

Maturity of Information Technology Governance in the  
Financial Sector of Ethiopia; a Comparative Study

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A Thesis Submitted to the Department of Information Science

Presented in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Information Science

Addis Ababa University

Addis Ababa, Ethiopia

June 2016

ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
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Financial Sector of Ethiopia; a Comparative Study

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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.

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

Advisor \_\_\_\_\_  
Tibebe Beshah (PhD.)

# Acknowledgement

I am deeply grateful to my advisor, Dr. Tibebe Beshah, for his precious comments, guidance and unreserved support in checking and giving constructive suggestions. I would like to say thank you!

My special thanks go to Ato Shimelis Legesse, Alemnhe Adane, Ashenafi, Eshetu, Zewdu and Ibrahim who helped me in the administration of questionnaire in their respective organizations.

I would like also to thank employees and management of Zemen Bank, Dashen Bank, Commercial Bank of Ethiopia, NICE Insurance, Nile Insurance and Ethiopian Insurance Company for their willingness to participate in the survey and duly filled the questionnaires.

My thanks are due to Prof. Dr. Steven DeHaes and Prof. Dr. Van Grembergen for kindly granting permission to use the survey instrument.

Finally, I would like to thank both my classmates as well as the community of school of information science graduate studies of Addis Ababa University for their support in the journey.

Tagel Mekonenn

June 2016

Addis Ababa

## **Abstract**

Information Technology (IT) changes significantly the way we live, communicate and do business. As a result there are few companies that can afford the luxury of ignoring IT. This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT Governance.

The aim of this study was to investigate maturity of IT Governance in the financial sector of Ethiopia. Mainly survey methodology was employed to investigate the perceived importance and maturity of IT Governance practices in the financial sector of Ethiopia in terms of IT Governance structure, processes and relational mechanism. Using simple random sampling, two private banks (Dashen Bank and Zemen Bank) and two private insurance companies (National Insurance Company of Ethiopia and Nile Insurance) were selected randomly. Purposive sampling was used to include Commercial Bank of Ethiopia and Ethiopian Insurance Company since one of the objectives of the research was comparing IT Governance maturity between private and public financial institutions. A total of 96 self administered questionnaires were distributed targeting senior business and IT leaders and return rate of 80% was achieved.

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

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. In spite of this keenness, 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 (1.3) reached better level of IT Governance maturity than that of publicly owned (0.94) likewise 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).

Regarding IT decision making right, IT leaders in the banking sector play superior role than their peers in the insurance sector. The prevalent IT Governance archetype (locus of IT decision making authority) in the banking sector was a combination of IT Monopoly (*IT executives has exclusive decision making right on IT Architecture and Infrastructure*) and IT Duopoly (*IT leaders shares decision making right with business executives on IT principle, business application needs and IT investment and prioritization*) whereas it was Business Monarch in the insurance sector i.e. IT leaders have only input rights and the decision right was exclusively held by business executives. Furthermore, among IT Governance mechanisms, relatively IT Governance structure was rated as more important as well as mature than that of IT Governance Processes and Relational mechanism.

On the basis of the above results, it can be concluded that, IT Governance maturity is at initial stage (level 1) in the financial sector of Ethiopia. So, to reach desired level of IT Governance maturity and to get the best out of IT investment, financial institutions have to start implementing formal IT Governance which fits to their business strategy and culture by mixing-and-matching elements of existing frameworks.

**Keywords:** IT Governance, Information Technology Governance, Maturity, Financial Sector, Ethiopia

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# List of Acronyms

ATM.....	Automated Teller Machine
BSC.....	Balanced Score Card
CBB .....	Construction and Business Bank
CBE .....	Commercial Bank of Ethiopia
CCTA .....	Central Computing and Telecommunications Agency
CEO.....	Chief Executive Officer
CFO.....	Chief Finance Officer
CIO.....	Chief Information Officer
CMM.....	Capability Maturity Model
CMMI .....	Capability Maturity Model Integration
CRM.....	Customer Relationship Management
COBIT.....	Control Objectives for Information and Related Technologies
COO .....	Chief Operation Officer
EBIS.....	Electronic Banking and Information System
EIC .....	Ethiopian Insurance Corporation
ERP .....	Enterprise Resource Planning
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
ITAG .....	Information Technology Alignment and Governance
IT BSC .....	Information Technology Balanced Score Card
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
MICR .....	Magnetic Ink Character Reader
MIS .....	Management Information Systems
NBE.....	National Bank of Ethiopia
NICE .....	Nation Insurance Company of Ethiopia
ROI.....	Return on Investment
SCM .....	Supply Chain Management
SISP .....	Strategic Information System Planning
SLA.....	Service Level Agreement
SPSS.....	Statistical Package for Social Science

# CHAPTER ONE

## INTRODUCTION

### 1.1 *Background of the Study*

Though information systems (IS) of some form or another have been around since the beginning of time, Information Technology (IT) is relatively new introduction to the scene. The facilities provided by such technology have had a major impact on individual, organizations and society at large. IT changes substantially the way we live, communicate and do business. There are few companies that can afford the luxury of ignoring IT. As IT has become more powerful and relatively cheaper, its use becomes pervasive. Application of IT is not only to improve efficiency (reducing time and cost of transaction) but also to increase business effectiveness and to manage organizations more strategically (Robert and Dorothy, 2003).

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 formalizes and clarifies oversight, accountability and decision right for a wide array of IT strategy, resource and control activities. In addition IT Governance is important because it ensures and sustains system operations and reduces the organization’s exposure to crises as a result of critical system failures.

While, in the past, business executives could avoid, ignore or delegate IT decisions, this is now impossible in most organizations and sectors. Organizations have started with the implementation of IT Governance to achieve the fusion between business/IT strategy and to obtain the needed IT involvement of senior management (De Haes & Van Grembergen, 2004). IT Governance is about optimal returns from investment in IT and how to ensure that transparent, long term, sustainable and measureable stakeholder value is achieved. Hence extracting maximum value from existing investment is imperative for Information Technology Governance. Gartner (2009) also states that IT Governance has been recognized as a CIO (Chief Information Officer) Top10 issues for more than five years and has risen in priority. Further more successful CIOs recognize that Information Technology has become far more than a means

of improving efficiency and reducing costs. Rather, they see Information Technology as a business partner which can enable and driver business strategy and objectives (Selig, 2008).

The history of financial institutions in Ethiopia goes as far back as 1905, when the first bank – the Bank of Abyssinia was established under the arrangement between the Emperor Minilik II and European banking group which was behind the National Bank of Egypt. Modern forms of insurance services also introduced at the same time when Bank of Abyssinia began to transact marine and fire insurance as an agent of foreign insurance company.

Eventually, the finanancial serctor have passed through numerous reformations during Hailesialssie I, Derge and the current regime. After the fall of Derge in 1991, the current administration opened the financial sector to private investors by introducing Monetary and Banking proclamation Number 83/1994 and the Licensing & Supervision of Banking Business Number 84/1994. Following the proclamation a number of private insurance and banks started operation. According to National Bank of Ethiopia (2015) currently there are seventeen commercial Banks (16 private and 1 government owned) and seventeen Insurance companies (16 private and 1 government owned) operational in Ethiopia.

Introduction of IT to the financial sector is a recent phenomenon in Ethiopia. Recently both private and public Banks introduced core banking system and IT based financial services like ATM (Automated Teller Machine), Mobile banking, Internet Banking, and Electronic fund transfer. Insurance companies also started deploying integrated insurance system (which can handle policy, claims, reinsurance and finance) to provide efficient and effective service as well as to get timely Management Information System (MIS) reports.

In today's dynamic and throat-cutting competitive environment, financial institutions are expected to respond quickly to the ever growing needs of their customers by introducing IT based product and services as well as mitigating IT related risks and complying with legal and regulatory requirements.

In the past organizations used to view IT as a support function with primary goal to help the businesses store information and produce MIS reports more quickly and efficiently. In addition IT was seen as cost center as well as reactive to business and regulatory needs. PWC (2014) argued that those days are gone and now IT is expected to enable as well as drive business strategy by working with other business unit's as a partner i.e. through formal IT Governance.

Senait (2011) also argued that, it is not enough to implement the latest technology and application in the institutions, but how efficient and effectively the organization is managing and governing IT infrastructure and trying to align it with its business strategy which brings success to the organization.

## 1.2 *Statement of the Problem*

According to ITGI (2005), IT Governance is concerned about two main things: IT's delivery of value to the business through IT/business alignment and mitigation of IT related risks.

Organizations (both private and public) invest huge amount of money to acquire hardware, software, IT infrastructure development, consultancy service, and support to provide efficient and effective IT based product and services to their customers. According to Weill (2004) enterprises spend 4.2% of their annual revenue on IT, which exceeds 50 % of their annual total capital investment. This huge and diverse investment, pervasive use of IT as well as the strategic role of IT to the achievement of organizational objective necessitates effective IT Governance.

Weill and Ross (2004), in a survey of 250 organizations around the world, found out that companies with superior IT Governance have profits 20% higher than those with poor IT Governance, considering the same strategic objectives. GU, et al. (2008) also conducted a study to analyze the influence of IT Governance on IT investment performance on a sample of fortune 1,000 firms. The result shows that firms with good IT Governance can realize two to three times the value from their Information Technology investments compared to an average firm.

In a related study Lingyu et.al (as cited in Pereira & Mira, 2012) found that enterprises that perform well in IT Governance may gain 40% higher return on investment than their competitors; given the same business strategy, those with an average performance in IT Governance may make 20% more profit. Bogale et.al. (2015) also found that, IT Governance performance is strongly correlated with organization performance.

As financial institutions struggle to keep pace with technological and regulatory change, mature IT Governance can be the make-or-break difference between those that thrive and those that don't. 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. Financial institutions that don't get strategic support from their IT function find it harder to innovate, keep costs in check, adapt quickly to market changes, meet regulatory requirement and achieve their business objectives.

In order to alleviate the above problems and to sustain and/or extend their competitive advantage, organizations have to be at the desired IT Governance maturity level that fits to their business strategy and objectives. To achieve the aforementioned objective, organizations have to periodically assess the "as is" IT Governance maturity level (capability) and determine the "to be" IT Governance level based on their enterprise strategy (Guldentops et al., 2002). Having a clear picture about the current state of IT Governance maturity level relative to competitors or 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 (DeHaes and Van Grembergen, 2004; ITGI, 2005).

There are few studies conducted locally which addressed some aspects of this study. Senait (2011) investigate the status of IT Governance at Commercial Bank of Ethiopia (CBE) using COBIT framework and found that IT Governance is at lower stage. Some of the limitations of her work are: she did not measure maturity of IT Governance at CBE objectively using a maturity scale, which makes her findings ambiguous and difficult to compare with competitors or industry average (benchmark). The study also did not compare IT Governance maturity of CBE against privately owned banks as well as insurance companies. Furthermore the study didn't address the prevalent IT Governance archetype (locus of IT decision making right) in the financial sector of Ethiopia.

In a related study, Misrak (2015) took IT Governance as one of the construct which influences qualitative IT Return on Investment and found that IT Governance in banking industry is relatively better than insurance sector in Ethiopia. But she did not measure objectively the level of IT Governance maturity in the banking and insurance sector using a maturity model. Moreover her work did not address the prevalent IT Governance archetype (locus of IT decision making right) in the financial sector of Ethiopia (see section 2.4).

In light of the above, this study aims to explore the following research questions:

- How is IT Governance perceived in private and public financial institutions in Ethiopia?
- At what level of maturity does IT Governance found in the financial sector of Ethiopia based on generic maturity scale?
- Is it the Banking or Insurance sector that reached better level of IT Governance maturity?
- Which sector (private / public) reached better IT Governance maturity level?
- Which IT Governance archetype (locus of IT decision authority) prevails in the Ethiopian financial sector?

### 1.3 *Objective (s)*

#### 1.3.1 *General Objective*

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

#### 1.3.2 *Specific Objectives*

To achieve the main goal, the study will have the following specific objective:

- To assess the decision making right and accountability practices (ITG Structure)
- To assess the level of standardization and institutionalization of IT Governance practices (IT Governance Processes)
- To assess the level of participation of IT Governance stakeholders (communication and collaboration between Business and IT leaders).
- To assess the level of IT Governance maturity between private and public financial institutions as well as banking and insurance sector.
- Assess the prevalent IT Governance archetype (locus of IT decision authority) in the financial sector.

## ***1.4 Significance of the Study***

In today's dynamic and competitive environment, having matured IT Governance practices are a must for financial institutions to sustain and/or extend their business strategy. The findings of the research will help institutions to figure out the gaps in the current IT Governance practice as compared to competitors or industry standards, identify precisely where improvements can be made to bring IT Governance processes up to the desired level maturity. The finding also can serve as a benchmark to assess IT Governance maturity in other sectors of the economy. NBE can also use the findings as an input to introduce IT Governance directives in to the financial sector of Ethiopia. Moreover the finding will add value to the existing body of knowledge on IT Governance i.e. it can be used as an input for further research on IT Governance.

## ***1.5 Scope and Limitation***

The scope of this research was to investigating the perceived importance and maturity IT Governance in financial sector of Ethiopia in terms of IT Governance structure, processes and relational mechanism. Due to time and other limitations only private and public banks and insurance companies were considered. Micro Finance Institutions are out of the scope of this research.

One of the limitations of the study was board of directors were not included in the study, beside it would be more interesting if all banks and insurance companies were included in the survey and opinion of NBE was incorporated.

## ***1.6 Organization of the Research***

The study consists of five chapters. The first chapter is about background of the study, statement of the problem, objective of the study and scope and limitation of the study. The second chapter presents conceptual and empirical literature review related to IT Governance in general and IT Governance maturity in particular. The third chapter discusses research design and methodologies used to collect, analyze and interpret the data. The fourth chapter presents the study findings, analysis, and presentation of the result. Finally, based on the analysis and interpretation of the findings, chapter five presents conclusion and recommendation.

# CHAPTER TWO

## LITERATURE REVIEW AND RELATED WORKS

This chapter covered both theoretical and empirical literature review on IT Governance, difference between IT Governance and IT Management, Evolution of IT Governance, IT Governance frameworks, importance of IT Governance, focus areas of IT Governance, IT Governance in Ethiopia and IT Governance Maturity.

### ***2.1 Information Technology Governance (IT Governance)***

IT and its use in business have experienced fundamental transformation in the past decades from back office support to enabler and strategic partner to the business. IT Governance is one of these concepts that suddenly emerged and became an important issue in the IT area. However there is no single universally agreed definition of IT Governance; different authors and institutions defined IT Governance differently (Guldentops & Van Grambergn, 2008).

Weill (2004) defined IT Governance as: “Specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT”. IT Governance is not about what specific decisions are made rather it is about systematically determining who makes what decision (decision right), who has input right to the decision, and make sure that decisions are carried out in the appropriate manner (measure and monitor the result).

The other most cited IT Governance definition is the one given by DeHeas and Van Grambergn (2004) which defines IT Governance as: “the organizational 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.”

In addition to the aforementioned definitions institutions like Information Technology Governance Institute ITGI (2005) defines IT Governance as: “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.”

ITGI (2003) further avowed that, IT Governance is a board and/or senior management responsibility to ensure that:

- IT strategy is aligned with the business strategy, i.e. IT delivers the functionality and services in line with the organization's needs.
- IT brings new business opportunities that were never possible before
- IT-related services and functionalities are delivered at the maximum economical value or in the most efficient manner.
- IT related risks are known and managed and IT resources are secured.

With minor differences the aforementioned definitions give due attention to optimizing IT investment through business/ IT alignment and return value to the business within acceptable risk level (within the risk appetite of the organization).

### ***2.1.1 Evolution of IT Governance***

Over the years, organizations become highly dependent on IT to the point where it would be impossible for them to function without it. As a result the role of IT in the enterprise changed from technology provider to strategic business partner. According to Sallé (2004) IT has passed through three stages (see Figure 1). In the earliest stage IT organizations focus on effective management of enterprise IT infrastructure. Next to Information Technology Infrastructure Management (ITIM), IT organizations focus on identification and delivery of quality IT services at a reasonable time and cost to both internal and external customers. When IT organizations evolve in to current stage (IT Governance), IT becomes a strategic partner to the business i.e. IT not only support but also enable as well as drive business strategy and objectives.

