



ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

**TAILORING AN INFORMATION TECHNOLOGY GOVERNANCE
FRAMEWORK FOR NATIONAL BANK OF ETHIOPIA**

By

TEMESGEN ASNAKE

JUNE, 2017

ADDIS ABABA, ETHIOPIA



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COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE
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Partial Fulfillment of the Requirements for the Degree of
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Declaration

This thesis has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree in any university. This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by citations giving explicit references. A list of references is appended.

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

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Abstract

Managing IT and its resources is very difficult and being a big IS research areas at this time. National bank of Ethiopia is the Central bank of Ethiopia that is responsible for monetary policy. Over the years, organizations become highly dependent on IT to the point where it would be impossible for them to function without it. IT governance (ITG) is defined as the processes and practices that ensure the effective and efficient use of IT in enabling an organization to achieve its goals. There are a number of IT governance standards or frameworks available but extant literature reveal that direct adoption of an IT governance framework is bulky and very difficult since all organizations are context-dependent.

The objective of this research is to propose a tailored IT Governance framework for National bank of Ethiopia. There are number of challenges during directly applying or adapting any IT governance framework and there is a need of tailoring to the specific organization since all organizations in the world are context-dependent that are affected by their internal and external environment.

The research then utilized the Delphi Method with two rounds to gather opinion from NBE experts on COBIT₅ Items to come to consensus on how to consume those Items to NBE. To answer all the research questions the research uses thirty elements of COBIT₅ (from five principles and seven enablers).

As key findings of this research, there are four COBIT₅ framework elements which were removed, namely Implemented IT governance Framework or some standards, Collection of competitive products and services, separated IT Governance and management and the last one is IT Governance is expected to cover all Enterprise issues (All Covered). The others list from 1st up to 26th show the ranked list of items for implementation and COBIT₅ usage from higher need to lower need based on NBE's current context and environment readiness. Finally proposed framework is established based on the experts' consensus on the elements which were already sorted. Then, possible recommendations are forwarded for future action in short and long terms by key stakeholders.

Keywords:IT governance, COBIT5,IT governance framework, Tailoring, IT Governance Feature Elements.

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List of Acronyms

NBE	National Bank of Ethiopia
COBIT ₅	C ontrol O bjectives for I nformation and Related T echnologies- version 5
ITG	Information Technology Governance
ITIL	Information Technology Infrastructure library
IS	Information System
CIO	Chief Information officer

CHAPTER ONE

INTRODUCTION

1.1 Background

The shift from technological centric organizations to service providers' makes the change that the management of IT is looked from the newer perspectives (Yousif & Hidayah, 2015). Banks are a very critical sector of a nation's economy. As a traditional concept, banks ensure the transmission of funds from surplus to deficit units and serve the society who need additional fund. They also facilitate spending and investment, which fuel growth in the economy (Eden, 2014). Pervasive use of technology in banks and other sectors has created critical dependency on IT that calls for a specific focus on IT Governance (Tagel, 2016).

Today Information Technology (IT) can be found in every modern enterprise. Since, IT has become one of the most critical parts of an enterprise, it has made management aware of the impact IT has on the success of the enterprise. It also significantly increases on IT investments. IT governance aims at assuring that IT delivers more value from IT investments and enforcing IT's role as a business enabler (Eden, 2014). According to Saiqa & Nabeel (2012) recently, alignment between information technology and corporate governance is creating a new research area.

Today, IT governance is on the main agenda of many organizations, and high-level IT governance models are being created (Said & Alami, 2014). Even though, any governance model is developed it doesn't mean this high level model imply that governance is actually working in the organization. Conceiving the IT governance model is the first step, implementing it into the organization as a sustainable solution is the next challenging step (Haes & Grembergen). National Bank of Ethiopia which is the central bank of Ethiopia is also one of the most crucial financial service providers in the country. Since the bank's role is monetary stability and a regulatory body for the entire economic activity, its services are enabled by information technology operations. The question of IT governance is raised here with a level of that will have a vast impact on all financial services delivery. The question is how organizations can pragmatically implement a sustainable IT

governance framework. As proposed by Peterson et al. (2004), IT governance can be deployed using a mix of structures, processes and relational mechanisms.

The term “IT Governance” first appeared in academic literature in the early 1990s, but was not addressed directly until later that decade, with the introduction of specific IT governance studies such as (Brown,1997). Also marking the prominence of this period was the foundation of the IT Governance Institute (ITGI) in 1998 (HaesandGrembergen, 2005), an industry organization established to build and foster a practitioner-focused understanding of the IT governance notion. (Gerald and Allen, 2007).Governance is the single most important factor in generating value from IT, and it is a critical success factor for the organization. (Governance, 2013).

Despite the formalized recognition and use of the IT governance term, the understanding of how organizations structured, monitored and evaluated their IT functions has been long studied, but under such labels as control of IS services (Olson and Chervany, 1980), IS organizational structure (Simson, 1990), IT decision making responsibilities (Boynton et al. 1992), and IS organizational roles (Brown and Magill, 1994). The multiplicity and diversity of IT governance research has led to a variety of definitions of IT governance being put forward over the years (Haes andGrembergen 2005; Webb, et al., 2006). However, still there is not sufficient consensus on an accepted definition. Drawing on the literature, we understand IT governance to be a dynamic, performance driven, adaptive, relational process of aligning corporate and IT strategies, objectives, accountability structures, systems, and practices with the objective of delivering valuable, risk-reduced, and measurable returns on IT-related investments (Gerald,et al, 2007).

Initial research into IT governance was widely based on understanding the structural and physical arrangements of the IT function within the overall context of an organization. Concerned primarily with defining the locus of IT control, most early studies were focused on the basic bipolar model of centralized and decentralized structures, with the objective of determining the relative merits of one of these governance forms over the other (for example, Golub 1975, Keen 1981, Olson and Chervany 1980).Upon reaching a theoretical saturation of this basic notion, practitioners and

academics turned to investigating novel governance forms that represented horizontal and vertical expansions of this baseline dichotomy (Brown and Grant 2005).

Simultaneous to the development of new governance structures, a separate body of research investigated how best to choose from the ever-growing pool of IT governance models. Primarily oriented towards contingency analysis, the goal of this stream of research was to provide generalized alignment Selection criteria for organizational decision makers, who at this point, were starting to be overwhelmed by the plethora of available options (Gerald et al, 2007).

Researchers were examining and addressing the fundamental concepts of IT governance even as early as the 1960's, but it was not until the late 1990's that the notation of *Information system(IS)governance frameworks* and then later *IT governance frameworks* started to feature prominently in the academic literature (Mengistu, 2015).

Information Technology (IT) governance is considered as one of the critical success or failure factors for organizations that are IT dependent for information provision and business operations(Chris & Charles, 2015).Because of the pervasiveness and dependence on information technology (IT) in organizations, the importance of an alignment between IT units and the business's strategic direction has increased. This alignment is the primary goal of IT Governance (Mengistu, 2015).

Good IT governance is about providing processes and decision-making structures for the business so it can make reasoned decisions on IT matters. It also describes how well IT activities are implemented, how effectively the resources are being used and how well the effectiveness of the implementation of the activities is measured (Green, 2001).Due to the dynamic and highly competitive business environment nowadays where firms spend around 3-5 percent of their revenues each year on IT just to stay competitive, good IT governance is no longer nice to have but it is a must have (Donald, 2015)

In this study, the question of IT governance related to its business need achievement and critical dimensions or impact to the economy in relation to IT services will be addressed in national bank of

Ethiopia as a central bank on which all banks services are dependent on this bank's IT series delivery.

1.2. Statements of the problem

Since, there is no overall, universal best governance framework, and that each organization must implement a mix of these different requirements in a manner most appropriate to their environment (Gerald et al, 2007).According to Simms (2008), failure to govern IT adequately can result in insufficient financial return of IT investments, large financial losses, and an increased risk profile of the organization. The current financial crisis has shown that failing governance implementations affect organizations and economy (Christoph et al, 2009). The failure impact on central banks, at national bank of Ethiopia is not only limited to the organization itself, propagated to the entire financial sector. Although a significant amount of work has been done on the subject of IT governance , still they appears to be some disjointed and confusion about what IT governance really is and how it may be realized in practice (Gerald et al, 2007).

Number of questions raised within IT Governance have been identified and warrant further investigation. They range from the empirical research necessary to support the presented IT Governance arrangements, to the linkage of corporate and IT Governance and the design choices of organizations within that context, to how organizations need to implement IT Governance to balance IT value delivery and IT risks (Governance, 2013).

The presented conceptual map of IT Governance components needs to be tested and supported by empirical evidence (Christoph et al, 2009). It depends contextually to specific organization like NBE since corporate governance and IT governance are feeding each other.

Central banks were originally established with the purpose of providing the banking sector with finality, which is essential for the smooth and stable functioning of payment and settlement systems operated by the private banking sector. In this sense, the banking sector and central bank collaborate by providing payment and settlement systems, in which bank notes and bank deposits are used as means of payment (Kazuhiko, 2014).

Mapping organization nature to the proper IT governance model is not simple; these include duplication of resources, difficulty in achieving institution wide alignment with strategic business objectives, and IT risks that were not being managed (Said & Alami, 2014). As a consequence, these institutions were in various stages of review and subsequent implementation of comprehensive IT governance restructures (Michael, Graham, & Brian, 2012).

NBE may use the world's available IT governance frame works, but these IT governance methods and tools are considered too heavy, inflexible and thus expensive to implement (Chadi, Savanid& Yang, 2011). Recent fast advancements in technology require new agile or adaptive ways of working. Hoogervorst noted that the changes in the technology are leading new ways of working such as self-management and self-organization. These emerging trends are significantly changing the IT landscape by challenging the boundaries and traditional ways of working. There is a need to understand the concepts of Enterprise IT governance (EIT) in the modern context of emerging technologies and trends (Muhammad & Gill, 2007). NBE also moving the way forward on those new technology implementations and fail in dynamic IT administration that need a FIT IT governance framework framed to NBE context. As much as more dynamic picture is likely to emerge as IT governance in a context that both enables and constrains action. Similarly (Jennifer & McKay, 2012)propose that institutional pressures play a role in determining the IT governance mode.

Extended governance model done by (Gerald, Allen, Aareni, & Shawn, 2007) is not answering issues like final tailored or fittest framework for specific organization. A paper by Said & Alami(2014) trying to compare most IT governance frameworks but don't describe about how to tailoring to specific organization.

The IT Governance framework of Dahlberg and Kivijärvi aims to support the use of COBIT or ITIL by facilitating an executive level holistic IT governance review. This leads to the realization that the framework is not detailed enough for implementation guidance. All processes of IT are covered. This is the only framework that explicitly structures IT Governance from a lifecycle perspective only

(planning, operating, and evaluation) and presents the according processes (Christoph, Sharm, & Dan, 2009).which lacks the Audit nature of COBITs.

As the IT Governance arrangements implementation is dependent on the organization's goals, which vary across organizations, a selection of a preferred framework is difficult. Of the presented frameworks, the COBIT framework is most frequently used and seen as the defacto standard of IT Governance (Said & Alami, 2014). With the broad scope of covering all IT processes and explicit guidance on its implementation, many professionals in the field of IT Governance use the framework as guidance. It is important to implement explicit structures and processes together with implicit coordination mechanisms to achieve effective IT Governance (Christoph, Sharm, & Dan, 2009).

Business is getting only more IT intensive, and IT is getting more complex. Maximizing value from IT investments has always been an imperative for business. From the experience, more than 50% of today's IT investments are wasted or fail to deliver returns to the business. With the increase in complexity, the cost of IT failure has become all the more significant (Richard, Greg, & Ziad).

Few studies can be mentioned in IT governances like Tagel Mekonin who suggested that, 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. But he was not putting a framework for the IT governance for any of the financial institutions besides he tried to address the maturity level of the financial sector in Ethiopia and indicating it is still in the lower level of maturity.

The National Bank of Ethiopia (NBE) has implemented a number of projects like core banking system, payment systems, credit bureau system, the coming applications including the new datacenter construction which are central systems with highly integrations and different financial operations like Ethiopian switch. Using those systems all financial institutions are regulated and managed. NBE doesn't have an implemented framework that will permanently address the failure in IT systems and the finical sector as entirely.

1.3. The research questions

The main research question of this research is *“What are those IT Governance Framework elements which can be candidates to be tailored to NBE?”*

This research paper will answer the following sub research questions.

- What IT Governance framework elements are relevant to NBE?
- What COBITs control elements are tailored to NBE environment?

1.4. Objective of the study

The general objective of the research is to propose a generic tailored IT Governance framework for National bank of Ethiopia as a central bank for its efficiency and effectiveness to the whole financial sector development through IT services and analyze how IT governance carried out in National bank of Ethiopia which is responsible for monetary stability of the country.

Specific objectives:

- To assess literature on previously related works for conceptual understanding and to identify different framework elements and contextual items for NBE.
- To assess available IT governance frameworks and to select one then to capture its feature for tailoring.
- To assess the IT governance framework tailoring steps
- To propose proper contextual fit framework to NBE.

1.5. Significance of the study

The significance of this research is to consume the benefits that will be gained from the proposed framework for NBE environment. Both the NBE IT professionals and management will use this framework that helps them to deliver effective and efficient IT services to the bank and to the financial sector.

The financial sector regulatory body like NBE which is the leader of the entire economic activity and country’s development, its operation to achieve the above mission should be supported by the information technology with high availability, secure, reliable and best performance to provide the

service to the sector effectively. To achieve this, the IT unit is highly important and be in “IT governance Framework” as a central bank. Therefore, the purpose of the study is to propose the IT Governance framework which is tailored after assessed from COBIT₅ that will be contextualized to NBE situations and missions.

1.6. Scope of the study

This research centers on IT governance frameworks, in particular COBIT5 based on the selection criteria collected from literature, specifically in NBE. It also considers the Delphi rounds to process the tailoring

From this research paper tailored and fit framework expected. Based on the previous works on the IT governance frame works like (Saiqa & Nabeel, 2012); (Gerald et al, 2007); (Vargas, 2010) tailoring the framework is a continuous research activity which is elaborated on this research paper. Tailoring and contextualization of the framework elements or features are progressively shown on the research process.

The research data collection was limited to a small portion of respondents; fifteen members with purposive sampling were selected since expert opinion is needed specifically by the Delphi process.

1.7. Ethical Concerns

In this research CIOs from different domain areas like from infrastructure, applications, databases, security, user support, knowledge management, research and project management are communicated, will be observed and questionnaires will be distributed. The director and the higher officials also will be the part of the research communications. At this time the privacy, legal and confidential matters will be respected by the researcher since those individuals are managing a number of public and private sector financial activities and regulations as a central bank.

CHAPTER TWO

LITERATURE REIVIEW

This chapter is organized with the intension of developing concept construction to the IT Governance frameworks adaption as well as tailoring process to achieve a contextual framework to the specific organization like National Bank of Ethiopia. The content of the literature is organized as follows: Governance Overview, IT governance, its evolution, the focus areas it covers, Development of IT governance, it's necessary elements with referring in the case of national bank of Ethiopia, It governance frameworks with their drawbacks and problem domain during the implementations and adaptations, how to tailoring those available frameworks to the given organization contexts as well. In this part we will discuss in detail what IT Governance is and what is its current position in the information technology era of this time.

2.1. Governance: Overview

Different literature can explain the word governance in a variety of ways since different authors using this word for a variety of purposes in a number of disciplines for a variety of contexts as well. (Chadi, Savanid, & Yang, 2011)

Numbers of definitions are available for the word governance with the context of the workable definition of the given discipline. According to Governance (2013) as a workable definition Governance is the process of establish chains of responsibility, authority, and communication (decision rights) and establishing measurement, policy, standards and control mechanisms to enable people to carry out their role and responsibilities. Before we come to this paper's concern which is called '*IT governance*' let's discuss about various governance types and issues in detail below.

2.1.1. Enterprise Governance

Information system audit and control Foundation and defines Enterprise 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 organization's resources are used responsibly (ISACA,2012). According to Muhammad & Gill (2007) IT Governance is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives.

2.1.2. Corporate governance

From the relative definition of IT governance, corporate governance is the relationship between corporate managers, directors and the providers of equity, people and institutions who save and invest their capital to earn a return. It ensures that the board of directors is accountable for the pursuit of corporate objectives and that the corporation itself conforms to the law and regulations (Haes & Grembergen).According to Leonardo (2008), IT governance reflects the broader corporate governance principles.

This can be explained by various theories or models of corporate governance Such as:

- Agency Theory (top management acting as agent for shareholders),
- Stewardship Model (top managers acting as good stewards of the corporations), and
- Stakeholder Model -the firm as a system of stakeholders operating within the larger system of the host society that provides the necessary legal and market infrastructure(Donald and Mengistu, 2015)

As (Chris & Charles, 2015) shows that, Business governance is a process, organizational function, set of techniques, and systematic approach for creating and deploying policy and business rules into day-to-day business operations.

2.1.3. IT Governance

Since it includes several critical aspects, namely, leadership, organization and decision rights, scalable processes and enabling technologies, IT governance is considered a complex system (Omari, 2016).

According to Petar (2011) the way enterprises govern their Information Technology (IT) is referred to as IT Governance. We do have number of definitions for IT governance; however there is no single universally agreed definition of IT Governance; different authors and institutions defined IT Governance differently. 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) (Tagel, 2016). Many other articles in the IT literature discusses and theorize the concept of IT governance, using different lens of analysis such as business and IT alignment (Leonardo, 2008)

The term ‘governance’ in IT has been used to broadly describe the policies, structures, and management processes involved in managing IT functions (Donald and Mengistu, 2015). IT governance is a subset of enterprise governance whereby IT resources and process are managed (Senait, 2011). According to ISO/IEC 38500 (2008) “Corporate Governance of IT is the system by which the current and future use of IT is directed and controlled. Corporate governance of IT involves evaluating and directing the use of IT to support the organization and monitoring this use to achieve plans. It includes the strategy and policies for using IT within an organization”.

2.2. Evolution of IT governance

Historically IT grows continuously over a night and over the years, organizations becomes 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 (Tagel, 2016)

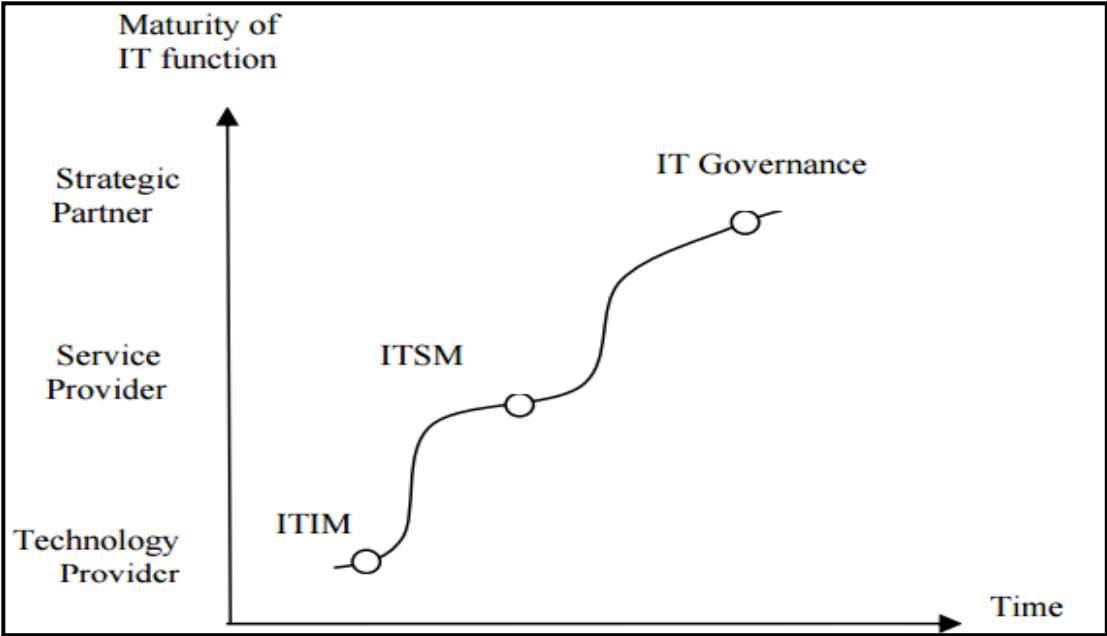


Figure 1 : Evolution stage of IT Governance from Sallé (2004)

2.3. IT Governance vs. IT Management

According to (Petar , 2011) for better view for IT Governance, understanding both IT management and IT governance is so important. The focus of IT management is the presentations of IT operations and effective internal supply of IT service and products but IT governance has a much broader range and a wider time aspect. It also concentrates on performing and transforming IT to meet the demands of internal business and external business (business customers) of both the present and the future requirements.

