
**ADDIS ABABA UNIVERSITY**

**COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE**

**SCHOOL OF INFORMATION SCIENCE**

# DEVELOPING A TAILOR IT SERVICE MANAGEMENT FRAMEWORK BASED ON ITIL FRAMEWORK FOR IT SERVICE MANAGEMENT PROCESSES IN ETHIOPIAN COMMERCIAL BANKS: THE CASE OF BUNNA INTERNATIONAL BANK S.C.

By

TADESSE DABI

June, 2017

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

By: Tadesse Dabi

Advisor: Lemma Lessa (PhD)

June, 2017

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**By: Tadesse Dabi**

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| **Internal Examiner** | **Signature** | **Date** |
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| **Internal Examiner** | **Signature** | **Date** |

## 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.

Signature: _____

Tadesse Dabi

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

Advisor's Signature: _____

Lemma Lessa (PhD)

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## Abstract

*In today's complex IT environment, the global economy is increasingly service-based. As a result, IT Service providers have a growing need for developing IT Service Management (ITSM) Framework based on best practices. The Information Technology Infrastructure Library (ITIL) is a set of best practices and widely implemented ITSM framework in the world. However, ITIL is not a one-size-fits-all solution; rather IT organizations are required to adopt ITIL in different ways possibly due to cultural, political or economic factors. Research in ITIL adoption is in its infant stage. The status of ITIL adoption has become one of the most popular research topics in ITSM research. Thus, this research aims to develop ITSM Framework based on ITIL Framework for Ethiopian Banking Industry.*

*For this purpose, a case study research strategy was applied as empirical research approach to closely examine the data within a specific context and to analyze different qualitative elements of ITSM practices and ITIL guidelines. Primary and secondary data were collected using questionnaire and semi-structured interview through review of company documents. Data was then analyzed and interpreted under guidance of ISO 15054 Process Assessment Model and SWOT analysis techniques.*

*The results indicated that out of the twenty four ITIL V3 processes in scope, twenty two did not fully or largely achieve their intended purpose in the case study organization; hence irregular or inconsistent ITSM process performance may be introduced. Therefore, tailored ITSM Framework is proposed based on the current operational model, assessment findings and the SWOT analysis. In the proposed Framework, components' activities and processes relationship are discussed based on ITIL concepts. The proposed Framework can help the Ethiopian Banking Industry to effectively manage IT services design, development, deployment, delivery and support processes. Besides, who and when to use the proposed Framework is also suggested.*



Keywords: IT Service Management, ITIL, Service Management Processes

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## List of Acronyms

| | |
|---|---|
| BIB | Bunna International Bank |
| CCTA | Central Computer and Telecommunications Agency |
| CMMI | Capability Maturity Model Integrated |
| COBIT | Control Objective for Information Technology |
| ISO/IEC | International Organization for Standardization/International Electrotechnical Commission |
| IT | Information Technology |
| ITG | IT Governance |
| ITGI | IT Governance Institute |
| ITIL | Information Technology Infrastructure Library |
| ITSM | Information Technology Service Management |
| itSMF | The IT Service Management Forum |
| OGC | Office of Government Commerce |
| SEI | Software Engineering Institute |
| SWOT | Strengths, Weaknesses, Opportunities, and Threats |

# CHAPTER ONE
# INTRODUCTION

The main purpose of this chapter is to introduce the background of ITIL adoption and development; describe the problem and to have an overall view on the study. The chapter also raises the main research questions of this thesis and a brief overview of the existing research achievements related to tailor ITSM Framework based on ITIL Framework in organizations and finally how this thesis conducted.

## 1.1 Background

IT is undergoing a rapid transformation in the banking industry. No longer independent, IT must play an increasingly greater role in helping banks carry out their business operation such as marketing, sales, and channel integration initiatives, and in ensuring that banks comply with various regulatory requirements. To this end, IT in banking sector needs to develop a strategic approach to service management processes. In short, IT in banking is expected to deliver compliance, consistency, continuity and security while changing the way banking is done.

ITSM is a branch of the field of Information Systems Maintenance (ISM); and ISM focuses on technique and delivery of goods while ITSM is a newly emerging field focusing on processes and services (Marrone & Kolbe 2011). Iden & Langeland (2010) stated that various frameworks for ITSM exist, among which Information Technology infrastructure library (ITIL) is most accepted and used; further Pollard & Cater-Steel (2009) indicated one of the ITSM framework that becomes particularly prominent is the ITIL. Jäntti et al. (2013) also pointed that thousands of IT organizations worldwide have started to improve their IT service management processes based on the ITIL, which is the most widely used best practice framework for IT service management (ITSM); however a major challenge has been how the people responsible for process improvement can demonstrate the benefits that process improvement initiatives provide.

