Aug 26th, 12:00 AM - Aug 27th, 12:00 AM

ASSESSING THE ROLE OF INFORMATION TECHNOLOGY GOVERNANCE (ITG) ON THE PERFORMANCE OF PUBLIC HIGHER EDUCATION INSTITUTIONS IN ETHIOPIA

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1. INTRODUCTION

Information technology (IT) usage is part of any modern organization be it a business, governmental or nongovernmental one. In a typical organization, investments on desktop and laptop computers, printers, telecommunication networks, database management systems and some specialized information systems (accounting, manufacturing, human resources, customer relationship, supply chain, etc) are commonplace. Bianchi *et al* (2021) stated that organizations have been using IT to automate and perform process integration, connecting the enterprise with customers, suppliers and distributors to obtain sustainable competitive advantage. Moreover, the pervasive use of technology has created a critical dependency on IT that demands considerable attention to IT Governance (ITG). Ghildyal and Chang (2017) argued that IT governance is an essential part of enterprise governance which is driven primarily by demand for transparency across enterprise IT related risks and protection of shareholder value. Aditya, *et al* (2018) also share the above view stating that in the era of digital transformation, IT risk is the main focus for top management, especially in business decision making. These clearly indicate that IT governance critically influences firm performance. Lazic *et al* (2011) also asserted that the fundamental importance of information technology (IT) in today's business operations can hardly be refuted and while IT spending is constantly rising, the continuous debate surrounding the IT productivity paradox has decreased.

As business complexity and regulatory requirements grow, the need for and investment on IT will be expected to increase (Parent and Reich, 2009). But whether these investments are really creating the value they are intended to create and whether risks related to such investments and operations are properly managed do not seem well assessed. Sayana (2002) argue that senior management and business managers do have concerns about computer based information systems (ISs) because such systems are critical to such large organizations as they do not merely record business transactions, but actually drive the key business processes of the enterprise. In many organizations, information technology (IT) has become crucial in the support, sustainability and growth of the business. This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT governance. IT governance consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and objectives.

The practitioner and academic literature has paid increased attention to the practice of information technology (IT) governance by boards of directors and their executive management who represent top management of any organization. However, it seems that top management of many organizations do not explicitly practice a formalized style of IT governance, and of those that do, many face significant challenges. The potential impact of ineffective IT governance is clear, with organizations spending an increasing amount on IT.

Ethiopian Companies are spending huge amount of money on IT as indicated for the developed economies such as the USA. Worku (2010) for instance stated that harnessing its leadership with advanced banking technology, Dashen Bank signed an agreement with iVery, a South African electronic payment technology company, for the introduction of mobile commerce in April, 2009. Personal observation of the researcher (also a faculty member) indicated that Addis Ababa University has invested a lot on its information system to support online content delivery, student services and facilitate all its operations. The same pattern applies to almost all public and private universities in Ethiopia.

There is continuing debate over the contribution of IT towards business value creation in all types of organizations, (Lazic *et al*, 2011) for instance. It is repetitively claimed that IT capability has increased tremendously but not translated into bottom line figures such as profitability, productivity, cost reduction etc. While it was described in various terms such as IT management, IT resources management or IT leadership in the past, today emphasis has been on IT governance instead of IT management/leadership. While there are studies conducted on aligning business and IT strategies in organizations, there are only limited studies addressing value creation aspect and what hiders such value creation process.

The study is motivated by the fact that IT and its application in business (to be used synonymously with IS from audit and governance perspectives) being one key resources that needs to be governed by top management for organizational value creation but being at the same time the least understood of the key assets in an enterprise (Weill and Ross, 2004). These resources being least understood will have significant positive as well as negative impact on organizational survival and success. It is often reported that boards and executive management are suffering from IT attention deficit (Parent and Reich 2009). Why top managements of organizations behave as such depends on several contingency factors which are not sufficiently explored through empirical studies, especially from developing economies point of view.

This study is also motivated by the fact that IT related risks are critical for organization resulting in loss of value, litigation and decline in market share as evidenced by Parent and Reich (2009) who have reported on the importance of IT investment in the modern business environment as well as related risks due to failure of these investments. They cited as an example that U.S. companies spend as much on information technology each year as they do on offices, warehouses, and factories combined and they also claimed that IT represents about two-third of all capital spending and the average enterprise's IT investment is now greater than 4.2% of annual revenues (Parent and Reich, 2009). As a result of these large investments, the consequences of any disasters are likely to be profound and lasting.