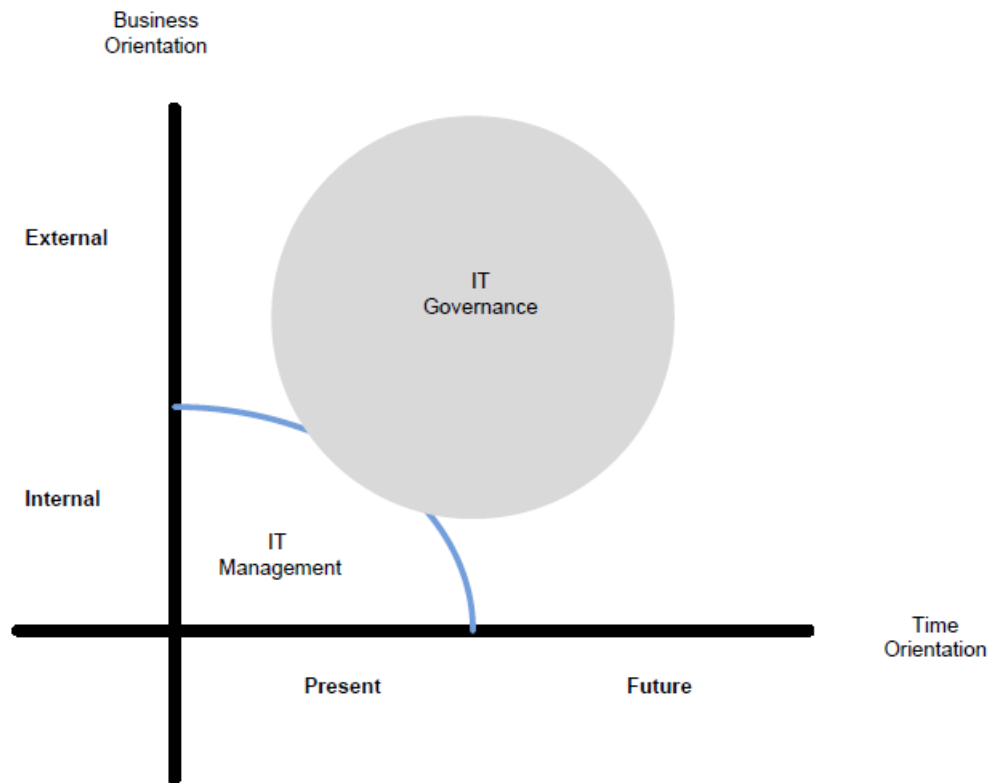


Figure 2: IT governance and IT management (Petar, 2011)

While we try to compare the two terms (IT governance and 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) whereas 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, whereas 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 (Tagel, 2016).

2.4. Importance of IT Governance

According to (Petar, 2011) Good IT governance is an efficient way of using information and processes, which in turn gives higher profits and long term benefits and One important part of IT governance is having the right people involved in IT decision making, e.g. a CIO, which yields both more strategic applications and greater buy-in. As a general term Governance is vital to the success of any organization from small domestic organizations to large international organizations (Donald and Mengistu, 2015).According to Senait(2011) company's return on investment will become at it level best when there is a proper management and usability of the resource belonging to the project.

An effective IT governance structure is the single most important predictor of getting value from IT (Rasha, A.,Khther ,& Marini, O, 2013).Effective IT governance helps ensure that IT supports business goals, optimizes business investment in IT, and appropriately manages IT-related risks and opportunities (Zhang, 2013).IT Governance matters because it influences the benefits received from IT investments. One of the most common and convincing reasons for the need for governance within IT is the frequent failure of IT services and projects to meet the organization's requirements (Zhang, 2013). Shengnan Zhanga also tried to explain that the primary goal of IT governance is to align organization's IT operations with its business strategies.

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 (Tagel, 2016)

2.5. Focus areas of IT Governance

There are five main focus areas for IT governance, all driven by stakeholder value. Two of them are outcomes: value delivery and risk management. Three of them are drivers: strategic alignment, resource management (which overlays them all) and performance measurement (Petar, 2011).

The four domains of IT governance including strategic alignment, IT resource management, IT risk management, IT performance management (Senait, 2011) As many researchers indicate IT Governance is mainly concerned with two main issues. Its concerned about IT's delivery of value to the business and mitigation of risks. Those two are the fundamental concerns of IT Governance. Apart from this the following are areas by which IT governance covers.

Strategic alignment:-The main concern of this domain is aligning IT with the business and collaborative solutions. There should be clear strategic objectives and visible strategy map with the business so that to have Good communication and alignment.

Value Delivery:-concentrating on optimizing expenses and providing the value of IT. Value that IT should deliver to the enterprise can also be explained in terms of the competitive advantage of the organization.

Risk management:-This domain deals with the issue on how IT risks are being managed in organization in order to protect IT assets, disaster recovery and continuity of operations.

Resource management:-optimizing knowledge and IT infrastructure.

Performance management:- This refers to the performance by which the IT is being evaluated and sees whether it is giving the value that it promises or not (Senait, 2011).

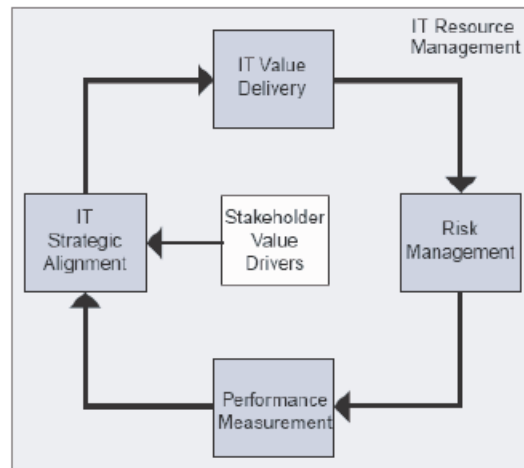


Figure 3: IT governance Coverage areas ITGI (2006) Broad Briefing of IT governance

2.6. IT Governance frameworks

The role of IT is considered as “strategic”, and it is able to support current business strategies and also to shape new business strategies (Leonardo, 2008)

The literature about the IT governance concept is limited and fragmented, thus clear and organic approach to the IT governance literature is needed. Weill (2004) defines IT governance by providing a contrast to IT management .He states that “IT governance is not about specific decisions are made. That is management. Rather governance is about systematically determining who makes each type of decisions (a decision right), who has input to a decision (an input right) and how these people (or groups) are held accountable for their role” (Leonardo, 2008).

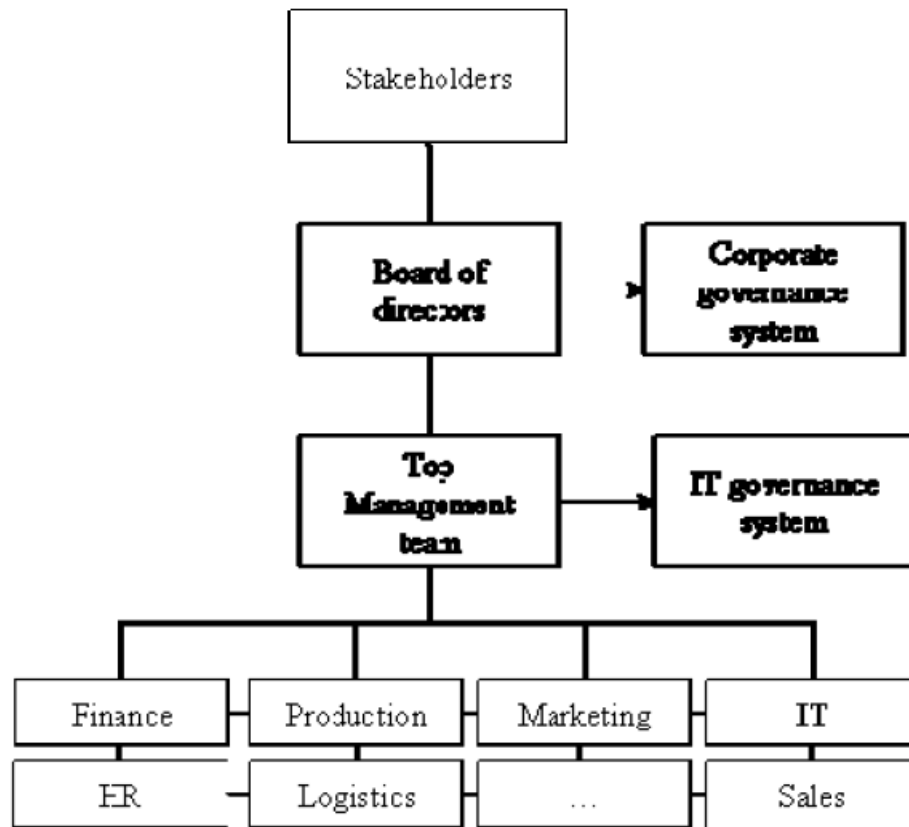


Figure 4:Corporate Governance and IT governance systems (Leonardo, 2008)

A framework offers the boundaries, the principles to follow and the guidelines through which a vision is provided as a philosophical base and the construction structure. It offers the basic structure that is flexible to apply in a certain environment like COBIT (Rasha et al, 2013).For Weill & Woodham (2002), Peterson (2004) and Grembergen (2004), IT Governance maybe implemented by using a mixture of structures, processes and relational mechanisms. Each of these elements is fundamental for the successful implementation of an IT Governance framework in an organization:

- I. **Structures** include the organization and assignment of the IT functions to specific people or departments, the existence of clearly defined roles and responsibilities and the creation of a series of committees related to IT planning and operation.
- II. **Processes** refer to strategic decision making, the strategic planning of IT systems, the management of services and monitoring, control and process definition tools (COBIT, ITIL, ITBSC, etc.).
- III. Lastly, **relational mechanisms** are established in order to support the relationship that should exist between IT and the business. These mechanisms include: the active participation of corporate executives and IT management, strategic dialogue, training,

exchange of experiences and knowledge and communication throughout the organization. A specific combination of these elements is called an IT Governance Framework.

For the purpose of this study we will look at the common and which are becoming a de-facto standards available currently.

2.6.1. Control Objective for Information and related Technologies (COBIT)

COBIT is a standard which is developed by the Information Systems Audit and control Association (ISACA) and was originally released in 1996. COBIT emphasizes regulatory compliance ,helps organizations to increase the value attained from IT, enables alignment and simplifies and implementation of the COBIT framework. It produces valuable control objectives that protect the company against wasting money on Information Technology. Control Objectives for Information and Related Technology (COBIT) becomes very popular in recent years and is regarded as the most comprehensive IT governance framework. However, its actual utilization and effectiveness are not clear due to the lack of academic studies (Zhang, 2013).

COBIT is a group of best processes, indicators, metrics and techniques on control and evaluation of ITs' area(Yousif & Hidayah, 2015).Despite the growing popularity of COBIT, the actual utilization and effectiveness of COBIT are not clear due to the lack of academic studies (Zhang, 2013).Hence, on this work a tailored framework is proposed in order to show how actually utilize IT governance framework elements by making the most fit feature elements to NBE in order to fill the gap of utilization of the framework's individual items.

COBIT is a globally accepted set of tools that executives and IT professionals can use to ensure that IT operations are aligned with business goals and objectives. The IT Governance Institute (ITGI), which founded by ISACA in 1998, released the third edition of COBIT in 2000; the fourth edition was released in 2005, and was revised as 4.1 edition in 2007. Released in 2012, COBIT 5 is the newest framework (Zhang, 2013)

The underpinning concept of the COBIT framework is that IT should be controlled by concentrating on information that is needed to support the business objectives and requirements (Zhang, 2013)

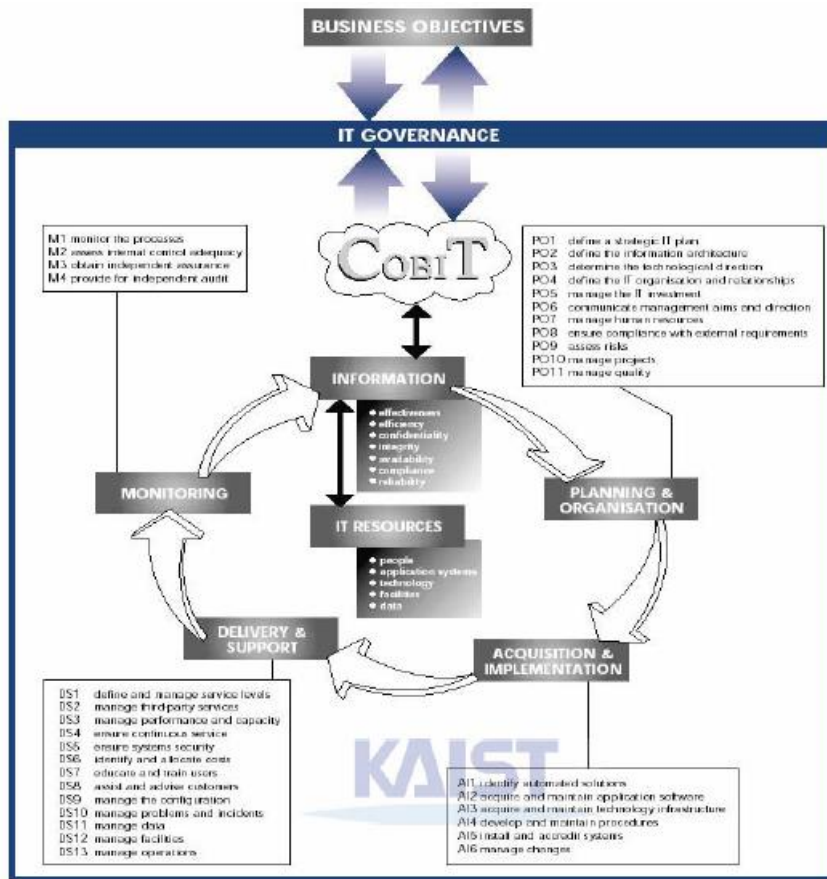


Figure 5:COBIT framework (ITGI, 2006)

The above framework is broader and has four domains namely *planning and organizations* which cover the use of IT and how it can be used in a company where it can be achieve its business goals. *Acquisition and implementation*, which mainly concerned with need identification, acquisition and implementation of information technology for the company. *Deliver and support* deals with delivery aspect of IT which ranges from application deployment issues to support services in line to it. *Monitoring* is mainly concerned performance evaluation (ITGI, 2006).

2.6.2. The IT Infrastructure Library (ITIL)

ITIL is a series of eight books that provide consistent and comprehensive best practices for IT service management and delivery. 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. The processes of Service Support are:

- Incident management
- Problem management
- Configuration management
- Change management
- Release management

The key practices of Service Delivery are:

- Service level management
- Financial management for IT services
- Capacity management
- IT service continuity management
- Availability management

In its third version, ITIL attempts to move from a process-based framework to a more comprehensive structure reflecting the life cycle of IT services with complete operational phases, namely design, transition and operation, also stresses the importance IT strategy and continual service improvement.

2.6.3. ISO17799/27000

ISO 17799 is one of the well-known and internationally accepted standards that help to manage the risks in an organization. The international organization for standardization's (ISO) 17799 was released by the ISO in December 2000(Muhammad & Gill, 2007).

ISO/IEC 17799:2005 Code of Practice for Information Security Management is an international standard, which was published by the International Organization for Standardization (ISO) and International Electro technical Commission (IEC). The historic source for the standard was BS 7799-1, which contributed essential parts to ISO/IEC 17799:2005. It was developed and published by the British Standards Institution (BSI), labeled as BS 7799-1:1999. The original British Standard was issued in two parts: BS 7799 Part 1: Information Technology—Code of Practice for Information Security (Zhang, 2013)

2.7. How COBIT5 is selected for this study-Criteria established

Here is the comparison process.

NO	Elements needed to be addressed	ITIL	COBIT5	TOGAF	Prince 2	CMMI	PMBOK	Sig Sigma	BSC
1	Strategic Linker-Corporate and IT strategy link will be established.	✓	✓						✓
2	Addressing all operational issues(IT and Business operations)	✓	✓						
3	All Coverage-All Management and operational issues addressed.		✓						
4	Easy to implement	✓		✓	✓	✓	✓	✓	✓
5	Once understand and applied it will continue to address matured IT environment not limited to some issues.		✓						

6	More Literature recommendations for implementations.		✓						
7	Better for Complex organizations	✓	✓						

Figure 1: Criteria table for Framework Comparisons

Those criteria are collected from literatures. Still COBITs is the leader in the industry and the discussion point.

2.8. The reason to contextualize the IT governance framework to the specific organization.

The proliferation of other IT standards and best practices, such as ISO27000 series and ITIL, creates great challenges for organizations to understand their relations and to take advantage of them.

IT governance frameworks, such as the IT Infrastructure Library (ITIL), Control Objectives for Information and related Technologies (COBIT), and Information Technology-Code of Practice for Information Security Management (ISO 17799), are common frameworks adopted by organizations to ensure operational efficiency, decreased costs, and increased control of IT infrastructure, thereby achieving organizational goals through aligning IT and business (Chadi, Savanid, & Yang, 2011).

A set of structures, procedures, norms, responsibilities for IT management must be defined. That is the IT governance. The reconceptualization of IT governance is based both on corporate governance principles, and on different definitions and lens of analysis of IT governance (Leonardo, 2008).

2.8.1. A drawback of available frameworks, if used as it is.

The proliferation of other IT standards and best practices, such as ISO27000 series and ITIL, creates great challenges for organizations to understand their relations and to take advantage of them (Rasha, A., Khther, & Marini, O, 2013).

From a continuous development and progression in IT industry and from the need of IT management and governance, a variety of IT Governance were tried to be developed. According to Rasha (2013) a number of IT governance frameworks, such as ITIL, COBIT, ISO 17799 are developed to provide guidance and tools for better IT governance. Among them, Control Objectives for Information and related Technologies (COBIT) is claimed to be the most comprehensive IT governance frameworks. It gives a broad overview of the full life-cycle of IT management (Rasha et al, 2013). Despite the growing popularity of COBIT, the actual utilization and effectiveness of COBIT are not clear due to the lack of academic studies.

Some researchers have pointed out that the biggest disadvantage with COBIT is that it requires a great deal of knowledge to understand its framework before it could be applied as a tool to support IT governance. It is reported (ITGI, 2011) that the usage of COBIT increased from 9% in 2006 to 14% in 2008; however, it decreased to 12.9% in 2010. This trend proves the conclusion from their previous survey that COBIT is not as easily implemented as originally estimated (ITGI, 2006). According to this survey, ITIL and ISO 17799/ISO 27000 are the two most frequently used frameworks. Many executives agree that even though they believe COBIT is a good framework, they prefer to focus on ITIL and ISO 27000 (Rash et al, 2013). The lack of guidance for customization and implementation make it difficult to launch COBIT within established IT environments, especially when some IT frameworks are well in place. How to choose and use various IT frameworks to benefit the organization most? How to start COBIT based on established IT policies and procedures? These questions become big puzzles for management and IT professionals.

According to Zulfa and Hidayah(2015), Even though they are not comprehensive enough to serve as well-organized in-house system management and also they can't do anything by their own , there are a number of frameworks, tools and standards that have been included in IT management systems, in organizations. Currently, organizations are showing interest in adopting the best practices and standards for IT governance (Rash et al, 2013). The causes of success and failure in IT governance framework adoption are yet to be adequately studied (Chadi, Savanid, & Yang, 2011).

No single dominant approach for ITG. ITG may have either defensive or strategic approach for preventing or mitigating disasters while strategic for sustainable shareholder value in practice, holistic understanding of legal, regulatory, business and internal ethic environment contexts should determine the suitability of the framework for a particular bank by facilitating maximization of benefits and

minimization of risks emanating from IT deployment. It focuses specifically on information technology systems, their performance and risk management (Anand & Chopla, 2012).

2.8.2. Tailoring or adapting process of IT governance frameworks for particular organization's context.

However, despite the heralded benefits of IT governance to organizations, previous studies demonstrate that many firms are still struggling to implement and apply frameworks to their work environment (Chadi, Savanid, & Yang, 2011).

Tomatzky and Fleischer (1990) developed the TOE framework to consider three aspects of innovation adoption, namely: technology, organization and environment. The technological context refers to both internal and external technologies adopted by firms. The organizational context generally covers various aspects of characteristics and resources within firms, such as a firm's size, degree of centralization, degree of formalization, managerial structure and human resources. On the other hand, the environmental context refers to external pressures including size and structure of the industry, competition, macroeconomic milieu, dealings with government, and regulatory environment (Chadi, Savanid, & Yang, 2011). This contextualization affects the adaptation of any framework to one of the specific organizations.

3. Chapter Summary

This chapter covers all relevant literature that are related with the framing of the ideas concerning with IT governance related and IT governance frameworks that are available in this time specially by focusing on COBIT and ITIL frameworks which are most common at this time. From its evolutionary growing to its framework development as well as types of governance (Enterprise and Corporate) governances and their individual behaviors are narrated in this chapter. The term IT governance, its contexts, importance and focus areas also tried to be addressed.

Since the main target of the paper is IT governance framework development (tailoring), IT governance frameworks are explained under (COBIT, ITIL) frameworks. COBIT 5 was developed by ISACA is explained with special focus of this thesis's tailoring process. COBIT's core concepts like PO, AI, DS, ME and IT resources process of COBIT with tailoring, fitting and organization contextualization bases

were described.(Zhang, 2013).There is a critical reason for contextualizing IT governance frameworks to the specific organization (the main agenda of this thesis) which is the difficulty to implement and understand it, the General nature of the COBIT and the context of the organization is one of them. The next chapter focuses on the methodology and research design of the paper that will be setting as the research design to address the research question and to use the concepts that are organized in the literature review.

CHAPTER THREE

RESEARCH METHODS AND DESIGN

3.1. Introduction

The purpose of this chapter is to provide a description of the research design and to show the use and selection of the Delphi research method that has been chosen for this thesis. The chapter tried to cover the detail description of the Delphi Method by showing the properness of the Delphi method to answer the research question and to fit to the research objective. The research design and study setting, the research approach, target population and sampling method, method of data collection with instrument development and validation including the detail design of the research with chapter summary also are presented here. IT governance framework control establishments for refinement, gap analysis and the way of mapping the existing COBITs elements to the gap of NBE environment are explained in this chapter.

3.2. The Research Approach

Any scientific process needs a plan and a procedure to execute any process. A book that has been written by Cresswell (2014) supports this idea which indicates that research approaches are plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation.

The nature of the research problem or issue being addressed has the power to shape the selection of the research approach (Creswell, 2014). As per Creswell's insight the research approach selection is not only depends on the nature of the problem but also the researchers' personal experiences, and the audiences for the study.