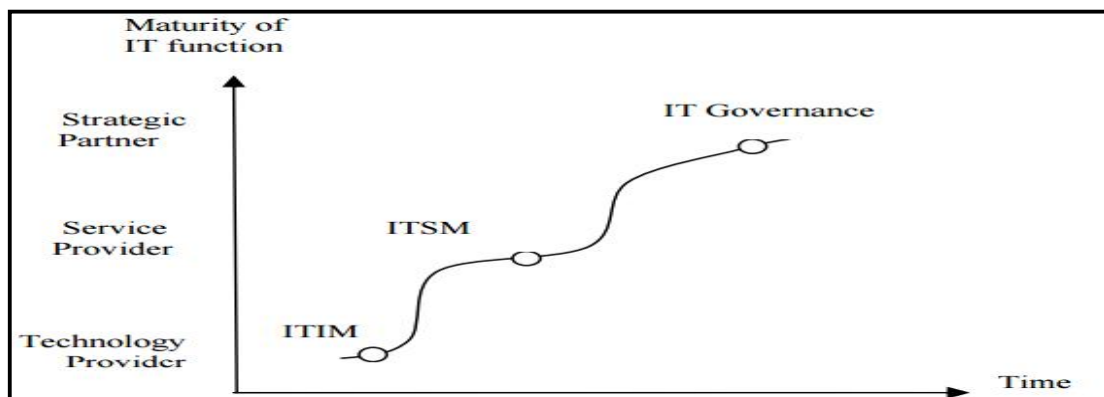


Figure 1 Evolution stage of IT Governance from Sallé (2004)

### ***2.1.2 The relationship between Corporate and IT Governance***

IT Governance is an integral part of corporate governance. According to ITGI (2003) the adoption of IT Governance practices has been driven by the implementation of corporate governance and defines Corporate Governance as “the set of responsibilities and practices exercised by the board and executive management with the goal of providing strategic direction, ensuring that objectives are achieved, ascertaining that risks are managed appropriately and verifying that the enterprise’s resources are used responsibly.”

Boards and executive management have to extend governance to IT and provide the leadership. IT Governance is not just an IT/CIO issue or only of interest to the IT function. In its broadest sense it is part of the overall governance of an organization, but with a specific focus on improving the management and control of IT for the benefit of the primary stakeholders.

### ***2.1.3 Importance of IT Governance***

Effective IT Governance requires a significant amount of management time and attention since enterprises are highly dependent on IT to provide IT based products and services for their customers. Carefully designed and implemented IT Governance will harmonize decisions about IT use and management with enterprise strategy and objectives (Weill & Rose, 2004). Symons et.al (2005) also said that, good IT Governance ensures that IT investments are aligned with business strategy, optimized, and delivering value within acceptable risk boundaries taking into account organizational structure, culture, maturity, and strategy of the organization. Furthermore Weill and Ross (2004) listed some of the reasons why IT Governance should not be left for chance:

- **Good IT Governance pays off:** Firms with superior IT governance have more than 20% higher profits than firms with poor governance given the same strategic objectives.
- **Good IT Governance meet regulatory requirements and mitigate IT related risks:** IT Governance follows an integrated approach to meet external legal and regulatory requirements as well as mitigate IT related risks.
- **IT is Expensive:** Enterprises spend more than 4.2% of their annual revenue, which exceeds 50 % of their annual total capital investment. Due to this many enterprises are prioritizing their IT spending on strategic areas.

- **IT is Pervasive:** IT is everywhere in the enterprise. A well designed IT Governance arrangements distribute IT decision making to those responsible for outcomes since centrally managing IT is no longer desirable.
- **IT brings new Opportunities:** the introduction of new technologies, including web-based services, mobile technologies, and ERP creates strategic opportunities that have never been before.
- **IT Value depends on more than good technology:** as IT implementations enables standardization and integration of business process, the roles of technologists and business leaders become increasingly intertwined. IT decision making necessarily becomes joint decision making so does the responsibility of the outcomes of the decision.

#### ***2.1.4 IT Governance vs. IT Management***

The differences between IT Governance and IT Management are not always clear. According to Weill and Ross (2004), governance determines who should make what decision(s) where as management is the process of making the actual decision. IT management focuses on efficient and effective provision/delivery of IT product and services over a short time span focusing on internal customers and keeping the system up and running, where as IT Governance has a much broader range and a wider time span (see Figure 2). It also concentrates on transforming IT to meet the demands of internal and external business of both present and future requirements. This does not mean that IT management is an easy task rather IT Governance is wider in scope as well as time span i.e. it is strategic oriented. Another significant difference between IT management and IT Governance is where as elements of IT management and the supply of IT product and service can be outsourced to an external IT provider, IT Governance is organization specific, and directions and controls over IT cannot be delegated to the market (Peterson, 2003).

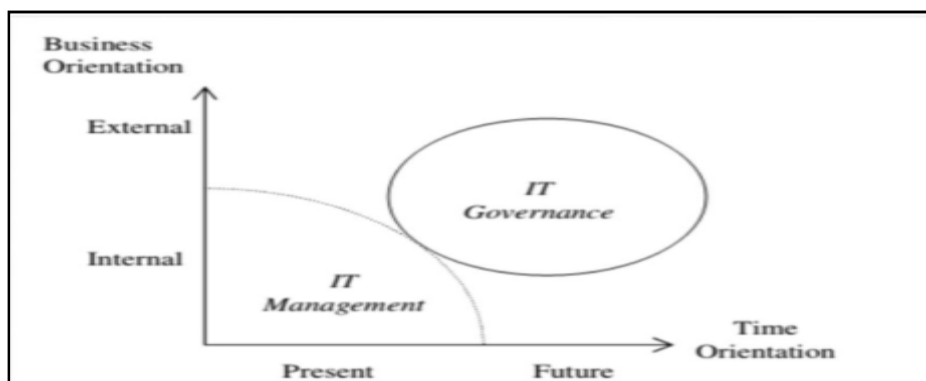


Figure 2. IT Governance Vs. IT Management from Peterson (2003)

### ***2.1.5 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 later 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 (2005) IT Governance has five focus areas: Strategic alignment between business and IT, Value delivery, Resource Management, Risk Management, and Performance Measurement.

**Strategic alignment** focuses on ensuring the linkage of strategic business plan and IT strategic plan; on defining, maintaining and validating the IT value proposition; and on aligning IT operations with enterprise operations. If there is misalignment between business and IT strategy, IT may not contribute either to the creation and protection of values towards the achievement of the business strategy.

**Value delivery** is about executing the value proposition throughout the delivery cycle, ensuring that IT delivers the promised benefits specified on the strategy, concentrating on optimizing costs and proving the intrinsic value of IT i.e. cost reduction, increasing revenue or return on investment, widening customer base, and delivery of quality IT products and services at a reasonable time and budget are values which can be achieved by implementing effective IT Governance.

**Resource management** is about the optimal investment (based on business cases) and proper management of, critical IT resources like IT infrastructure, applications, information/data, and people (IT employees as well as partners).

**Risk management** requires risk awareness by senior corporate officer and executives, a clear understanding of the enterprise's appetite for risk, understanding of regulatory compliance requirements, transparency about the significant risks to the enterprise, and embedding of risk management responsibilities into the organization.

**Performance measurement and monitoring:** tracks and monitors strategy implementation, project completion, resource usage using Key Performance Indicators (KPI), Key Goal Indicators (KGI), key Risk Indicators (KRI) and IT Balanced Score Card (IT BSC).

### ***2.1.6 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.

#### ***2.1.6.1 Control Objective for Information and related Technologies***

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.** Basically IT delivers services to its customers (users). This domain concerns 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 control processes.

Despite the fact that 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.

### ***2.1.6.2 The 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.

### ***2.1.6.3 ISO17799/27000***

ISO/IEC 2700 is an international standard, which was published by the International Organization for Standardization (ISO) and International Electro technical Commission (IEC). Its goal is to provide information to parties responsible for implementing information security within an organization. It can be seen as a best practice for developing and maintaining security standards and management practices within an organization to improve reliability on information security in inter-organizational relationships. The standard has the following high-level groupings: security policy, organizational security, asset classification and control, personnel security, physical and environmental security, communications and operations management, access control, systems development and maintenance, business continuity management, and compliance. The standard is very thorough and covers a great deal of material in a concise manner.

ISO 17799's relatively narrow focus on security makes it unsuitable as the sole basis for an IT Governance framework, but since risk management is one of the focus area of IT Governance, there is relevance to ISO 17799, and parts of it can be adopted in building an overall IT Governance framework.

While COBIT takes the perspective of audit and control, ITIL takes the perspective of continuous IT service improvement and ISO 2700 on security (improving reliability and availability of information system). The above frameworks are more of complementary than competitive i.e. organizations can tailor their own IT Governance framework by mixing-and-matching components from each framework which can fit the organization culture and overall business strategy.

### ***2.1.7 IT Organization Structure***

Information Technology Governance structures are the distribution of IT decision making rights and responsibilities; and IT decision makers themselves. Effective IT Governance is determined by the way the IT function is organized and where the locus of IT decision-making authority is located within the organization (DeHeas & Van Grambergn, 2004).

Any attempt at developing and enforcing Information Technology Governance requires an understanding of the structural (organizational) pieces of the framework. The three major types of IT organizational structures are centralized, decentralized, federated organizations. Each organizational structure presents different challenge in implementing IT Governance as characterized by its decision-making process (Symons et.al, 2005).

**Centralized:** In centralized IT organization structure, all IT decision-making and the IT budget are in one place, they are much easier to manage and require less effort to organize. The Chief Information Officer (CIO) can take the lead in developing IT Governance processes and work directly with the Chief Executive Officer (CEO) and executive team. The challenge for centralized Information Technology organizations is to refrain from becoming a monarchy and to ensure that business units and operating groups have a voice (contribution) in the process.

**Decentralized:** Each business unit make its own IT investment decision (develop, acquire and manage), there are no formal processes between business units (islands of systems). IT investment decisions may be optimized at the business unit level but not at organization level. This often results in duplicated infrastructure and applications, and little sharing of resources or expertise, if any. The challenge is to develop an enterprise wide Information Technology Governance process that enables the organization to make tradeoffs.

**Federated:** These are hybrid organizations that have both decentralized and centralized mechanism. Most infrastructure and enterprise wide applications are centralized in a corporate IT organization and operated as a shared service with chargeback, while business units retain control over business unit-specific applications and development. This attempt to create the best of both worlds (hybrid IT organization), centralized control for reduced costs, with applications development left with the business units where it can be more responsive to the ever changing needs of customers. The challenge for federated Information Technology organizations is to

strike a balance between the needs of the business units for infrastructure investments and to conform to enterprise architecture and standards.

According to Weill (2004), top-performing enterprises govern IT differently from each other and from average enterprises. Growth oriented firms decentralize more of their IT decision rights and place IT capabilities in the business units where as those leading on profit centralize more decision rights.

Weill and Ross (2004) also come up with detailed decision-making allocation models that go beyond the traditional centralized, decentralized, or federal approaches. They identified five inter related IT Governance decisions and Six IT Governance decision making style (archetype) and created IT Governance matrix. The IT Governance arrangement matrix addresses the most important IT Governance questions: what decision must be made and who should make them?

The five IT decision areas are:

1. **IT principles:** formulating a set of high level statements about how Information Technology is used in the organization. IT principle decision sets the direction for other IT decisions. IT principles should take in to account business principles (strategy) and be formulated on how to support business strategy and objectives. It is all about what is the strategic role of IT in the organization.
2. **IT architecture:** designing and organizing a blueprint for data, applications and infrastructure needs of the organization. It is captured in the form of policies, relationships and technical choices to attain desired technical standardization and integration. Information Technology architecture is an abstract design of the overall information systems structure. IT architecture provides guidance on how to build, install and integrate IT infrastructure and applications.
3. **IT Infrastructure:** Selecting centrally coordinated, shared IT services that provide the foundation for the organization's IT capability. IT infrastructure consists of technical components (computers, network devices and printers), shared IT services (management of mainframe and shared customer databases) and shared applications (Enterprise Resource Planning, Customer Relationship Management, and Supply Chain Management, systems).
4. **Business application need:** Specifying the business need for purchased or in-house developed IT applications. Contrary to shared applications like ERP, business applications are local applications that change frequently as market situations change. They address

business requirements and create value for customers. So as to develop strategic IT applications that deliver value, business needs have to be identified and specified.

5. **IT investment and prioritization:** determining how much to invest and on which IT project(s). It includes project approvals and justification techniques (business case). IT investment and prioritization direct resources to convert Information Technology principles into systems.

The above IT Governance decisions can be made by the following six kinds of IT Governance archetypes (style) i.e. the Locus of IT related decision making authority lies on one or combination of them.

1. **Business monarchy:** A group of Chief Executive Officer (CEO) and other C-level business managers such as CFO (Chief Financial Officer) and COO (Chief Operation Officer). It can include committee of senior business managers held exclusive decision making right.
2. **IT monarchy:** CIO and/or senior IT Managers held exclusive decision making right.
3. **Feudal:** Managers of each business unit or function make independent decisions.
4. **Federal:** Combination of business executives (C-level), senior managers and the business units with or without IT people (IT manager, CIO) involved.
5. **IT duopoly:** Combination of IT and business people. IT people may be a central IT group (CIO) and business unit IT group. Business people may be business executives or business unit managers. IT duopoly archetype is different from Federal in that Federal always has both a central business group and business units. IT duopoly can have either central business group or business units, but instead has always IT people.
6. **Anarchy:** Isolated individual (small groups) that make their own decision based on their local needs.

### 2.1.8 Necessary Elements of IT Governance

According to De Haes and Van Grembergen (2008), IT Governance can be deployed using a mixture of various structures, processes and relational mechanisms.

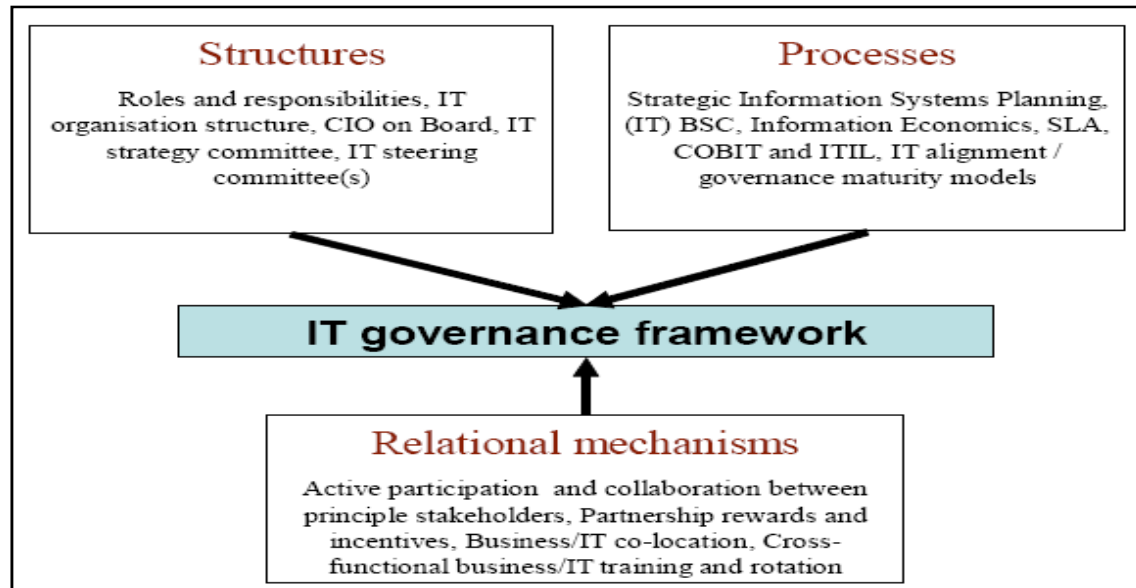


Figure 3 Necessary elements of IT Governance framework from De Haes & Van Grembergen (2008)

Symons et.al (2005) also mentioned every IT Governance framework must address governance structures (who makes the decisions, who participate in the committees and what is the responsibilities of participants), governance processes (the how of IT Governance i.e. the processes of how IT projects are prioritized and IT investments are made), and governance communications to measure, monitor and communicate performance of the overall IT Governance result. Organizations with a mature mix of IT Governance mechanisms indeed achieved higher degree of business / IT alignment compared to other organizations. The above framework (Figure 3) depicts comprehensible relationship between IT Governance structure, processes and relational mechanisms.

#### 2.1.8.1 IT Governance Structures:

IT Governance structures includes structural devices and mechanisms for connecting and enabling horizontal (liaison) contacts between business and IT function. They include governance-specific positions, reporting relationships, and committees either created especially for or repurposed to execute IT Governance processes.