Finally, the study is motivated by the diversity and scattered nature of mechanisms that bring proper IT governance. While many studies mentioned IT governance processes, structures and relational mechanisms as means of getting proper IT governance (DeHaes VanGrembergen, 2005), others proposed IT auditing and audit committees as one critical means of IT governance (Parent and Reich, 2009). Even in this regard, except very few exploratory studies indicating future studies, empirical

investigations are so scant. When we see the African and Ethiopian context, almost no studies were available. So this research will be undertaken to partially bridge this gap in the literature.

The need for proper governance of IT is evidenced by Chorafas (2009) who stated that the huge changes taking place in IT organization and management are driving people to pick up new skills, while the CIO's performance is increasingly judged by how far and how well he or she can be a business innovator and service-level designer. These points that are reflections of IT audit and governance tasks shall be empirically tested in Ethiopian context.

This is clear from the concern of Parent and Reich (2009) who stressed that they see no sign that the pace and size of IT investments will abate, nor that IT-based risk will cease to be a problem. This underscores the importance for Boards to act and act now if their companies are to minimize the effects of an ever-growing array of potential IT disasters which means a call for proper IT audit and governance. Unfortunately, many Boards pay little, if any, attention to IT investments, and they do not concern themselves with minimizing potential waste or risk in this area. Hence, top management seems to be suffering from an IT attention deficit. It can be claimed that Ethiopian Company boards and executive committee members can't be exceptions from those in the developed world. All these problems and concerns are related to the process of IT governance in organizations. As Weill (2004) claimed, IT Governance matters because it influences the benefits received from IT investments. He further claims that through a combination of practices (such as redesigned business processes and well designed governance mechanisms) and appropriately matched IT investments, top performing enterprises generate superior returns on their IT investments (up to 40% greater return than their competitors for the same investment).

In addition to IT governance processes, structures and relational mechanisms used by organizations, one basic IT governance tool that needs critical observation is IT auditing (Woda, 2002). Pathak (2005) described IS auditing (taken synonymously with IT auditing) as having acquired pre-dominance with the extensive use of information and communication technology in the business information processing area. IT auditing is, therefore, defined as the process of collecting and evaluating evidence to determine whether an information system safeguards assets, maintains data integrity, achieves organizational goals effectively and consumes resources efficiently.

Lazic *et al* (2011) argued that many organizations started with the implementation of ITG, but academic research within this area is still in its early stages, with theoretical models explaining the impact of ITG on business performance being unavailable.

Bianchi *et al* (2021) stressed that IT governance practices and their impact on organizational performance of universities are not researched well. This will be more severe in public universities as Ghildyal and Chang (2017) called for re-establishment of the Public Sector IT governance in order to reach the vision and mission of our Public Sector Objectives. They added that the IT governance in public sectors is not always practical, resulting in a range of issues, which hinder the organization performance, namely: Staff unable to access integrated data due to multiple disconnected systems; Proliferation of

manual based-systems; Lack of semantic integration; Mandraulic effort in obtaining a snapshot of data from multiple systems.

In developing economies like Ethiopia, empirical studies on auditing of IT and IT governance processes and their impact on organizational performance, particularly in universities are scarce. Such studies are scarce even at African level let alone in Ethiopia as evidenced by Mbarika *et al* (2005) indicating that research with a focus on Sub-Saharan Africa (SSA), a major region within the world's second largest continent, is almost non-existent in mainstream information systems areas. Therefore, this study has been designed to fill the gap stated in here and contribute new insight both to the academics and the practice of IT auditing and IT governance and its impact on organizational performance with specific emphasis on public universities in Ethiopia.

The research problem to be addressed in this research is investigating how Ethiopian Universities are handling the IT Governance agenda and how IT auditing can be used in the IT governance process. This will be followed by assessing how IT governance performance influenced organizational performance such as customer satisfaction, quality of decisions made and cost savings realized. This problem will be investigated in light of the theories indicated in the next part (Strategic Choice Theories, Institutional Theories and Stewardship/Agency Theories).

