mechanisms were rated more or less equally important.

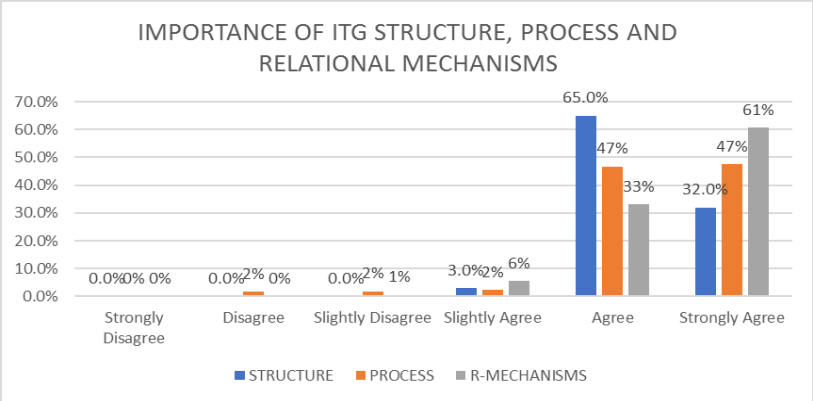


Figure 11. ITG Importance of Structure, Process and Relational Mechanisms (source: Survey result 2018)

The second research question was, what is the maturity level of IT governance practices at EABC? based on generic maturity scale? Regarding this, the average IT Governance maturity in EABC was rated 0.7 between (level 0) and (level 1) based on generic maturity scale from 0(non-existence) to 5(optimized). The result shows that EABC have partially recognized IT Governance issue but practiced it in an informal, disorganized and ad hoc basis with little or no standardization. In addition, maturity of individual IT Governance practices in EABC ranges between 0 and 2.8 based on generic maturity scale from 0(non-existence) to 5(optimized). This shows that, on the one hand there are IT Governance practices which were clearly documented and communicated to stakeholders but not measured and monitored, on the other hand there were IT Governance practices which were not recognized at all.

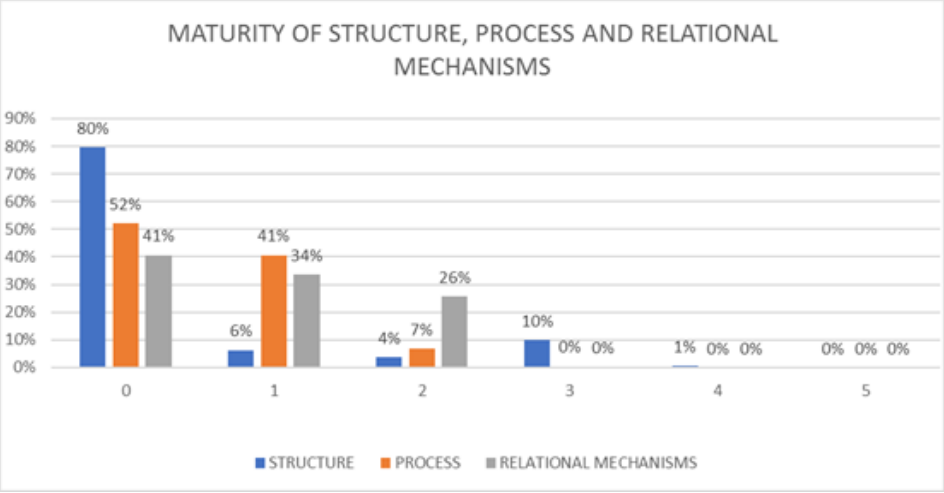


Figure 12. ITG Maturity of Structure, Process and Relational Mechanisms

Lower level of IT Governance maturity in Ethiopian agricultural business corporation can be attributed to strong influence the political environment and focus on accomplishment of legal norms and provisions, rather than the search for return on investment.

In addition, Lower level of IT Governance maturity can be attributed to lack of competency required in terms of expertise and experience in Governing IT, only 9% respondents had training/certificate on at least one IT Governance framework (COBIT, ITIL or ISO 2700). Furthermore, treating IT as a support unit which can only increase back office efficiency and to generate periodic MIS reports rather than an enabler can the reason for lower level of IT Governance maturity in EABC.

4.5 Discussion of Findings against Related Works

The average perceived importance of IT Governance practices was rated 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree). The result agrees with Kaur, et.al (2012), who found that the average level of observed importance of IT Governance in Malaysian private organizations was 5.28 on a scale of 1 to 7 and with Tagel (2016) who found out the average perceived importance of IT Governance practices in the financial sector of Ethiopia was rated 4.2 based on a scale from 0(strongly disagree) to 5(strongly agree).