According to Ranjit(2011) research has eight main steps which are formulating a research problem, Conceptualizing a research design, Constructing an instrument for data collection, Selecting a sample, Writing a research proposal, Collecting data, Processing and displaying data and finally Writing a research report. *“The path to finding answers to your research questions constitutes research methodology. Just as there are posts along the way as you travel to your destination,*

So there are practical steps through which you must pass in your research journey in order to find the answers to your research questions”(Ranjit, 2011,p.36).

The process of research involves emerging questions and procedures, data typically collected in the participant’s setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data. The final written report has a flexible structure. Those who engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation (Creswell, 2014).

There are three approaches for any researches. According to CressWell(2014) there are qualitative ,quantitative and mixed approaches. Design science is also another approach in the research process. Since most of IT Governance control elements behaviors are reflected from the social and behavioral perspectives, and from numeric interpretations also, for this paper quantitative approach was selected. On other hands, Qualitative research is especially useful when the researcher does not know the important variables to examine. This type of approach may be needed because the topics new, the subject has never been addressed with a certain sample or group of people, and existing theories do not apply with the particular sample or group under study.

Kaplan and Duchon(1988) argued that information systems research is context-dependent .In this research the process of investigating the COBIT control elements to make it fit to the National bank of Ethiopia context is a reflection of experts opinion and as an artificial phenomena and artifacts (conceptions).

From the above intension of research approach selection, our starting point is by looking to the main research question of this paper: *“What are the candidates or cumulative IT Governance Framework elements that should be tailored to NBE context as a central bank?”* This research question forced the researcher to have a context-dependent to specific organization which is NBE and to establish constructive set of IT Governance control elements. Besides that the proposed IT Governance controls should be implementable in the context of NBE and establishment of avoidance of context-free organizations is needed in information systems research (Thatcher, 2016).

The Delphi method is selected for this paper and will be explained as below in detail. Expert opinion and reaching on consensus to IT Governance control elements constructively is important for this research due to the context-specific nature of the primary research question and need to seek additional IT governance framework control elements not gained from the literature review which are proper fit and tailored to NBE environment.

3.3. The Delphi Method Description

The Delphi Method also allows the researcher to have the experts opinion rank on the IT governance framework controls, which may prove a valuable contribution to practice. The Delphi method has proven popular in information systems research for identifying and prioritizing issues for management decision-making (Thatcher, 2016). In this research the two round Delphi steps helps the researcher to sort the COBIT₅ feature elements based on the NBE context or requirement to address the current need of the bank.

3.3.1. Background

When we see the thesis of (Thatcher, 2016), the name Delphi comes from an ancient city in Greece that housed the Temple of Apollo. This was home to the Pythia, a resident priestess known as the Oracle of Delphi, renowned for her prophecies. ‘Project Delphi’ was developed by the Rand Corporation in the late 1940’s as a survey technique to extract consensus of opinion from a group of experts.

Rowe and Wright characterize the Delphi method as consisting of four key features:

- **Anonymity** of participants, which allows participants to express their opinions and judgments privately thereby avoiding undue social pressures either from dominant individuals or from a need to conform to the majority. The nature of the iterative rounds of the Delphi method also allows the anonymous participants to change their opinion without fear of being ridiculed by others in the group;
- **Iteration** of the survey / questionnaire allowing participants to refine their view of the issue at each iteration;
- **Controlled feedback** is provided to participants informing them of the opinions of their anonymous colleagues in the previous survey round, which can then be used to inform their responses to the next survey round; and

- **Statistical aggregation** of the results are presented to participants as a simple, descriptive statistical summary such as mean, median and standard deviation, thereby allowing the group judgment to be viewed as an equal weighting of the participants.

3.3.2. Relevancy

The Delphi method is an appropriate research instrument where there is incomplete knowledge about phenomena (Skulmoski et al., 2007). The Delphi method is particularly useful when the goal is to improve our understanding of problems, opportunities, solutions or to develop forecasts and works equally well in both quantitative and qualitative research (Skulmoski et al., 2007). The method has an advantage like that information can be gathered from a geographically diverse panel of participants; that panelists have anonymity, which reduces the halo effects associated with the opinions of prominent participants; and that panelists have time to consider carefully their responses before replying (Somerville, 2008) & Landeta (2006) posits that the Delphi method is valuable in addressing problems inherent in group opinion that involves direct interaction, specifically a reduction in the influence of various psychological effects among participants such as inhibition and dominant personalities.

3.3.3. How to apply the Delphi Method

Skulmoski et al. (2007) cite a number of published information systems research articles that have employed the Delphi method, presenting this method feasible to identify ranking issues in the research process. This research refers a number of thesis papers that were using the Delphi method and analyze their usage in those processes.

(Okoli and Pawlowski, 2004) also list a number of information systems research projects that utilize the Delphi method from which they observe that the majority of Delphi studies focused on forecasting and issue identification / prioritization. Okoli and Pawlowski further noted that the Delphi method had also been used for concept / framework development that typically involved a two-step process of identification / elaboration of a set of concepts followed by classification / taxonomy development.

In applying the Delphi method it is important to differentiate this technique from the traditional survey tool method. Generally the survey method is associated with quantitative and qualitative analysis where data from a large number of respondents is collected and analyzed using statistical techniques. By analyzing a representative sample of respondents, survey tools seek to discover common responses to questions from which generalizations can be made associated with the objectives of the study (Gable, 1994).

3.4. The Research Design

Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design (Creswell, 2014)

In his book, Ranjit (2011) explain the research design as the way how you will find answers to your research questions which is also sets out the specific details of your enquiry. According to Ranjit, the selection of an appropriate research design is vital to arrive at valid findings, comparisons and conclusions not misleading the result as a whole.

The research design of this paper is targeting to answer the research question.

- Primary Research Question: *“What are those IT Governance Framework elements which can be candidates to be tailored to NBE?”*
- First Research Sub-Question: *What IT Governance framework elements are relevant to NBE?*
- Second Research Sub-Question: *What COBIT₅ control elements are tailored to NBE environment?*

To answer the above primary and sub research questions the following research setting and planning is going to be implemented for the research process.

Research design is different from the method by which data are collected. Many research methods texts confuse research designs with methods. It is not uncommon to see research design treated as a mode of data collection rather than as a logical structure of the inquiry. But there is nothing intrinsic about any research design that requires a particular method of data collection. This research follows the exploratory and descriptive research methods since the research address both methods’ issues in IT

governance affairs. Delphi steps are used to achieve consensus in the tailoring of IT governance elements of the COBIT₅ framework.

Quantitative techniques are applied to address technical and social perspectives of the IT Governance issues. Qualitative research is an empirical research method which is widely used in social, behavioral, organizational and evaluative research (Bonnie & Dennis, 1988). For this specific framework tailoring process the researcher prefer to use the quantitative aspect of data processing to select and prioritize the list of COBIT₅ item in the entire process. Most data in qualitative research are not normally in the form of numbers and to be collected from various sources, which involves many techniques such as data description, decoding, translation, etc. to understand their meaning in a natural setting (Shengnan, 2013). In This paper the research is designed with two Delphi rounds questionnaire with quantitative measurement of data collected by those two rounds in the process because of the usability of expert requirement to use the COBIT₅.

3.4.1. Sampling

The sampling selected for this research is purposive sampling that is appropriate to gather data from the experts and to have continuous two Delphi steps from the CIOs respectively of their concerns and from senior experts as well. Experts should be selected purposefully for the Delphi rounds. This purposive sampling will be addressed from each stratum of experts. Therefore, Number of stratus of experts will be avail in the sampling process.

3.4.2. Instruments

Available information on the documents of the bank, usually there is a large amount of data that has already been collected by others, although it may not necessarily have been interpreted or published. Identifying these sources as a beginning point and retrieving the information is a good starting point in any data collection effort.

Semi structured questionnaire, analysis of documentation and observation techniques were utilized for data collection with combined manner. It will result in rich and in-depth understanding of IT practices in central banks specifically in national bank of Ethiopia.

Observation is another technique that can be visited in the banks governance flows and operations. Questionnaire (also referred to as self-administered questionnaire) is a data collection tool in which written questions are presented that are to be answered by the respondents in written form. Questionnaire design was addressed carefully because poorly designed questionnaire may not produce the intended information. Developed questionnaire is combination of different survey questionnaire that has been previously developed for IT governance data collection.

A written questionnaire can be administered in different ways, such as by Sending questionnaires by mail with clear instructions on how to answer the questions and asking for mailed responses; Gathering all or part of the respondents in one place at one time, giving oral or written instructions, and letting the respondents fill out the questionnaires; or Hand delivering questionnaires to respondents and collecting them later. In this research respondents are located around the researcher's working area and it will not be difficult to collect data and no need of using mail communication.

3.4.3. Variables

Variables are those simplified portions of the complex phenomena that we intend to study. The efficiency ratio of Organizational structure to organizational process and relational mechanism are dependent variables. Other demographic related variables like Gender, Age, domain area, Status, Work Experience, Position and IT Governance exposure and training will be used to collect respondent's profile from the NBE experts with respective of their technical domain areas. Number of projects failed, return on investment ratio per each IT governance control elements are the listed variables in this research that are mapped to COBIT₅. Variables also generated from COBIT₅ principles and enablers that will cover around thirty elements in the process.

3.4.4. Evaluation Mechanism

In the evaluation, 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, reliability is the way we will depend on the research or process output of the research result. The tailored framework generated for NBE by the case study scenarios which is the best fit to the bank will be evaluated by creating a case study group or assigned individual with known IT governance Control variables input to the process.

3.4.5. Procedure

In this thesis, as a first step literature review section will be available. The review helps to develop or construct theories and concepts on IT governance frame development for a given organization contextually, basic IT Governance elements are addressed (especially COBIT's Feature elements which are Five principles and Seven enablers were described and established for farther processing of tailoring), reconstruction of the model is processed from the literature and the case study applied on the National Bank of Ethiopia as a given context in the case.

3.4.6. Data analysis

In IS most research results are interpreted from the quantitative perspective of the research process that can generate effective outputs. Analysis for qualitative and quantitative result is done at the integration phase for its needed interpretations. But, in this research only the quantitative aspect of interpretations will be handled. SPSS will be used to analyze the quantitative data. A typology of this integration is described in formal level; this study includes theoretical perspectives which purpose is to promote practical implications, so the theoretical perspective is explicit.

3.4.7. Study setting

Even though purposive sampling and Delphi method is applied for one strata, there will be a stratified sampling from the whole population which is established for the study. The reason why we should have those number of strata is, the NBE ICT role reflects by emerging from the junior IT expert to the CIOs ,IT director ,the vice governor and to the whole financial sectors and banks as a whole. While we see the commitment of participants to complete each round of the Delphi process will often depend on their interest and work-related involvement in the problem being studied (Hasson et al., 2000).

3.4.8. Target population and sampling methods

According to Ranjit(2011),two things (avoidance of bias and attainment of maximum precision for a given outlay of resources) should be critically understood.

For this research purposive sampling and stratified sampling are using due to a diversity of expert groups with different mixed domain areas which are available across the NBE and the banks. After

strata are listed, individuals are selected by purposive sampling from each of the strata. Finally the expert targeted groups will be ready for the Delphi round survey for the process of questionnaires and interviews.

As per explained in the study setting above there will be the following strata listed below:

- 1) The junior IT expert group-NBE(two members will be selected from Infrastructure and Systems management teams)
- 2) The senior /advanced technical expert Group-NBE(selected from 7 existed domain CIOs by purposive sampling –Since concerned expert opinion is highly required).(two members will be selected from Infrastructure and Systems management teams)
- 3) CIOs Domain Experts Group-NBE(IT director, and 7 chiefs officers of different domains will be selected).(Three members will be selected here(The IT director and two CIOs from System and infrastructure domains))
- 4) High level IT decision makers-NBE(Vice Governor ,Governor and Board members and project sponsors)-The Vice Governor corporate services is selected by purposive sampling
- 5) NBE business user strategic Decision makers (Director and Vice governor)-The Director will be selected.
- 6) NBE business users / operational members (seniors and officers). (one senior will be relevant and enough since expert opinion is needed for sampling for representing the business operation purposively)

Totally six stratus and fourteen individuals will be available for the expert opinion and Delphi rounding process. Due to the fact of the impossibility of the probability of successfulness of response of the questionnaires researcher will apply only the two round Delphi rounds to reach at consensus of targeting the research questions.

The consensus is reached by the above Groups is the success of the final fit for IT governance framework elements by synonym expert opinion of the Delphi method rounds questionnaire output.

3.4.9. Method of data collection, Instrument development and validation

According to Ranjit (2011), to collect data for the study which is primary data, you need either to construct the instrument or to select one that has already been constructed. If there is a need to use the secondary data, there is a need to identify what information is needed and then develop a form to extract the required data and should passing the same steps as for primary data.

For this research both primary and secondary are used to conduct the research. Mainly both closed-ended self-administered questionnaire and observation were used to collect Primary data. ICT strategy studies and other NBE strategic and Directives, organizational structure, job descriptions, annual reports were also used as a secondary source of data 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).

It can be anything that can be a means of collecting information for the study which is named ‘research tool’ or ‘research instrument’ like observation forms, interview schedules, questionnaires and interview guides. Constructing those instruments is the first practical step in carrying out a study based on your decision how to collect that data (Ranjit, 2011). One of the key elements of collecting data in the qualitative approach is to observe participants’ behaviors during their engagement in activities (Creswell, 2014).

While we are using the Delphi method the critical steps are shown below:

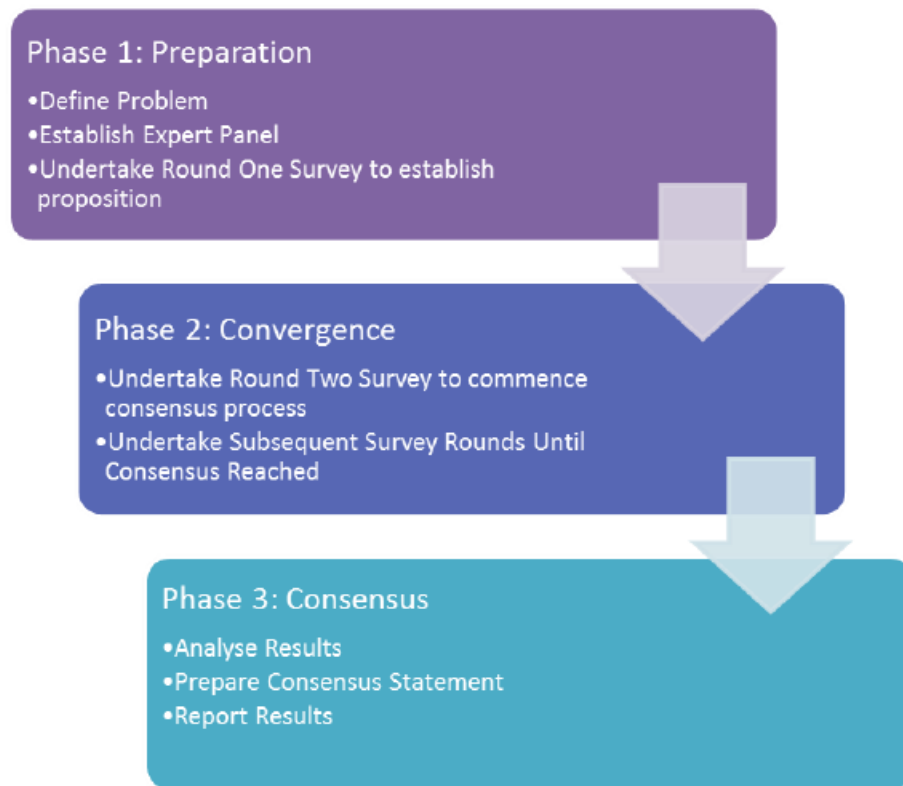


Figure 6: Delphi method Phases overview. Source: (Thatcher, 2016)

We will discuss on each of the steps on that the procedure on what will be done at each of the steps of the Delphi steps related to the research question available on this thesis. What will be done on each of the above steps on each of the research questions domain is the next detail of the research process.

COBIT₅ Principles mapping and prioritizations to the Research questions.

RQ-Primary: *-What are those IT Governance Framework elements which can be candidates to be tailored to NBE? Refer (Appendix 1) for round 1 survey.*

- RQ-Sub question1: *-What IT Governance framework elements are relevant to NBE?*

Here the fit elements are identified by this research question. Refer (Appendix A) taken from the round1 survey.

- RQ-sub question 2: - *What COBIT₅ control elements are tailored to NBE environment?*

Refer (Appendix B) taken from sub question result.

3.5.COBIT₅ Basic Control Elements Establishment for Tailoring or Contextualizing

This helps the researcher to collect the opinion bases for the set of IT Governance controls that creates the primary objective of the paper.

In NBE there are seventy professional staffs. Purposive sampling is used in the selection of participants based on the need of domain expert opinion as a source of information to the study. In a Delphi method expert opinion is sought, in addition to that purposive sample is needed where people are selected because of their expert ability to answer the research questions rather than presenting the entire population. In NBE the most useful source of IT governance related information and decision making can be the Chief information officers of different IT domains. There are around 9 CIOs in NBE including the IT director and the vice governor.

For the establishment of elements of COBIT₅, first there was a need to understand the COBIT₅ basic elements as it is and the second was to assess the current existing status of NBE that help us to tailor those elements to NBE's Need in the next section. In this regard we have to list and explain each of the COBIT₅ principles and items on this aspect.

The round one survey by Appendix A and the interviews triangulation will lead the research to the elements establishments. COBIT₅ Elements and features that needs to be tailored/contextualize and which are agreed to fit to NBE context will be established by the Delphi Round One Method.

From the result of round one, a questionnaire and interview for triangulation will be generated for round two Delphi methods.

3.6. Assess COBIT₅ Control Elements In Relation to NBE Context and Identify Gaps From the Basic Established Controls and Forward to Consensus Result.

In this part we have to see the detail elements of the COBIT₅ Framework of ISACA's product. Since, the main intension of this paper is to make fit this framework to NBE environment, first we have to narrate all elements of COBIT₅ to compare with the result of the consensus that can be gained from the Delphi rounds above.

According to ISACA (2012) framework COBIT₅, the new framework includes IT Governance, Risk, Security and Auditing.

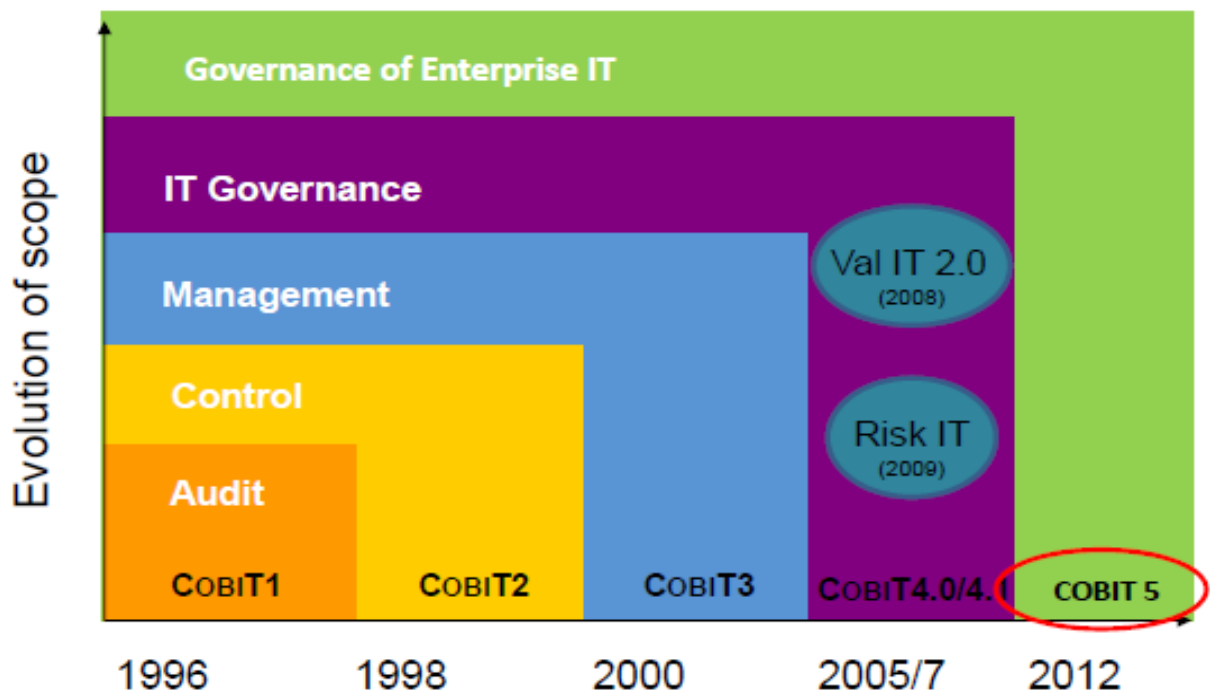


Figure 7: A complete business framework for the Governance of Enterprise IT (ISACA, 2012)

This latest ISACA's globally accepted framework COBIT₅ is aimed to provide an end-to-end business view of the governance of enterprise IT that reflects the core role of IT in creating value for enterprises. Five principles and enablers are generic and useful for enterprises of all sizes.