The specific questions to be answered are:

1. How are Universities dealing with IT governance problems?
2. What is the association between IT governance performance and organizational performance?
3. What is the role of IT auditing in IT governance process?

2. LITERATURE REVIEW, RESEARCH MODEL AND HYPOTHESES

2.1. IT and IT Governance in Organizations

The performance of many organizations relies on the effective use of Information Technology (IT). A mechanism to achieve this goal is the introduction of IT Governance to control and manage IT. Information Technology (IT) has become pervasive in current dynamic and often turbulent business environments. While in the past, business executives could delegate, ignore or avoid IT decisions, this is now impossible in most sectors and industries (VanGrembergen and DeHaes, 2008). They further claimed that the dependency on IT becomes even more imperative in this knowledge-based economy, where organizations are using technology in managing, developing and communicating intangible assets such as information and knowledge. These facts will enable us to conclude that IT becomes not only a success factor for survival and prosperity, but also an opportunity to differentiate and to achieve competitive advantage.

In many organizations, information technology (IT) has become crucial in the support, sustainability and growth of the business. This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT governance (VanGrembergen and DeHaes, 2008). DeHaes and VanGrembergen (2009a) stated that IT governance is a concept that recently emerged and became an integral aspect within the complex realms of IT. IT governance consists of the leadership and

organizational structures and processes that ensure that the organization's IT sustains and extends the organizations strategy and objectives. Peterson et al. (2002) stressed that executives recognized that getting IT right this time will not be about technology, but about governing IT. Traditionally defined as the locus of IT control, scholars have recently questioned whether the concept of IT governance is simply about centralization and decentralization. Provided that IT is considered as a strategic partner to an enterprise implies that it is a top management and board responsibility to properly govern IT. Hence, IT governance shall be considered as an organizational phenomenon to be analyzed by and dealt with organizational behavior theories (Jewer, 2009). In the next paragraphs will present definition and roles of IT governance on business performance. Weill and Ross (2004) identified six key assets namely, human, financial, physical, intellectual property, IT, and relationships that must be governed to create value.

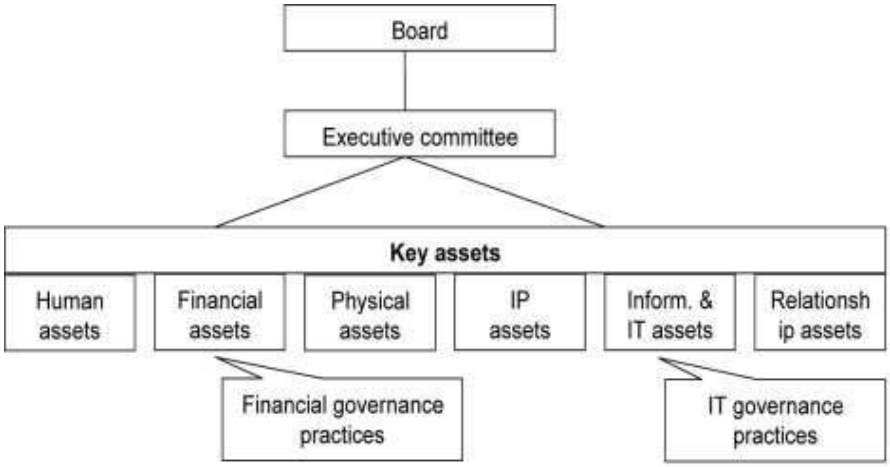

Figure 1: The Assets Firms govern to create value (Weill and Ross, 2004)

Jewer (2009) stated that IT governance literature can be classified into two separate streams. The first focuses on the design of decision-making structures at the managerial level, while the second focuses on the role of the board. The term 'governance' in IT has been used to broadly describe the policies, structures, and management processes involved in managing IT functions (Jafaar and Jordan, 2009). Jewer (2009) also stated that Board IT governance is the provision of oversight of business/IT strategic alignment; IT value delivery; IT resource management; IT risk management, and; IT performance management and stressed that as with corporate governance, boards have a fiduciary duty and a duty of care in IT governance being responsible for acting honestly and in good faith and for spending time to make informed business judgments. IT governance can be deployed using a mix of structures, processes and relational mechanisms (Peterson, 2003; DeHaes and VanGrembergen, 2008; Symons, 2005). Examples of structures, processes, and relational mechanisms include:

- *Structures.* CIO on Board, executive management committees, IT strategy committee, IT leadership committees, and IT steering committee(s).
- *Processes.* Strategic information systems planning, balanced (IT) scorecards, information economics, service level agreements, control objectives for information and related technologies and the IT infrastructure library, IT portfolio management, and demand management.