Both the survey and interview result also shows among IT Governance mechanisms (Structure, Processes and Relational mechanism), relatively IT Governance Relational Mechanisms rated as more important as well as mature. This result somewhat agrees with the findings of DeHeas and Van Grambergn (2008), The relational mechanisms, certainly the one focused at motivating people, creating awareness, etc likely very important in the initiation phase of IT governance.

When The average IT Governance maturity in EABC was rated 0.7 between (level 0) and (level 1) based on generic maturity scale from 0(non-existence) to 5(optimized). This result agrees with Tagel (2016), who found that the average maturity of all IT governance practices was 0.7. The result also agrees with Nfuka and Lazar (2010) who found that IT Governance in Tanzanian public-sector organizations was 1.95 which is between initial (level 1) and repeatable (level 2) and stated IT Governance in the developing nations was at lower maturity level.

4.6 Summary

This section presented summary of major findings of the research which were discussed in the previous sections. There is a strong consensus between all respondents on the importance of IT Governance practices in Ethiopian Agricultural Business Corporation. Importance of IT Governance was rated 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree). however, the actual average IT Governance practice maturity was rated 0.7 based on generic maturity scale from 0(non-existence) to 5(optimized). This shows that there is a wide gap between perceived importance and maturity of actual IT Governance practices. IT Governance maturity was at between non-existent stage (level 0) and initial stage (level 1) i.e. IT Governance issues were partially recognized but some are not applied at all and some are practice in an informal, disorganized and ad hoc basis with little or no standardization.

In addition, the basic IT Governance practices like IT steering committee & IT project steering committee and IT performance measurement & monitoring practices were either non-existent or practiced on an informal, ad hoc basis with little or no evidence of standardization. This can be attributed to the lack of competency expertise and experience on IT Governance and IT Governance directives as the corporation is a recent establishment.

CHAPTER FIVE

Conclusion and Recommendation

The public-sector attention to IT governance has increased as reforms to modernize corporate management put in to effect. The use of IT for sustaining and extending organizations objectives and strategies, this use of technology as a strategic partner and enabler of business has caused critical dependency on IT and a call for specific focus on IT governance.

Accordingly, Lack of effective IT Governance may lead to run-away of IT projects, failure to deliver value to the business, inability to comply with regulatory of requirements, weakened competitive advantage, and lower customer satisfaction and so on.

The basic principle of the study is that, understanding the current status of IT Governance maturity as compared to industry standard enables institutions to formulate a strategy either to maintain or improve their current IT Governance status by identifying what has already being done, what works well, where the barriers and gaps are and take remedial actions.

5.1 Conclusion

The major findings of this survey can be presented as:

As both the survey as well as interview, result clearly shows that there is a strong consensus between all respondents on the importance of IT Governance practices in Ethiopian Agricultural Business Corporation. Importance of IT Governance was rated 4.4 based on a scale from 0(strongly disagree) to 5(strongly agree). Chargeback arrangement is the least important governance practice of all with average mean of 2.9.

However, the overall average IT Governance practice maturity was rated 0.7 based on generic maturity scale from 0(non-existence) to 5(optimized). This shows that there is a wide gap between perceived importance and maturity of actual IT Governance practices.

IT Governance maturity was at between non-existent stage (level 0) and initial stage (level 1) i.e. IT Governance issues were partially recognized but some are not applied at all and some are practice in an informal, disorganized and ad hoc basis with little or no standardization.

In addition, the basic IT Governance practices like IT steering committee & IT project steering committee and IT performance measurement & monitoring practices were either non-existent or practiced on an informal, ad hoc basis with little or no evidence of standardization. This can be attributed to the lack of competency expertise and experience on IT Governance and IT Governance directives as the corporation is a recent establishment.

Both the survey and interview result also shows among IT Governance mechanisms (Structure, Processes and Relational mechanism), relatively IT Governance Relational Mechanisms rated as more important as well as mature.

Though, IT Governance committees are common mechanisms to implement shared decision making, there are no permanent IT Governance related committees. Temporary committees are formed to handle a particular IT related task/project and dissolve soon the project is completed.

Relatively formal IT budget control & reporting as well as strategic information system planning were practiced formally but there is no performance measuring and monitoring mechanisms or devices in place.