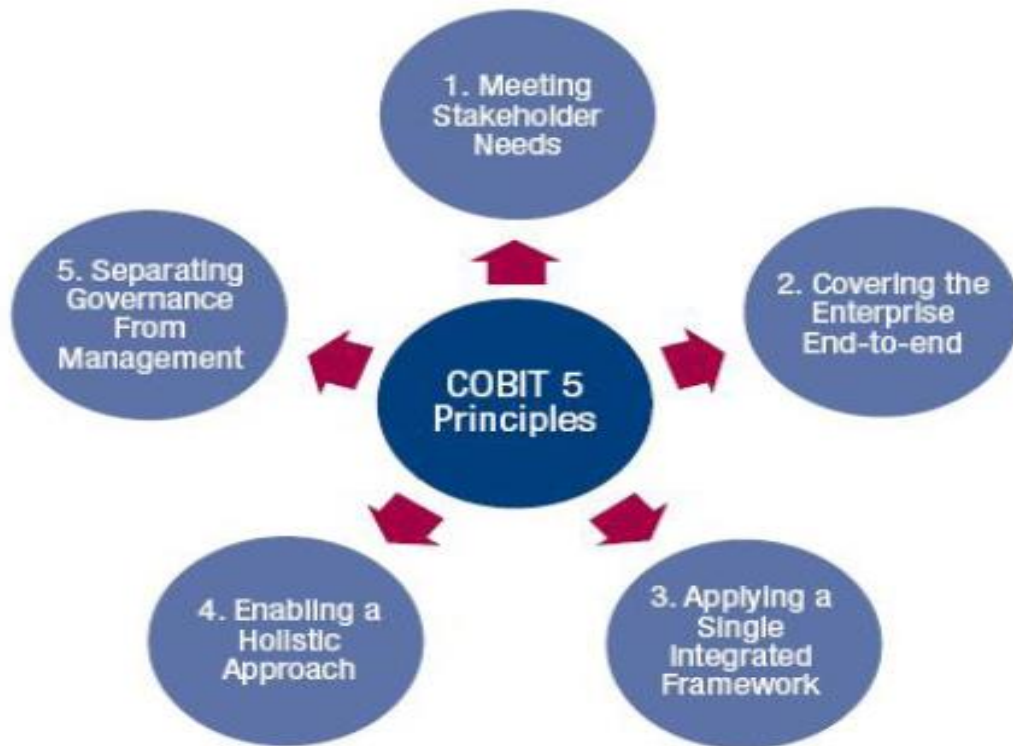


Figure 8 :ISACA’s COBIT₅Principles (ISACA, 2012)

Let’s come to the research questions to address with relation to the COBIT₅ principles with the steps of Delphi.

Based on the Primary research question and from the above principles data is collected from the experts to assure the contextual needed list of cumulative elements that should tailored and should be prioritized. First the principles should be listed in priority of the need of the organization context from the experts’ opinion panel.

The gap mapping and framework proposing or construction process will be handled here after we will get the result from the two Delphi rounds and mapping with COBIT₅ Existed items by ISACA.

3.7. Chapter Summary

This chapter covers two major parts. In the first part the research approach that includes the selection of the research approach and its appropriateness was explained. The nature of research approach selection is not only depends on the nature of the problem but also the researchers' personal experiences, and the audiences for the study. The chapter describes why quantitative approach is selected in the Delphi survey study. The background, relevancy, application and appropriateness of the Delphi method were also explained.

The second part of this chapter, which is the research design, is also presented. In this part the chapter tries to explain how to set the research arrangement on the way of answering the research questions. Study setting, target population and sampling method, instrument development were addressed as the second part of this chapter. The COBIT₅ basic elements establishment for tailoring and the mapping of those elements to NBE environment based on the two round Delphi methods is also described here. On the next chapter we will deliver how data will be present and display which was gained from the methodology and how to interpret for finding and discussion purposes as a major result of this thesis.

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION

4.1. Introduction

The type of information and the way you want to communicate your findings to the readers affects your way of analysis of the information collected (Ranjit, 2011). In this chapter two Delphi rounds questionnaires were processed. At the First round the COBIT 5 framework elements which were needed to be tailored were selected and prioritized, their importance and extent of fit level were also arranged. The single lists of feature elements are ready for the second Delphi round and refining and farther consensus process. At the second Delphi round those elements from the first round were rearranged and agreed elements are picked at the End of the two rounds. From those results more agreed COBIT 5 IT governance framework is identified and resulted to the output.

The main purpose of this chapter was to present the data gained at the first and the second round of the Delphi techniques rounds. The data collection was with the intension of gaining the required data for the purpose of answering one main and two sub research questions. Mainly the need was to show tailored/fit COBIT5 feature elements that are proper to NBE environment. The data presentation in this chapter has Seven main section listed below.

The data collection steps were starting by making focus group discussion including individual discussion and pilot testing on the questionnaires content. Participants' awareness creation was made on COBIT5 and the features listed on the questionnaires. Farther clarity was made to the respondents on the Words and logics that need more explanation that helps them to answer without any uncertainty.

After preparing a small group discussion with the respondents about the questionnaire data was collected that covers four parts which include like below:

- Demographic information about the respondents' who were participating in the questionnaire that helps to show the volume of participation in the study and the level of their ITG awareness and readiness to the field.

- List of COBIT₅ agreed feature elements which are candidates to be tailored to NBE environment that shows high level list of COBIT₅ that are needed to be customized based on the next steps of fit level discussions.
- List of COBIT₅agreed features that are needed based of the importance level that can be better to NBE environment.
- The most list of agreed COBIT₅ feature elements which are assumed to be exactly FIT to NBE context to have context dependent items in the list which is named fit level or extent of fit to NBE environment.

Generally, this chapter presents the data in seven sections which are: Demographic data presentation ;COBIT₅ Feature elements that are selected as a candidate for tailoring presentation; COBIT₅ Feature elements that are selected and listed/sorted by importance presentation; COBIT₅Feature elements that are selected and listed/sorted by level fit presentation; COBIT₅Feature elements that are selected and listed/sorted by the above three level of sorting(first by Candidate output, second by importance and third by extent of Fit sorting process)(single sort of feature elements);Final List of Elements from round one that is ready for round two sorting; Round two data representation and the final sorted list ;Proposed framework for NBE environment that is taken and present from the above listed candidate, importance and fit level detail data to propose the tailored COBIT₅ items as its COBIT₅ principles and enablers to the specific organization.

4.2. Demographic Data Presentation

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

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	6	30.0	31.6	31.6
	Female	3	15.0	15.8	84.2
	Total	19	95.0	100.0	100.0
Missing	777	1	5.0		
Total		20	100.0		

Table 2: Respondents' demography-Gender (Source: Survey result 2017)

From table 2 there is one missed gender information from 14 respondents, 10 male and 3 female ,totally 13 respondents provide their demographic information.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-30	8	40.0	61.5	61.5
	31-40	5	25.0	38.5	100.0
	Total	13	65.0	100.0	
Missing	777	1	5.0		
Missing	System	6	30.0		
	Total	7	35.0		
Total		20	100.0		

Table 3: Respondents' demography-Age (Source: Survey result 2017)

Table 3 shows, most of the professionals in NBE are youngsters and falls in age between 25-30 which presents 61.5% valid present and 38.5% are ages between 31-40 covers 38.5% which are almost found in the CIOs levels of variety of domain experts.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Bachelor's Degree	6	30.0	31.6	31.6
Valid Master's degree	10	50.0	52.6	84.2
Valid Total	3	15.0	15.8	100.0
Missing 777	19	95.0	100.0	
Total	1	5.0		
	20	100.0		

Table 4: Respondents' demography-Education (Source: Survey result 2017)

From academic point of view most of the respondents are Bachelor's Degree with valid percent 52.6 % and Masters degree with 15.8% coverage.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid ITIL	17	85.0	89.5	89.5
Valid Other	1	5.0	5.3	94.7
Valid Total	1	5.0	5.3	100.0
Missing 777	19	95.0	100.0	
Total	1	5.0		
	20	100.0		

Table 5: Respondents' demography-ITG Training (Source: Survey result 2017)

Only one staff is certified IT governance related training that is the certificate of ITIL. That was the reason why the researcher prepared a group and individual discussion and awareness on COBIT₅ items before the respondents fill the questionnaire. There is also one respondent with other type training related with COBIT and ITIL on training attendee level (participation).

4.3. COBIT₅ Feature Elements that are selected as a Candidate for tailoring presentation

In this section it is tried to answer the first research question which is: "What are those IT Governance Framework elements which can be candidates to be tailored to NBE?" For this purpose, first the research has to consider what are those listed COBIT₅ Elements that are going to be addressed in the

tailoring process. As per addressed in the literature review part, trying to consume the whole elements not only the COBIT but also any standards will lead the organization to the complexity and difficult to understand to apply the framework elements on the way of FIT to the specific organization.

For our process the research were trying to use the Five COBIT₅ principles and seven enablers since those elements are basic to its implementations process. Those elements are distributed to thirty elements for the selection, prioritization and implementations in the tailoring process for NBE context.

The following are thirty COBIT₅ basic elements that are mapped to our variable representations on the latter data analysis and interpretation process. See the table in Annex I, table shows the variable mapping for the COBIT₅ Principles and Enablers.

As we can see on Annex I, table there are Ninety variables generated from the Basic thirty COBIT₅ items that each COBIT₅ Item will have three variables for the Candidate selection, Importance and Fit level identification in the Items list.

From the collected survey data the result below is present in order to answer the first research question.

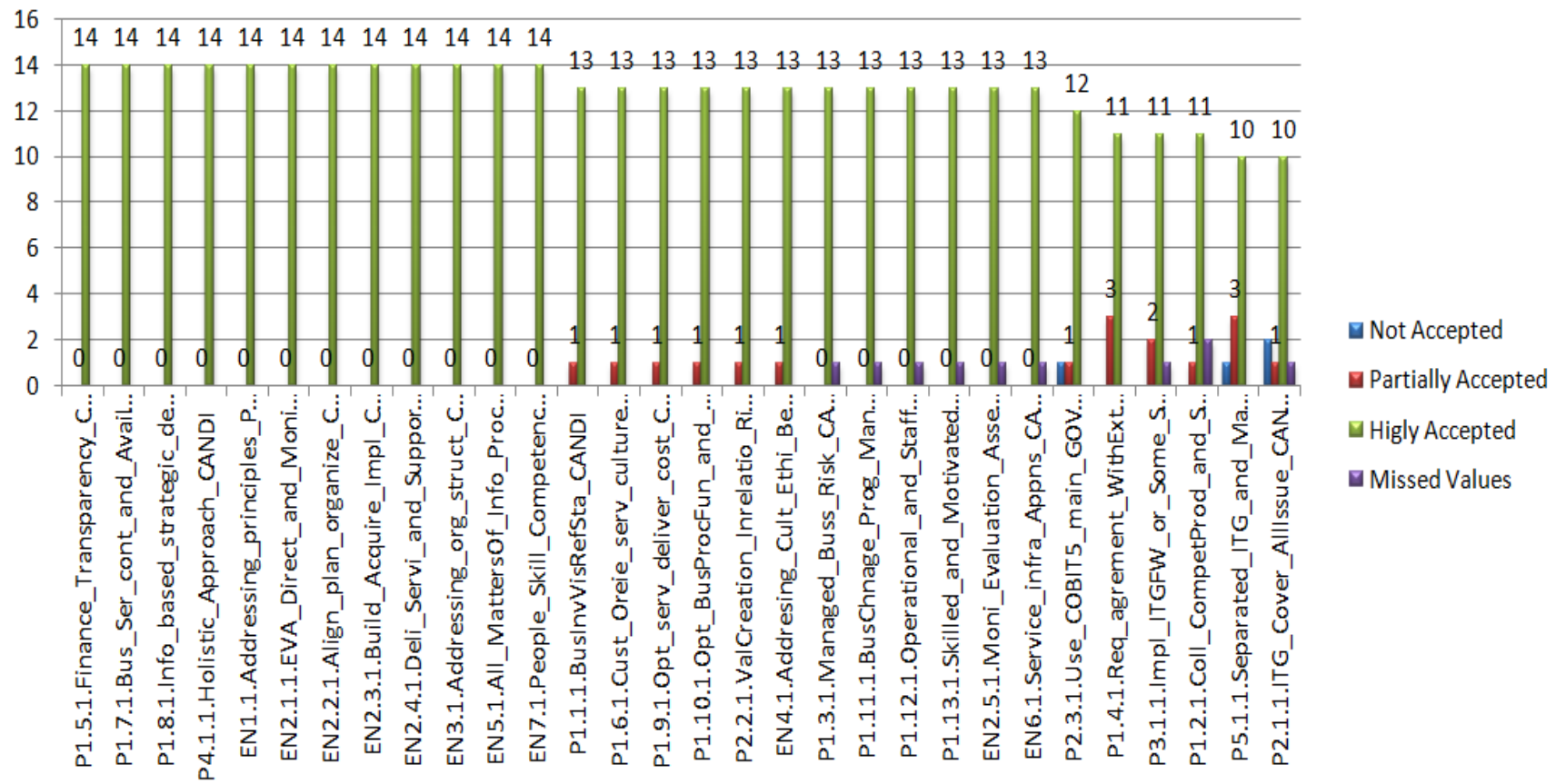


Figure 9: List of Candidates of COBIT to be tailored to NBE (Source: Survey result 2017)

See the detail explanation below (on the coming pages) how the sorting was done and how this graph is generated. The fourteen respondents answer is converged to three Groups for simplicity named highly accepted (agree and strongly agree), Partial accepted (Neutral), Rejected (Disagree and strongly Disagree).

As shown in figure 9 above respondents' agreement on each thirty candidate elements are listed with three basic categories (Highly Accepted, Partially Accepted, Not Accepted). Those categories are generated based on a scale from 0 (strongly disagree) to 4 (strongly agree) and then grouped to three states (0 (Not Accepted), 1 (Partially Accepted), 2 (Highly Accepted)). The sorting was done based on first by 'Highly Accepted' which is number of state 2, then by 'Partially Accepted' which is state 1 and finally by 'Not accepted' which is state 0 which is indicator of ignorance to the item.

From the figure 14, we will have five basic groups of Items in sorting left to Right (Highly Accepted to least Accepted order):

Group one: The first twelve Items scored exactly equal 14 (P1.5.1, P1.7.1, P1.8.1, P4.1.1, EN1.1, EN2.1.1, EN2.2.1, EN2.3.1, EN2.4.1, EN3.1, EN5.1, EN7.1). These items are scored pure 14 which is highly accepted (i.e 2 which is the cumulative state of 'Agree' and 'Strongly Agree'). From this state those twelve elements passed to the tailoring process with any further comparisons.

Group two: Another twelve items with the score of 13 (Highly accepted to be tailored (state 2 (i.e 2 which is the cumulative state of 'Agree' and 'Strongly Agree'))) but here the first six sub items that have additional 'Partially accepted' state (i.e 1 (one)), those are (P.1.1.1, P1.6.1, P1.9.1, P1.10.1, P2.2.1, EN4.1) which scored 'one' for each of the six items listed above. The second group the same record 13 with additional missed values not supported with partially accepted and hence they are sorted next to the previous six items like (P1.3.1, P1.11.1, P1.12.1, P1.13.1, EN2.5.1, and EN6.1)

Group three: This section contain only one item with score 12 for 'Highly accepted' which is state 2. The item is P2.3.1 with one Record of 'Partially accepted' and 'Not accepted' states but less from the previous section groups.

Group four: Three ordered items that have the score amount of same 11 (Number of 'Highly accepted' or 2 counts). Those elements are ordered like (P1.4.1, P3.1.1, P1.2.1). Those items have 3, 2 and 1 scores respectively for 'Partially Accepted' or 1 Counts that support their order accordingly.

Group Five: These items include the last two items that are almost ready for cutoff points to avoid from the entire 30 elements that needed to be tailored to NBE environment. These Items are scored 10 similar records and vary in

'Partially accepted' supportive sorting each has 3 and 1 number of counting for each respectively (P5.1.1, P2.1.1)

Total Item Order of 30 items {P1.5.1, P1.7.1, P1.8.1, P4.1.1, EN1.1, EN2.1.1, EN2.2.1, EN2.3.1, EN2.4.1, EN3.1, EN5.1, EN7.1, P1.1.1, P1.6.1, P1.9.1, P1.10.1, P2.2.1, EN4.1, P1.3.1, P1.11.1, P1.12.1, P1.13.1, EN2.5.1, EN6.1, P2.3.1, P1.4.1, P3.1.1, P1.2.1, P5.1.1, P2.1.1}

<i>COBIT5 Candidates To Be Tailored-Variable Level</i>	<i>Score</i>	<i>Rank</i>
P1.5.1.Finance_Transparency_CANDI	14	1
P1.7.1.Bus_Ser_cont_and_Avail_CANDI	14	1
P1.8.1.Info_based_strategic_deci_mak_CANDI	14	1
P4.1.1.Holistic_Approach_CANDI	14	1
EN1.1.Addressing_principles_Poli_Fram_CANDI	14	1
EN2.1.1.EVA_Direct_and_Monitor_CANDI	14	1
EN2.2.1.Align_plan_organize_CANDI	14	1
EN2.3.1.Build_Acquire_Impl_CANDI	14	1
EN2.4.1.Deli_Servi_and_Support_allIssues_CANDI	14	1
EN3.1.Addressing_org_struct_CANDI	14	1
EN5.1.All_MattersOf_Info_Process_CANDI	14	1
EN7.1.People_Skill_Compotence_CANDI	14	1
P1.1.1.BusInvVisRefSta_CANDI	13	2
P1.6.1.Cust_Oreie_serv_culture_CANDI	13	2
P1.9.1.Opt_serv_deliver_cost_CANDI	13	2
P1.10.1.Opt_BusProcFun_and_costs_CANDI	13	2
P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CANDI	13	2
EN4.1.Addressing_Cult_Ethi_Behav_CANDI	13	2
P1.3.1.Managed_Buss_Risk_CANDI	13	2
P1.11.1.BusChnage_Prog_ManagedWell_CANDI	13	2
P1.12.1.Operational_and_Staff_produc_CANDI	13	2
P1.13.1.Skilled_and_Motivated_peoples_CANDI	13	2
EN2.5.1.Moni_Evaluation_Asses_CANDI	13	2
EN6.1.Service_infra_Appns_CANDI	13	2
P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI	12	3
P1.4.1.Req_agrement_WithExt_Laand_regu_CANDI	11	4
P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI	11	4

P1.2.1.Coll_CompProd_and_Serv_CANDI	11	4
P5.1.1.Separated_ITG_and_Mangement_CANDI	10	5
P2.1.1.ITG_Cover_AllIssue_CANDI	10	5

Table 5:Sorted list of 30 Items for candidate selection from more accepted to tailor to less accept to tailor (Source: Survey or analysis Result 2017)

See Annex I table for the definitions of the above sorted variables.

Finally what does it mean by the above order? What does it tell us? Those are the main questions that we have to consider for our tailoring process? As per the description how the order is justified there is a business goal reason and implementation indicator that tells us the current implementation need of the COBIT framework in NBE environment.

If we see the last two, three or four items, the research can have candidate selection Priority here. The last item named “P2.1.1.ITG_Cover_AllIssue_CANDI” which is IT Governance is expected to Cover all Enterprise issues (All Covered) and here the meaning is Experts are agreed to implement and apply to NBE to the future not at this time. This can be applied to the second, third and fourth Items (P5.1.1.Separated_ITG_and_Mangement_CANDI, P1.2.1.Coll_CompProd_and_Serv_CANDI, P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI).Use table in annex I for the meaning of the variables listed here.

On the other way we can see the first items in the list which are agreed by those participants at this round (first Delphi round).These items from the first to the fourth like (P1.5.1.Finance_Transparency_CANDI,P1.7.1.Bus_Ser_cont_and_Avail_CANDI,P1.8.1.Info_based_strategic_deci_mak_CANDI,P4.1.1.Holistic_Approach_CANDI).Those four items which the first in the list have the same rank(priority) and no other comparisons methods. The decision can be left to the Bank’s IT management to be applied which one first and which one is second. For any consumptions of the list it is better to use the rank and the score numbers.

4.4. Important List of COBIT₅ Features to NBE in the Future (list by importance)

This section intends to analyze for the second research question. “*What IT Governance framework elements are relevant to NBE?*” From the given table 5, obviously there are 30 items listed and on table 6 they are ordered from top accepted to least accepted order by a priority of three measurements 0,1 and 2 from lower accepted grouped or mapped liker scale(0) to higher accepted grouped or mapped scale (2).

In this section, we have sorted those items again with importance priority and need assessment of NBE.