- *Relational mechanisms.* Active participation and collaboration between principal stakeholders, partnership rewards and incentives, business/IT co-location, cross-functional business/IT training and rotation.

2.2. IT Auditing and IT Governance

Hardy (2009) asserted that those who are responsible for IT functions that deliver IT services have realized they no longer work in a vacuum. Compliance has opened the doors to IT processes and exposed the need to tighten key controls. IT governance maturity assessments have become widespread, showing gaps between expected goals and process capability. This is making executives realize the need to run IT more like a business and to drive process and infrastructure improvement. CIOs are no longer working in isolation; they are acting as the bridge to the business and as part of an executive team governing IT investments and service delivery. Roles and responsibilities between IT and the business customers are being clarified. So, what does this all mean for IT auditors and what is their role in IT governance are the questions that are relevant and timely to ask.

Ohri (2008) traced the demands for IT auditing stating that the last few years have been an exciting time in the world of IT auditing as a result of the accounting scandals and increased regulation. IT auditing adds security, reliability and accuracy to the information systems integral to humans' lives associating IT governance to IT auditing compliance issues. Carlin and Gallegos (2007) stated that the IT auditor can help organizations implement control structure processes such as Control Objectives for Information and Related Technology (COBIT), the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and International Organization for Standardization (ISO) standards 9000, 9001, 17799, and their amendments. In addition, the IT auditor can help maturing organizations successfully attain IT governance as part of their internal audit structure or as an external audit by public accounting firm or government audit organization.

Iliescu (2010) supports this stating that auditing IT Governance needs more business knowledge than regular Information Systems (IS) audits because the IS auditor has to evaluate how IT is enabling the business strategy. IT is no longer seen as support process, but because a project is not enough to respond itself to a business outcome, multiple projects should managed together as programs. Iliescu (2010) further recommends that when auditing IT Governance, the IS auditor should also consider relationships within the organization (strategically, financially and/or operationally) and obtain information on the strategic plan, including the IS strategic plan. Sayana (2004) also stated that in enterprise information systems scenario, the IT audit will be critically relevant and the scope of IT audit needs to be broadened to cover IT governance aspects. The auditor is then expected to adopt what is called a risk-based approach. While there are risks inherent to information systems, these risks impact different systems in different ways. The risk of nonavailability even for an hour can be serious for a billing system at a busy retail store. The risk of unauthorized modification can be a source of frauds and potential losses to an online banking system.

Hardy (2009) also approved this stating that IT auditors now have an opportunity to be agents for change and providers of assurance to management as they have expert knowledge about IT risks and

controls, which is in high demand and in short supply, but to be effective, they need to be business-savvy and able to engage with top management. IT auditors need to get involved; be constructive; and use open, commonly accepted practices, frameworks and standards. The days of hidden checklists are over—an open-book mentality that enables self-assessment and passes on knowledge to business and IT managers is needed. IT auditors can perform a number of key roles (Hardy, 2009):

- Initiating IT governance programmes in ways such as explaining IT governance and its value to management, defining the role for audit participation, challenging proposed activities and actions and providing advice regarding controls and risk management.
- Assessing the current state such as target-state positioning and gap priorities.
- Planning IT governance solutions in ways such as providing independent assurance that issues identified are valid, business cases are subjectively and accurately presented, and plans appear achievable.
- Monitoring IT governance initiatives in efforts such as providing independent assessment of the overall efficiency and effectiveness of IT governance initiatives, assessing the effectiveness of audit's contribution to the initiative, using positive results to improve current audit-related IT governance activities, and adapting as well as improve audit's approach to future IT audit activities.
- Helping make IT governance business as usual by providing objective and constructive input, encourage self-assessments, and provide assurance to management that governance is working effectively, and provide ongoing audits based on an integrated governance approach.