Chargeback arrangements are not practiced to share cost of infrastructure as well as shared service to business units based on usage.

Cross training, collocations are practiced in an informal and ad hoc basis with little or no evidence of standardization but job rotation between business and IT not practiced at all.

IT Governance frameworks like COBIT, ITIL, ISO 27000 or tailored framework are not practiced in EABC but they have started providing training on ITIL which will pave the way to its implementation.

Though respondents overwhelmingly strongly agree on the importance of IT Governance practices, basic IT Governance practices like IT project and architecture steering committees, performance measurement & monitoring practices were found at non-exitent level of maturity

(level 0). This shows that, there is a huge gap between the perceived importance and the actual maturity of IT Governance Ethiopia agricultural business corporation.

5.2 Recommendation

Results indicated that majority of IT governance practices scored lower maturity level but important to the process of decision making and monitoring in the studied environment. Based on the results recommendations are provided to improve poorly performing practices and get the most out of the IT investment

IT Governance structure:
The basic idea that expresses IT Governance structures is to what extent stakeholders participate in IT related decisions like business application needs, IT infrastructure, IT architecture and IT principles

- IT governance related committees are the most common IT Governance mechanisms to apply shared decision making.IT Governance structure mechanisms like IT steering committee, IT project steering committee and IT strategy committees composed of business and IT executives and business unit leaders with a clear agenda and meeting schedule have to be in place.

Standardization and institutionalization of IT Governance processes:

- EABC has to implement formal IT Governance which fits to their organizational context by mixing-and-matching existing frameworks like ITIL, COBIT and ISO.
- The promised benefits of each IT related initiatives have to be clearly defined and documented ahead in order to make post implementation benefit measurement and monitoring practices easy.
- For improved quality of service and easier performance measuring and monitoring purpose Service Level Agreement(SLA) and key performance indicator (KPI) has to be defined and documented and communicated at different level (department, team and individual employees).

- The IT directorate has to develop strategic information system plan which enables as well as drive the business strategy. IT strategic committee have to identify those strategic business initiatives which can be enabled by IT, prioritize them based on their business case and get buy in from CEO and/or board.

Communication and collaboration between stakeholders (IT Governance relational mechanism):

- The IT director has to play the leadership role to implement formal IT Governance in collaboration with business executives and the board.
- The IT directorate has to devise mechanisms to encourage and reward those business unit leaders who are willing to participate and contribute their share on IT related decision making.
- The management team has to facilitate cross training between business and IT at strategic and tactical level to improve shared knowledge and mutual understanding between business and IT.
- Aside formal communication and collaboration between business and IT, management team have to facilitate favourable condition and encourage informal meetings between business and IT people. This will considerably improve understanding between business and IT management and enable them to reach a consensus easily during IT related decision making.
- IT directorate have to conduct IT Governance awareness creation campaign throughout the organization and also create a platform to share IT Governance related information.

Policy implication:

- The FDRE ministry of public enterprises has to prepare directives that encourage and enforces the implementation IT governance in all institutions under its jurisdiction.

5.3 Direction for Future Research

- This research is a single case study that has covered only one institution, one of the future research area will be comparison between similar sector institutions or with the international benchmark.
- The other future area of research is developing IT Governance framework for government enterprises.
- The other research area is to assess maturity of IT Governance in other better IT intensive sector like the Aviation and Telecom industry in Ethiopia.

Appendix A

Cover letter for Validity request

Dear Sir/Madam,

My name is Yohannes Ayalew and I am a graduate student at Addis Ababa University School of Information Science. Currently I am working my Master's thesis in title "Assessment of Information Technology Governance Maturity in Ethiopian Agricultural Business Corporation".

The purpose of the study is to investigate how IT Governance is perceived and the effectiveness (maturity) of IT Governance in terms of IT Governance Structure, Process and Relational mechanism in EABC.

As part of the research process, prior to distributing the survey questionnier for pilot test, the validity of the content has to be assessed by expertise on the area (both academicians and practitioners). I would greatly appreciate if you kindly give me feedback on the content of the survey instrument. Which question need adjustment?, The relevancy of question in the list?, Any important question(s) left? and about the arrangment of the questions …

I look forward to hearing from you soon.

Regards,

Yohannes Ayalew

E-mail:yohannesat10@gmail.com

Mobile: +251-0911645551

Appendix B

Cover letter for Questionnaire

Dear Respondent,

My name is Yohannes Ayalew and I am a graduate student at Addis Ababa University School of Information Science. Currently I am working my Master's thesis in title "Assessment of Information Technology Governance Maturity in Ethiopian Agricultural Business Corporation".