IT organization structure with a clearly defined roles and responsibilities is one of the elements of IT Governance structure. Formulate IT organization structure based on corporate governance

model and business strategy of the organization. Allocate clearly roles and responsibilities for each stakeholders of IT Governance

The bulk of governance work is carried out by committees or sub-committees made of board members, executives and senior management. IT Governance is a collaborative process, hence IT Governance committees should be as inclusive as possible i.e. there must be a healthy mix of business unit, corporate, and IT membership. It is customary multiple committees work at different levels and capacity to carry out IT Governance processes. IT Strategy committee composed of executive management and senior management to assist the board in governing and overseeing the enterprise's IT-related matters. IT steering committee to evaluate and prioritize IT projects/investments based on their contribution to the achievement of business strategy. IT architecture committee composed of business and IT people to provide architecture guidelines (make sure that any IT related decision be it hardware or software meets organization standards). IT audit and security/compliance committees to make sure that IT comply with both internal policies as well as external legal and regulatory directives.

According to De Haes and Van Grembergen (2008), effective IT Governance structure consists of direct reporting between CIO and CEO. This ensures that IT is part of executive team where most strategy discussions begin and end. Without this seat at the table, IT will be limited to support organization as opposed to enabling organization. IT Governance officer who is directly reporting to CIO is also another important element of IT Governance structure. Another position that plays an important role in IT Governance is the IT relationship manager who can act as an intermediary between business and IT.

### ***2.1.8.2 IT Governance Processes***

IT Governance processes are the formalization and institutionalization of IT decisions that are made by stakeholders. These include Strategic information system planning (SISP), IT investment proposal, architecture exception processes, allocation of IT costs to business units through chargeback mechanism, introducing IT performance measurement and monitoring mechanisms (Like IT BSC, SLA, KPI, KGI, KRI ...), forcing all IT demands through a single point where demands can be consolidated, prioritized, evaluated and fulfilled through portfolio management.

### ***2.1.8.3 IT Governance Relational Mechanisms***

IT Governance relational mechanisms are about active participation and collaborative relationship among corporate executives, IT management, and business management (creating strategic partnership between business and IT leaders). Relational mechanisms are crucial for attaining and sustaining business/IT alignment, even when the appropriate IT Governance structures and processes are in place. Active communication and collaboration between business and IT is a critical IT Governance success factor since it boosts their mutual understanding and formulating shared goals. In addition ensuring ongoing knowledge sharing across departments and organizations is paramount for attaining and sustaining business-IT alignment. The ability of the CIO to articulate a vision for IT's role in the organization and get buy in from board and/or executives, conducting IT Governance awareness campaign and developing portal to communicate IT Governance related information are also critical success factors. According to Symons et.al, (2005), good IT Governance requires discipline and commitment; it also needs to adapt the organization structure the culture, and the overall strategy of the company.

## ***2. 2 IT Governance in Ethiopia***

In today's increasingly globalized and vibrant business world, IT is one of the key determinants of competitiveness and growth of firms. The competitive advantage of a firm is gradually being determined by the strategic role of IT in the organization.

The precondition for introducing an IT-based product and service is the existence of an effective and reliable Information and Communication Technology (ICT) infrastructure and services. ICT is a key component of financial service delivery. Without reliable and effective ICT infrastructure it is nearly impossible to provide efficient and effective financial services like ATM, Mobile and internet banking.

Unfortunately, underdeveloped countries like Ethiopia are adopting IT lately as a means to achieve economic growth and social development. Despite the early introduction of telecommunication in Ethiopia (during Minilik the II), the country has one of the most underdeveloped ICT infrastructures in the world (Dessalegn, 2011). To tackle the ICT infrastructure deficit the Ethiopian government set a strategic direction on the GTP (Growth and Transformation Plan) I (2010) to enhance ICT infrastructure, human resource development and the legal and regulatory framework related to ICT.

Early application of automation in the financial sector had little, if any, direct effect on the users of financial services i.e. it focused on automating the back office operation to minimize cost of transaction and generation of financial (MIS) reports. Due to some improvement on the ICT infrastructure in the recent year's financial institutions particularly banks launched various IT based product and services. By implementing core banking system, in addition to decreasing the transaction time and cost of operations, banks are able to introduce new IT based products and services like ATMs, Internet banking, Mobile and other IT based products and services to their customers. As a result IT has become crucial in the support, sustainability and growth of the firm.

As compared to other African nations like Nigeria and Kenya, IT Governance did not get that much attention from government, practitioners as well as academicians in Ethiopia. As an example Central Nigerian Bank (CNB) (2013) introduced IT standards to both local and foreign financial institutions. The directive requires all financial institutions to achieve minimum maturity of level 3 (defined stage) in a scale of 0 to 5 i.e. IT Governance process have to be properly defined, documented, communicated and integrated into organizational practices through formally approved policy. The IT Standards Governance Council of the CBN periodically monitors whether financial institutions adhere to the directive or not.

Central Bank of Kenya (2012) also set a guideline which requires boards of financial institutions to establish IT Governance charter and policies. The charter and policies should clearly outline the decision-making rights and accountability framework, aligning business and IT, creating steering committees, make sure that values are derived from IT and form independent control framework to get independent assurance on the effectiveness of IT Governance to mention a few.

### ***2.2.1 Corporate Governance in Financial Institutions of Ethiopia***

According to ITGI (2003) IT Governance is not an isolated discipline. It is an integral part of the overall corporate governance. As a regulatory body, in 2015 National Bank of Ethiopia (NBE) introduced Corporate Governance directive which requires financial institutions to comply with. The aim of Bank Corporate Governance Directives No SBB/62/2015 is to make sure that financial institutions are soundly and prudently managed and directed. As it is stated on the directives, corporate governance gives way to balanced risk taking and enhances business prudence, prosperity and corporate accountability with ultimate objective of realizing long term shareholders value, consumers' and other stakeholders interest. The directive clearly stated the

roles and responsibilities of board of directors as well as senior executives who are appointed by the board.

Article 5.2 of the directive says that, the board may preferably comprise of directors who have competencies in banking, finance, accounting, legal..., information technology and investment management. DeHeas and Van Grambergn (2008) advocate presence of IT expertise at board level significantly improve the level of IT Governance in the institution.

Some of the responsibilities of board of directors are establishing and ensuring the effective functioning of various board sub-committees (like Audit Committee, Risk management and compliance committee ...). Ensuring that appropriate management information system (MIS) is established to produce accurate, complete, relevant and timely information on the performance of the bank.

The chief executive officer (President) shall at least be responsible for developing corporate strategies, policies, business plans & budgets. Preparing organizational structure that clearly assigns duties and responsibilities. Develop management information system (MIS) that adequately addresses the bank's business environment and risk profile.

Developing, approving and implementing procedure manuals, guidelines and controls to address compliance with laws and regulations applicable to the bank's business environment and risk profile. Make sure that the above documents are properly documented and communicated to all concerned staff.

The directive also requires institutions to develop key performance indicators to monitor the performance of senior management. It also lists around 17 policies, procedure, manuals, and guidelines financial institutions must develop, document and communicate.

Furthermore the directive insists institutions to upload on their web site information related to the board members, including their qualification, experience, and board sub-committees; and basic organizational structure, including line business structure.

To sum up, even if the directives do not directly mention the term IT Governance, most aspects of IT Governance are incorporated in the directives. To mention a few, creation of clear organization structure with roles and responsibilities, developing strategic plan, developing MIS system, setting key performance indicators and key risk indicators, uploading sub-committee roles and responsibilities on the company web sites/portal are indicators and documenting and communicating the same.

### 2.3 IT Governance Maturity

Development and maintenance of the capability to perform key IT processes is one aspect of IT Governance. The IT function, working with other business units, has to build a variety of capabilities to meet organizational strategy and objectives (Debreceeny & 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 (Bowen & Schneid, 2013). The CMM was developed further into CMMI, which provides a generalized framework and models for process improvement. It has become usual to use variations of this model to describe the maturity of non-software processes and to extend it for use outside of the process improvement areas defined in the CMMI. The original Maturity Model has five levels ranging from level 1 (initial) to level 5 (Optimized). The fundamental principle of such a maturity measurement is that one can only move to a higher maturity level when all conditions, described in a certain maturity level, are fulfilled. COBIT version 4.1 adapted CMMI terminologies in its six levels of IT Governance maturity, by adding Level 0 (Non-existent), (See Figure 4 and 5).

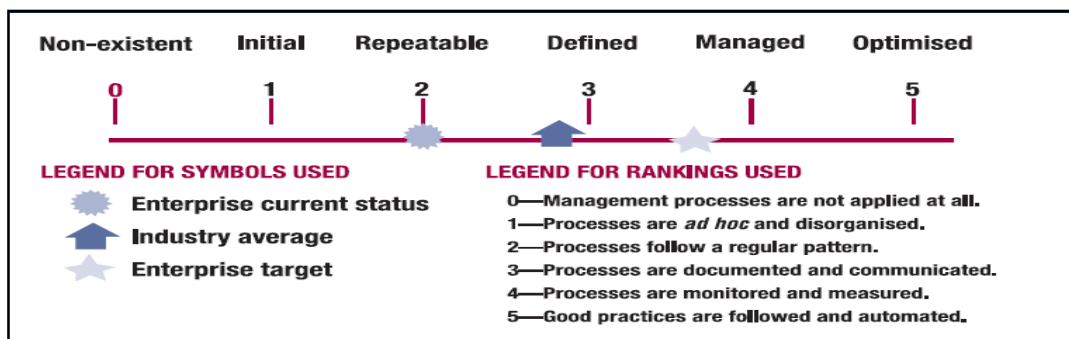


Figure 4 IT Governance maturity scale from ITGI (2005)

**Level 0 (Non-Existent):** shows complete lack of any recognizable processes. The organization has not even recognized that there is an IT Governance issues to be addressed.

**Level 1 (Initial):** there is evidence that the organization has recognized that the issues exist and need to be addressed. There is however no processes standardized but 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 disorganized.

**Level 2 (Repeatable):** 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.

**Level 3 (Defined):** procedures have been standardized and documented, and communicated through training. It is however left to the individual to follow these processes, and it is unlikely that deviations will be detected.

**Level 4 (Managed and Measurable):** it is possible to monitor and measure compliance with procedures and to take action where processes appear not to be working effectively. Processes are under constant improvement and provide good practice.

**Level 5 (Optimized):** processes have been refined to a level of best practice, based on the results of continuous improvement and maturity modeling with other organizations.

Figure 5 Generic Maturity Model from ITGI (2005)

Differences in IT Governance maturity come from factors such as the risks facing the organization and the contribution of processes to value generation and service delivery. ITGI (2005) recommends leaders to assess their organization's IT Governance maturity to identify the greatest opportunities for improvement relative to competitors or industry standards. To implement effective governance of IT, enterprises need to assess how well they are currently performing and identify precisely where and how improvements can be made to bring these processes up to the desired capability target level.

The more mature an organization becomes, the more repeatable processes exist. However sometimes it does not make economic sense to be at level five (Optimized) maturities for every IT Governance process or practices, because the benefits of being at level five for every process could not justify the costs of achieving and maintaining that level of maturity. One would expect process maturity levels to vary for different IT Governance processes, IT infrastructure and industry characteristics. For example, level two may be desirable for one IT Governance process, but inappropriate for more critical IT Governance process. This shows that maturity levels are not a goal, but rather they are a means to evaluate the adequacy of the internal controls with respect to business strategies and objectives (Pederiva, 2003).

## ***2.4 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 financial sector of Ethiopia. However there are studies which were conducted locally as well as internationally which addressed some aspects of this study.

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). The study also did not compare IT Governance maturity level at CBE against privately owned banks as well as insurance companies. In addition the study didn’t address the prevalent IT Governance archetype (style) at CBE.

Misrak (2015) on her thesis titled “Information Technology Investment in Financial Sector of Ethiopia: Towards Qualitative Measurements of an IT ROI Conceptual Model” uses a combination of qualitative and quantitative research method (Mixed approach) to develop a conceptual framework which enhances IT ROI by identifying constructs, evaluating their relationship and influence on a qualitative ROI in IT. She found that IT Governance in banking

industry is relatively better than Insurance Industry. Regarding strategic alignment of IT and business and IT business value, banking industry is in a better position than that of Insurance. Though she took IT Governance as one of the construct of IT ROI, IT Governance maturity level was not measured objectively using a maturity scale. The result did not show the exact level of IT Governance maturity of banks and insurance companies rather it compares their maturity subjectively. The result would be more helpful to financial institutions, either to improve or sustain the as-is IT Governance situation, if the maturity level is presented objectively using generic maturity model 0 (non-existent) to 5(optimized). Her thesis also didn't address the prevalent IT Governance archetype in the financial sector of Ethiopia.

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.

In a related research 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 established by ISACA. The 15 most important IT Governance processes from a set of COBIT's 34 processes are mailed to 378 senior

IT/IS managers to self assess the level of IT governance maturity in their respective organization. The net response rate of the survey was 27%.

The result shows that IT Governance maturity level in Australia public sector fluctuate between 2.5 and 3.5 based on a generic maturity scale from 0(non-existence) to 5(optimized), with most of the maturity levels (9 out of 15 most important IT Governance processes) falling between 3 and 3.5. Since the international benchmark fluctuates between 2 and 3, with most of the maturity levels (10 out of 15 most important IT Governance processes) falling between 2 and 2.5, the variation between the international benchmark and the Australian public sector is 1 maturity level. The researchers concluded that, the Australian public sector performed better than the international benchmark.

In a similar research, Nfuka and Lazar (2010) conducted a study on “IT Governance Maturity in the Public Sector Organizations in a Developing Country: The Case of Tanzania”. The purpose of the study was to analyze IT Governance maturity in Tanzanian public sector organizations and to compare the result with two similar studies previously done in Australia 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 (comprising of Business and IT representatives) in each organizations. The researchers also used the 15 most important COBIT IT governance practices which were used in the previous research.

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 lower. 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, this

means that Australia's IT Governance practices are clearly defined, documented and communicated in contrast to the case of Tanzanian public sector organizations.

Three of the aforementioned studies used COBIT framework to assess IT Governance maturity in both public and private institutions but no comparison was made between the two sectors. The result would be more interesting if IT Governance maturity comparison is made between private and public sector as well where IT decision making right is located in each sectors.

In a related research Liu Zhen and Mojtaba Ress (2014) conducted a research in title "Assessment of IT Governance and Process Maturity: Evidence from banking Industry" in 17 public and private Iranian Banks using COBIT 4.1 framework. The aim of the study was to assess the alignment of business strategies with IT strategies and to compare IT Governance maturity between private and public Banks. The researchers used mixed (qualitative and quantitative) methodology and semi-structured interview to gather data from respondents.

The highest and the lowest IT Governance maturity among privately-owned banks were 2.14 and 2.05 where as that of publicly owned banks was 1.92 and 1.74 respectively based on a generic maturity scale from 0(non-existence) to 5(optimized). The average IT Governance maturity of privately owned banks was 2.08 where as publicly owned banks was 1.79.

Though, Iranian banks are at the lowest IT Governance maturity level, between 1 (initial) and 2 (repeatable), IT Governance maturity in privately owned banks (2.08) were more mature than that of publicly owned banks (1.79). In general privately-owned banks have higher IT Governance and process maturity than that of publicly-owned banks.

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 series of in-depth interviews 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.

DeHeas and Van Grambergen (2008) conducted a study titled "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, it appears that 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. But implementation wise, 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.

Kaur, et.al (2012) conducted a research in title: “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 targeting senior IT personnel (CIO or IT Directors) from various industries. The survey question were 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 private/public sectors or between industries instead of aggregating private sector in to a single group.

Author	Objective	Method	Finding	Remark
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) and no comparison is also made with privately owned banks as well as insurance companies. In addition small sample size.
Misrak (2015)	To develop a framework which enhances qualitative IT ROI for financial institutions in Ethiopia	Mixed Approach (Qualitative and Quantitative research )	IT Governance at banking industry is better than that of insurance. Strategic alignment between business and IT as well as value delivery from IT is also better in the banking sector.	Objective measurements like the generic capability maturity scale were not used to measure and compare IT Governance maturity between private and public financial institutions as well as between banks and insurance companies.
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 rated 1.95 which is way behind as compared to Australia (3) and international (2.5) case.	Only public sector was considered in the study (no comparison was made with private institutions). In addition the prevalent IT Governance archetype (locus of IT decision making right) was not studied.
Liu Zhen and Mojtaba Ress (2014)	To assess IT Governance and process maturity between private and public Iranian Banks	Qualitative and Quantitative research	Privately-owned banks have higher IT Governance and process maturity than that of publicly-owned banks.	The research considered only the banking sector. No comparison was made with insurance sector. In addition the prevalent IT Governance archetype was not studied.
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.	The researchers considered only five small Banks, the result would be representative if medium as well as large banks are included in the study. It would also be more interesting the result is compared with the insurance sector.
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 IT Governance maturity comparison is made between private and public sector. In addition the locus of IT decision authority is identified.
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.	The prevalent IT Governance archetypes (locus of IT decision authority) at each institution were not studied.