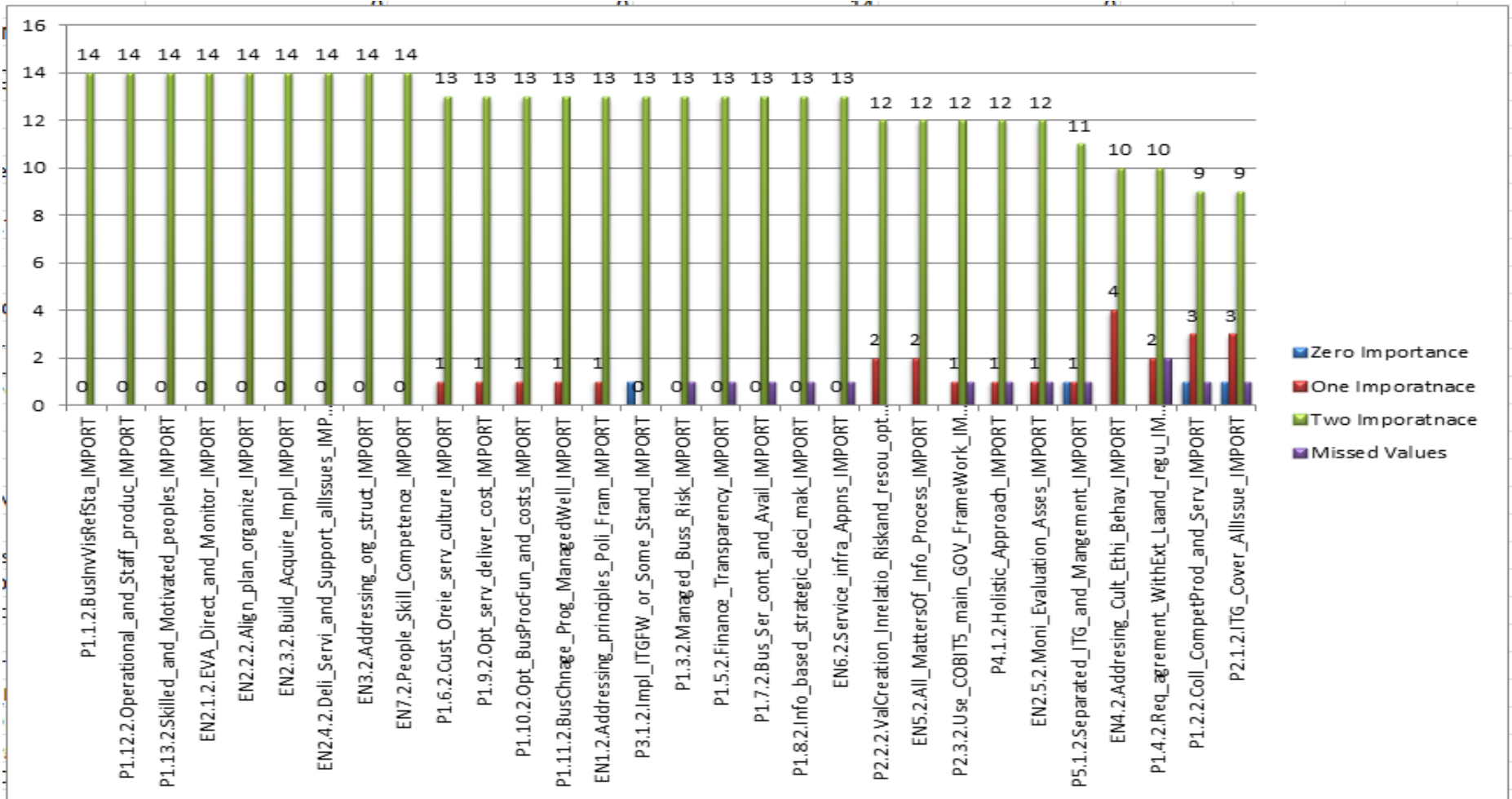


Figure 10 List of COBIT 5 Items with Importance level to NBE (Source: Survey result 2017)

See the detail explanation below on the importance (on the coming pages) how the sorting was done and how this graph is generated. The fourteen respondents answer is converged to three Groups for simplicity named ‘Two importance’/Highly accepted (importance and very importance), ‘one importance’ (Neutral), ‘Zero importance/Rejected (Disagree and strongly Disagree).

As shown in figure 4.4.1 above, respondents' agreement on each 30 candidate elements are listed with three basic categories (Highly accepted, partially accepted, Not Accepted) for the importance. Like the previous Candidate selection process those categories are generated based on a scale from 0 (Not very important) to 4 (Very Important) and then grouped to three states (0 (Not Accepted), 1 (Partially Accepted), 2 (Highly Accepted)) levels. The sorting was done based on first by 'highly accepted' which is number of state 2, then by 'partially accepted' which is state 1 and finally by 'Not accepted' which is state 0 which is indicator of ignorance to the item based on the importance.

From the figure 15, we can have six basic groups of Items in sorting left to Right (highly accepted to least accepted order):

Group one: The first nine elements with highly accepted level and score of 14 are found. This indicates that those items are basically and highly important to be adapting to NBE at the first level. All those Items doesn't have any additional 'partially accepted' or 'Not Accepted' state at this level for further comparisons and purely required to NBE environment from the assessment. Those listed nine items are ordered like (P1.1.2, P1.12.2, P1.13.2, EN2.1.2, EN2.2.2, EN2.3.2, EN2.4.2, EN3.2, EN7.2).

Group two: The second group with eleven members that have the score of 13 is listed with 'Highly Accepted' importance level of COBIT5 member elements. Those listed nine items are ordered like (P1.6.2, P1.9.2, P1.10.2, P1.11.2, EN1.2, P3.1.2, P1.3.2, P1.5.2, P1.7.2, P1.8.2, EN6.2). In this list the first five items are supported by level 1 or 'Partially Accepted' level of importance in the group that makes them the first in the second group of items.

Group three: Here, there are five items with 12 score of Highly Accepted for the importance requirement of the features. The first two items have the same 2 score of 'Partially Accepted' level of importance and the others three of them is also supported by score of 1 by the 'Partially Accepted' level of importance. The lists of those items are like (P2.2.2, EN5.2, P2.3.2, P4.1.2, EN2.5.2)

Group Four: One item with score of 11 is found which is lonely for comparisons. The item id is P5.1.2.

Group Five: There are two elements with score of 10 for the ‘highly acceptance’ Importance level. They are also ordered by the ‘Partially Accepted’ level of importance which has the first is high (score 4) the second is low (2) respectively like (EN4.2, P1.4.2).

Group Six: The last two items with the same level of score of 9 in “Highly Accepted” and equal score of 3 in “Partially Accepted” level of importance. Therefore the research can use one of those two equal elements in acceptance score as far as ours proposed need and choices to the environment. {P1.2.2, P2.1.2}

Finally, we have the following sort of items with importance levels from highly Accepted level to the lower one importance.

(P1.1.2, P1.12.2, P1.13.2, EN2.1.2, EN2.2.2, EN2.3.2, EN2.4.2, EN3.2, EN7.2 ,P1.6.2, P1.9.2, P1.10.2 , P1.11.2, EN1.2, P3.1.2, P1.3.2, P1.5.2, P1.7.2, P1.8.2,EN6.2,P2.2.2, EN5.2, P2.3.2, P4.1.2, EN2.5.2,P5.1.2 ,EN4.2, P1.4.2,P1.2.2, P2.1.2)

<i>COBIT5 IT Governance Elements</i>	<i>Score</i>	<i>Rank</i>
P1.1.2.BusInvVisRefSta_IMPORT	14	1
P1.12.2.Operational_and_Staff_produc_IMPORT	14	1
P1.13.2.Skilled_and_Motivated_peoples_IMPORT	14	1
EN2.1.2.EVA_Direct_and_Monitor_IMPORT	14	1
EN2.2.2.Align_plan_organize_IMPORT	14	1
EN2.3.2.Build_Acquire_Impl_IMPORT	14	1
EN2.4.2.Deli_Servi_and_Support_allIssues_IMPORT	14	1
EN3.2.Addressing_org_struct_IMPORT	14	1
EN7.2.People_Skill_Compentence_IMPORT	14	1
P1.6.2.Cust_Oreie_serv_culture_IMPORT	13	2
P1.9.2.Opt_serv_deliver_cost_IMPORT	13	2
P1.10.2.Opt_BusProcFun_and_costs_IMPORT	13	2
P1.11.2.BusChnage_Prog_ManagedWell_IMPORT	13	2
EN1.2.Addressing_principles_Poli_Fram_IMPORT	13	2
P3.1.2.Impl_ITGFW_or_Some_Stand_IMPORT	13	2
P1.3.2.Managed_Buss_Risk_IMPORT	13	2

P1.5.2.Finance_Transparency_IMPORT	13	2
P1.7.2.Bus_Ser_cont_and_Avail_IMPORT	13	2
P1.8.2.Info_based_strategic_deci_mak_IMPORT	13	2
EN6.2.Service_infra_Appns_IMPORT	13	2
P2.2.2.ValCreation_Inrelatio_Riskand_resou_opt_IMPORT	12	3
EN5.2.All_MattersOf_Info_Process_IMPORT	12	3
P2.3.2.Use_COBIT5_main_GOV_FrameWork_IMPORT	12	3
P4.1.2.Holistic_Approach_IMPORT	12	3
EN2.5.2.Moni_Evaluation_Asses_IMPORT	12	3
P5.1.2.Separated_ITG_and_Mangement_IMPORT	11	4
EN4.2.Addressing_Cult_Ethi_Behav_IMPORT	10	5
P1.4.2.Req_agrement_WithExt_Laand_regu_IMPORT	10	5
P1.2.2.Coll_CompertProd_and_Serv_IMPORT	9	6
P2.1.2.ITG_Cover_AllIssue_IMPORT	9	6

Table 6:Sorted list of 30 Items for the importance list of Items (Source: Survey or analysis Result 2017)

See Annex I, for variable definition to the original name of the COBIT₅ element.

Top four elements that are highly important for NBE(P1.1.2.BusInvVisRefSta_IMPORT, P1.12.2.Operational_and_Staff_produc_IMPORT,P1.13.2.Skilled_and_Motivated_peoples_IMPORT ,EN2.1.2.EVA_Direct_and_Monitor_IMPORT) see table 4.5 for the transition of the variable. The last four Items from last one to the fourth (P2.1.2.ITG_Cover_AllIssue_IMPORT,P1.2.2.Coll_CompertProd_and_Serv_IMPORT,P1.4.2.Req_agrement_WithExt_Laand_regu_IMPORT,EN4.2.Addressing_Cult_Ethi_Behav_IMPORT).This is the respondents agreement on the priority level for NBE context.

4.5. Level of fit of COBIT₅ features to NBE Context?

In this section the third research question will be answered “What is the extent of fit for COBIT control elements tailored to NBE environment?” This section shows the level of fit of the COBIT

elements implies the implementation and adoption guides based on the detail of fit towards each items according to the extent of fit level.

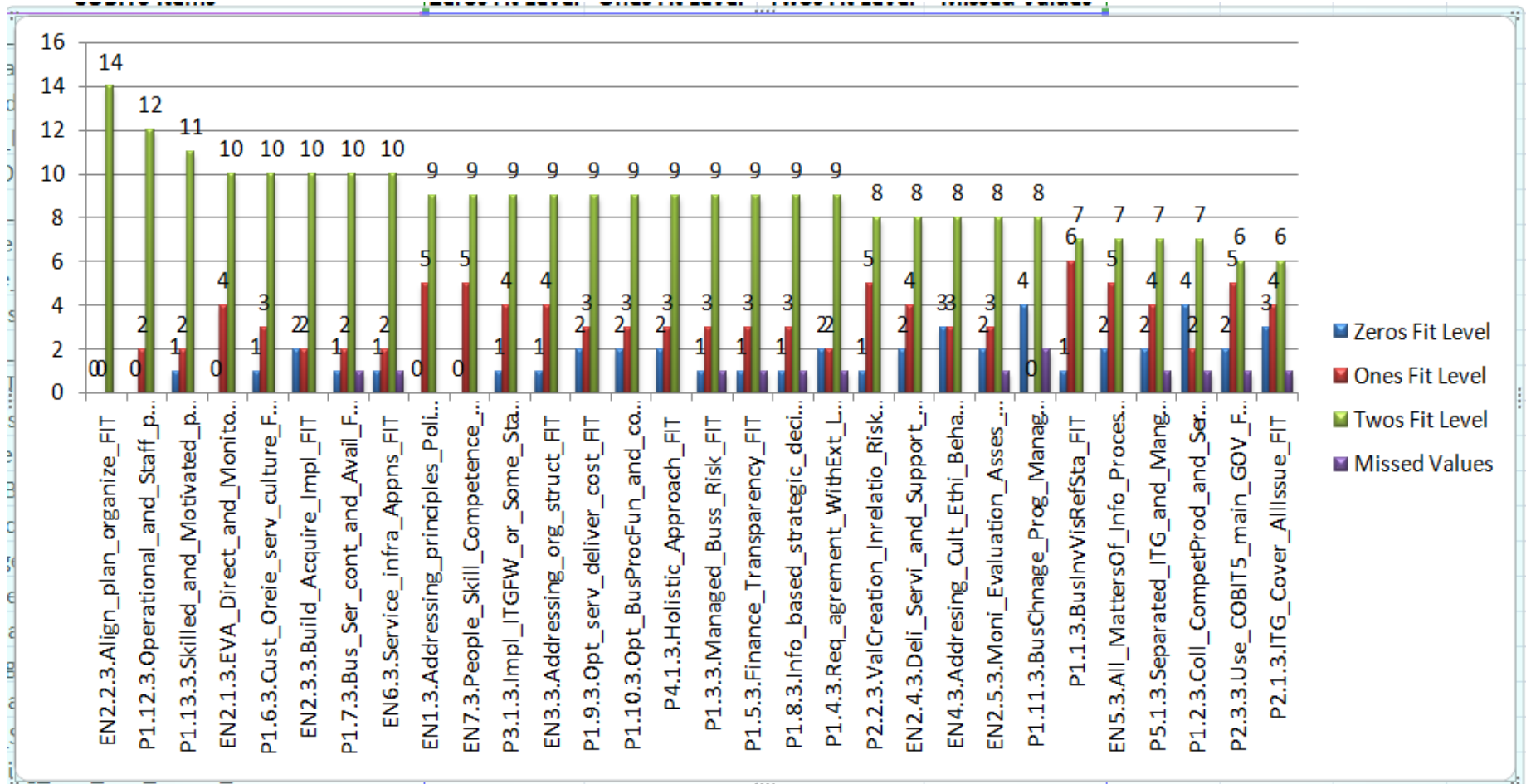


Figure 11: List of COBIT5 Items with Extent of fit level to NBE environment (Source: Survey result 2017)

See the detail explanation below (on the coming pages) how the sorting was done and how this graph is generated. The fourteen respondents answer is converged to three Groups for simplicity named ‘two fit’/most fit (fit and most fit), ‘one fit’/medium (Neutral), Not/Rejected (lower fit and Not fit).

As shown in figure 11 above, respondents' agreement on each thirty candidate elements are listed with three basic categories of Extent level (Highly Fit, Partially Fit, Not Fit) for the level of fit. Like the previous importance level selection process those categories are generated based on a scale from 0(Lower Fit) to 4(Most Fit) and then Grouped to three states (0(Low Fit),1(Partially Fit),2(Highly Fit)) levels. The sorting was done based on first by 'Highly Fit' which is number of state 2, then by 'Partially Fit' which is state 1 and finally by 'Not Fit' which is state 0 that indicate ignorance to the item.

From the figure 11 above, the research will have eight basic groups of Items in sorting from left to Right (highly Fit to least Fit order). A group help to compare individual members in the group with another detail sub character.

Group One: This group has one of the first Items with score of 14(Highly Fit) with variable ID,EN2.2.3.

Group two: It has one member with score of 12 (Highly Fit) and 2 Partially Fit level record with ID,P1.12.3.

Group Three: It has also the same one item with Highly Fit Record of 11 and 2 partially fit Item with Item ID,P1.13.3.

Group Four: Those are five items with record of 10 for the value of highly fit elements. Listed like (EN2.1.3, P1.6.3, EN2.3.3, P1.7.3,EN6.3)

Group Five: Those are eleven items listed like (EN1.3, EN7.3, P3.1.3, EN3.3,P1.9.3, P1.10.3, P4.1.3, P1.3.3,P1.5.3, P1.8.3, P1.4.3).Those Items have the score of 10 in highly fit level(2).

Group Six: Five Items with eight score fit level listed (P2.2.3, EN2.4.3, EN4.3, EN2.5.3, P1.11.3).

Group Seven: 4 elements with score of 7 listed (P1.1.3, EN5.3, P5.1.3, P1.2.3)

Group Eight: two items with score of 6 listed (P2.3.3, P2.1.3)

Finally, we have the following sort of items with Fit levels from highly Accepted Fit level to the lower Fit one.

(EN2.2.3, P1.12.3, P1.13.3, EN2.1.3, P1.6.3, EN2.3.3, P1.7.3, EN6.3, EN1.3, EN7.3, P3.1.3, EN3.3, P1.9.3, P1.10.3, P4.1.3, P1.3.3, P1.5.3, P1.8.3, P1.4.3, P2.2.3, EN2.4.3, EN4.3, EN2.5.3, P1.11.3, P1.1.3, EN5.3, P5.1.3, P1.2.3, P2.3.3, P2.1.3)

COBIT5 Items with Fit level	Score	Rank
EN2.2.3.Align_plan_organize_FIT	14	1
P1.12.3.Operational_and_Staff_produc_FIT	12	2
P1.13.3.Skilled_and_Motivated_peoples_FIT	11	3
EN2.1.3.EVA_Direct_and_Monitor_FIT	10	4
P1.6.3.Cust_Oreie_serv_culture_FIT	10	4
EN2.3.3.Build_Acquire_Impl_FIT	10	4
P1.7.3.Bus_Ser_cont_and_Avail_FIT	10	4
EN6.3.Service_infra_Appns_FIT	10	4
EN1.3.Addressing_principles_Poli_Fram_FIT	9	5
EN7.3.People_Skill_Competence_FIT	9	5
P3.1.3.Impl_ITGFW_or_Some_Stand_FIT	9	5
EN3.3.Addressing_org_struct_FIT	9	5
P1.9.3.Opt_serv_deliver_cost_FIT	9	5
P1.10.3.Opt_BusProcFun_and_costs_FIT	9	5
P4.1.3.Holistic_Approach_FIT	9	5
P1.3.3.Managed_Buss_Risk_FIT	9	5
P1.5.3.Finance_Transparency_FIT	9	5
P1.8.3.Info_based_strategic_deci_mak_FIT	9	5
P1.4.3.Req_agrement_WithExt_Laand_regu_FIT	9	5
P2.2.3.ValCreation_Inrelatio_Riskand_resou_opt_FIT	8	6
EN2.4.3.Deli_Servi_and_Support_allIssues_FIT	8	6
EN4.3.Addressing_Cult_Ethi_Behav_FIT	8	6
EN2.5.3.Moni_Evaluation_Asses_FIT	8	6
P1.11.3.BusChnage_Prog_ManagedWell_FIT	8	6
P1.1.3.BusInvVisRefSta_FIT	7	7
EN5.3.All_MattersOf_Info_Process_FIT	7	7

P5.1.3.Separated_ITG_and_Mangement_FIT	7	7
P1.2.3.Coll_CompertProd_and_Serv_FIT	7	7
P2.3.3.Use_COBIT5_main_GOV_FrameWork_FIT	6	8
P2.1.3.ITG_Cover_AllIssue_FIT	6	8

Table 7:Sorted list of 30 Items for the Fit level (extent of fit) list of Items (Source: Survey or analysis Result 2017)

See Annex I for the definitions of each variable to the Original name of COBIT5 items.

This sort implies the extents that each items implementation prioritized shows with different extent level from most to least. This helps the bank to implement as per the extent fit needed to its environment. The implementation can be compared with the importance list from the previous list (importance list).

Most Fit list of items:

(EN2.2.3.Align_plan_organize_FIT,P1.12.3.Operational_and_Staff_produc_FIT,P1.13.3.Skilled_and_Motivated_peoples_FIT, EN2.1.3.EVA_Direct_and_Monitor_FIT)

4.6. Combined or cumulative sorting by the three sorting outputs (Candidate, Importance and Fit level)

This section generates the final List of items that are sorted by the three combination sorting and make ready for the Second Delphi step. Using table 6 and table 7 the following table of sorting will be generated from the three variable perspectives.

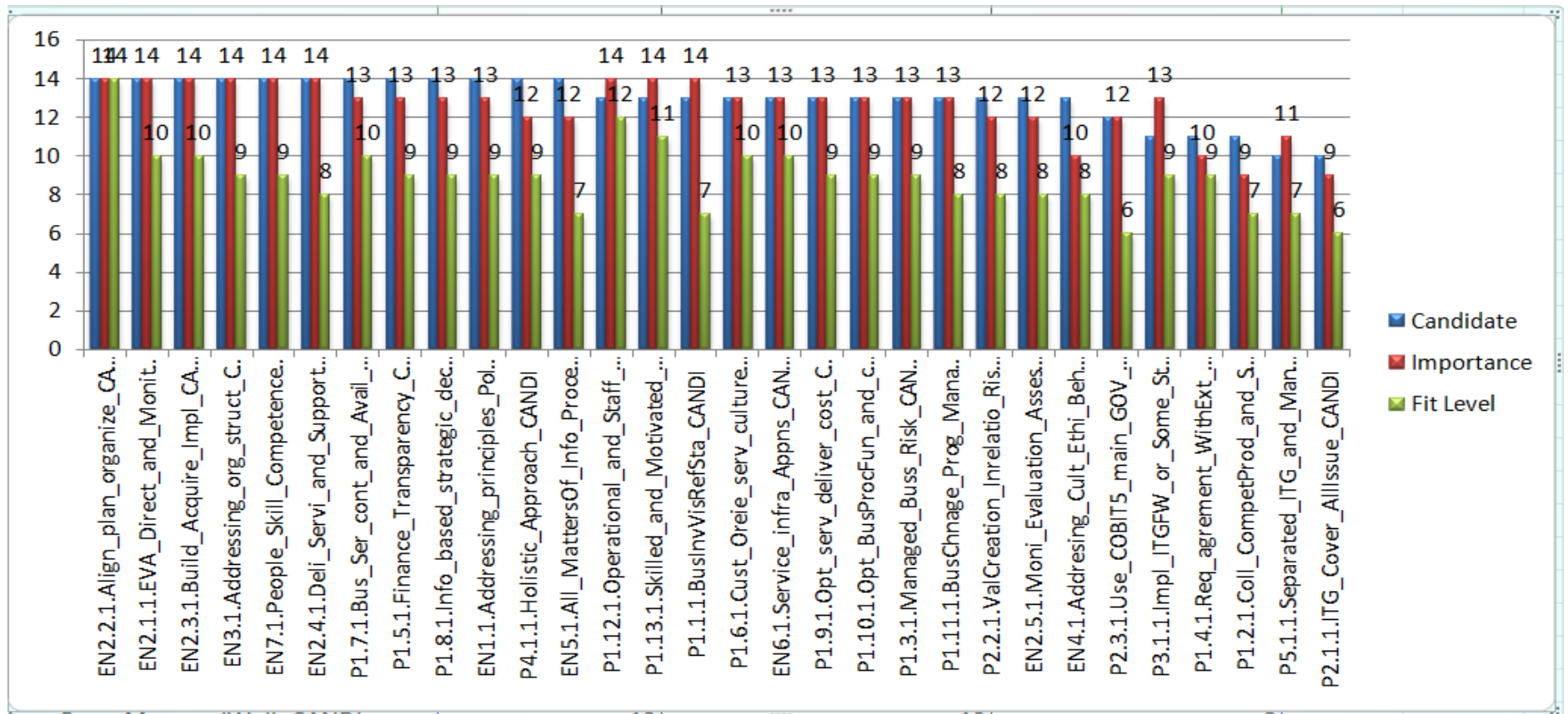


Figure 12: List of COBIT5 Items with Extent of fit level to NBE environment (Source: Survey result 2017)

This graph is generated based on the sorting process first by Candidate level, then by Importance and finally by fit level. The data for this process was gained already sorted on the previous three steps for (Candidate, importance and fit level).