The purpose of the study is to investigate how IT Governance is perceived and the current effectiveness (maturity) of IT Governance at EABC in terms of IT Governance Structure, Process and Relational Mechanism.

I am inviting you to participate in this research study by completing the attached survey questions. The survey questionnaire requires approximately 15 to 20 minutes. Regarding confidentiality, no personal or identifying information is required and the information that you provide will be used for academic purpose.

If you have any question or concern about completing the questionnaire or participating in this study, please contact me. By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

Thank you in advance!

Yohannes Ayalew
Mobile: +251-911-64-55-51
Email: yohannesat10@gmail.com

Appendix C

Questionnaire

This self-assessment questionnaire has two main sections. Section I contains 6 demographic questions and section II contains 37 IT Governance related questions. Section II has three main parts, the first part contains IT Governance Structure related questions, the second and the third part contains IT Governance process and relational mechanism questions respectively.

Section I: Personal and Occupational Information

Please put a " ✔ " mark in the provided box

1. Gender?

   ☐ Male ☐ Female

2. Age?

   ☐ Less than 25 years ☐ 25 – 30 years ☐ 31 – 40 years

   ☐ 41 – 50years ☐ More than 50 years

3. Higher level of education achieved?

   ☐ College Diploma ☐ Bachelor's Degree

   ☐ Master's degree ☐ PhD Other, please specify _____

4. What is your current position in the organization?

   ☐ CIO/IT Director ☐ IT Manager ☐ IT Professional

   ☐ Business Manager ☐ Business Professional ☐ Other

5. Years of experience in your current position?

   ☐ < 2 year ☐ Between 5 and 10 years

   ☐ Between 2 and 5 years ☐ > 10 years

6. IT Governance related training/certificate

   ☐ COBIT ☐ ITIL ☐ ISO2700 Other_____

Section II: IT Governance Related Questions

The survey questionnaire uses a six-point Likert scale i.e. 0(zero) being the lowest score and 5(five) the highest score on the importance and effectiveness (maturity) of IT Governance practices.

Regarding **importance of IT Governance practices**, the scale is **0(Zero)** being the lowest score, "strongly disagree" and **5 (Five)** the highest score, "strongly agree".

0 ---------Strongly Disagree
1----------Disagree
2----------Slightly Disagree
3----------Slightly Agree
4----------Agree
5----------Strongly agree

IT Governance practices importance scale

Regarding **current effectiveness (Maturity) of IT Governance practices, the scale is 0(Zero)** is being the lowest score, "Non-existence" and **5(Five)** the highest score, "Optimized".

0 ---------Non Existence: P*rocesses are not applied at all*
1----------Initial: *Processes are ad hoc and disorganized*
2----------Repeatable: *Processes follow a regular pattern*
3----------Defined: *Processes are documented and communicated*
4----------Managed: *Processes are monitored and managed*
5----------Optimized: *Processes have been refined to a level of best practice*

I T Governance Maturity/Effectiveness

For each of the following IT Governance mechanisms/practices please put " ✔ " mark the most appropriate category based on how important they are (perceived importance) and degree of effectiveness (Maturity) currently in your organization.

IT Governance Structure (S x)

	How do you personally rate the importance of the following IT Governance structures and their actual effectiveness in your organization?	***Importance***						***Effectiveness/Maturity***					
		0 (Strongly Disagree)	1 (Disagree)	2 (Slightly disagree)	3 (Slightly Agree)	4 (Agree)	5(Strongly Agree)	**0 (Non Existence)**	**1 (Initial)**	**2 (Repeatable)**	**3 (Defined)**	**4 (Managed)**	**5 (Optimized)**
S1	IT organization structure with clearly defined roles and responsibilities.												
S2	IT strategy planning committee at executive or board level												
S3	IT steering committee (IT investment evaluation and prioritization)												
S4	IT expertise at level of board of directors												
S5	CIO/IT Director is full member of executive team												
S6	CIO reporting to CEO (direct reporting line between CIO and CEO)												
S7	There is Office of IT Governance (function and officer report to CIO)												
S8	There is IT Project/Portfolio management and change management unit (which reports to CIO/IT director)												
S9	There is IT project steering committee												
S10	There is IT security steering committee												
S11	There is IT architecture steering committee												
S12	There is IT audit committee at executive level												
S13	There is IT Security / compliance / risk officer												
S14	IT Governance roles, responsibilities and accountabilities are clearly defined and enforced across the organization.												