Table 1 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.

According to Hevner et al. (2004) Information System (IS) research involves two distinct and complementary paradigms, namely behavioral science and design science research. Behavioral science seeks to develop and justify theories that explain or predict organizational and human phenomena regarding information system where as design science seeks to develop innovative artifacts. This research follows behavioral science paradigm since the objective of the study is assessing IT Governance maturity in the financial sector of Ethiopia based on an existing IT Governance framework.

### ***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 each sample financial institutions and also to make comparison between private and public financial institutions (Kotari, 2004) moreover Zegeye et.al. (2009) stated that “Surveys gather data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared.”

### ***3.1.1 Research Methodology /Approach***

The selection of research approach is depends on the research problem, research questions and the objectives of the research. According to Kotari (2004) there are three approaches to conduct a research: qualitative, quantitative and mixed approaches. Quantitative approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. Qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior. Research in such a situation is a function of researcher's insights and impressions. Mixed approach utilizes the strengths of both qualitative and quantitative research.

In this study mainly a survey method was employed to assess the perceived importance and maturity of IT Governance in financial sector of Ethiopia. Survey was preferred because it is an appropriate means of gathering data when the information sought is specific and familiar to the respondents (Ronald, 2005). The survey result was complemented and triangulated with interview with IT leaders and some key document review.

### ***3.1.2 Study Setting***

The geographical coverage of this research is limited to Addis Ababa since the head quarters of all financial institutions are located in the capital city. The data was gathered from senior business and IT expertise at the head offices of sample institution.

### ***3.1.3 Target Population and Sampling Method***

According to the National Bank of Ethiopia NBE (2015), currently there are 17 Banks (16 private and 1 publicly owned), and 17 insurance companies (16 private and 1 publicly owned) operating in Ethiopia. The sample frame of this research was all the 34 financial institutions (public/private banks and insurance companies) in Ethiopia.

A combination of simple random and purposive sampling was used to select four privately owned and two publicly owned financial institutions. Out of sixteen privately owned banks using simple random sampling Dashen Bank and Zemen Bank were selected and in the same manner out of sixteen privately owned insurance companies National Insurance Company of Ethiopia (NICE) and Nile Insurance were selected randomly. Simple random sampling was preferred

because the population is small and relatively homogenous as a result each member of the population will have equal probability to be selected, furthermore the financial sector is a highly controlled and regulated sector (Bogale & Amoroso, 2015).

Since one of the objectives of the research is comparing IT Governance maturity between private and public financial institutions, using purposive sampling two of the only publicly owned financial institutions namely Commercial Bank of Ethiopia and Ethiopian Insurance Company were included in the survey.

Regarding target respondents, purposive sampling specifically expert sampling was used to select a total of 96 senior IT and business expertise/leaders to participate in the study. Target key informants were division heads and above IT expertise (i.e. IT division heads, IT Managers, and CIO or parallel position) and executives, business unit managers and business expertise since they are the stakeholders in IT Governance. Purposive sampling was used because participants were selected based on their insight or special perspective and experience on the issue under investigation. Expert sampling was preferred since IT Governance involves senior IT / business units employees (ITGI, 2003).

As a result 20 senior IT/business experts from each Bank and 12 from each insurance company were 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 sample institutions.

### ***3.1.4 Method of Data Collection***

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, annual reports, National Bank of Ethiopia (NBE) directives and the website of each company 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 (Zohrabi, 2013).

### ***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 administrated questionnaire to collect data from senior business and IT leaders. 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; Zohrabi 2013).

The self administered questionnaire contains forty closed-ended items, of which thirty one of them were adopted from DeHeas and Van Grambergn (2008), seven items were developed from IT Governance related literature and two 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 their email address and received a permission to use the survey instrument (See appendix F).

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 respective 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 "non existence" 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 (Zohrabi, 2013).

#### ***3.1.5.2 Validity and Reliability***

Validity and reliability are the two fundamental elements in the evaluation of a measurement instrument. Validity indicates the degree to which an instrument measures what it is supposed to measure (Kotari, 2004). In this research content validity test was conducted. Content validity assesses the extent to which a measuring instrument provides adequate coverage of the topic under study.

After developing the data collection instrument, it was forwarded to four IT/IS practitioners (who have practical experience as well as training on both COBIT and ITIL IT Governance

frameworks) as well as two academicians for comment (to modify unclear/ambiguous questions, get rid of unnecessary questions and to include additional questions if any) accompanied with cover letter (See Appendix B). Based on the reviewers comments some unclear questions were rephrased, the order of some questions were rearranged, one question was removed from the list and two additional new questions (the need for IT project & change management unit and business continuity & disaster recovery plan) were added on the list.

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 18 respondents from two financial institutions. According to Connelly (2008), a pilot study sample should be at least 10% of the sample projected for the study. In this research 19% 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 **.851** which confirms that the survey instrument was reliable and can produce consistent results.

Case Processing Summary							
		N	%	Reliability Statistics			
Cases	Valid	18	100.0	Cronbach's Alpha	N of Items		
	Excluded <sup>a</sup>	0	0.0			<b>.851</b>	80
	Total	18	100.0				
a. Listwise deletion based on all variables in the procedure.							

**Table 2. Cronbach's alpha result of the pilot test (Source: reliability test 2016).**

Following the positive outcome of the pilot test, the final survey instrument (questionnaire) was distributed to 96 respondents accompanied with cover letter which clearly explain the purpose of the study and confidentiality of the information collected from participants (see Appendix A and Appendix C). The survey instrument comprised of two parts. The first part contains 6 demography questions. The second part consists of 40 items categorized in to IT Governance Structure, IT Governance Processes and IT Governance Relational Mechanisms having 16, 12 and 12 questions respectively.

### ***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). The qualitative data which were collected from CIO or 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, Business/IT alignment and IT Governance archetype. To sum, the survey result, analysis of the qualitative data and review of 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 the financial sector of Ethiopia. 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 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*

The chapter presented and interpreted the perceived importance and maturity of IT Governance in the financial sector of Ethiopia in terms of IT Governance Structure, Process and Relational Mechanism.

A total of 96 self administered questionnaires were distributed to six private and public financial institutions (Banks and Insurance) to collect data on the perceived importance and maturity of IT Governance from business and IT executives/professionals. Out of the 96 questionnaire, 85 were returned and 11 of them failed to return. During data encoding out of the 85 returned questionnaires 77 of them were found useful and the rest were significantly incomplete. This shows that response rate of 80% was achieved.

For both banking and insurance sector 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 in the banking and insurance sector was presented based on IT Governance Structure, Processes and Relational Mechanisms using chart and frequency table. The most and least mature IT Governance practices as well as the prevalent IT Governance archetype also discussed.

Then findings of IT Governance maturity were discussed between private and public financial institutions, banks and insurance, as well as at the financial sector as a whole. In addition the prevalent IT Governance archetype (locus of IT decision authority) of both insurance and banking sector was discussed. Findings also presented and discussed alongside with related works done previously by other researchers.

## 4.2 Data Presentation Banking Sector

### 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 CBE, Dashen and Zemen Bank.

		Frequency	Percentage	Valid Percentage
<b>Gender</b>	Male	46	90 %	90 %
	Female	5	10 %	10 %
	<b>Total</b>	<b>51</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Age</b>	<25 Years	1	2%	2%
	Between 25 and 30	8	16%	16%
	Between 31 and 40	27	53%	53%
	Between 41 and 50	14	27%	27%
	>50 Years	1	2%	2%
	<b>Total</b>	<b>51</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Educational Status</b>	Bachelor	33	65 %	65 %
	Masters	18	35 %	35 %
	<b>Total</b>	<b>51</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Work Experience</b>	< 2 Years	7	14 %	14 %
	Between 2 and 5	12	24 %	24 %
	Between 5 and 10	18	35 %	35 %
	>10 years	14	27 %	27 %
	<b>Total</b>	<b>51</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Current Job Position</b>	IT Manager & Director	10	20 %	20 %
	IT Professional	25	49 %	49 %
	Business Manager	10	20 %	20 %
	Business Professional	6	12 %	12 %
	<b>Total</b>	<b>51</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>ITG related Training/Certificate</b>	COBIT	3	6 %	6 %
	ITIL	16	31 %	31 %
	COBIT and ITIL or ISO	9	18 %	18 %
	None	23	45 %	45 %
	<b>Total</b>	<b>51</b>	<b>100 %</b>	<b>100 %</b>

Table 3 Respondents' demography Banking Sector (Source: Survey result 2016)

The findings as presented in Table 3, Male formed 90 % of respondents and Female 10%. This shows that there is gender gap at decision making level in the banking sector. Regarding Age, majority of the respondents (53% of them) fall in the age between 31 and 40 followed by 27 % of them between the age of 41 and 50. Considering education 35 % of them had master's degree and 65% of them had bachelor degree. When it comes to work experience 35% of respondents have between 5 and 10 years of experience. Furthermore the table shows that 69% of respondents were either IT managers or professionals followed by business managers (10%).

The table also shows that majority of respondents (55 %) have training/certificate on at least one IT Governance frameworks (ITIL/COBIT/ISO). The educational status, work experience and training taken by respondents' shows that there is favorable environment to achieve desired level of IT Governance maturity in the banking sector.

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 16 IT Governance Structure, 12 IT Governance Process and 12 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 in the Banking Sector

As can be seen on Figure 6, 85% 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, 58% of respondents said that it is either at initial stage (level 1) or not recognized at all (level 0) in the banking sector. Only 22 % of respondents rated IT Governance structure maturity either at defined (level 3) or managed stage (level 4) in the banking sector based on a generic maturity scale from 0(non-existence) to 5(optimized).

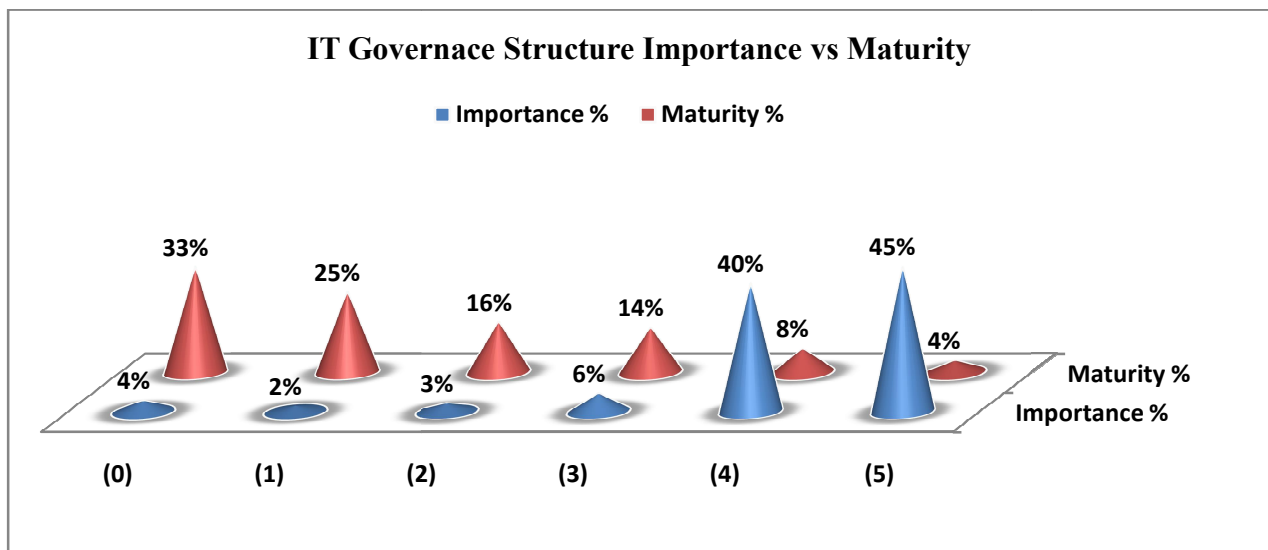


Figure 6 ITG Structure Importance Vs Maturity in the Banking Sector (Source: Survey result 2016)

Perceived Importance of IT Governance Structure in the Banking Sector																	
Statistics																	
	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	SI11	SI12	SI13	SI14	SI15	SI16	
N	Valid	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Mean	4.37	4.33	4.12	3.92	4.12	4.33	3.75	3.92	4.1	4.14	3.53	4.37	4.49	4.3	4.29	4.12
	Median	4	4	4	4	5	4	4	4	4	5	4	4	5	4	5	4
	Mode	4	4	4 <sup>a</sup>	5	5	5	4 <sup>a</sup>	4 <sup>a</sup>	5	5	4	4	5	5	5	4 <sup>a</sup>
	Deviation	0.56	0.65	1.14	1.47	1.42	0.74	1.47	1.34	1.38	1.36	1.63	0.66	0.61	0.9	1.05	1.14
	Variance	0.32	0.43	1.31	2.15	2.03	0.55	2.15	1.79	1.89	1.84	2.65	0.44	0.38	0.7	1.09	1.31
a. Multiple modes exist. The smallest value is shown																	

Table 4 Perceived Importance of IT Governance Structure in the Banking Sector (Source: Survey result 2016)

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 leaders in the banking sector strongly agree on the importance of IT Governance Structure practices. Beside, S13 (presence of IT security/risk officer), S1 (IT organization structure with clearly defined roles and responsibilities) were rated the most important IT Governance structure practice with a mean of 4.49 and 4.37 and standard deviation of 0.61 and 0.56 respectively where as S7 (Office of IT Governance) and S11 (IT architecture steering committee), were rated the least important IT Governance structure practice with a mean value of 3.75 and 3.53 respectively.

Maturity of IT Governance Structure in the Banking Sector																	
Statistics																	
	SM1	SM2	SM3	SM4	SM5	SM6	SM7	SM8	SM9	SM10	SM11	SM12	SM13	SM14	SM15	SM16	
N	Valid	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Mean	2.88	1.71	1.31	1.78	2.02	2.24	.49	.98	1.33	.75	.47	1.92	2.55	1.47	1.12	.86
	Median	3.00	2.00	1.00	1.00	2.00	2.00	0.00	1.00	1.00	0.00	0.00	2.00	3.00	1.00	1.00	1.00
	Mode	3	1	1	0	3	3	0	1	1	0	0	1	2 <sup>a</sup>	1	1	0
	Std.	.993	1.361	1.241	1.604	1.516	1.531	1.027	1.157	1.409	1.214	1.046	1.534	1.222	1.302	1.070	1.167
	Variance	.986	1.852	1.540	2.573	2.300	2.344	1.055	1.340	1.987	1.474	1.094	2.354	1.493	1.694	1.146	1.361
a. Multiple modes exist. The smallest value is shown																	

Table 5 Maturity of IT Governance Structure Frequency Table Banking Sector (Source: Survey result 2016)

Regarding maturity of IT Governance structure practices as shown on Table 5, out of the sixteen elements only four of them namely S1 (IT organization structure with clearly defined roles and responsibilities), S13 (IT Security/compliance officer), S6 (CIO reporting to CEO) and S5 (CIO full member of executive team) were rated above repeatable stage (level 2) with a mean value of 2.88, 2.55 2.24, and 2.02 respectively based on a generic maturity scale from 0 (non-existence) to 5 (optimized). This shows that only four (25%) of IT Governance structure practices achieved a

maturity level between repeatable (level 2) and defined stage (level 3) the rest were either at initial (level 1) or non existence stage(level 0). On the other hand S7 (Office of IT Governance) and S11 (IT architecture steering committee) were rated the least mature IT Governance structure practices in the banking sector with a mean value of 0.49 and 0.47 respectively based on a generic maturity scale from 0(non-existence) to 5(optimized).

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

*IT/IS in our Bank is organized centrally at head quarter and lead by Vice President Electronic Banking and Information System (EBIS) who is directly reporting to the president (CEO) of the bank. Currently we have already finalized preparation to implement an updated IT/IS organization structure which further strengthens Vice President EBIS by annexing modernization and change management department in addition to the existing IT and Electronic Banking units. Furthermore the roles and responsibilities of each position were clearly defined, documented and communicated to all stakeholders.*

Another interviewee from other bank also said:

*IS/IT in our bank is lead by Vice President IS process who directly report to the CEO of the bank. In addition vice president IT/IS is full member of executive management. Our bank has well organized IT/IS organization structure with clearly defined roles and responsibilities. Though all IT related decisions are made centrally, to provide efficient and effective IT based product and services to the ever increasing demands of our customers, some IT related tasks were delegated to district level.*

Regarding IT Governance related committees he said that:

*Actually there are permanent committees like Audit, risk and compliance at board level. These committees were formed as a result of NBE corporate governance directives to oversee and make sure that the organization is in full compliance with NBE directives (maintain the safety and soundness of financial system ). Since IT/IS failure is considered as operational risk, these committees extend their supervision to IT/IS too. 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.*

Concerning IT Governance archetype (decision making style) the interview result was summarized as follows: A combination of IT Monarchy and IT Duopoly IT Governance

archetype prevailed in the banking sector. IT/IS leaders originate input to all IT related decisions (IT leaders have input right on IT Architecture, IT Infrastructure, IT Principle, IT Investment and business application needs of the organization) as well have exclusive decision making right on IT Architecture and Infrastructure. This means more technical issues like IT Architecture (Network, Database, operating system ... and application architecture) and IT Infrastructure ( implementation of IT architecture like servers, network infrastructure, cooling system, power supply, data center...) decisions were domains of IT executives / managers. On the other hand IT principles, IT investment & prioritization, and business application need decisions are made by business and IT executives (IT Duopoly).