All the above points indicate that there shall be considerable change in the way the auditor's role is perceived by the auditor as well as by the auditees. Hardy (2009) concluded that enlightened IT audit groups will set their own IT governance performance goals and measure their success and contribution by monitoring how well their efforts and audit recommendations have helped cause real and beneficial outcomes such as alignment between IT and business strategies, optimal cost of IT with good return on IT investments, clear view on how well IT is performing, IT meeting compliance requirements, and effective risk management programme. Bianchi et al (2021) in a recent study found out that the role of audit committee for IT governance in organizations was not properly assessed in the past which needs to be further studied.

2.3. Theories and Hypotheses Development

This research uses three theoretical perspectives and their integrated explanations to develop a theoretical framework of auditing IT and IT governance:

1. **Strategic choice theory** states that purposeful actions abound in organizations and organizational member have substantial leeway in shaping their own fates (Jewer, 2009).
2. **Institutional theory** addresses the issue of how and why organizational structures and processes come to be taken for granted and the consequences of this institutionalization process (Judge and Zeithaml 1992).

3. **Agency Theory** defines the relationship between the owners (principals) and managers (Agents). Wu (2006) argues that there exists information asymmetry between the agent and the principal and thereby divergence of interests between the two.

Jewer (2009), Jewer and McKay (2012) claimed that these theories can be used under different, partially-overlapping theoretical assumptions, and thus each theory gives only a limited explanation of the whole phenomena regarding IT governance and its consequences (organizational performance).

Based on the above theoretical review, a conceptual model for this research has been prepared below conceptualizing the IT governance process (indicating the variables and the key relationships) with additional literature review about IT governance and IT auditing. To explain IT governance, the three factors identified as critical by various experts (VanGrembergen and Dehaes, 2008 for example) are the following:

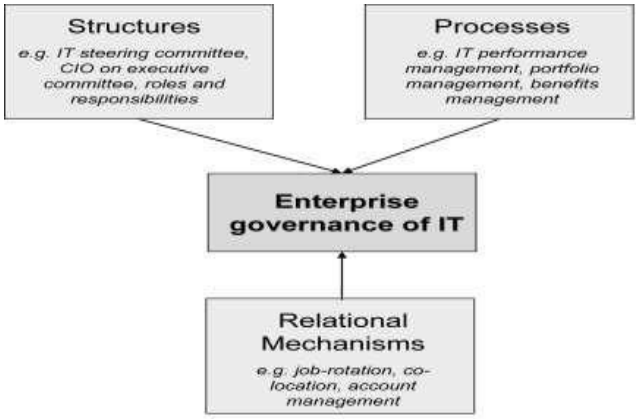

Figure 2: IT governance structures, processes and mechanisms (VanGrembergen and Dehaes 2009a)

Ko and Fink (2010) identified three possible means of achieving IT governance which are structures, processes and people. They combined mechanisms and structures together and added people as a new component. In the above diagram, the people components are part of the relational mechanisms (which are under structure) in this case. Once the factors that facilitate IT governance and the theories that explain this are identified, the relationship between IT governance performance and organizational performance can be observed as evident from the following model:

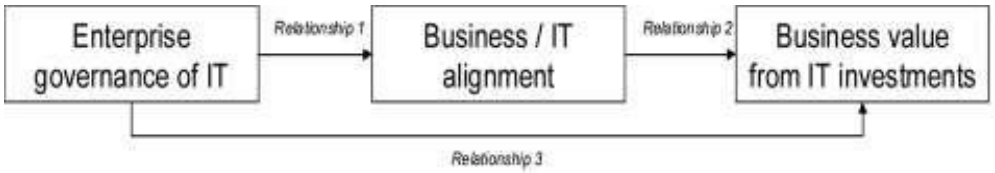

Figure 3: IT governance and Organizational Performance (DeHaes and VanGrembergen, 2009a)

The model presented for Business/IT alignment and business value from IT investments (organizational performance) will be equally applicable for other components of IT governance. Even if the above model can be used to related IT governance performance and organizational performance, it doesn't indicate the role of IT auditing in the relationship. The contribution of both types of audits (internal and

external audits) for IT risk governance has also been indicated by Parent and Reich (2009) as shown in the diagram below:

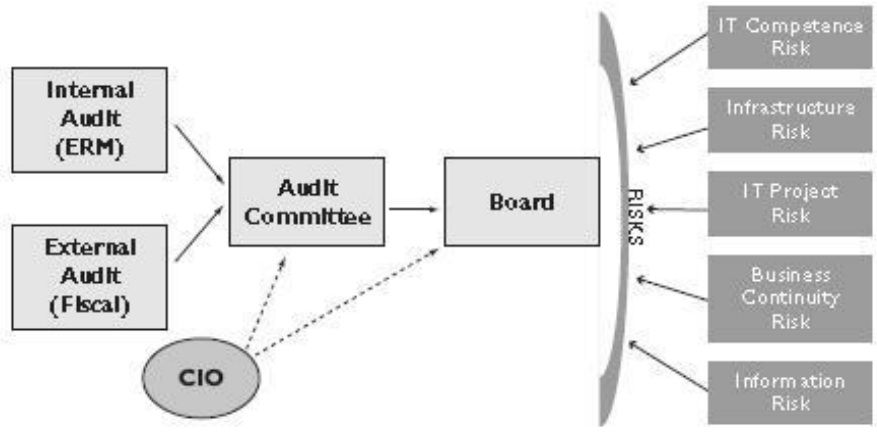

Figure 4: IT audit's role in IT risk governance (taken from Parent and Reich, 2009)

Parent and Reich (2009) stated that ideally, the audit committee triangulates input about IT risk governance: the organization's Chief Information Officer (CIO), the external auditors and internal auditors. This triangulation process is equally applicable to other components of IT governance (strategic alignment, value delivery, performance management and resource management). Empirical evidences are scant and not available in this area and it considered as a gap in the IT governance knowledge base worth detailed investigation.

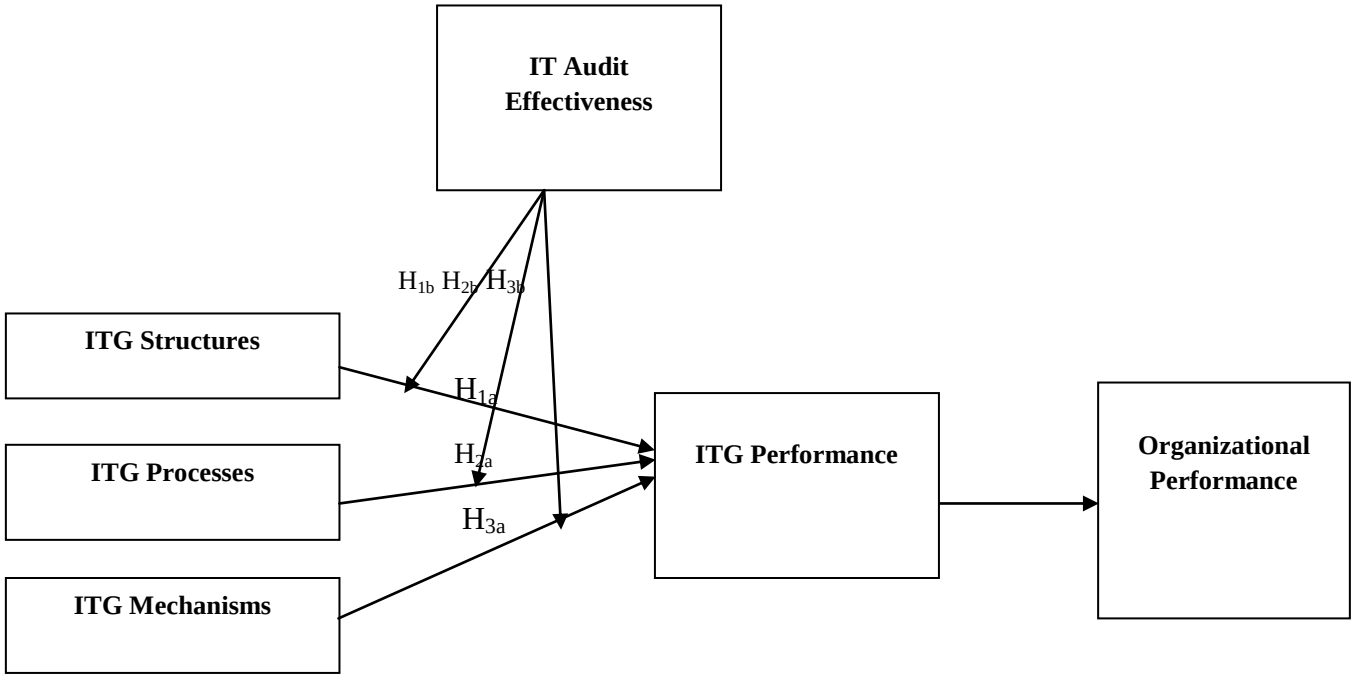

Figure 5: The Conceptual Framework (Developed by the researcher based on the literature)