<i>Basic COBIT5 Items</i>	<i>Candidate</i>	<i>Importance</i>	<i>Fit Level</i>	<i>Ran k</i>
EN2.2.1.Align_plan_organize_CANDI	14	14	14	1
EN2.1.1.EVA_Direct_and_Monitor_CANDI	14	14	10	2
EN2.3.1.Build_Acquire_Impl_CANDI	14	14	10	3
EN3.1.Addressing_org_struct_CANDI	14	14	9	4
EN7.1.People_Skill_Compotence_CANDI	14	14	9	5
EN2.4.1.Deli_Servi_and_Support_allIssues_CANDI	14	14	8	6
P1.7.1.Bus_Ser_cont_and_Avail_CANDI	14	13	10	7
P1.5.1.Finance_Transparency_CANDI	14	13	9	8
P1.8.1.Info_based_strategic_deci_mak_CANDI	14	13	9	9
EN1.1.Addressing_principles_Poli_Fram_CANDI	14	13	9	10
P4.1.1.Holistic_Approach_CANDI	14	12	9	11
EN5.1.All_MattersOf_Info_Process_CANDI	14	12	7	12
P1.12.1.Operational_and_Staff_produc_CANDI	13	14	12	13
P1.13.1.Skilled_and_Motivated_peoples_CANDI	13	14	11	14
P1.1.1.BusInvVisRefSta_CANDI	13	14	7	15
P1.6.1.Cust_Oreie_serv_culture_CANDI	13	13	10	16
EN6.1.Service_infra_Appns_CANDI	13	13	10	17
P1.9.1.Opt_serv_deliver_cost_CANDI	13	13	9	18
P1.10.1.Opt_BusProcFun_and_costs_CANDI	13	13	9	19
P1.3.1.Managed_Buss_Risk_CANDI	13	13	9	20
P1.11.1.BusChnage_Prog_ManagedWell_CANDI	13	13	8	21
P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CANDI	13	12	8	22
EN2.5.1.Moni_Evaluation_Asses_CANDI	13	12	8	23
EN4.1.Addressing_Cult_Ethi_Behav_CANDI	13	10	8	24
P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI	12	12	6	25
P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI	11	13	9	26

P1.4.1.Req_agrement_WithExt_Laand_regu_CAND	11	10	9	27
I				
P1.2.1.Coll_CometProd_and_Serv_CANDI	11	9	7	28
P5.1.1.Separated_ITG_and_Mangement_CANDI	10	11	7	29
P2.1.1.ITG_Cover_AllIssue_CANDI	10	9	6	30

Table 8:Sorted list of 30 Items for the Fit level (extent of fit) list of Items (Source: Survey or analysis Result 2017).

From the table 8 above 26th is going to be considering as a cut of point since those list of Items are the last four items with candidate selection first, importance and fit level. Therefore the first 26 Items are selected to be pass to the propose frame work.

4.7. Round two data representation

The final sorted list of round one Delphi step is table 8.From this table the questionnaire is prepared for the second round question. This step helps to sort again the table 9 and to come to consensus.

<i>Basic COBIT5 Items</i>	<i>Rank</i>
EN2.2.1.Align_plan_organize_CANDI	1
EN2.1.1.EVA_Direct_and_Monitor_CANDI	2
EN2.3.1.Build_Acquire_Impl_CANDI	3
EN3.1.Addressing_org_struct_CANDI	4
EN7.1.People_Skill_Compotence_CANDI	5
EN2.4.1.Deli_Servi_and_Support_allIssues_CANDI	6
P1.7.1.Bus_Ser_cont_and_Avail_CANDI	7
P1.5.1.Finance_Transparency_CANDI	8
P1.8.1.Info_based_strategic_deci_mak_CANDI	9
EN1.1.Addressing_principles_Poli_Fram_CANDI	10
P4.1.1.Holistic_Approach_CANDI	11
EN5.1.All_MattersOf_Info_Process_CANDI	12
P1.12.1.Operational_and_Staff_produc_CANDI	13
P1.13.1.Skilled_and_Motivated_peoples_CANDI	14

P1.1.1.BusInvVisRefSta_CANDI	15
P1.6.1.Cust_Oreie_serv_culture_CANDI	16
EN6.1.Service_infra_Appns_CANDI	17
P1.9.1.Opt_serv_deliver_cost_CANDI	18
P1.10.1.Opt_BusProcFun_and_costs_CANDI	19
P1.3.1.Managed_Buss_Risk_CANDI	20
P1.11.1.BusChnage_Prog_ManagedWell_CANDI	21
P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CANDI	22
EN2.5.1.Moni_Evaluation_Asses_CANDI	23
EN4.1.Addressing_Cult_Ethi_Behav_CANDI	24
P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI	25
P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI	26
P1.4.1.Req_agrement_WithExt_Laand_regu_CANDI	27
P1.2.1.Coll_CompertProd_and_Serv_CANDI	28
P5.1.1.Separated_ITG_and_Mangement_CANDI	29
P2.1.1.ITG_Cover_AllIssue_CANDI	30

Table 9:Sorted list of thirty Items from round one (Source: Survey or analysis Result 2017).

Table 9 is the final result of sorted items in round one that will be delivered to respondents for round two. The last five items which are shaded are suggested for experts for discussion to be the cut-off point to remove from the original framework.

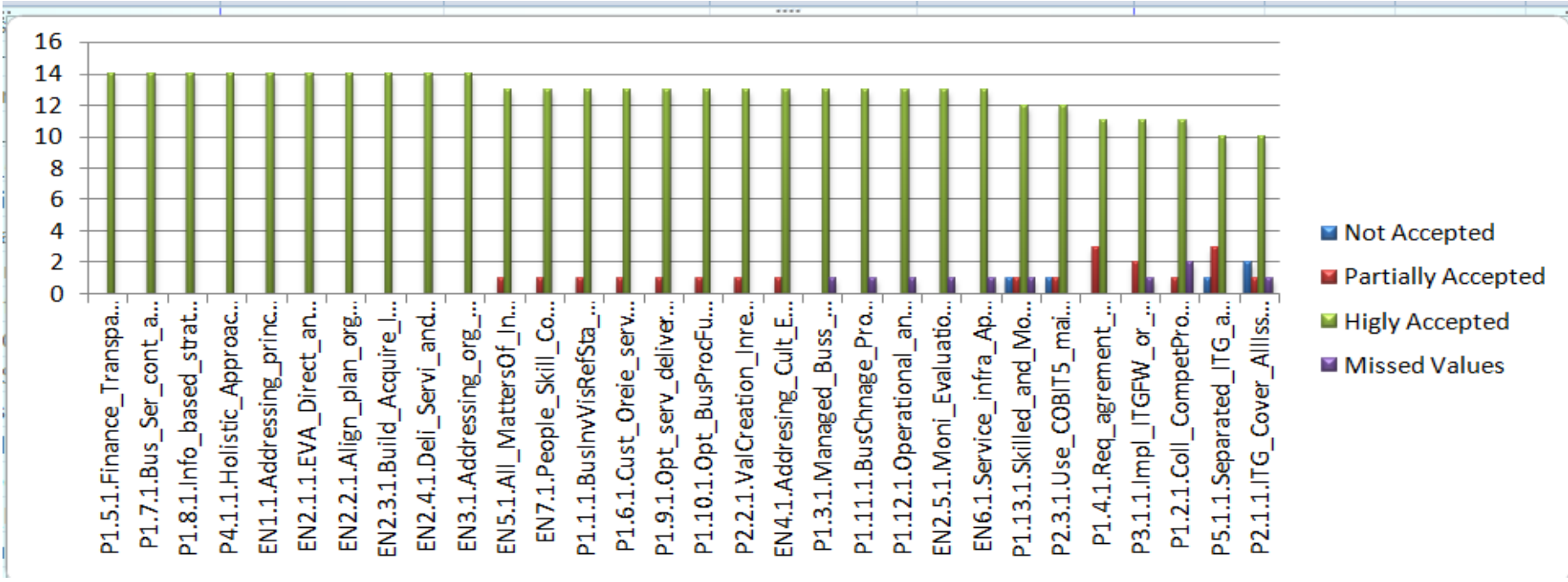


Figure 13:List of COBIT5 Items for second Round -sorted (Source: Survey result 2017)

Figure 13 shows the result of round two sorted from the result of round one for more Delphi round of farther refinement. The convergence is Highly Accepted (Agree and Strongly Agree), Partially Accepted (Neutral),Not Accepted(Disagree and Strongly Disagree).

As shown in figure 9 above respondents' agreed on each thirty elements are listed with three basic categories (Highly Accepted, Partially Accepted, Not Accepted). Those categories are generated based on a scale from 0 (strongly disagree) to 4 (strongly agree) and then grouped to three states (0 (Not Accepted), 1 (Partially Accepted), 2 (Highly Accepted)). The sorting was done based on first by 'Highly Accepted' which is number of state 2, then by 'Partially Accepted' which is state 1 and finally by 'Not accepted' which is state 0 which is indicator of ignorance to the item.

From the figure above, the research will have five basic groups of Items in sorting left to Right (Highly Accepted to least Accepted order):

Group one: The first twelve Items scored exactly equal 14 (P1.5.1, P1.7.1, P1.8.1, P4.1.1, EN1.1, EN2.1.1, EN2.2.1, EN2.3.1, EN2.4.1, EN3.1, EN5.1, EN7.1). These Items are scored pure 14 which is highly accepted (i.e 2 which is the cumulative state of 'Agree' and 'Strongly Agree'). From this state those twelve elements passed to the tailoring process with any farther comparisons.

Group two: Another twelve items with the score of 13 (Highly accepted to be tailored (state 2 (i.e 2 which is the cumulative state of 'Agree' and 'Strongly Agree'))) but here the first six sub items that have additional 'Partially accepted' state (i.e 1 (one)), those are (P.1.1.1, P1.6.1, P1.9.1, P1.10.1, P2.2.1, EN4.1) which scored 'one' for each of the six items listed above. The second group the same record 13 with additional missed values not supported with partially accepted and hence they are sorted next to the previous six items like (P1.3.1, P1.11.1, P1.12.1, P1.13.1, EN2.5.1, and EN6.1)

Group three: This section contain only one item with score 12 for 'Highly accepted' which is state 2. The item is P2.3.1 with one Record of 'Partially accepted' and 'Not accepted' states but less from the previous section groups.

Group four: three Ordered items that have the score amount of same 11 (Number of 'Highly accepted' or 2 counts). Those elements are ordered like (P1.4.1, P3.1.1, P1.2.1). Those items have 3, 2 and 1 scores respectively for 'Partially Accepted' or 1 Counts that support their order accordingly.

Group Five: These items include the last two items that are almost ready for cutoff points to avoid from the entire 30 elements that needed to be tailored to NBE environment. These Items are scored 10 similar records and vary in 'Partially accepted' supportive sorting each has 3 and 1 number of counting for each respectively (P5.1.1, P2.1.1)

Total item Order of 30 items {P1.5.1, P1.7.1, P1.8.1, P4.1.1, EN1.1, EN2.1.1, EN2.2.1, EN2.3.1, EN2.4.1, EN3.1, EN5.1, EN7.1, P1.1.1.1, P1.6.1, P1.9.1, P1.10.1, P2.2.1, EN4.1, P1.3.1, P1.11.1, P1.12.1, P1.13.1, EN2.5.1, EN6.1, P2.3.1, P1.4.1, P3.1.1, P1.2.1, P5.1.1, P2.1.1}

<i>COBIT5 Candidates To Be Tailored-Variable Level</i>	<i>Score</i>	<i>Rank</i>
P1.5.1.Finance_Transparency_CANDI	14	1
P1.7.1.Bus_Ser_cont_and_Avail_CANDI	14	1
P1.8.1.Info_based_strategic_deci_mak_CANDI	14	1
P4.1.1.Holistic_Approach_CANDI	14	1
EN1.1.Addressing_principles_Poli_Fram_CANDI	14	1
EN2.1.1.EVA_Direct_and_Monitor_CANDI	14	1
EN2.2.1.Align_plan_organize_CANDI	14	1
EN2.3.1.Build_Acquire_Impl_CANDI	14	1
EN2.4.1.Deli_Servi_and_Support_allIssues_CANDI	14	1
EN3.1.Addressing_org_struct_CANDI	14	1
EN5.1.All_MattersOf_Info_Process_CANDI	14	1
EN7.1.People_Skill_Competence_CANDI	14	1
P1.1.1.BusInvVisRefSta_CANDI	13	2
P1.6.1.Cust_Oreie_serv_culture_CANDI	13	2
P1.9.1.Opt_serv_deliver_cost_CANDI	13	2
P1.10.1.Opt_BusProcFun_and_costs_CANDI	13	2
P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CANDI	13	2
EN4.1.Addressing_Cult_Ethi_Behav_CANDI	13	2
P1.3.1.Managed_Buss_Risk_CANDI	13	2
P1.11.1.BusChnage_Prog_ManagedWell_CANDI	13	2
P1.12.1.Operational_and_Staff_produc_CANDI	13	2
P1.13.1.Skilled_and_Motivated_peoples_CANDI	13	2
EN2.5.1.Moni_Evaluation_Asses_CANDI	13	2
EN6.1.Service_infra_Appns_CANDI	13	2
P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI	12	3
P1.4.1.Reg_agrement_WithExt_Laand_regu_CANDI	11	4

P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI	11	4
P1.2.1.Coll_CompProd_and_Serv_CANDI	11	4
P5.1.1.Separated_ITG_and_Mangement_CANDI	10	5
P2.1.1.ITG_Cover_AllIssue_CANDI	10	5

Table 10:Sorted list of 30 Items for candidate selection from more accepted to tailor to less accept to tailor (Source: Survey or analysis Result 2017)

Finally what does it mean by the above order? What does it tell us? Those are the main questions that we have to consider for our tailoring process? As per the description how the order is justified there is a business goal reason and implementation indicator that tells us the current implementation need of the COBIT framework in NBE environment.

If we see the last two, three or four items, the research will have candidate selection Priority here. The last item named “P2.1.1.ITG_Cover_AllIssue_CANDI” which is IT Governance is expected to Cover all Enterprise issues(All Covered) and here the meaning is Experts are agreed to implement and apply to NBE to the future not at this time. This can be applied to the second, third and fourth Items(P5.1.1.Separated_ITG_and_Mangement_CANDI,P1.2.1.Coll_CompProd_and_Serv_CANDI, P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI).Use table 5 for the meaning of the variables listed here.

On the other way we can see the first items in the list which are agreed by those participants at this round (first Delphi round).These items from the first to the fourth like:

(P1.5.1.Finance_Transparency_CANDI,P1.7.1.Bus_Ser_cont_and_Avail_CANDI,P1.8.1.Info_based_strategic_deci_mak_CANDI, P4.1.1.Holistic_Approach_CANDI).Those four items which the first in the list have the same rank (priority) and no other comparisons methods. The decision can be left to the Bank’s IT management to be applied which one first and which one is second. For any consumptions of the list it is better to use the rank and the score numbers.

From the table 9 above 26th is going to be considering as a cut of point since those list of Items are the last four items with candidate selection first, importance and fit level. Therefore the first 26 Items are selected to be pass to the propose frame work.

4.8. Proposed Framework

The framework proposed is based on the list generated above on table with specific quantified priority that will be arranged in the priority. Based on the colors labeled to the five Principle and Seven enablers, the Modified COBIT₅ Elements are recommended as follows below. Follow the colors labeling indicator.

Before we proceed to the proposed framework lets show the Original COBIT5 Elements on the original framework (ISACA, 2012)

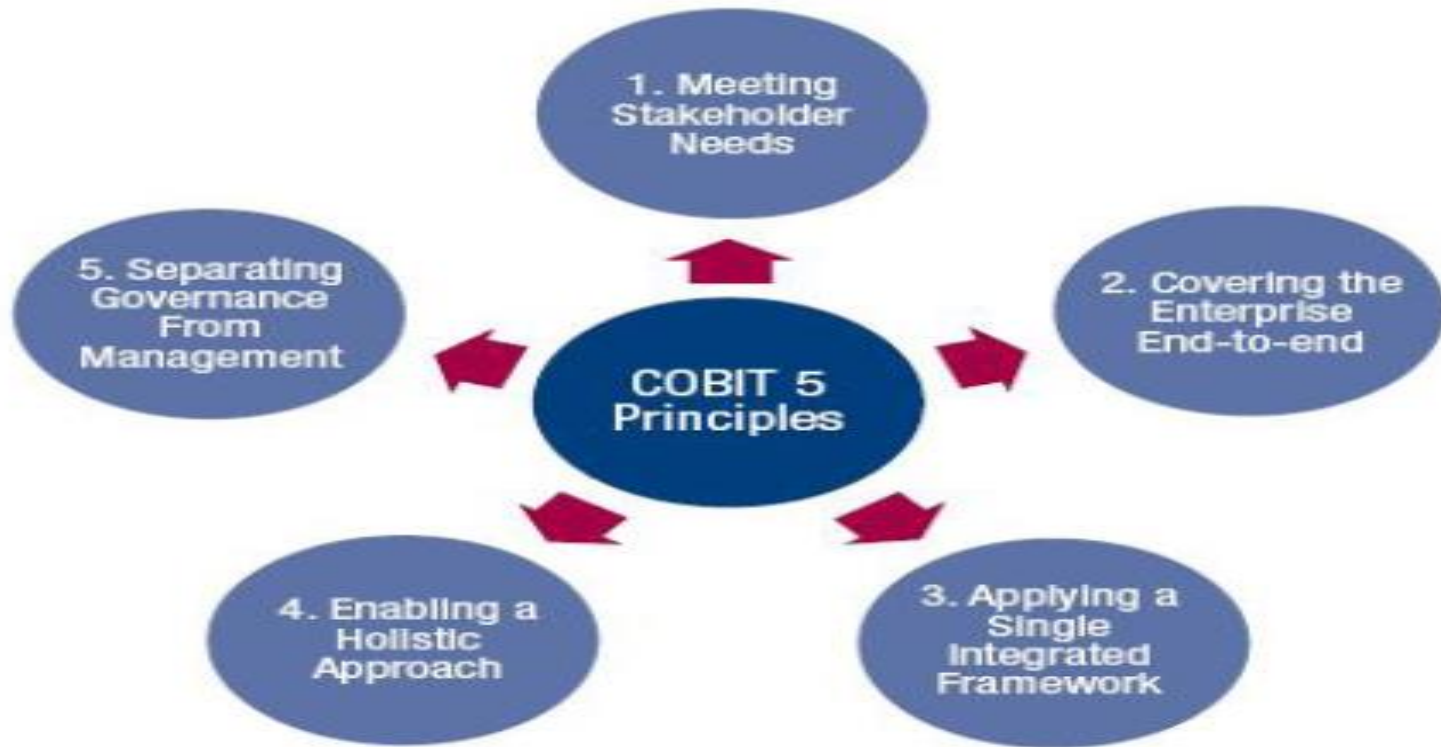


Figure 14: COBIT5 Principles (ISACA,2012)

Figure 14 is the list of principles on which the source of those variables generated on the table located on Annex I. Under Each principle there other variables like under principle 4 (Enabling a holistic approach) under this principle there are seven enablers. All elements are emerged from the above basic five COBIT5 principles.