The survey result somewhat agrees with the interview. Even if there is IT/IS organization structure with clearly defined roles and responsibilities and *Vice President IT/IS* is member of the executive team & report to the CEO (President) on average maturity of IT Governance structure was rated 1.5 which is half way between initial (level 1) and repeatable stage (level 2).

**4.2.3 IT Governance Process in the Banking Sector**

Regarding importance of IT Governance processes in the banking sector, as shown on Figure 7, 84 % of respondents either strongly agree or agree on the importance (50% of them strongly agree and 34 % agree). However, when it comes to actual standardization and institutionalization of IT Governance practice (processes) maturity, 32% of respondents said IT Governance processes were not recognized at all (level 0), 31% of them said that they were recognized but practiced at ad hoc level (level 1) and only 17% of them said that though undocumented, there are IT Governance processes regularly practiced (level 2).

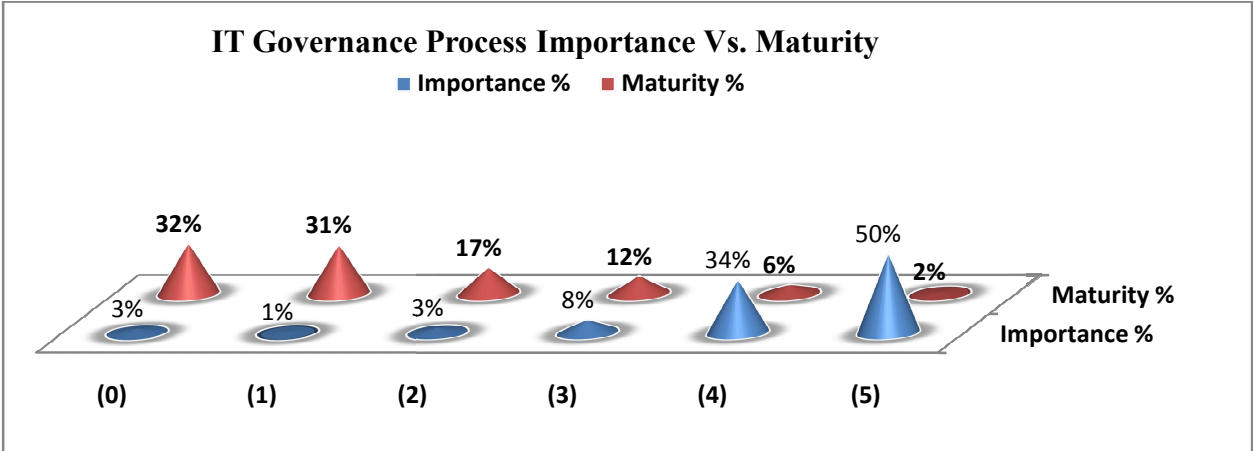


Figure 7 ITG Processes Importance Vs Maturity in the Banking Sector (Source: Survey result 2016)

Perceived Importance of IT Governance Processes in the Banking Sector													
Statistics													
		PI1	PI2	PI3	PI4	PI5	PI6	PI7	PI8	PI9	PI10	PI11	PI12
N	Valid	51	51	51	51	51	51	51	51	51	51	51	51
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		4.43	4.18	4.18	3.94	4.22	4.16	4.24	3.82	3.98	4.39	4.55	4.43
Median		5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	5.00	5.00
Mode		5	5	5	4	5	5	5	4	4 <sup>a</sup>	5	5	5
Std.		.640	1.072	1.161	1.271	1.270	1.102	.992	1.532	1.208	.802	.702	1.025
Variance		.410	1.148	1.348	1.616	1.613	1.215	.984	2.348	1.460	.643	.493	1.050
a. Multiple modes exist. The smallest value is shown													

Table 6 Perceived Importance of ITG Process Frequency Table Banking Sector (Source: Survey result 2016)

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 business and IT leaders in the banking sector strongly agree on the importance of IT Governance process practices. Furthermore the table depicts P11 (Disaster recovery and business continuity plan) and P1 (Strategic Information System Planning) were rated the most important IT Governance process with a mean of 4.55 and 4.43 respectively where as P8 (Chargeback arrangement practice) was rated the least important ITG process practice with a mean value of 3.82.

Maturity of IT Governance Processes in the Banking Sector													
Statistics													
		PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM9	PM10	PM11	PM12
N	Valid	51	51	51	51	51	51	51	51	51	51	51	51
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		1.78	1.31	.92	.90	1.06	1.02	1.43	1.00	.92	2.24	2.12	1.25
Median		2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	2.00	2.00	1.00
Mode		2	0	0	1	0	0	1	0	0	2	2	1
Std.		1.222	1.257	1.163	1.005	1.240	1.122	1.345	1.342	1.278	1.176	1.291	1.230
Variance		1.493	1.580	1.354	1.010	1.536	1.260	1.810	1.800	1.634	1.384	1.666	1.514

Table 7 IT Governance Process Maturity Frequency Table Banking Sector (Source: Survey result 2016)

When it comes to maturity of IT Governance process practices in the banking sector, as shown on Table 7, out of 12 elements, only two of them namely P10 (Formal IT budget control and reporting practice) and P11 (Disaster recovery and business continuity plan) were rated the most mature IT Governance practices having a mean value of 2.24 and 2.12 respectively where as P4 (Portfolio management) was rated the least mature IT Governance process with a mean value of 0.9 based on a generic maturity scale from 0 (non-existence) to 5 (optimized).. This shows that less than 20% 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).

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

*Currently we do not have strategic information system plan. But, as per the recommendation of our consultant (E & Y) we are working on it (it is under progress). Regarding alignment of IT with the business strategy most IT related investment as well as project decisions are made based on business cases (expected benefit in terms of cost reduction, revenue generation or market expansion or growth). As it is known our bank is pioneer in introducing both core banking and card payment system in Ethiopian banking industry. From our success history I can say that IT and business strategies are aligned (IT is enabler of business strategy)*

Another interviewee from other bank also said that:

*For the time being our bank has 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 products and services like ATM, Mobile and Internet Banking. Furthermore all IT related initiatives/investments are aligned with our business strategy. But it does not mean that everything is going smooth, rather we are getting better and better through learning from both our success as well as failure.*

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

*Currently no mechanisms are in place to measure and monitor performance of IT in our bank. Prior to measuring and monitoring performance of IT there has to be clearly defined quantitative as well as qualitatively key performance indicators in place. Recently internal IT auditors also reported that there is lack of adoption and implementation of best practices that can significantly improve value of IT*

Regarding the presence of performance measurement and monitoring another interviewee from other bank also said that:

*Currently there is no means to monitor and measure contribution of IT/IS to the achievement of our business strategy or goal. It has been only three years since our bank launched an integrated state of the art core banking system. Even if there is a substantial increase in the number of customers, profitability and market share it is difficult to attribute all these successes to implementation of core banking system and networking of*

branches. 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 units in particular.” Furthermore he said that “Recently our bank 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:

*No formal IT Governance is practiced in our bank but as per the recommendation of E&Y (IT Consultant firm), recently the bank trained both business and IT leaders on ITIL and COBIT IT Governance frameworks to pave the ground for 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 1.33 which is at 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 in the Banking Sector

As shown on Figure 8 below, respondents overwhelmingly agree (83% 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 28% of the respondents said that IT Governance relational mechanisms practices were not recognized at all (level 0), 32% of them rated IT Governance process at initial stage (level 1) and 34% of respondents rated IT Governance relational mechanisms at either repeatable (level 2) or defined stage (level 3).

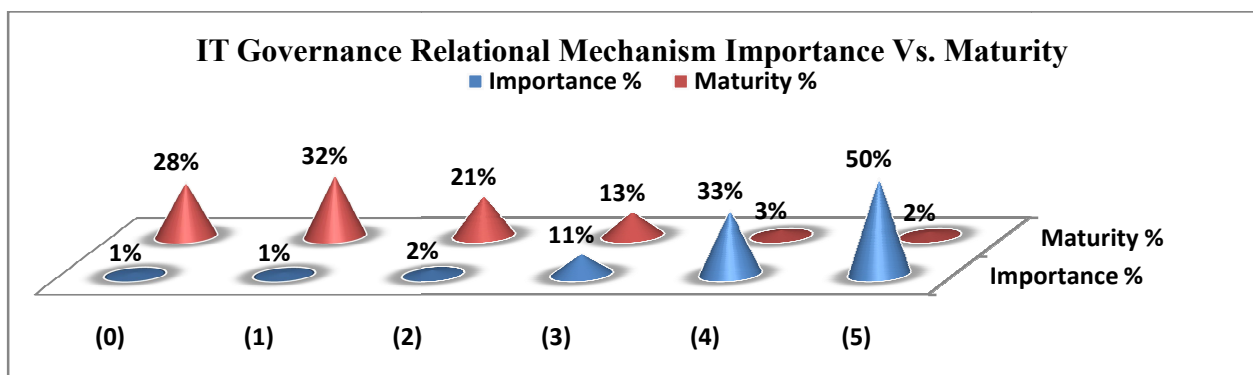


Figure 8 IT Governance Relational Mechanisms Importance Vs Maturity Banking Sector (Source: Survey result 2016)

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 leaders. Business unit leaders 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 unit leaders believe that, IT related decisions are technical issue and have to be addressed by Technical people (IT).*

Another interviewee from other bank also said that:

*The synergy between IT and other business unit is not that much strong. Though every business unit understands its side of the business, most of them lack institution wide vision i.e. they are occupied by day to day operation. This makes communication and collaboration between business and IT a bit challenging. I can say that there is limited partnership as well as understanding between business and IT leaders.*

Descriptive Statistics						
		N	Mini mum	Maxi mum	Mean	Std. Deviation
1	Mutual understanding between Business and IT ( <b>Importance</b> )	51	1	5	4.57	.781
2	IT leadership ( <b>Importance</b> )	51	3	5	4.51	.644
3	Executive management giving the good example ( <b>Importance</b> )	51	3	5	4.49	.644
10	.....	51	0	5	3.96	1.038
11	IT Relationship or account manager dedicated to specific business unit ( <b>Importance</b> )	51	0	5	3.80	1.200
12	Cross-functional Job-rotation between Business and IT ( <b>Importance</b> )	51	0	5	3.76	1.290
13	Informal meetings between business and IT senior management ( <b>Maturity</b> )	51	0	5	1.86	1.281
14	Strategic alliance/coalition between Business and IT ( <b>Maturity</b> )	51	0	5	1.78	1.222
22	....	51	0	3	.78	1.045
23	Knowledge management on IT Governance( <b>Maturity</b> )	51	0	4	.75	1.017
24	IT Relationship or account manager dedicated to specific business unit (who bridges the gap between Business and IT) ( <b>Maturity</b> )	51	0	3	.73	.940
	Valid N (listwise)	51				

Table 8 Most and least Important / Mature ITG Practices Frequency Table Banking Sector (Source Survey result 2016)

Regarding importance of IT Governance processes, as shown on Table 8, R5 (Mutual understanding between Business and IT) and R3 (IT leadership) were rated the most important IT Governance relational mechanism with a mean value of 4.57 and 4.51 respectively where as R8 (Cross-functional Job-rotation) and R11 (IT Relationship or account manager) were rated the

least important IT Governance practices in the banking sector with a mean value of 3.76 and 3.8 respectively based on a scale from 0(strongly disagree) to 5(strongly agree). On the other hand R12 (Informal meetings between business and IT senior management) and R1 (Strategic alliance/coalition between Business and IT) were rated the most mature IT Governance relational mechanisms with a mean value of 1.86 and 1.78 respectively whereas, R9 (Knowledge management on IT Governance) and R11 (IT Relationship or account manager) were rated the least mature IT Governance relational mechanism in the banking sector with a mean value of 0.75 and .73 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 1.38 or at initial stage (level 1). The interview result also confirms that there is limited strategic partnership and communication between business and IT leaders.

Concerning maturity between IT Governance mechanisms, on average IT Governance structure (1.5) was relatively more mature than that of IT Governance process (1.33) and IT Governance relational mechanism (1.38) in the banking sector of Ethiopia.

### 4.3 Data Presentation Insurance Sector

#### 4.3.1 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 EIC, NICE and Nile insurance.

		Frequency	Percentage	Valid Percentage
<b>Gender</b>	Male	21	81 %	81 %
	Female	5	19 %	19 %
	<b>Total</b>	<b>26</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Age</b>	<25 Years	0	0%	0%
	Between 25 and 30	8	31%	31%
	Between 31 and 40	12	46%	46%
	Between 41 and 50	3	12%	12%
	>50 Years	3	12%	12%
	<b>Total</b>	<b>26</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Educational Status</b>	Bachelor	21	81 %	81 %
	Masters	5	19 %	19 %
	<b>Total</b>	<b>26</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Work Experience</b>	< 2 Years	4	15 %	15 %
	Between 2 and 5	4	15 %	15 %
	Between 5 and 10	14	54 %	54 %
	>10 years	4	15 %	15 %
	<b>Total</b>	<b>26</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>Current Job Position</b>	IT Manager & Director	3	12 %	12 %
	IT Professional	5	19 %	19 %
	Business Manager	9	35 %	35 %
	Business Professional	9	35 %	35 %
	<b>Total</b>	<b>26</b>	<b>100.0 %</b>	<b>100.0 %</b>
<b>ITG related Training/Certificate</b>	COBIT	0	0 %	0 %
	ITIL	0	0 %	0 %
	COBIT and ITIL or ISO	0	0 %	0 %
	None	26	100 %	100 %
	<b>Total</b>	<b>26</b>	<b>100 %</b>	<b>100 %</b>

Table 9 Respondents' Demography Insurance Sector (Source: Survey result 2016)

Demographic information as presented in Table 4, Male formed 81 % of respondents and Female 19%. This shows that there is gender gap at decision making level in the insurance sector. Regarding Age, majority of the respondents (46% of them) fall in the age between 31 and 40 followed by 31 % of them between the age of 41 and 50. Considering education 19 % of them had master's degree and 81% of them had bachelor degree. When it comes to work experience 54% of respondents have between 5 and 10 years of experience. Furthermore the table shows 70% of respondents were either business manager or business professionals. Only 30% of them

were either IT manager or IT professionals. None of the respondents have training/certificate on any of IT Governance related frameworks.

#### 4.3.2 IT Governance Structure in the Insurance Sector

Concerning perceived importance of IT Governance structure in the insurance sector as shown on Figure 9, on average 80% of respondents either strongly agree or agree on the importance of IT Governance structure practices (40% strongly agree and 40% agree). However, when it comes to the current status of IT Governance structure practices maturity, as shown on Figure 10, 69% of respondents said that IT Governance structure practices were not recognized at all (level 0) and 19 % of them believed that it was at its initial stage (level 1).