IT Governance Processes (P x)

	How do you personally rate the importance of the following IT Governance process and their actual effectiveness in your organization?	*Importance*						***Effectiveness/Maturity***					
		0 (Strongly disagree)	1 (Disagree)	2 (Slightly disagree)	3 (Slightly Agree)	4 (Agree)	5(Strongly Agree)	**0 (Non Existence)**	**1 (Initial)**	**2 (Repeatable)**	**3 (Defined)**	**4 (Managed)**	**5 (Optimized)**
P1	There is Strategic Information System Planning												
P2	There is IT Demand management which forces all IT demands through a single point, where they can be consolidated, prioritized and fulfilled.												
P3	Implementation of one or a combination of multiple IT Governance frameworks like COBIT, ITIL, ISO 27000 or tailored framework												
P4	There is Portfolio management (Prioritization process for IT investments and projects based on business cases, ROI, payback)												
P5	There is IT performance measurement and monitoring mechanism (Key Performance Indicators and Key Risk Indicators)												
P6	IT Governance assurance and self-assessment process is in place												
P7	Service Level Agreements (Formal agreement to deliver IT service to both internal and/or external customers).												
P8	Chargeback arrangement practice (Allocation of IT costs to business units)												
P9	IT project management / governance methodology e.g. PRINCE2												
910	Measuring and Monitoring the planned business benefits during and after implementation of IT projects/ investments.												
P10	There is formal IT budget control and reporting practice												
P11	There is disaster recovery and business continuity plan												

IT Governance Relational Mechanism (Rx)

	How do you personally rate the importance of the following IT Governance relational mechanism and their actual effectiveness in your organization?	Importance						***Effectiveness/Maturity***					
		0 (Strongly disagree)	1 (Disagree)	2 (Slightly Disagree)	3 (Slightly Agree)	4 (Agree)	5(Strongly Agree)	**0 (Non Existence)**	**1 (Initial)**	**2 (Repeatable)**	**3 (Defined)**	**4 (Managed)**	**5 (Optimized)**
R1	Strategic alliance/coalition between Business and IT												
R2	There is regular communication between CIO, CFO and CEO												
R3	IT leadership (Ability of CIO or similar role to articulate a vision for IT's role in the company and ensure that this vision is clearly understood.												
R4	Executive / senior management giving the good example (Senior business and IT management working as partners)												
R5	Mutual understanding between Business and IT												
R6	Co-location of Business and IT												
R7	Cross-training between Business and IT												
R8	Cross-functional Job-rotation between Business and IT to promote continued learning												
R9	Knowledge management on IT Governance (Platform to share and distribute knowledge about IT Governance roles and responsibilities).												
R10	IT Governance awareness campaign												
R11	Informal meetings between business and IT senior management												

Section III. Thank you!

Thank you for taking your time to answer this survey questions. You are welcome to forward any comments about IT Governance in your organization.