4. Enabling a Holistic Approach

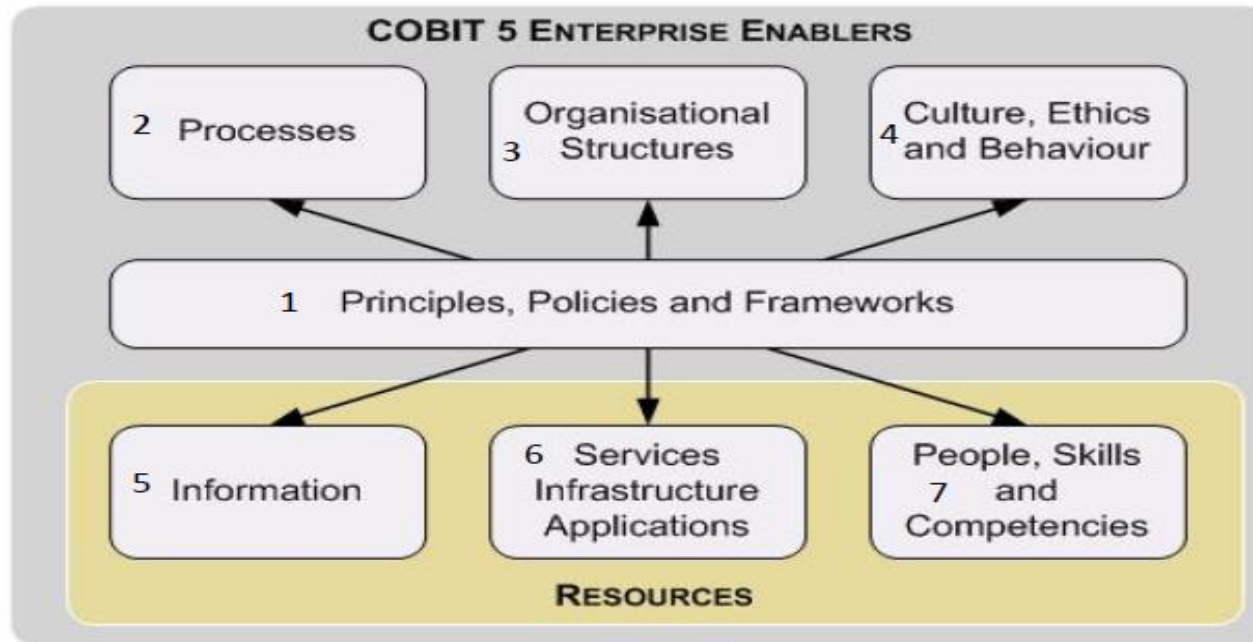


Figure 15: COBIT5 Enablers (ISACA, 2012)

This is the list of seven enablers under the principle 4(enabling a holistic approach).Under this figure we can see that enabler 2(process) that will list or show the following figure which is the process Model of COBIT5.

COBIT Reference Model

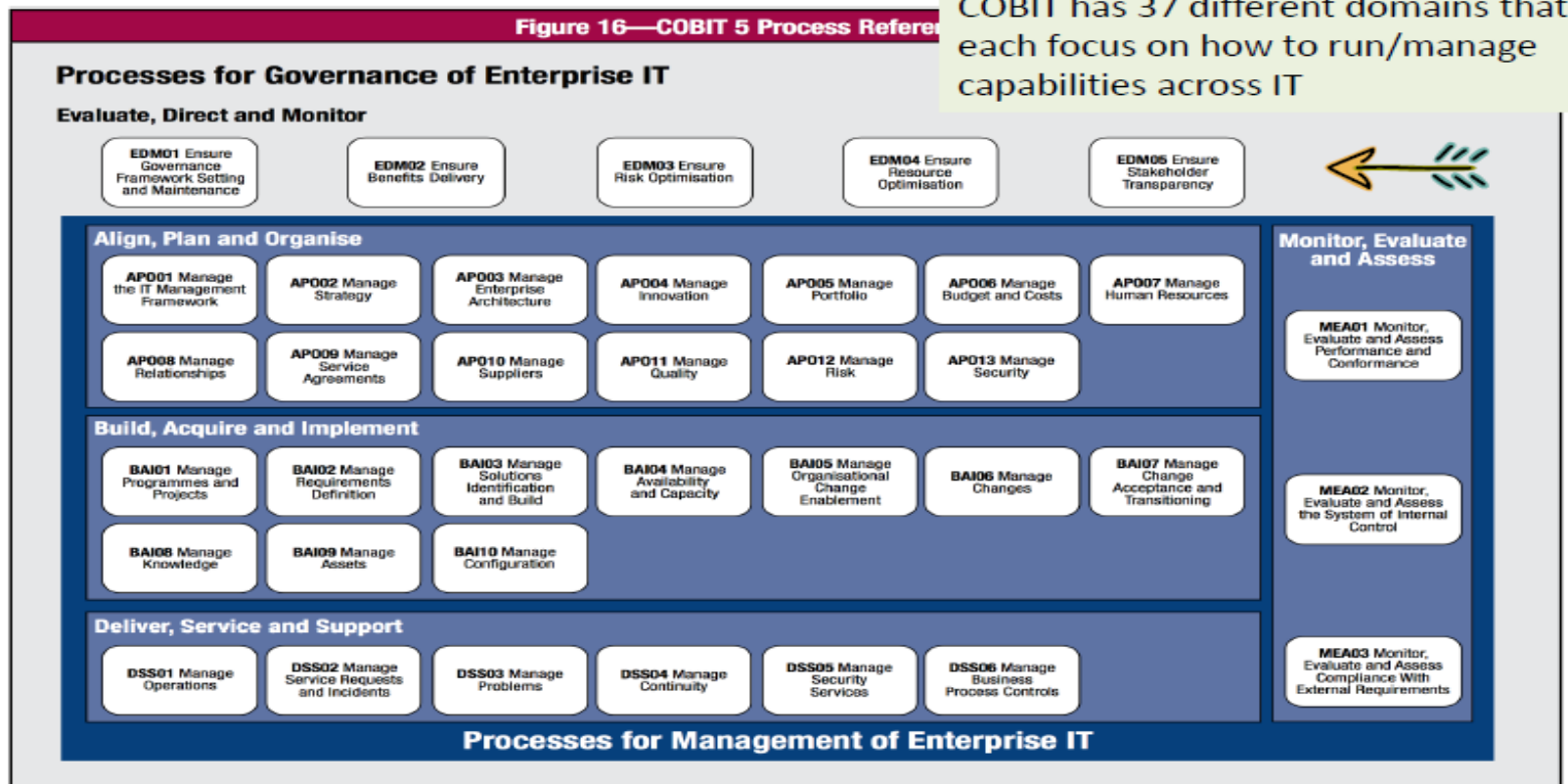


Figure 16: COBIT5 Process Model (ISACA,2012)

This is the COBIT5 Process Model that is emerged from the second enablers named 'process' that helps to collect variables. From the above processes Model five categorical group of process elements are listed for the variable(i.e, a)Evaluate Direct Monitor b) Align plan and Organize c)Build ,acquire and implement d) deliver ,service and support e)Monitor, Evaluate and Assess).

Here is the proposed framework from Principles and Enablers Perspectives.

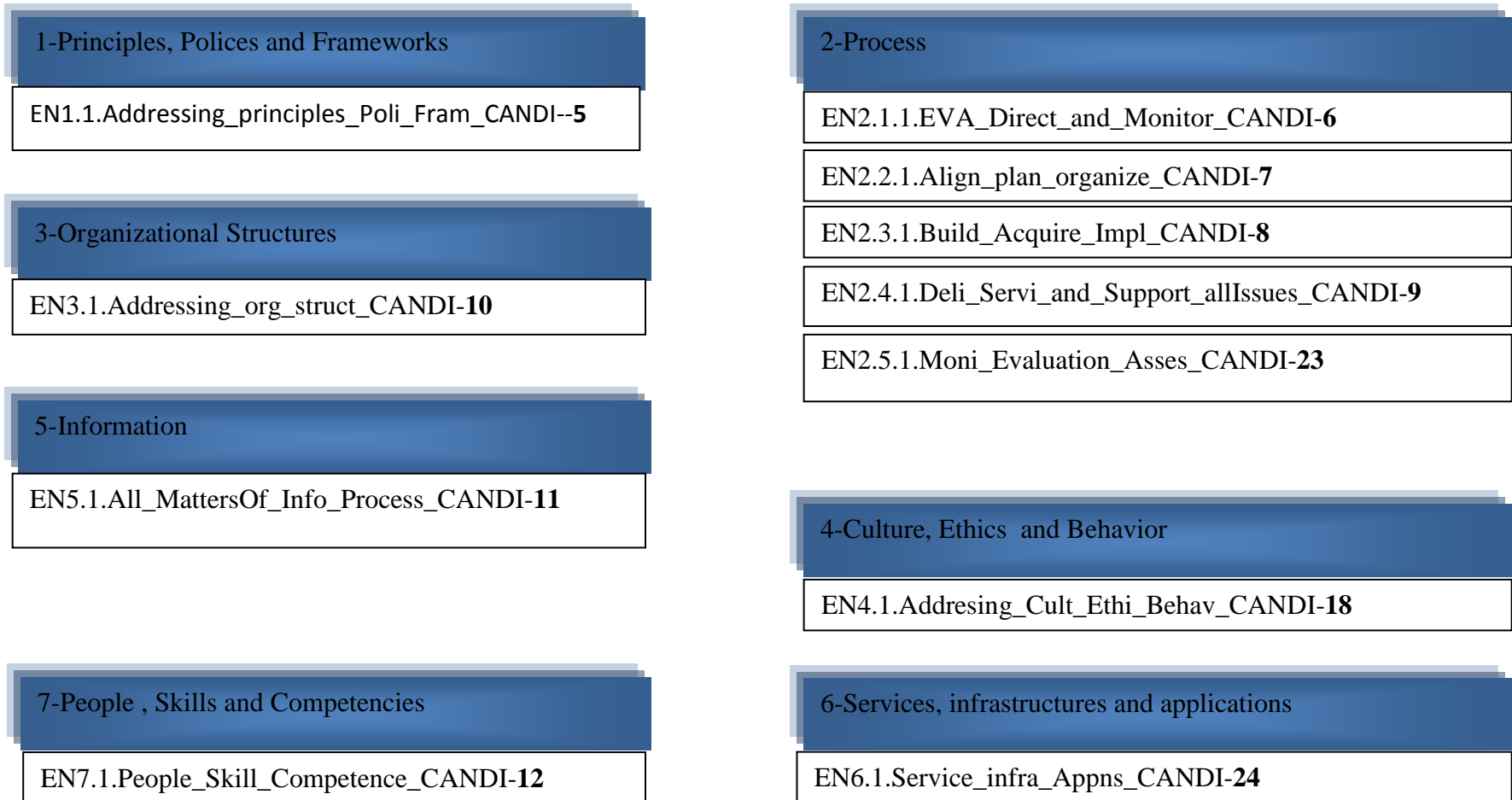


Figure 17:Proposed Framework-COBIT₅ Enablers Perspective

See the table on Annex I for variable / abbreviations definition for figure17and figure18 proposed framework items.

1-Meeting Stockholder Needs

P1.1.1.BusInvVisRefSta_CANDI-13

P1.2.1.Coll_CompertProd_and_Serv_CA-28

P1.3.1.Managed Buss Risk CANDI-19

P1.4.1.Rea agrement WithExt Laand regu CANDI-26

P1.5.1.Finance_Transparency_CANDI-1

P1.6.1.Cust Oreie serv culture CANDI-14

P1.7.1.Bus Ser cont and Avail CANDI-2

P1.8.1.Info based strategic deci mak CANDI-3

P1.9.1.Opt_serv_deliver_cost_CANDI-15

P1.10.1.Ont BusProcFun and costs CANDI-16

P1.11.1.BusChnage_Prog_ManagedWell_CANDI-20

P1.12.1.Operational_and_Staff_produc_CANDI-21

P1.13.1.Skilled_and_Motivated_peoples_CANDI-22

2-Covering the enterprise End-to-End

P2.1.1.ITG Cover AllIssue CANDI-30

P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CAN-17

P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI-25

3-Applying a single Integrated Framework

P3.1.1.Impl ITGFW or Some Stand CANDI-27

5-Separating Governance from Management

P5.1.1.Separated ITG and Mangement CANDI-29

4-Enabling a holistic Approach

P4.1.1.Holistic_Approach_CANDI-4

Figure 18: Proposed Framework-COBIT₅ Principle Perspective

When we see the above figure 4.8.2 proposed framework from the COBIT5 Principle perspective, four Elements are listed (shaded boxes) to be removed from the original COBIT5 feature elements. The 26th item is the cut-off point. This point was decided based on the discussion of the experts those who were invited in the panel. The last items from the 27th to 30th (inclusively) are removed from the original list.

4.9. Discussion

The contribution to the domain of literature to identify how the world's standard IT governance frameworks especially COBIT5 can be used with tailor-made or contextualized based to the specific organization. This research aims to propose a tailored IT governance framework to achieve properness or exact fit in strategic alignment of the business and functions in IT and to respond to a gap based on previous IT governance research. This quantitative study therefore extract and explore data that impact COBIT5 implementation on the way of exact fit to NBE based on previous works like the practicality of COBIT (Shengnan, 2013), Gerald and Allen also worked on framing the frameworks, adapting COBIT5 specific only for system Development (Zulfa & Hidayah, 2015). On those works 'how to make fit' the COBIT5 was not addressed. Gill ridely try to show COBIT5 and its utilization but didn't show which elements of COBIT5 should be use and which COBIT5 elements should either remove or pending not to fully apply for the given organization based on its maturity level or current assessment .Most of the above works not exactly show how to tailor to specific organization.

The first research question was that, what were those listed important feature elements of COBIT5 those were needed to NBE environment. For this research question the original thirty COBIT elements were sorted based on NBE's current need. This result implies that there are top listed items that are primarily needed to be implemented and on other hands there were last items based on the assessment that can be applied latter based on the NBE ICT environment maturity level.

The top items like 'P1.1.2.BusInvVisRefSta_IMPORT' which is the first items. This shows that business investment to have visible reflection for the stack holders. This means NBE's investment is required to be based on stockholders heartbeat to the entire financial sector. The investment must be targeting on the stockholders condition for further financial sector regulatory process. The second item named 'P1.12.2.Operational_and_Staff_produc_IMPORT' which has a very big target on the ICT staffs of NBE to be productive in the ICT operation of the bank. This shows that NBE needed to have productive staff in all operations in relation to avoiding staff turnover that have technical capability in ICT operations. In

addition to having a big number of staff, making the staff to be encouraged in all activities and to make productive is very important. Therefore, this implies NBE should work on its staff specially in training and incentives to have productive IT staff that helps the bank its mission through technology in the financial sector. The third one 'P1.13.2.Skilled_and_Motivated_peoples_IMPORT' is also again focus on man power to have skilled man power to NBE ICT environment. The fourth one 'EN2.1.2.EVA_Direct_and_Monitor_IMPORT' implies there must exist continues follow-up and monitoring on all ICT operations and process. The last items in the list was 'P2.1.2.ITG_Cover_AllIssue_IMPORT' that means currently there is no that much need and not mandatory that ITG process to cover all enterprise issues rather focus on the very important issues of ICT process. This may lead the bank to complicated management of all enterprise issues.

The second research question was intended to know what was the extent fit of those items to NBE environment. The top listed items mean the most fit items to NBE context and vice versa. The top elements from this perspective was, 'EN2.2.3.Align_plan_organize_FIT' a COBIT5 enabler which helps to insure the alignment of ICT environment to the business and insure that ICT environment is organized and planed well. The second item was 'P1.12.3.Operational_and_Staff_produc_FIT' the staff productivity operationally, the third was 'P1.13.3.Skilled_and_Motivated_peoples_FIT' having motivated IT people NBE environment is required, the fourth fit element 'EN2.1.3.EVA_Direct_and_Monitor_FIT' is implies evaluation ,direction and monitoring is highly important to NBE ICT.

Finally, the proposed framework is applied from after the Delphi round two result of data collection process. The meaning of this framework implies that rather than we are going to applying the COBIT5 framework items (five principles and seven enablers),we have to assess the organization's existing context and select and apply the implementations based that selection and sorting criteria of the COBIT elements.

4.10. Chapter summary

This chapter mainly covered about how the data is presented and interpreted. In each section data was presented in way of answering each research questions and meeting the designed research objectives. In the first section, Candidate COBIT 5 elements were sorted to answer the primary research question.

Candidates are sorted from the higher needed to be tailored to the lower need level of being a candidate in the tailoring process.

The Next sub-section was used to sort important elements of COBIT₅ by the importance level. Variables are arranged in a way of addressing the first sub-research question in the process. Those thirty Items are sorted from highly important to lower important to NBE. The next section was answering the second sub-research question with fit level of those thirty items to NBE environment

Finally, COBIT₅ items were selected from 1st to 26th to be incorporated to the new proposed framework that can be used as a tailored framework of COBIT₅ for the current consumption of the bank.

In the entire data processing SPSS was using as a main data processing tool. In some parts Excel also used for sorting and Graphical representations and interpretations.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Introduction

The previous chapter has focused on presenting the data gathered in this study together with a detail discussion of the result. The main purpose of this chapter is to summarize and conclude the research with recommendations and indicating future direction in relation to this research.

5.2. Summary of the key findings

A list of COBIT⁵ items from highly important to lower important was generated. On Table 4.6 the named list of variables is presented. The purpose of this list is to show the NBE important list of items that can be prioritized based on this importance sorting on those items. In response of the first sub-question the most important item was ‘Business investment that has visible and reflected stakeholder value’ which is the Principle element of COBIT⁵. The second important element was ‘Operational and staff productivity’ which experts assume for Human resource module of IT governance.

From data collected in the round one survey it is observed that the strongest perceived fittest top five list of items are:(EN2.2.3, P1.12.3, P1.13.3, EN2.1.3, P1.6.3).See the name of variable on table 4.4.Among those items the most fit items experts perceived was EN2.2.3 which is named ‘Align, Plan, and Organize IT Organization (Manage Framework, Strategy, Innovation, Portfolio.etc)’ that implies the IT-Business Alignment process to NBE environment. The least item in the list means that items are not that much fit to NBE and can be applied to the future.

The primary research question to be answered was:

What are the cumulative IT Governance Framework elements that should be tailored to NBE context as a central bank?”

5.3. Conclusion

Major findings of this study can be summarized as:

There is establishment of list of sorts of COBIT items that are arranged from 1st -26th elements from the thirty items. The last four items are like:

Items(P5.1.1.Separated_ITG_and_Mangement_CANDI,P1.2.1.Coll_CometProd_and_Serv_CANDI, P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI).Use annex I for the meaning of the variables listed here. Those items show that there is a need of waiting a matured IT environment of NBE that will be capable of affording those requirements. Eg.The last Item ‘Implementing single Integrated IT governance frame work ‘ for specific success is not highly required at this time. On the other hand finance transparency as a COBIT items is number one to be required at this time for NBE.

The first four items are listed as:

(P1.5.1.Finance_Transparency_CANDI,P1.7.1.Bus_Ser_cont_and_Avail_CANDI,P1.8.1.Info_based_stra tegic_deci_mak_CANDI, P4.1.1.Holistic_Approach_CANDI) see annex I for variable definition. The first item ‘finance transparency’ is required by stakeholders of NBE. The second Item ‘Business services continuity and availability’ is another important COBIT element currently needed for NBE.Such list continue up to the 26th item that helps the NBE management for decision making of the governance implementations.NBE management can follow such arrangement to decide the implementation priority based the bank’s IT maturity level.

This research has used the basic COBIT 5 control elements that have been confirmed as an important beginning point of the NBE to be consumed as its IT Governance framework implementations. The agreement or Expert opinion consensus was brought by applying the two-round Delphi steps.

The literature review covered the main areas like governance overview as an Enterprise, corporate governance and IT governance as well. Evolution of IT governance, comparison of IT governance with management, Importance, development and focus areas of IT governance with its Necessary elements were also addressed. The main description of IT governance frameworks with their drawbacks and the reason to tailor as a main agenda of the paper was described.

As a research motivation this research focuses on the main advantages and initiatives for national bank of Ethiopia to derive its mission to the entire financial sector to implement the standard IT management and Governance to derive its mission well. The main objective was to found tailored or proper fit of IT governance framework to the sector as well. The specific objectives were to review literature on previously related works for conceptual understanding and then identify different framework elements and contextual items for NBE, to assess available IT governance frameworks and capture their features, to assess the IT governance framework tailoring steps, to create tailored/proper contextual fit frame work for NBE and To evaluate the framework performance with given parameters. The principal motivation, therefore, for this research is to contribute to knowledge and practice regarding IT governance to the National bank of Ethiopia in addition to the contribute IT governance tailored frame work framework from COBIT₅.

5.4. Limitations of the study

This research has the following limitations:

- Because of expert's availability and devotion the researcher is forced to use only two round Delphi steps in consensus construction of COBIT 5 items.
- Small time frame gap was provided to experts to answer Delphi round two questionnaires to the researcher.
- Since there is no literature found on how to decide the cut-off point from the sorted list, the cut-off point is decided based on the experts comments provided during small group discussions and panel.
- The researcher was planning to participate fifteen experts including the vice governor but the researcher cannot meet the vice governor because H.E was not around the office for duty.

5.5. Recommendations

There exists number of standards or frameworks in relation to IT governance. But those standards were applied in different organization and reaching to their maturity level and being consider as a standard or framework. Using those frameworks or standards to a specific organization is a very difficult work directly applied to this context-dependent organization.

Using COBIT₅ as it has got couple of challenges and has been difficult for most organizations.NBE as a bank also has not yet applied any IT governance Framework. Therefore, to avoid this failure of IT from

framework application to its context as a mandatory process applying context-dependent to one specific organization is very important.

Based on the proposed tailored framework Major recommended elements are:

- Based on the sorted list of COBIT₅, NBE is recommended to implement the first listed twenty six items on the priority from 1st – 26th from most important to least important.
- NBE's strategic leaders are expected to focus on the recommended sorted listed items. Specially the IT director, the corporate service vice governor and the governor of the bank can be responsible to lounge this framework's listed elements according to their priority. The priority helps the management and the experts for the implementation process.
- We recommend that as a short term plan the first five or ten items can be applied at the first time implementation of the framework and eleven to twenty six items can also be applied as second round or long term implementation plan of the tailored framework.
- Financial institutions should prepare tailor-made IT governance framework not to suffer from a failure that can be resulted from complicated IT governance frameworks
- Applying the most agreed COBIT₅ elements is very critical for resource optimization and for avoiding IT failure in NBE and other financial institutions as well.
- Understanding the Context of the specific organization is very important before applying any framework or module to the organization since every organization in the world is unique.
- As a supervisory body NBE can use this tailoring and contextualizing process for those commercial banks in a way of regulation to protect them from IT failure and cybercrimes and bankrupt as well.