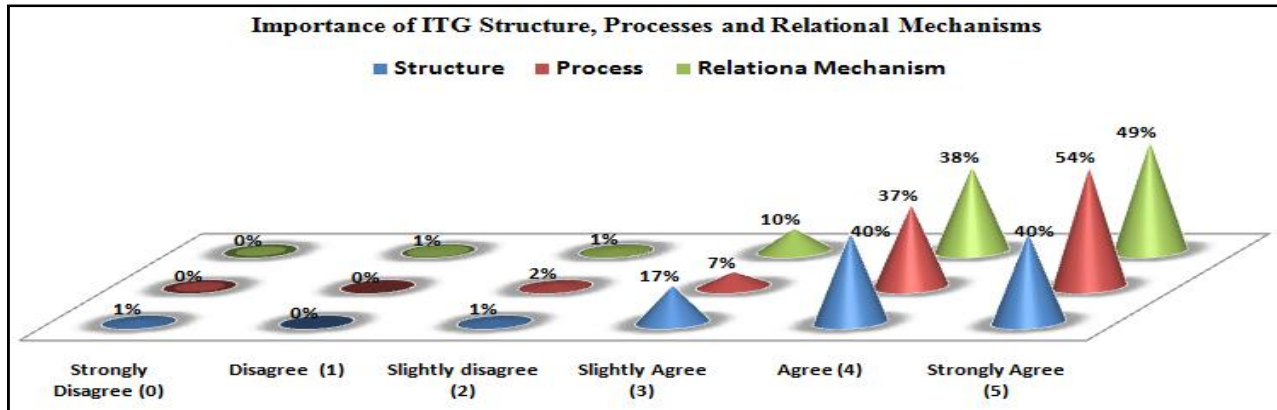


Figure 9 Importance of ITG Structure, Process and Relational Insurance Sector (Source: Survey result 2016)

Regarding IT Governance structure the interviewee said that:

*IT is organized centrally as IT service unit under Deputy CEO Operation. IT service unit manager is not member of executive team and directly report to Deputy CEO Operation. Regarding IT department organization he said that though the numbers of employees in the unit are less than five, there is clearly defined roles and responsibilities for each employee (Job description). Furthermore he said that: though our company is one of the few private insurance companies which deployed integrated insurance system ten years ago, still IT is viewed as a cost center and its role is limited to improving back office efficiency and generate periodic MIS reports for decision makers.*

Another interviewee from other insurance company also said that:

*IT/IS is organized centrally as Directorate IT Service, the director is member of executive team and directly report to the CEO. There is also IT organization structure with clearly defined roles and responsibilities.*

There is no permanent IT Governance related committees in all insurance companies and regarding IT Governance archetype, Business monarchy IT Governance archetype prevail i.e. IT leaders have only advisory role (input right) on all the five IT related decisions (IT Architecture, IT Infrastructure, IT Principle, IT Investment and business application needs of the organization). The decision making right is exclusively held by business executives.

The survey result utterly agrees with the interview. Even if there is IT/IS organization structure with clearly defined roles and responsibilities, IT leaders in the insurance sector are not members of executive team and no direct reporting to the CEO. Furthermore maturity of IT Governance structure in the insurance sector was rated 0.5 which is half way between nonexistent (level 0) and initial (level 1) based on a generic maturity scale from 0(non-existence) to 5(optimized). The interview result also confirms absence of basic IT Governance related committees as well as figurative role of IT leaders (IT is not treated as enabler of business strategy) in the insurance sector i.e. executive’s sense low value from IT investment.

### 4.3.3 IT Governance Process in the Insurance Sector

Regarding importance of IT Governance processes in the insurance sector, as shown on Figure 9, on average 93% of respondents either strongly agree or agree on importance of IT Governance processes (54% strongly agree and 37% agree). However, when it comes to maturity of standardization and institutionalization, as shown on Figure 10, 57% of them said that IT Governance processes were not recognized at all (level 0) and 27% of them said that it was at its initial stage (level 1).

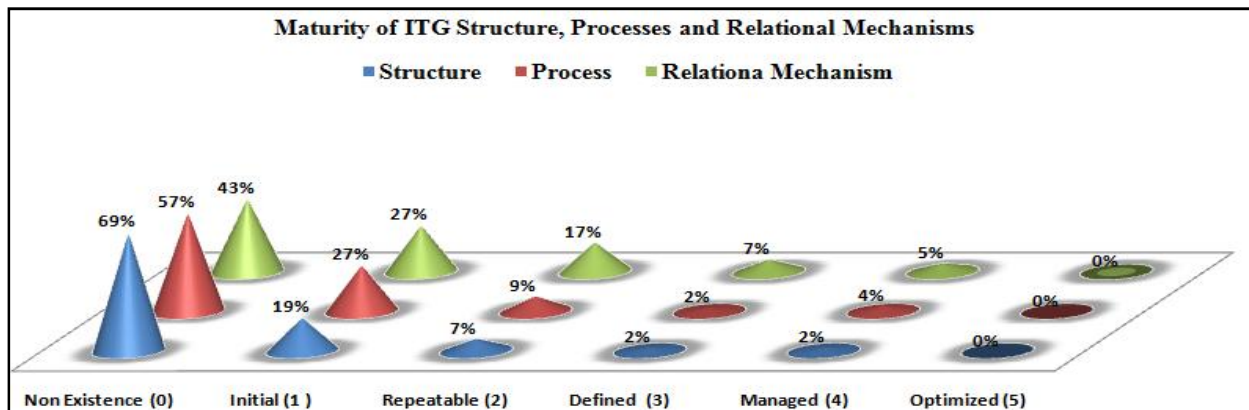


Figure 10 Maturity of ITG Structure, Process and Relational Insurance Sector (Source: Survey result 2016)

Regarding presence of SISP and its alignment to business strategy, performance measurement and monitoring and other IT Governance process practices, the interviewee said that:

*For the time being we do not have Strategic Information System Plan (SISP); as a matter of fact most executives are not convinced the value that IT can generate in the form of transaction cost reduction and market expansion. That is why there is no medium and long term IT/IS plan. There is also no performance measurement and monitoring mechanism in place. Furthermore, even if our company networked almost all branches and deployed an integrated insurance system centrally, IT is in its infant stage and also get limited attention from top management, as a result there is no formal IT Governance practice and to the best of my knowledge no third party assurance on IT too.*

Another interviewee from other insurance company also said that:

*There is no Strategic Information System Plan. In addition no formal IT Governance framework is in use however recently our company floated a bid for ITIL training to its IT staffs to improve service provision. Performance measurement and monitoring also is not common in our company*

Regarding IT Governance standardization and institutionalization (processes) in the insurance sector, the survey result agrees with the interview. On average maturity of IT Governance processes was rated 0.7 which is midway between non-existent (level 0) and initial stage (level 1). The interview result also shows that almost none of IT Governance process practices were common in the insurance sector.

#### ***4.3.4 IT Governance Relational Mechanism in the Insurance Sector***

Regarding strategic partnership between business and IT in the insurance sector, as shown on Figure 9, 49% of respondents strongly agree on the importance of IT Governance relational mechanism followed by 38% who agrees. However, as shown on Figure 10, 43% of respondents said that IT Governance relational mechanism was not recognized at all (level 0) and 27% of them believed that it is at its initial stage (level 1). Only 20% of them said that it is either at defined (level 3) or managed (level 4).

Regarding communication and collaboration between business and IT the interviewee said that:

*There is moderate partnership between business and IT leaders. But, most executives and business unit leaders think that the business can operate regardless of IT. There is very limited understanding of the potential role of IT by most business unit leaders, but those at the IT have enough knowledge about the business. I think this is due to resistance to change and lack of awareness creation about the potential role of IT to the business.*

Descriptive Statistics							
		N	Mini mum	Maxi mum	Mean	Std. Deviation	Variance
1	There is IT organization structure with clearly defined roles and responsibilities. (Importance)	26	3	5	4.62	.571	.326
2	Service Level Agreements (Formal agreement to deliver IT service to both internal and/or external customers). (Importance)	26	3	5	4.69	.549	.302
3	There is formal IT budget control and reporting practice (Importance)	26	4	5	4.65	.485	.235
4	There is Strategic Information System Planning (Importance)	26	4	5	4.62	.496	.246
37	.....	26	0	5	3.92	1.093	1.194
38	There is IT Project/Portfolio management and change management unit (which reports to CIO/IT director) (Importance)	26	2	5	3.92	.845	.714
39	There is IT project steering committee (Importance)	26	0	5	3.81	1.096	1.202
40	There is IT Security / compliance / risk officer (Importance)	26	0	5	3.73	1.564	2.445
41	There is formal IT budget control and reporting practice (Maturity)	26	1	4	1.85	.925	.855
42	Mutual understanding between Business and IT (Maturity)	26	0	4	1.69	1.158	1.342
43	Strategic alliance/coalition between Business and IT (Maturity)	26	0	4	1.69	1.123	1.262
44	There is IT organization structure with clearly defined roles and responsibilities. (Maturity)	26	0	4	1.58	1.206	1.454
	.....						
77	IT project management / governance methodology e.g. PRI+B34NCE2 (Maturity)	25	0	1	.16	.374	.140
78	My organization use one or a combination of multiple IT Governance frameworks like COBIT, ITIL, ISO 27000 or tailored framework (Maturity)	25	0	3	.16	.624	.390
79	There is IT Project/Portfolio management and change management unit (which reports to CIO/IT director) (Maturity)	26	0	1	.15	.368	.135
80	There is IT architecture steering committee (Maturity)	26	0	3	.12	.588	.346

Table 10 Most / Least Important / Mature ITG Practices Insurance Sector (Source Survey result)

Table 10 shows that S1 (IT organization structure with clearly defined roles and responsibilities) and P7 (Service Level Agreements) were rated the most important IT Governance practices where as S11 (IT steering committee) and S13 (IT Security compliance / risk officer) were rated the least important IT Governance practices with a mean value of 3.81 and 3.73 respectively.

On the other hand P10 (formal IT budget control and reporting), R1 (Strategic alliance/coalition between Business and IT), and S1 (IT organization structure with clearly defined roles and responsibilities) were rated the most mature IT Governance practices between initial (level 1) and repeatable (level 2) where as S8 (IT Project/Portfolio management) and S11 (IT architecture steering committee) were rated the least mature IT Governance practices in the insurance sector.

#### 4.4 IT Governance in the Banking Sector

In the previous section the perceived importance and maturity of IT Governance practices in the banking sector 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 in the banking sector. As shown on Figure 11 below, the aggregate perceived importance of IT Governance practices in the banking sector was 4.2 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 in the banking sector was 1.4 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 between business and IT leaders in the Banking sector, actual implementation was way behind. In addition 6 in 10 (60%) of IT Governance practices were rated between initial (level 1) and repeatable stage (level 2) and 25% of them fluctuate between (level 0) and (level 1). Only S1 (IT organization structure with clearly defined roles and responsibilities) and S13 (IT security and compliance officer) reached defined stage (level 3) with mean value of 2.88 and 2.55 respectively. That means IT organization structure was documented and communicated, in addition roles and responsibilities of IT security/compliance officer was clearly defined and communicated to the respected body but not measured and monitored. However S7 (Office of IT Governance) and S11 (IT architecture steering committee) were rated the least matured IT Governance practices in the banking sector. The result further shows that, among the 40 IT Governance practices, none of them reached at managed stage (level 4).

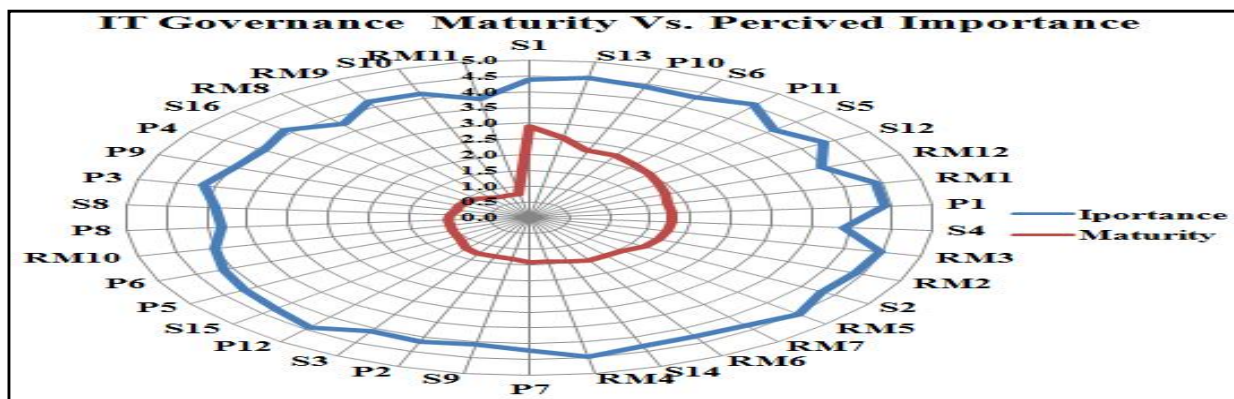


Figure 11 IT Governance Maturity vs. Importance in the banking sector (Source: Survey result 2016)

#### 4. 5 IT Governance in the Insurance Sector

In the previous section the perceived importance and maturity of IT Governance practices in the insurance sector was presented in detail in terms of IT Governance structure, processes and relational mechanisms. This section presents the aggregate perceived importance and maturity of IT Governance in the insurance sector. As shown on Figure 12 below, the aggregate perceived importance of IT Governance practices in the insurance sector was rated 4.28 based on a scale from 0(strongly disagree) to 5(strongly agree) i.e. there is a strong consensus between business and IT leaders on the importance of IT Governance practices. However, when it comes to actual implementation, the average maturity of all IT governance practices was 0.71 based on a generic maturity scale from 0(non-existence) to 5(optimized). This shows that there is a wide gap between the perceived importance and maturity of IT Governance practices in the insurance sector. In addition 75% of IT Governance practices were rated between 0(non-existent) and 1(initial) level and 25% of them were rated between initial (level 1) & repeatable stage (level 2).

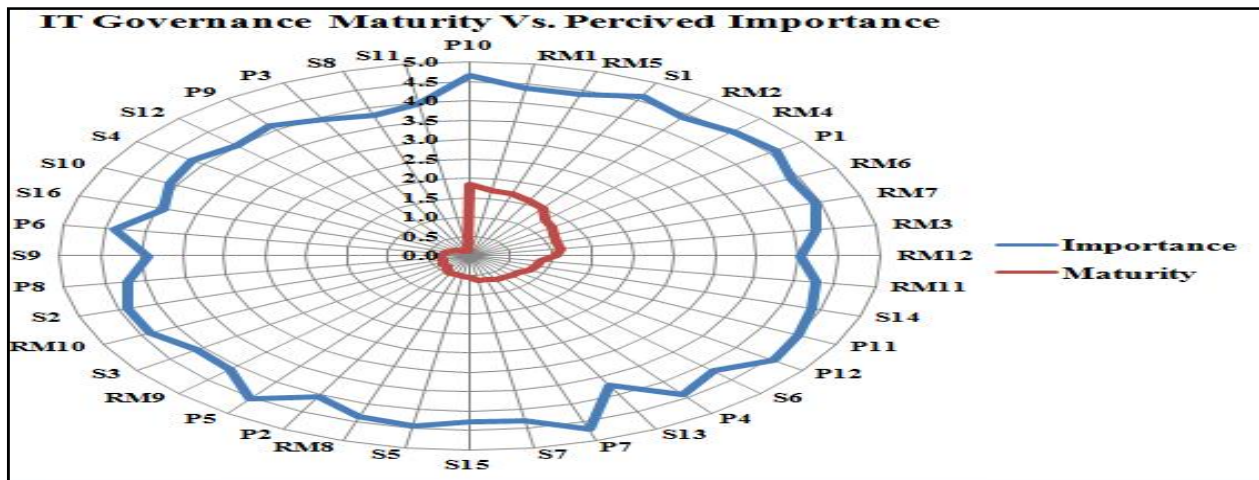
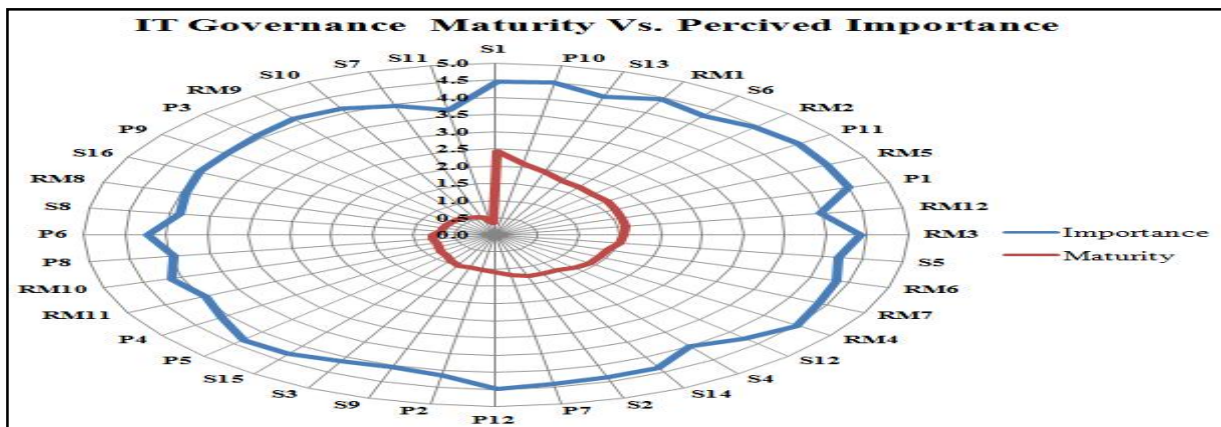


Figure 12 IT Governance Maturity vs. Importance in the Insurance Sector (Source: Survey result 2016)

Only four IT Governance practices, P10 (Formal IT budget control and reporting practice), RM1 (Strategic alliance/coalition between Business and IT), RM5 (Mutual understanding between Business and IT), and S1 (IT organization structure with clearly defined roles and responsibilities) reached repeatable stage (level 2). Whereas S11 (IT architecture steering committee) and S8 (IT Project and change management) rated the least mature IT Governance practices in the insurance sector. The result further shows, among the 40 IT Governance practices on average none of them reached fully at repeatable stage (level 2) in the insurance sector.