2.3.1. ITG Structures and ITG Performance

IT governance structures include formal organizational structures and mechanisms for connecting and enabling horizontal, or liaison, contacts between business and IT management (decision-making) functions. Examples of IT governance structures include CIO on Board, executive management committees, IT strategy committee, IT leadership committees, and IT steering committees (Peterson, 2004; DeHaes and VanGrembergen, 2009a; Symons, 2005).

Jewer and McKay(2012) suggested that future research could investigate the role of committees such as IT strategic committees, as there is limited understanding of how or when IT Strategy Committees are effectively incorporated in board decision-making. For example, they mentioned a field study of a Belgian financial group found that even though the company had an IT Strategy Committee it "did not enable a more thorough and ongoing involvement of boards in IT governance (Jewer and McKay, 2012; DeHaes & VanGrembergen, 2005). The current study will help partially fill this gap leading to the next hypotheses using **Strategic Choice and Agency Theories** respectively as a lens.

Hypothesis 1a*: IT governance Structures positively and strongly influence IT governance performance of Ethiopian Universities.*

Hypothesis 1b*: IT audit effectiveness positively moderates the influence of IT governance Structures on IT governance performance in Ethiopian Universities.*

2.3.2. ITG Processes and ITG Performance

IT governance processes refer to formalization and institutionalization of strategic IT decision making or IT monitoring procedures. IT governance processes include strategic information systems planning, balanced (IT) scorecards, information economics, service level agreements, control objectives for information and related technologies and the IT infrastructure library, IT portfolio management, and demand management (Peterson, 2004; DeHaes and VanGrembergen, 2009a; Symons, 2005; Jewer and McKay, 2012). This implies the next hypotheses about the relationship between IT governance processes and ITG performance (success) using **Strategic Choice and Agency Theories** respectively as a lens.

Hypothesis 2a: *IT governance processes positively and strongly influence IT governance performance of Ethiopian Universities*

Hypothesis 2b: *IT Audit Effectiveness positively moderated the influence of IT governance processes on IT governance performance in Ethiopian Universities*

2.3.3. ITG Mechanisms and ITG Performance

IT governance relational mechanisms are the other mechanisms used to improve IT governance performance. The relational mechanisms are about the active participation of, and collaborative relationship among, corporate executives, IT management, and business management. Relational mechanisms are crucial in the IT governance framework and paramount for attaining and sustaining

business/IT alignment, even when the appropriate structures and processes are in place. These include active participation and collaboration between principal stakeholders, partnership rewards and incentives, business/IT co-location, cross-functional business/IT training and rotation (Peterson, 2004; DeHaes and VanGrembergen, 2009a; Symons, 2005). This results in the next hypotheses using **Strategic Choice and Agency Theories** respectively as a lens.

Hypothesis 3a: *IT governance relational mechanisms positively and strongly influence IT governance performance of Ethiopian Universities*

Hypothesis 3b: *IT audit effectiveness positively moderates the influence of IT governance relational mechanisms on IT governance performance in Ethiopian Universities*

2.3.4. IT Governance Performance and Organizational Performance

It is hard to pinpoint when the importance of IT governance became clear to the IT/IS professions (Weill and Ross, 2004; VanGrembergen and DeHaes, 2008). Gradually over a period of years, involving hundreds of conversations with managers and multiple research studies, it has been evidenced that IT governance is the most important factor generating business value from IT.