5.6. Future research directions

This research area is very critical during the implementation of any IT standards or frameworks. If the area is researched well in the future it can answer a number of questions if further reaches are done and applied to a number of organizations especially for financial sector in a way of 'Context-dependent'.

From the Delphi round perspective, in this research there were only two Delphi rounds applied. This was defined as a limitation of this research. Therefore, in the future if the researcher uses more than two Delphi rounds the output of the research will be more accurate and the shape of the proposed framework will be more context-dependent to that specific organization.

The cut-off point was decided by the experts' discussion but as a future direction if the researcher can support with a literature how to decide the cut-off points the output will be more context-dependent on that area.

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Appendices

Appendix A: Survey Questionnaire-Round One

Dear Mr. /Mrs.

I am Temesgen Asnake a postgraduate student, Master of Science in information science at Addis Ababa University, Ethiopia. My research title is “*Tailoring IT Governance Framework for National Bank of Ethiopia*”

For any governmental, economic, political and social growth or development, the role of IT in the business is obviously clear. But to use IT and to gain business competitiveness, how to manage and govern IT becomes a big problem for most CIO (chief information officers). Numbers of issues are rising at this time on how to manage the risk and how to maximize the IT value and ensure the IT performance on track. Here, the main issue is how to manage/govern the IT which is a method to effectively control and manage risks associated with IT.

This study is about the consumption of the COBIT₅ IT governance framework to your organization (Making proper “FIT” to your sensitive IT environment without any hole to the IT failure). Maybe you don’t know much about this IT governance framework or you even not hear about it, but this will not contaminate this survey, the question are not technical problems but about what is your company more concern when perform IT governance.

As the result of the survey, we will generate some conclusion and recommendations for the companies in their IT governance work.

Thank you for giving me your *golden* time.

Temesgen Asnake.

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This questionnaire covered two main sections. Section I contains seven demographic questions and section II contains thirty *COBIT5 Items/features tailoring related questions* to select on each three supper columns that are (Candidate selection, Importance level and Fit level)

NOTE:-COBIT5(Control **O**bjectives for **I**nformation and Related **T**echnologies (COBIT)) is a good-practice framework created by international professional association ISACA for information technology (IT) management and IT governance.COBIT5 is the last version released by 2012 that includes ITIL(IT service management).

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. Did you take IT Governance Related Training/Certificate

Yes NO

7. If #6 is “Yes” IT Governance related training/certificate

COBIT ITIL ISO2700 Other_____

SECTION II: COBIT5 Elements and features that *needed to be tailored/contextualize* and which are *agreed to be fit* to NBE context by Delphi Round One Method.

First Column: Is about COBIT5 Elements and features that *candidate selection for Tailoring to NBE*. The scale is **0 (Zero)** being the lowest score, “**Strongly Disagree**” and **4 (Four)** the highest score, “**Strongly Agree**”. To get list of needed elements to be tailored.

- 0 ----- **Strongly Disagree**
- 1 ----- **Disagree**
- 2 ----- **Neutral**
- 3 ----- **Agree**
- 4 ----- **Strongly Agree**

Second Column: Is about COBIT5 Elements and Features *to show the importance level of those features*. The Scale is **0 (Zero)** is being the lowest score, “*Not Very important to NBE*” and **4 (Four)** the highest score, “*Very Important to NBE*”.

To get list of fit elements to NBE’s Context.

- 0 ----- **Not Very important:** *Features are not highly needed to NBE*
- 1 ----- **Not important:** *Features are not needed*
- 2 ----- **Somewhat Important:** *Features are not clear to apply*
- 3 ----- **Important:** *Features are fairly needed*
- 4 ----- **Very important:** *Features are highly needed to NBE environment*

Third Column: Extent of “**FIT**” of COBIT5 Elements and features to NBE context by Delphi Round One Method. For COBIT5 Elements and Features the **level of fit/extent to NBE environment**. Scale is **0 (Zero)** is being the lowest score, “*Lower Fit*” and **4 (Four)** is the highest score, “*Most Fit*”. To get the *extent of fit* for each COBIT 5 feature elements.

Fit Means: -Exactly/Directly/mandatorily proper to NBE environment.

- 0 ----- **Lower Fit**
- 1 ----- **Satisfactory Fit**
- 2 ----- **Fit**
- 3 ----- **Very Fit**
- 4 ----- **Most Fit**

This is **ROUND ONE** Delphi step that is going to be applied for each of the following COBITs Framework elements. Please put “✓” mark the most appropriate category based on how important they are (perceived importance) to NBE environment. Feel fair, free and proper and fill the space based on your expertise and related experience.

COBIT₅ Principles (P x)

No.		Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?					How Much this feature is important to NBE in the Future?					What will be the LEVEL of FIT of this feature to NBE Context?				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
P1	Principle1: Meeting Stake holder Needs.															
P1.1	Business investment that has visible and reflected stakeholder value.															
P1.2	Collection of competitive products and services.															
P1.3	Managed Business Risk.															
P1.4	A requirement in Agreement with external laws and regulations.															
P1.5	Finance transparency.															
P1.6	Customer oriented service culture.															
P1.7	Business Service continuity and availability															
P1.8	Information based															

No.		Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?					How Much this feature is important to NBE in the Future?					What will be the LEVEL of FIT of this feature to NBE Context?				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
	strategic decision making.															
P1.9	Optimization of service delivery costs.															
P1.10	Optimization of business process functionality and costs.															
P1.11	Business change programs that are managed well.															
P1.12	Operational and staff productivity.															
P1.13	Skilled and motivated peoples.															
P2	Principle2: Covering the enterprise End-To-End.															
P2.1	IT Governance is expected to Cover all Enterprise issues(All Covered)															

No.		Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?					How Much this feature is important to NBE in the Future?					What will be the LEVEL of FIT of this feature to NBE Context?				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
P2.2	Value Creation in relation to risk and resource optimization.															
P2.3	Use COBIT ₅ as the main governance and management Framework.															
P3	Principle3: Applying A single integrated framework.															
P3.1	Implemented IT governance Framework or Some standards.															
P4	Principle4: Enabling a holistic approach.															
P4.1	Holistic approach that include like the following(principles, polices, people, process and organizational structures, culture ethics															

No.		Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?					How Much this feature is important to NBE in the Future?					What will be the LEVEL of FIT of this feature to NBE Context?				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
	,structures, information and peoples etc)															
P5	Principle5:Separating Governance and management															
P5.1	Separated IT Governance and management.															
COBIT₅ Enablers (ENx)																
EN1	Addressing of Principles, polices and Frameworks in IT															
EN2	COBIT₅ Processes Related															
EN2 .1	Evaluation, Direct, and monitor in IT Organization.															
EN2 .2	Align, Plan, and Organize IT Organization (Manage															

No.		<i>Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?</i>					<i>How Much this feature is important to NBE in the Future?</i>					<i>What will be the LEVEL of FIT of this feature to NBE Context?</i>				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
	Framework, Strategy, Innovation, Portfolio..etc)															
<i>EN2 .3</i>	Build, Acquire and Implement (Manage requirement definitions, changes etc...) of all NBE IT issues should be processed well.															
<i>EN2 .4</i>	Delivering, servicing and supporting of all IT issues should be processed as per the need (like Mange Operations,).															
<i>EN2 .5</i>	There must exist Monitoring, Evaluating and assess of all IT Process like performance, conformance and system of internal control.															

No.		<i>Do you agree that, this Feature should be SELECTED as a candidate to be tailored or adapt to NBE context?</i>					<i>How Much this feature is important to NBE in the Future?</i>					<i>What will be the LEVEL of FIT of this feature to NBE Context?</i>				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Not Very important	Not important	Somewhat Important	Important	Very important	Lower Fit	Satisfactory Fit	Fit	Very Fit	Most Fit
EN3	Addressing Organizational Structures in IT															
EN4	Addressing Culture Ethics and Behavior in IT															
EN5	All matters of Information processing in IT.															
EN6	Services, Infrastructure and applications.															
EN7	People, skills and competencies															

Thank you for your Time.

If you have any comments please drop here to me

END of the questionnaire

Appendix B: Survey Questionnaire-Round Two

Dear Mr. /Mrs.

I am Temesgen Asnake a postgraduate student, Master of Science in information science at Addis Ababa University, Ethiopia. My research title is “*Tailoring IT Governance Framework for National Bank of Ethiopia*”

For any governmental, economic, political and social growth or development, the role of IT in the business is obviously clear. Numbers of issues are rising at this time on how to manage the risk and how to maximize the IT value and ensure the IT performance on track. Here, the main issue is how to manage/govern the IT which is a method to effectively control and manage risks associated with IT.

This study is about the consumption of the COBIT₅ IT governance framework to your organization (Making proper “FIT” to your sensitive IT environment without any hole to the IT failure). Maybe you don’t know much about this IT governance framework or you even not hear about it, but this will not contaminate this survey, the question are not technical problems but about what is your company more concern when perform IT governance.

The research method applied involves two separate surveys (Delphi Rounds). This is the second survey in the two survey series. The purpose of the second (last) surveys is to further refine and validate a set of COBIT₅ elements to come to consensus. You do not need to have completed the previous survey round (round one) to be eligible to participate in this survey round.

As the result of the survey, we will generate some conclusion and recommendations for the companies in their IT governance work.

Thank you for giving me your *golden* time.

Temesgen Asnake.

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This questionnaire covered two main sections. Section I contains seven demographic questions and section II contains thirty *COBIT₅ Items/features tailoring related questions* which are refined from ROUND ONE (Sorted by the priority of participants choices)

NOTE:-COBIT₅(Control **O**bjectives for **I**nformation and Related **T**echnologies (COBIT)) is a good-practice framework created by international professional association ISACA for information technology (IT) management and IT governance.COBIT₅ is the last version released by 2012 that includes ITIL(IT service management).

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. Did you take IT Governance Related Training/Certificate?

Yes NO

7. If #6 is “Yes” IT Governance related training/certificate

COBIT ITIL ISO2700 Other _____

SECTION II:COBIT₅ Elements and features that *needed to be applied* and which are *agreed to be fit* to NBE context by Delphi Round two Method.

This is **ROUND TWO** Delphi steps that are going to be applied for each of the following COBIT₅ Framework elements. Please type (0-4) the most appropriate category based on how important they are (perceived importance) to NBE environment. Feel fair, free and proper and fill the space based on your expertise and related experience.

4	Strongly agree that the stated Item is critical to effective IT governance within NBE
3	Agree that the stated Item is important to effective IT governance within NBE
2	Neither agree nor disagree that the stated Item is important to effective IT governance within NBE
1	Disagree that the stated control is important to effective IT governance within NBE
0	Strongly disagree that the stated control is important to effective IT governance within NBE

4	Strongly agree that the stated Item is critical to effective IT governance within NBE		
3	Agree that the stated Item is important to effective IT governance within NBE		
2	Neither agree nor disagree that the stated Item is important to effective IT governance within NBE		
1	Disagree that the stated control is important to effective IT governance within NBE		
0	Strongly disagree that the stated control is important to effective IT governance within NBE		
	<i>Sorted COBIT₅ Feature Elements from Round one for further refinement and consensus</i>	<i>Fill the Score (0-4)</i>	<i>Comments</i>
1	Align, Plan, and Organize IT Organization (Manage Framework, Strategy, Innovation, Portfolio..etc)		
2	Evaluation, Direct, and monitor in IT Organization.		
3	Build, Acquire and Implement (Manage requirement definitions, changes etc...) of all NBE IT issues should be processed well.		
4	Addressing Organizational Structures in IT		
5	People, skills and competencies		
6	Delivering, servicing and supporting of all IT issues should be processed as per the need (like Mange Operations,).		
7	Business Service continuity and availability		
8	Finance transparency.		
9	Information based strategic decision making.		
10	Addressing of Principles, polices and Frameworks in IT		
11	Holistic approach that include like the following(principles, polices, people, process and organizational structures, culture ethics ,structures, information and peoples etc)		
12	All matters of Information processing in IT.		

4	Strongly agree that the stated Item is critical to effective IT governance within NBE		
3	Agree that the stated Item is important to effective IT governance within NBE		
2	Neither agree nor disagree that the stated Item is important to effective IT governance within NBE		
1	Disagree that the stated control is important to effective IT governance within NBE		
0	Strongly disagree that the stated control is important to effective IT governance within NBE		
	<i>Sorted COBIT₅ Feature Elements from Round one for further refinement and consensus</i>	<i>Fill the Score (0-4)</i>	<i>Comments</i>
13	Operational and staff productivity.		
14	Skilled and motivated peoples.		
15	Business investment that has visible and reflected stakeholder value.		
16	Customer oriented service culture.		
17	Services, Infrastructure and applications.		
18	Optimization of service delivery costs.		
19	Optimization of business process functionality and costs.		
20	Managed Business Risk.		
21	Business change programs that are managed well.		
22	Value Creation in relation to risk and resource optimization.		
23	There must exist Monitoring, Evaluating and assess of all IT Process like performance, conformance and system of internal control.		
24	Addressing Culture Ethics and Behavior in IT		
25	Use COBIT ₅ as the main governance and management Framework.		
26	Implemented IT governance Framework or Some standards.		
27	A requirement in Agreement with external laws and regulations.		
28	Collection of competitive products and services.		

29	Separated IT Governance and management.		
30	IT Governance is expected to Cover all Enterprise issues(All Covered)		

Thank you for your Time.

If you have any comments please drop here to me

END of the questionnaire.

Annex I -Tables

<i>ID</i>	<i>Principles</i>	<i>Variable Name</i>
P1	<i>Principle1: Meeting Stake holder Needs.</i>	
P1.1	Business investment that has visible and reflected stakeholder value.	P1.1.1.BusInvVisRefSta_CANDI P1.1.2.BusInvVisRefSta_IMPORT P1.1.3.BusInvVisRefSta_FIT
P1.2	Collection of competitive products and services.	P1.2.1.Coll_CometProd_and_Serv_CANDI P1.2.2.Coll_CometProd_and_Serv_IMPORT P1.2.3.Coll_CometProd_and_Serv_FIT
P1.3	Managed Business Risk.	P1.3.1.Managed_Buss_Risk_CANDI P1.3.2.Managed_Buss_Risk_IMPORT P1.3.3.Managed_Buss_Risk_FIT
P1.4	A requirement in Agreement with external laws and regulations.	P1.4.1.Req_agreement_WithExt_Laand_regu_CANDI P1.4.2.Req_agreement_WithExt_Laand_regu_IMPORT P1.4.3.Req_agreement_WithExt_Laand_regu_FIT
P1.5	Finance transparency.	P1.5.1.Finance_Transparency_CANDI P1.5.2.Finance_Transparency_IMPORT P1.5.3.Finance_Transparency_FIT
P1.6	Customer oriented service culture.	P1.6.1.Cust_Oreie_serv_culture_CANDI P1.6.2.Cust_Oreie_serv_culture_IMPORT

<i>ID</i>	<i>Principles</i>	<i>Variable Name</i>
		P1.6.3.Cust_Oreie_serv_culture_FIT
P1.7	Business Service continuity and availability	P1.7.1.Bus_Ser_cont_and_Avail_CANDI P1.7.2.Bus_Ser_cont_and_Avail_IMPORT P1.7.3.Bus_Ser_cont_and_Avail_FIT
P1.8	Information based strategic decision making.	P1.8.1.Info_based_strategic_deci_mak_CANDI P1.8.2.Info_based_strategic_deci_mak_IMPORT P1.8.3.Info_based_strategic_deci_mak_FIT
P1.9	Optimization of service delivery costs.	P1.9.1.Opt_serv_deliver_cost_CANDI P1.9.2.Opt_serv_deliver_cost_IMPORT P1.9.3.Opt_serv_deliver_cost_FIT
P1.10	Optimization of business process functionality and costs.	P1.10.1.Opt_BusProcFun_and_costs_CANDI P1.10.2.Opt_BusProcFun_and_costs_IMPORT P1.10.3.Opt_BusProcFun_and_costs_FIT
P1.11	Business change programs that are managed well.	P1.11.1.BusChnage_Prog_ManagedWell_CANDI P1.11.2.BusChnage_Prog_ManagedWell_IMPORT P1.11.3.BusChnage_Prog_ManagedWell_FIT
P1.12	Operational and staff productivity.	P1.12.1.Operational_and_Staff_produc_CANDI P1.12.2.Operational_and_Staff_produc_IMPORT P1.12.3.Operational_and_Staff_produc_FIT
P1.13	Skilled and motivated peoples.	P1.13.1.Skilled_and_Motivated_peoples_CANDI

ID	Principles	Variable Name
		P1.13.2.Skilled_and_Motivated_peoples_IMPORT P1.13.3.Skilled_and_Motivated_peoples_FIT
P2	Principle2: Covering the enterprise End-To-End.	
P2.1	IT Governance is expected to Cover all Enterprise issues(All Covered)	P2.1.1.ITG_Cover_AllIssue_CANDI P2.1.2.ITG_Cover_AllIssue_IMPORT P2.1.3.ITG_Cover_AllIssue_FIT
P2.2	Value Creation in relation to risk and resource optimization.	P2.2.1.ValCreation_Inrelatio_Riskand_resou_opt_CANDI P2.2.2.ValCreation_Inrelatio_Riskand_resou_opt_IMPORT P2.2.3.ValCreation_Inrelatio_Riskand_resou_opt_FIT
P2.3	Use COBIT5 as the main governance and management Framework.	P2.3.1.Use_COBIT5_main_GOV_FrameWork_CANDI P2.3.2.Use_COBIT5_main_GOV_FrameWork_IMPORT P2.3.3.Use_COBIT5_main_GOV_FrameWork_FIT
P3	Principle3: Applying A single integrated framework.	
P3.1	Implemented IT governance Framework or Some standards.	P3.1.1.Impl_ITGFW_or_Some_Stand_CANDI P3.1.2.Impl_ITGFW_or_Some_Stand_IMPORT P3.1.3.Impl_ITGFW_or_Some_Stand_FIT
P4	Principle4: Enabling a holistic approach.	
P4.1	Holistic approach that include like the	P4.1.1.Holistic_Approach_CANDI

ID	Principles	Variable Name
	following(principles, polices, people, process and organizational structures, culture ethics ,structures, information and peoples etc)	P4.1.2.Holistic_Approach_IMPORT P4.1.3.Holistic_Approach_FIT
P5	Principle5:Separating Governance and management	
P5.1	Separated IT Governance and management.	P5.1.1.Separated_ITG_and_Mangement_CANDI P5.1.2.Separated_ITG_and_Mangement_IMPORT P5.1.3.Separated_ITG_and_Mangement_FIT
COBIT₅ Enablers (ENx)		
EN1	Addressing of Principles, polices and Frameworks in IT	EN1.1.Addressing_principles_Poli_Fram_CANDI EN1.2.Addressing_principles_Poli_Fram_IMPORT EN1.3.Addressing_principles_Poli_Fram_FIT
EN2	COBIT₅ Processes Related	
EN2 .1	Evaluation, Direct, and monitor in IT Organization.	EN2.1.1.EVA_Direct_and_Monitor_CANDI EN2.1.2.EVA_Direct_and_Monitor_IMPORT EN2.1.3.EVA_Direct_and_Monitor_FIT
EN2 .2	Align, Plan, and Organize IT Organization (Manage Framework, Strategy, Innovation, Portfolio..etc)	EN2.2.1.Align_plan_organize_CANDI EN2.2.2.Align_plan_organize_IMPORT EN2.2.3.Align_plan_organize_FIT

ID	Principles	Variable Name
EN2 .3	Build, Acquire and Implement (Manage requirement definitions, changes etc...) of all NBE IT issues should be processed well.	EN2.3.1.Build_Acquire_Impl_CANDI EN2.3.2.Build_Acquire_Impl_IMPORT EN2.3.3.Build_Acquire_Impl_FIT
EN2 .4	Delivering, servicing and supporting of all IT issues should be processed as per the need (like Mange Operations,).	EN2.4.1.Deli_Servi_and_Support_allIssues_CANDI EN2.4.2.Deli_Servi_and_Support_allIssues_IMPORT EN2.4.3.Deli_Servi_and_Support_allIssues_FIT
EN2 .5	There must exist Monitoring, Evaluating and assess of all IT Process like performance, conformance and system of internal control.	EN2.5.1.Moni_Evaluation_Asses_CANDI EN2.5.2.Moni_Evaluation_Asses_IMPORT EN2.5.3.Moni_Evaluation_Asses_FIT
EN3	Addressing Organizational Structures in IT	EN3.1.Addressing_org_struct_CANDI EN3.2.Addressing_org_struct_IMPORT EN3.3.Addressing_org_struct_FIT
EN4	Addressing Culture Ethics and Behavior in IT	EN4.1.Addressing_Cult_Ethi_Behav_CANDI EN4.2.Addressing_Cult_Ethi_Behav_IMPORT EN4.3.Addressing_Cult_Ethi_Behav_FIT
EN5	All matters of Information processing in IT.	EN5.1.All_MattersOf_Info_Process_CANDI EN5.2.All_MattersOf_Info_Process_IMPORT EN5.3.All_MattersOf_Info_Process_FIT

<i>ID</i>	<i>Principles</i>	<i>Variable Name</i>
<i>EN6</i>	Services, Infrastructure and applications.	EN6.1.Service_infra_Appns_CANDI EN6.2.Service_infra_Appns_IMPORT EN6.3.Service_infra_Appns_FIT
<i>EN7</i>	People, skills and competencies	EN7.1.People_Skill_Compentence_CANDI EN7.2.People_Skill_Compentence_IMPORT EN7.3.People_Skill_Compentence_FIT