#### 4. 6 IT Governance in the Financial Sector of Ethiopia

In the previous sections the perceived importance and maturity of IT Governance practices were presented for Banking and Insurance sector independently. This section presented the aggregate result of the two sectors side by side. As shown on Figure 13 below, 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). This shows that respondents from both banking and insurance sectors strongly agree on the importance of IT Governance practices. However, when it comes to actual practices, the average maturity of all IT Governance practices was rated 1.2 based on a generic maturity scale from 0 (non-existence) to 5 (optimized). This shows that there is a wide gap between the perceived importance and maturity of IT Governance practices in the financial sector of Ethiopia. Furthermore 60% of IT Governance practices were rated between initial (level 1) and repeatable stage (level 2) and 40% of them were rated between 0 (non-existence) and initial stage (level 1). These further shows, most IT Governance issues were recognized but not practiced in an organized and managed way.



#### 4. 7 Comparison of ITG Maturity between Banking and Insurance Sector

This section compares maturity of IT Governance practices between banking and insurance sector in Ethiopia. As shown in Figure 14 below, on average 95% of IT Governance practices in the Banking sector hovers between initial (level 1) and defined stage (level 3) where as in the insurance sector only 60% of IT Governance practices fluctuate between initial (level 1) and repeatable stage (level 2) based on generic maturity scale from 0(non-existence) to 5(optimized). Whereas the average maturity of IT Governance practices in the banking sector was 1.4, it was 0.7 in the insurance sector. This shows that IT Governance maturity in the banking sector more or less doubles that of insurance sector. Moreover 50% of IT Governance practices fall between 1.5 and 3.0 maturity level in the banking sector, it was only 15% (6 out of 40) of them reached a maturity level between 1.5 and 2.0 in the insurance sector.

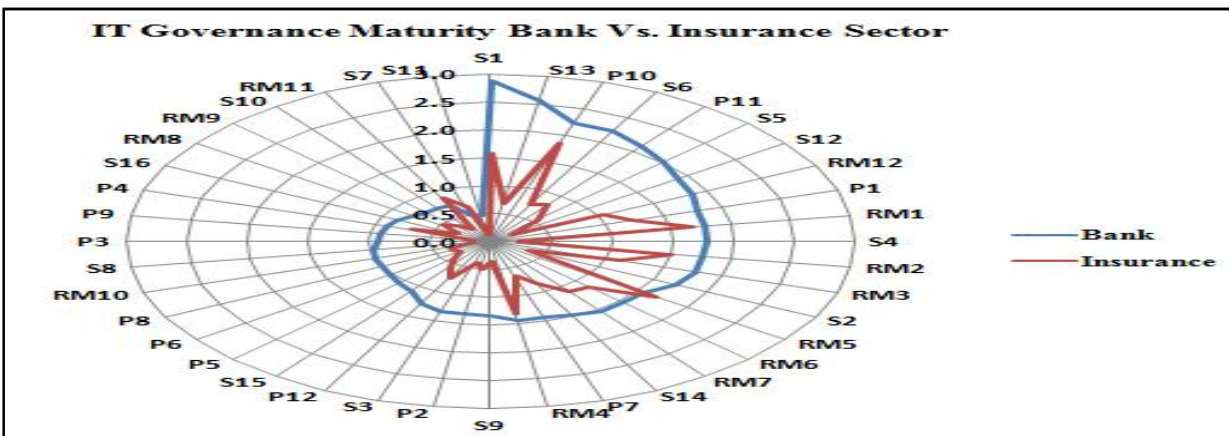


Figure 14 IT Governance Maturity Banking vs. Insurance Sector (Source: Survey result 2016)

In addition Figure 14 shows S1 (IT organization structure with clearly defined roles and responsibilities) and S13 (IT security and compliance officer) are the most mature IT Governance practices in the banking sector with mean value of 2.9 and 2.5 based on generic maturity scale from 0(non-existence) to 5(optimized). P10 (formal IT budget control and reporting practice) was the most mature IT Governance practices in the insurance sector with mean value of 1.8 followed by R1 (Strategic alliance/coalition between Business and IT). On the other hand S11 (IT architecture steering committee) were the least mature IT Governance practices in both banking and insurance sector. Only two IT Governance practices S7 (Office of IT Governance) and S11 (IT architecture steering committee) were rated at level 0 (non-existence) in the banking sector while 40% IT Governance practices were rated at level 0 (non-existent) in the insurance sector. This shows that the insurance sector is way behind.

#### 4.8 Comparison of ITG Maturity between Private and Public Financial Institutions

This section presented side by side maturity of IT Governance practices between private and public financial institutions in Ethiopia. As shown on Figure 15 below, IT Governance maturity in privately owned financial institutions hovers between 1(initial) and 2.5 (repeatable) level, where as in publicly owned financial institutions it hovers between 0.5 and 2.3 (between level 0 and level 2). The average IT Governance maturity in the privately owned financial institutions was 1.30 where as in the public financial institutions it was 0.94 based on a generic maturity scale from 0(non-existence) to 5(optimized). Even if the average IT Governance maturity in both private as well as public financial institutions were at its initial stage (level 1), as shown on Figure 15, privately owned financial institutions shows better level of maturity in almost all IT Governance practices.

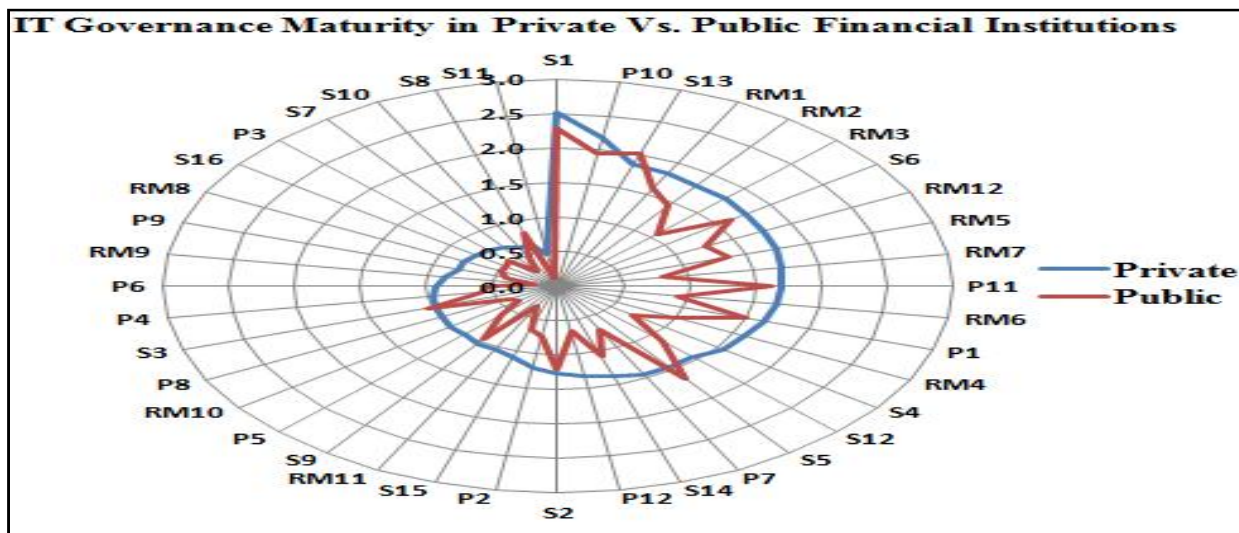


Figure 15 IT Governance Maturity Public vs. Private Financial Institutions (Source: Survey result 2016)

Only half of (19 out of 40) IT Governance practices were rated between 1(initial) and 2 (repeatable) maturity level in publicly owned financial institutions. When it comes to privately owned financial institutions, more than 75% of IT Governance practices reached between 1 (initial) and 2.5 (mid-way between repeatable and defined) level of maturity. Furthermore, as shown on Figure 15, S1 (IT organization structure with clearly defined roles and responsibilities), P10 (formal IT budget control and reporting practice) and S13 (IT security and compliance officer) were the most mature IT Governance practices in both private and publicly owned financial institution, whereas S7 (Office of IT Governance) and S11 (IT architecture steering committee) were the least mature IT Governance practices in both sectors.

## ***4.9 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 in the banking and insurance sector. In addition, the survey result was triangulated and complemented with interview with IT leaders and review of key documents such as Corporate Governance structure, IT Organization structure and job description of IT unit. Furthermore, comparison of IT Governance maturity between banking and insurance sector as well as private and public financial institutions were made.

In this section the results were discussed in light of the research questions set out in chapter one. The first research question was how IT Governance is perceived in private and public financial institutions in Ethiopia? In relation to this, almost all respondents (business and IT leaders) from both private and public financial institutions strongly agree on the importance of IT Governance practices. On average IT Governance importance was rated 4.2 based on a scale from 0 (strongly disagree) to 5 (strongly agree). The result shows that there is strong consensus among business and IT leaders on the importance of IT Governance practices. Respondents in both sectors 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.

The second research question was, at what level of maturity does IT Governance found in the financial sector of Ethiopia based on generic maturity scale? Regarding this, the average IT Governance maturity in the financial sector of Ethiopia was rated 1.2 (level 1) based on generic maturity scale from 0 (non-existence) to 5 (optimized). The result shows that financial institutions have already recognized IT Governance issue exist and needs to be addressed but practiced it in an informal and ad hoc basis with little or no standardization. In addition, maturity of individual IT Governance practices in the financial sector of Ethiopia ranges between 0.4 and 2.5 based on generic maturity scale from 0 (non-existence) to 5 (optimized) i.e. between (level 0) and (level 3). 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. Furthermore basic IT

Governance practices like IT project steering committee, IT steering committee, SISP, IT performance measurement and monitoring tools were not formalized and institutionalized.

Lower level of IT Governance maturity in the financial sector of Ethiopia can be attributed to late introduction of Information Technology to the financial sector of Ethiopia (provision of IT based financial services started less than a decade ago) due to lack of reliable ICT infrastructure as well as lack of competency required in terms of expertise and experience in Governing IT. In addition absence of pushing factors like IT Governance directives and lack of meaningful competition between institutions can also be the reason. Furthermore, lack of IT leadership, strategic partnership between business and IT and absence of proactive IT principles and policies, can also be the reason for lower level of IT Governance maturity in the financial sector of Ethiopia.

The third research question was, is it the banking or insurance sector reached better level of IT Governance maturity? Regarding this, both the survey as well interview result clearly shows that IT Governance in the banking sector significantly surpasses that of insurance sector. The average IT Governance maturity in the banking sector was rated 1.41 (between initial and repeatable level) where as in the insurance sector 0.71 (half way between non-existence and initial level) based on generic maturity scale from 0(non-existence) to 5(optimized). In addition, the highest and the lowest IT Governance maturity value in the banking sector were 2.9 and 0.5 where as that of insurance sector were 1.8 and 0.1. This shows that there is significant IT Governance maturity difference between the two sectors.

IT Governance maturity gap between insurance and banking sector can be attributed to the role of IT at each sector. Banks highly depend on IT to provide financial services to the ever increasing demands of their customers than the insurance sector where executives recognize low business value from IT. The other reason can be in the banking sector IT/IS is viewed as enabler of business strategy where as in the insurance sector IT is treated as a support unit which can increase back office efficiency and to generate periodic MIS report. In the banking sector IT/IS is organized at vice president level in par with other business executives. Furthermore, IT leaders in the banking sector are full member of executive team and report directly to the CEO (president). This enables IT leaders to have their own say during business strategy development by identifying strategic business initiatives that can be enabled by IT and get buy in from

executive/board. Whereas, in the insurance sector, IT is organized at service unit level, IT leaders were not member of executive team and they have only advisory role.

The other reason can be, more than half of (55%) respondents in the banking sector had training/certificate on at least one IT Governance framework (COBIT, ITIL or ISO 2700) whereas none of the respondents in the insurance sector had training/certificate on IT Governance frameworks. Furthermore educational status of respondents (leaders in both sector) depicts, there are more masters degree holders in the banking sector (35%) than that of the insurance (19%) which shows there is solid foundation in the banking sector that can significantly contribute to the achievement of better level of IT Governance maturity.

The fourth research question was which sector (private or public) reached better IT Governance maturity level? In relation to this, relatively privately owned financial institutions reached better level of IT Governance maturity (1.3) than that of publicly owned (0.94) based on generic maturity scale from 0(non-existence) to 5(optimized). Privately owned financial sector was more mature in almost all IT Governance practices (IT Governance structure, processes and relational mechanism) than the public one. 38% of IT Governance practices from the private and 20% from publicly owned financial institutions were rated between repeatable (level 2) and defined stage (level 3). On average one in four (25%) of IT Governance practices were not recognized at all (level 0) in the publicly owned financial institutions while only 5% of them were non-existence (level 0) in the privately owned. Moreover on average no IT Governance practices reached defined level (level 3) fully in both private and public financial institutions.

IT Governance maturity gap between private and public financial sector can be attributed to the diversity of IT Governance training/certificate as well as better educational status of leaders in the private financial sector. Private sector leaders have training/certificate on COBIT, ITIL and ISO where as leaders from the public sector only on ITIL. In addition 19 out of 50 (38%) of respondents from the private sector have Master's degree where as only 4 out 27 (17%) from the public financial sector. In addition privately owned financial institutions attract experienced and qualified expertise through attractive compensation and benefit package.

The fifth research question was which IT Governance archetype (locus of IT decision authority) prevails in the Ethiopian financial sector? Regarding this, though there is no well documented

information about who provides input (input right) and who makes the actual decision or decision right on the five IT Governance related decision areas (IT Principle, IT Investment, IT Architecture, IT Infrastructure, and Business application needs), interview with IT leaders and investigation of key document such as corporate governance structure, IT organization structure, roles and responsibilities, and job description of business and IT leaders result shows that there is no single IT Governance archetype (style) prevailed in financial institutions.

IT Governance archetype (decision making style) in the banking sector was a combination of IT Monarchy and IT Duopoly. IT/IS leaders originate input to all IT related decisions (IT executives and managers have input right on IT Architecture, IT Infrastructure, IT Principle, IT Investment and business application needs of the organization) as well have exclusive decision making right on IT Architecture and Infrastructure. This means more technical issues like IT Architecture and IT Infrastructure decisions were domains of IT executives and/or IT managers. On the other hand IT Principle, IT Investment and business application needs decision making right rests with business executives and IT executives (IT and business executives share decision making right).

IT Principle decisions (the strategic role of IT in the organization) , IT investment decision (how much to invest and prioritization of IT projects based on their business case like save cost, generate revenue or attract new customers ...) and Business application needs (acquisition and/or development of business unit specific applications) decision were made by both business and IT executives.

IT Governance archetype in the insurance sector is best described as Business Monarchy, which means all IT related decisions (IT Principle, IT Investment, IT Architecture, IT Infrastructure, and Business application needs) are made exclusively by business executives where as the input for the decisions originate from IT and/or Business unit leaders.

This clearly shows that IT leaders in the banking sector play superior roles as compared to their peers in the insurance sector i.e. IS/IT executives in the banking sector have exclusive decision making right on IT architecture and infrastructure also share decision making right with other executives on IT principle, IT investment & prioritization and business application needs decisions.

#### ***4.10 Discussion of Findings against Related Works***

In general as shown in summary of related works (See Table 1.) earlier works on IT Governance maturity either focus on one sector (either public, private or banking sector) or assessed IT Governance maturity subjectively by taking in to account smaller sample size. Unlike previous works, this study covered large and diversified sample size. It also assessed maturity of IT Governance objectively in the financial sector and made comparison between private & public financial institutions as well as banking & insurance sector in Ethiopia. In addition the prevalent IT Governance archetype at both banking and insurance sector was studied and presented.

Relatively, privately owned financial institutions in Ethiopia achieved better level of IT Governance maturity (1.3) than that of publicly owned (0.94) based on generic maturity scale from 0(non-existence) to 5(optimized). This result validate the work of Liu Zhen and Mojtaba Ress (2014) who found IT Governance maturity at privately owned banks (2.08) was more mature than that of publicly owned banks (1.79) in Iran financial institutions.

The result also shows the average IT Governance in the banking sector was (1.4) which was much better than that of insurance sector (0.7). This result agrees with Misrak (2015) who found that IT Governance in the banking industry is better than that of insurance sector. It also agrees with the findings of Guldentops, et al. (2002) smaller companies were at lower IT Governance maturity level as compared to larger ones.