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-------End of Survey-------

Appendix D

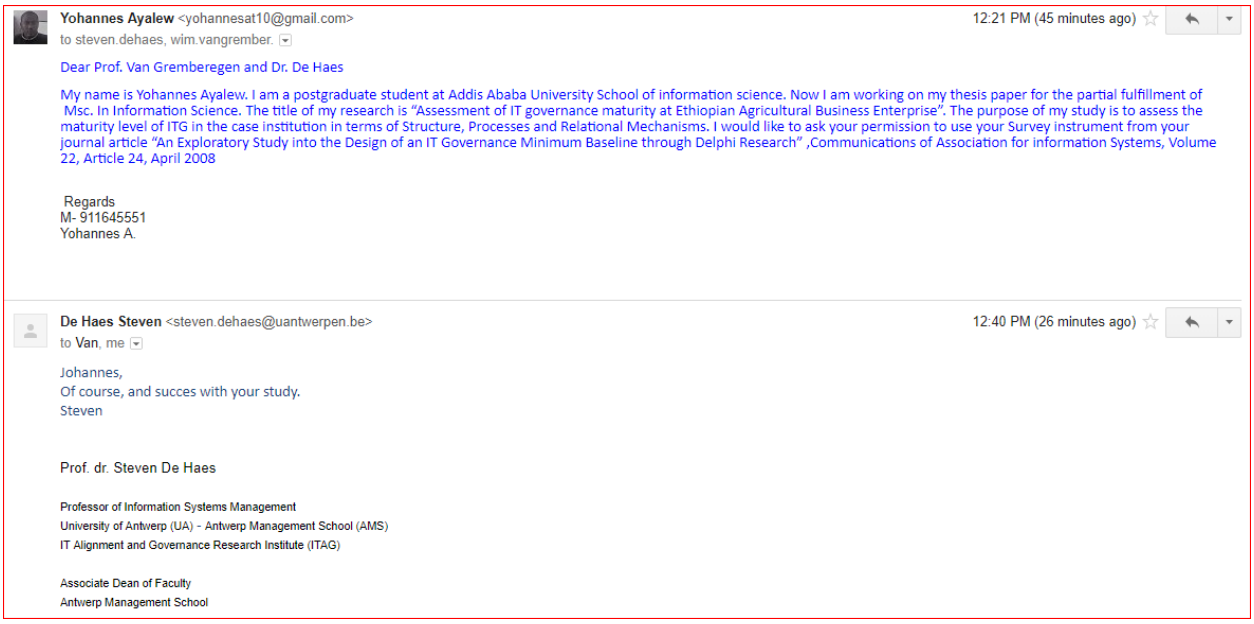
IV Interview Questions

1. What is your position and IT related responsibilities in the organization?
2. What is the strategic role of IT in your organization? How the board and executives perceive the value of IT? (Utility, support, or driver of business strategy?)
    A. Cost reduction, generate revenue, Competitive advantage, Customer retention, market expansion, to introduce new IT product and service, operational excellence …?
    B. How do you see the commitment of executive/senior management for IT related projects?
    C. Is IT treated as a business partner that adds value to the enterprise?
3. Is there a well-defined IT Governance structures with clearly defined roles and responsibilities?
        A. Are there committees and sub committees like IT strategy, steering, security, architecture committees …?
        B. Is it documented and communicated to all the stakeholders?
4. Does your organization have strategic IT plan? If so to what extent is it aligned with business strategy?
    a. Is IT and business are fully integrated in the organization at strategic, tactical and operational level.
5. Does your organization have implemented any IT Governance frameworks like COBIT, ITIL, ISO or tailored framework?
6. How do you see the understanding of IT by business and business by IT people? Are they speaking the same language? Is there shared understanding between business and IT?
7. How do you see business unit participation in IT Governance? Are they active participant or they think IT Governance is the responsibility of CIO/IT director?

8. Is there any mechanism in place which measures and monitors IT performance against the plan (Performance metrics like IT BSC, SLA, KPI)?
9. Do the board/executives get regular progress reports on major IT Projects?
10. Does your organization get independent assurance on the achievement of IT objectives and IT related risk containment?
11. Is there IT Governance awareness campaign practice in your organization at strategic, tactical and operational level? If so how often does your organization conduct IT Governance awareness campaign? Is there a platform to share IT Governance related information (framework, roles, responsibilities, committee, etc.)?
12. Which of the following best characterizes IT Governance at your organization?
    0. Non-existent
    1. Initial
    2. Repeatable
    3. Defined
    4. Managed
    5. Optimized

Appendix E

Permission for Survey Instrument



Yohannes Ayalew <yohannesat10@gmail.com> 12:21 PM (45 minutes ago)

to steven.dehaes, wim.vangrember.

Dear Prof. Van Gremberegen and Dr. De Haes

My name is Yohannes Ayalew. I am a postgraduate student at Addis Ababa University School of information science. Now I am working on my thesis paper for the partial fulfillment of Msc. In Information Science. The title of my research is "Assessment of IT governance maturity at Ethiopian Agricultural Business Enterprise". The purpose of my study is to assess the maturity level of ITG in the case institution in terms of Structure, Processes and Relational Mechanisms. I would like to ask your permission to use your Survey instrument from your journal article "An Exploratory Study into the Design of an IT Governance Minimum Baseline through Delphi Research" ,Communications of Association for information Systems, Volume 22, Article 24, April 2008

Regards
M- 911645551
Yohannes A.

De Haes Steven <steven.dehaes@uantwerpen.be> 12:40 PM (26 minutes ago)

to Van, me

Johannes,
Of course, and succes with your study.
Steven

Prof. dr. Steven De Haes

Professor of Information Systems Management
University of Antwerp (UA) - Antwerp Management School (AMS)
IT Alignment and Governance Research Institute (ITAG)

Associate Dean of Faculty
Antwerp Management School

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