It has been argued that the management of IT, not just the quantitative investment in IT, can impact performance and there is ample empirical evidence showing that the quality of the IT department can impact firm performance (Jewer and McKay, 2012). Gartner introduced the idea of improving IT governance for the first time in its Top 10 CIO Management Priorities for 2003 (ranked third). Jewer and McKay (2012) stated that they did not find an empirical study directly examining the consequences of board IT governance during the literature review; however, they reported that evidence from a recent study on the relationship between proxies for board IT governance and firm performance suggests that a positive relationship exists (Lim, 2012). In fact, there is empirical support for a positive relationship between board involvement in corporate governance and financial performance (Judge & Zeithaml, 1992) and between proxies for board involvement in governance and firm performance. There is some research indicating that when boards provide richer information, executive management is more likely to engage in behaviors that are consistent with stockholders interests. This fact, therefore, demands further empirical studies to investigate the role of top management IT governance on firm performance. This will lead us to the last hypothesis for this study using **Institutional Theory** as a lens:

Hypothesis 4: *IT governance performance positively and strongly influences firm operational performance (customer satisfaction, cost savings and facilitating decisions).*

3. RESEARCH METHODOLOGY

3.1. Research Design

The research will use explanatory design to answer research questions and test research hypotheses stated. As IT is used in facilitating organizational operations and securing strategic goals, the role of ITG on realizing such goals will be empirically tested using the data to be collected from the universities IT and other top management personnel. Such method has been used in many researches in the past and

was found to be appropriate design for cause-effect relationship type of studies (Jewer, 2009; Parent and Reich, 2009 for instance)

3.2. Research Approach

The study will employ only quantitative research approach. The data to be collected using Likert Scale questionnaires will result in a dataset to be analyzed using quantitative models such as correlation and linear multiple regression analysis. To reach large number of respondents from many universities limiting the study to quantitative approach is recommended as qualitative design will require intensive inquiry with very limited number of respondents.

3.3. Target Population and Sample Selection

The target population for this study will be Public Universities in Ethiopia. There are 32 public universities in four generations (based on year of establishment) in Ethiopia. Using proportionate stratified sampling technique, representative number of each generation of universities will be taken as target institutions for this study. Taking twelve universities (three from each generation of universities) is believed to be representative of the country as the universities are managed in the same manner under the supervision of a single ministry organization. The only difference among them is the year of establishment which is well considered when creating strata for sampling purpose. Once a university is identified as such, census of top IT and other management people will be taken as source of data and unit of analysis.

3.4. Source of Data and Data Collection Procedures

Data will be collected from top IT and other management groups of the universities in the selected universities using Likert scale questionnaires adapted from prior studies. The instrument will be pretested and pilot tested to check appropriateness after being adapted for this study. As the medium of communication is English for all universities, the survey instrument will be prepared in English and no need of translation to local languages.

3.5. Method of Data Analysis

The data collected will first be analyzed using descriptive analysis. Descriptive analysis is part of any research methods and will show the scenario on the ground. Next, correlation analysis will be tested to check the relationship between each independent variable the dependent variable. Finally, multiple regression analysis will be done using AMOS Software to check the effect of the independent variable (ITG performance) on the dependent variable (Organizational Success). Structural Equation Modeling (SEM) will be used to observe the effect of the independent and the moderating variables on the dependent variable at a time. The validity and reliability of the data will be ensured by using standardized instrument from prior studies and conducting Confirmatory Factor Analysis (CFA) to make sure that the instrument is usable in the Ethiopian context.

4. CONTRIBUTIONS OF THE STUDY

This study is expected to have the following significant contributions for various stakeholders. Primarily, it will have theoretical contributions to IS research by incorporating IT auditing in IT governance and using theories of Corporate governance for IS research. Secondly, it will have major academic contributions by incorporating IT audit and governance topics in the IS curricula. Thirdly, it will enable practitioners and policy makers make use of these models for proper practical use of IT for short term operational and long term strategic use of IT. Finally, it will serve as a base for other researchers in the areas of IT audit and governance replicating the same study, introducing new variables, investigating other types of organizations such as NGOs and the like.

5. LIMITATIONS OF THE STUDY

This study will target only public universities in Ethiopia. Private universities follow the same business models that banks and other institutions adopt and are excluded from this study. In addition, conceptually, the study primarily emphasizes on three major aspects of IT Governance. These are IT value delivery, IT risk governance and IT performance management. IT value delivery refers to the extent IT contributes to organizational goals and objectives to be measured in timely delivery of information, customer satisfaction and other deliverables as appropriate. IT risk governance on the other hand will emphasize on IT value preservation by mitigating various IT related risks as investigated by Parent and Reich (2009). IT performance management will help assess the value delivered out of IT investments and how risks are mitigated thereby relating the first two aspects of IT governance.

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