Both the survey and interview result also shows IT Governance in Ethiopian financial institution was 1.2, which was between initial (level 1) and repeatable stage (level 2) based on generic maturity scale 0 to 5. The result 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). IT Governance in the developing nations was at lower maturity level. Since both Ethiopia and Tanzania are underdeveloped countries and penetration of IT in both private and public sector was at its lower level so does IT Governance practices. The result also agrees with Senait (2011) who found that IT Governance status at CBE is at a very low level.

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). 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.

Both the survey and interview result also shows among IT Governance mechanisms (Structure, Processes and Relational mechanism), relatively IT Governance structure rated as more important as well as mature. This result somewhat agrees with the findings of Kaur, et.al (2012), on average IT Governance Structure ranked as more important followed by IT Governance processes and Relational Mechanism at Malaysian Private Organizations.

#### ***4.11 Summary***

This section presented summary of major findings of the research which were discussed in the previous sections. There is a strong consensus between business and IT leaders on the importance of IT Governance practices in both insurance and banking sector. Importance of IT Governance was rated 4.2 based on a scale from 0 (strongly disagree) to 5 (strongly agree). In spite of this keenness, the actual IT Governance practice maturity was rated 1.2 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. In addition IT Governance maturity was at initial stage (level 1) i.e. IT Governance issues were recognized but practiced in an informal and ad hoc basis with little or no standardization.

Relatively privately owned financial institutions reached better level of IT Governance maturity (1.3) than that of publicly owned financial institutions (0.94) moreover the banking sector (1.4) reached better level of IT Governance maturity than the insurance sector (0.7) based on generic maturity scale from 0 (non-existence) to 5 (optimized).

The prevalent IT Governance archetype (locus of IT decision making authority) in the banking sector was a combination of IT Monopoly and IT Duopoly whereas it was Business Monarch in the insurance sector. This clearly shows that IT leaders in the banking sector play superior role than their peers in the insurance sector.

Among IT Governance mechanisms, relatively IT Governance structure was rated as more important as well as mature than that of IT Governance Processes and Relational mechanism in

the financial sector of Ethiopia. In all sample institutions basic IT Governance practices like IT steering committee & IT project steering committee, SISP, IT performance measurement & monitoring practices and communication & collaboration between business and IT leaders were practiced on an informal, ad hoc basis with little or no evidence of standardization. This shows that, there is a huge gap in the implementation of IT Governance in the financial sector of Ethiopia. This can be attributed to the late introduction of IT in to the financial sector of Ethiopia due to lack of reliable ICT infrastructure, lack of competency (expertise and experience on IT Governance) as well as legal and regulatory frameworks (IT Governance directives).

# **CHAPTER FIVE**

## **CONCLUSION AND RECOMMENDATION**

Pervasive use of IT, huge and diverse investment as well as the strategic role of IT to the achievement of organizational objective necessitates implementation of effective IT Governance. Lack of effective IT Governance may lead to inability to comply with regulatory requirements, runaway of IT projects, delivery of poor quality IT product/service, weakened competitive position, and lower customer satisfaction to mention a few.

The study started with basic premise that, understanding the current status of IT Governance maturity as compared to competitors and/or 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 summarized as:

Business and IT leaders in both insurance and banking sector strongly agree on the importance of IT Governance practices. In spite of this enthusiasm, the actual IT Governance practice was still conducted on an informal and ad hoc basis with little or no evidence of standardization.

IT Governance maturity in the banking sector significantly surpasses that of the insurance sector in all IT Governance areas (IT Governance Structure, Processes and Relational Mechanism).

Though IT Governance maturity in both private as well as public financial institutions were at initial stage (level 1), relatively privately owned financial institutions reached better level of IT Governance maturity than that of publicly owned.

Regarding the prevalent IT Governance archetype (locus of IT decision making authority) IT leaders in the banking sector play superior role as compared to those in the insurance sector.

- In the banking sector a combination of IT Monarchy and IT Duopoly Governance archetype prevails. IT leaders have exclusive decision making right on IT Architecture & Infrastructure, also share decision making right with other executives on IT principle, IT investment and business application needs on top of that IT leaders have the right to provide input to all IT related decisions.

- In the insurance sector business monarchy IT Governance archetype prevails. IT leaders have only input right on all IT related decision areas and the actual decision is made by business executives.

In all sample financial institutions, IT/IS is organized centrally with clearly defined roles and responsibilities. Moreover in the banking sector IT is organized at vice president level in par with business executives, IT/IS vice president is full members of executive team and report directly to the CEO where as in the insurance sector IT is treated as a support unit and IT leaders are not member of executive team as well as no direct reporting line between IT leaders and the CEO.

To comply with NBE corporate governance directive, all financial institutions (banks and insurance) created Audit and Risk management & compliance committee at board level. Even if IT Governance committees are common mechanisms to implement shared decision making, almost in all sample financial institutions there were 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.

Though, presence of liaison role encourages horizontal information sharing between business and IT units at strategic, tactical and operational level, it was not common in all sample financial institutions.

Development and implementation of SISP based on business strategies is still at an early stage in the banking sector and not recognized at all in the insurance sector. In addition, there is no post implementation benefit tracking mechanism or devices in place in all sample financial institutions. Achievement of business cases, which were promised before the implementation of IT initiatives, were not measured, monitored and reported once the project is operational. Moreover, no IT related qualitative as well as quantitative key performance indicators were in place, which makes it difficult to measure the benefits later.

In all financial institutions IT/IS is treated as a cost center. Chargeback arrangements were not practiced to share cost of infrastructure as well as shared service to business units based on usage. Relatively formal IT budget control & reporting as well as disaster recovery & business continuity plan were practiced formally in all financial institutions.

Communication and collaboration between business and IT leaders at strategic, tactical and operational level and mutual understanding between business and IT are at lower level in both banking and insurance sectors. There is also lower level of participation on IT related decision

making processes from business unit leaders. Cross training, collocations as well as job rotation between business and IT not practiced in both sectors; this leads to limited mutual understanding between business & IT leaders and lower level of knowledge sharing. There is also limited knowledge sharing practice between business and IT leaders; however banks already started laying the foundation by facilitating training on COBIT and ITIL IT Governance frameworks for business and IT leaders.

Though business and IT leaders in the financial sector of Ethiopia strongly agree on the importance of IT Governance practices, basic IT Governance practices like IT project steering committees, SISP, performance measurement & monitoring practices and strategic partnership between business and IT leaders were found at initial level of maturity (level 1). This shows that, there is a huge gap between the perceived importance and the actual maturity of IT Governance in the financial sector of Ethiopia.

## ***5.2 Recommendation***

Recently IT/IS has got relatively better attention in the banking sector of Ethiopia, IT/IS is placed at vice president level in par with other business executives in the organization structure. This shows that IT becomes strategic partner to the business. The role of IT also changed from mere back office support unit to enabler and driver of business strategy.

IT Governance can be deployed using a mixture of various structures, processes and relational mechanisms. The best way to implement effective IT Governance in their respective institution and to reach at the desired level of IT Governance maturity, IT leaders has to get buy in from executives and the board, persuade and encourage business unit leaders to participate in various IT related decisions, formalize and institutionalize IT Governance processes like SISP and performance measurement and monitoring mechanism.

To reach desired level of IT Governance maturity based on their business strategy and culture, and get the best out of IT investment the following recommendations are forwarded:

IT Governance structure:

The most fundamental dimension to characterize IT Governance structures is to what extent stakeholders participate in IT related decisions like business application needs, IT infrastructure and IT principles decisions and where the locus of IT decision authority lies.

- Committees are the most common IT Governance mechanisms to implement shared decision making. Minimum baseline 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. Senior executive's engagement in ITG is also mandatory.
- In the banking sector the existing roles and responsibilities of IT leaders' needs to be further strengthen and formalized. IT in the insurance sector is way behind, so they have to revise the role of IT and restructure the organization structure accordingly.
- To encourage information sharing between business and IT units and integrate them at strategic and tactical level a liaison officer or account manager role has to be in place.

Standardization and institutionalization of IT Governance processes

- Financial institutions have to implement formal IT Governance which fits to their business strategy and culture by mixing-and-matching existing frameworks like ITIL, COBIT and ISO.
- Financial institutions have to develop strategic information system planning which enables as well as drive their business strategy. IT leaders have to identify those strategic business initiatives which can be enabled by IT, prioritize them based on their business case (creation and protection of values) and get buy in from CEO and/or board.
- The business case (promised benefits) of each IT related initiatives has to be clearly defined and documented a head. This makes post implementation benefit measurement and monitoring practices relatively easy.
- Financial institutions have to consider implementation of chargeback mechanism to allocate cost of shared IT infrastructure & services to business units based on usage. This will encourage business unit leaders to use IT responsibly and demand quality IT service.
- To improve quality of service to both internal and external customers, financial institutions have to clearly define, document and communicate key performance indicator

for IT/IS unit at different level (department, division, section and individual employees). This makes performance measurement and monitoring (benefit tracking) much easier.

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

- IT executive (leaders) has to take the driving seat to implement formal IT Governance in collaboration with business executives and the board.
- Encourage and reward those business unit leaders who are willing to participate and contribute their share on IT related decision making.
- Financial institutions have to facilitate cross training between business and IT at strategic and tactical level to improve shared knowledge and mutual understanding between business and IT.
- In addition to formal communication and collaboration between business and IT leaders, financial institutions have to create a favorable condition and encourage informal networks between business and IT leaders. This will substantially improve understanding between business and IT leaders and enable them to reach a consensus easily during IT related decision making.
- Institutions have to conduct IT Governance awareness creation campaign throughout the organization and also create a platform to share IT Governance related information like the committee structure, composition, role & responsibilities.

Policy implications:

- National Bank of Ethiopia has to assess IT Governance practices of other countries (as a benchmark) and introduce its own by aligning with the national strategy of the country.
- Money is the most liquid asset as a result financial institutions specifically banks are the primary target of cyber attack. Unless IT risk management (which is one of the focus areas of IT Governance) is addressed properly, the consequence will be grave. So National Bank of Ethiopia has to closely monitor IT related risk management practices of financial institutions and make sure that they comply.
- Sooner or later the financial sector will be open to foreign investors and local institutions may also get permission to expand their operation to foreign financial markets, local financial institutions may face huge regulatory challenge and competition from foreign

institutions unless they start implementing formal IT Governance and reach at acceptable level of maturity.

### ***5.3 Direction for Future Research***

- This research covered only banking and insurance sector, one of the future areas of research is extending to microfinance and saving institutions.
- The other future area of research is designing a comprehensive IT Governance framework for financial sector of Ethiopia by taking in to account their business strategy and culture.
- The other research area is using the finding of this research as a benchmark; assess maturity of IT Governance in other IT intensive sector like the Aviation and Telecom industry.

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# Appendices

## Appendix A



## Appendix B

Dear Sir/Madam,

My name is Tagel Mekonenn and I am a graduate student at Addis Ababa University School of Information. Currently I am working my Master's thesis in title "Information Technology Governance Maturity in Financial Institutions in Ethiopia: a Comparative Study".

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 financial institutions.

As part of the research process, prior to distributing the survey questionnaire 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? is there irrelevant question in the list? Any important question(s) left? What about the arrangement of the questions ...

I look forward to hearing from you soon.

Regards,

Tagel M.

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Mobile: +251-0913075020

## Appendix C

Dear Respondent,

My name is Tagel Mekonenn and I am a graduate student at Addis Ababa University School of Information Science. Currently I am working my Master's thesis in title "Information Technology Governance Maturity in Financial Institutions in Ethiopia a Comparative Study".

The purpose of the study is to investigate how IT Governance is perceived and the current effectiveness (maturity) of IT Governance in financial institutions 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 Tagel Mekonenn. By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

Thank you in advance!

Tagel Mekonenn

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## Appendix E

### 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. Which one portray IT Organization structure in your company (Centralized, Decentralized or Federated)?
4. 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?
5. Where the locus of decision right lies on the following IT Governance decisions (It is the responsibility of Business executives, IT Executive(s) or both)
  - a. IT Principle
  - b. IT Architecture
  - c. IT Infrastructure
  - d. Business application need
  - e. IT investment and prioritization
6. 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.
7. Does your organization have implemented any IT Governance frameworks like COBIT, ITIL, ISO or tailored framework?

8. 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?
9. 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?
10. Is there any mechanism in place which measures and monitors IT performance against the plan (Performance metrics like IT BSC, SLA,KPI ...)
11. Do the board/executives get regular progress reports on major IT Projects?
12. Does your organization get independent assurance on the achievement of IT objectives and IT related risk containment?
13. 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, committees ...)
14. What are the primary drivers and barriers for pursuing IT Governance at your organization?
15. 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 D

This self assessment questionnaire has two main sections. Section I contains 6 demographic questions and section II contains 40 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 “✓” 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: Processes 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**

*IT 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)**

	<i>How do you personally rate the importance of the following IT Governance structures and their actual effectiveness in your organization?</i>	<b>Importance</b>					<b>Effectiveness/Maturity</b>						
		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	There is IT organization structure with clearly defined roles and responsibilities.												
S2	There is IT strategy planning committee at executive or board level												
S3	There is IT steering committee (IT investment evaluation and prioritization)												
S4	There is IT expertise at level of board of directors												
S5	The 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												

	<i>IT Governance Structure continued ....</i>	<b>Importance</b>					<b>Effectiveness/Maturity</b>						
		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)
S12	There is IT audit committee at executive level												
S13	There is IT Security / compliance / risk officer												
S14	Documented roles and responsibilities include governance tasks for business and IT people (Integration of governance tasks in roles and responsibilities)												
S15	IT Governance roles, responsibilities and accountabilities are clearly defined and enforced across the organization.												
S16	The relationship between IT Governance stakeholders clearly documented and communicated.												

**IT Governance Processes (P x)**

	<i>How do you personally rate the importance of the following IT Governance process and their actual effectiveness in your organization?</i>	<i>Importance</i>					<i>Effectiveness/Maturity</i>						
		0 (Strongly disagree)	1 (Disagree )	2 (Slightlyly disagree)	3 (Slightlyly 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	My organization use 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) e.g. IT balanced scorecard												
P6	IT Governance assurance and self-assessment process is in place (Regular self-assessment or obtain independent assurance on the Governance and/or control )												
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)												
	<b><i>IT Governance process continued ...</i></b>	<i>Importance</i>					<i>Effectiveness/Maturity</i>						

		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)
P9	IT project management / governance methodology e.g. PRINCE2												
P10	There is formal IT budget control and reporting practice												
P11	There is disaster recovery and business continuity plan												
P12	Measuring and Monitoring the planned business benefits during and after implementation of IT projects/ investments.												

***IT Governance Relational Mechanism (Rx)***

	<i>How do you personally rate the importance of the following IT Governance relational mechanism and their actual effectiveness in your organization?</i>	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 to address IT issues.												
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 by managers throughout the												

	organization)																		
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	IT Relationship or account manager dedicated to specific business unit (who bridges the gap between Business and IT)																		
R12	Informal meetings between business and IT senior management																		

Section III. Thank you!

Thank you for taking the time to answer this survey questions. Comments that you might wish to make about IT Governance in your organization would be most welcome.

If you have any other comments or insights on the importance and/or maturity of IT Governance in your organization you are welcome

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

## Appendix F

Asking permission to use IT Governance survey instrument



Inbox x



**tagel mekonenn** <tagelmekonenn@gmail.com>  
to steven.dehaes, wim.vangrember. ▾

Feb 2 ☆



Dear Prof. Van Grembergen and Dr. De Haes,

My name is Tagel Mekonenn,

I am pursuing my Masters of Science in Information Science at Addis Ababa University School of Information. Currently I am working my Masters thesis in title "Information Technology Governance Maturity in Financial Institutions in Ethiopia a Comparative Study". The purpose of the study is to investigate how IT Governance is perceived, compare IT Governance maturity in terms of Structure, Process and Relational mechanism between private and publicly owned financial institutions and identify the prevalent IT Governance archetype in Ethiopia. I would like to ask your permission to use the survey instrument from your 2008 journal article "Best Practices in IT governance and alignment". If you have the time please also attach the full survey question.

I look forward to hear from you soon.

Tagel M.

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Mobile +251-0913-075020



**De Haes Steven** <steven.dehaes@uantwerpen.be>  
to Van, me ▾

Feb 4 ☆



Dear Tagel

Thank you for you mail. Our survey instrument is also published in our next textbook: De Haes, Van Grembergen, Enterprise Governance of IT: Achieving Alignment and Value (Springer, 2015). It is reported in chapter 3 in one of the assignment boxes. I would propose you access the instrument through the book.

Steven

Prof. dr. Steven De Haes

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