Iden & Eikebrokk (2013, p. 2) explained the relationship between ITSM and ITIL as “ITSM is the concept and ITIL is the framework IT functions can apply to adopt ITSM to IT operations”. Iden and Eikebrokk (2013, p. 6) also further indicated that the earliest academic study on ITIL adoption, as identified by a 2013 systematic literature review was a conference article published

in 2005 and the first journal article was published in 2006. After these, the status of ITIL adoption has become one of the most popular research topics in ITSM research.

Marrone, et al, (2014) has also identified benefits from ITIL adoption such as improved focus on ITSM, more rigorous control of testing and system changes, more predictable infrastructure, improved consultation with IT groups within the organization, smoother negotiation of service level agreements, reduced server faults, seamless end-to-end service, documented and consistent IT processes across the organization. Iden & Langeland (2010, p. 104) also supported the idea too and emphasized despite the fact that ITIL is increasingly adopted in public and private companies there are few scholarly works that examine issues related to its introduction. Meziani & Saleh (2010) discovered that any organizations developed its own ITSM model in order to increase the service level, reduce cost and improve security such as: Microsoft and HP, Procter & Gamble, Caterpillar, State Farm and Boeing in the USA. Organization have incorporated aspects of ITIL and IT Service Management into their IT Management strategies. These all reflect ITIL adoption effort is at its early stage; and justify as why developing tailor ITSM Framework based on ITIL framework for ITSM processes in Ethiopian Commercial Banks is selected as focus of this research.

Bunna International Bank S.C. is one of commercial Banks in Ethiopia which has joined the Banking industry of Ethiopia following the favorable economic developments witnessed in the country during the last decade and the incessantly growing needs for Financial Services. The Bank has obtained its license from the National Bank of Ethiopia (NBE) on June 25, 2009 in accordance with Licensing & Supervision of Banking Business Proclamation No. 592/2008 and the 1960's Commercial Code of Ethiopia. The bank officially commenced its operation on October 10, 2009 with the subscribed and paid up capital of birr 308 million and birr 156 million, respectively. Now the paid up capital of the bank has grown up to 757 million as of August 16, 2016. Currently, the bank has 107 branches that are found both in Addis Ababa and other towns of Ethiopia (About BIB Background, Published: Thursday, 18 August 2016 15:15).

### 1.2 Statement of the Problem

Marrone et al., (2014) found that ITIL is considered a "best practice", its adoption may not be homogeneous across all IT organizations. IT organizations adopt ITIL in different ways possibly due to cultural, political or economic factors. Regardless of country, size, or industry sector,

many organizations have not fully adopted the ITIL framework. Consequently there are opportunities for organizations to gain performance rewards associated with ITIL adoption, such as more rigorous control of testing and system changes, more predictable infrastructure, improved consultation within the organization, smoother negotiation of SLAs, reduced server faults, seamless end-to-end service, consistent IT processes, and effective change management. Cater-Steel & Wui-Gee (2005, p. 1) noted that despite the phenomenal popularity of ITIL as reported in IT practitioner magazines, there has been little academic research published to date about issues related to ITIL adoption and implementation. Alan & Robert (2016) and Bridget (n.d.) explained that many organizations turn to IT infrastructure libraries (ITIL) to better manage how IT services and technology are delivered to users, but ITIL is not a one-size-fits-all solution; the specific needs and even the size of the environment are driving factors. In some cases, we might need to customize and/or adopt ITIL to the needs of the organization or we might not need ITIL at all. Hjalmarsson, et al. (2016, p. 1) indicated that the domain of ITSM covers several frameworks, models or methods aimed to support efficient ITSM work in organizations. One of the most well-known ITSM-frameworks is the Information Technology Infrastructure Library

The study made by the Ethiopia Ministry of Communication and Information Technology (2011) indicated that, there was lack of a holistic coordination and cooperation across the Government for properly developing and utilizing IT. Besides it identified that, the IT organization structures, roles, and responsibilities are not properly defined nor approved and there was lack of a clear program and project management framework and tools for IT development.

According to the preliminary survey conducted on assessing ITSM Practices in Ethiopian Banking Industry, ITIL adoption is gaining momentum but is still in the early stages of implementation for most Ethiopia Banking Industries. Adoption of the ITIL framework (guidelines, principles, and concepts) is either absent or is still being established and is not yet fully implemented. Bunna International Bank is one of the Ethiopian Commercial Banking Services which has not yet implemented ITIL framework based on its response to preliminary survey questionnaire of assessing ITSM processes of the organization (Appendix - A). So, that is why this study focused on developing tailored ITSM Framework based on ITIL best practices for Bunna International Bank S.C. ITSM processes.

Thus, the goal of this study was to characterize the existing trends and desired states of ITSM processes of the case study organization; and then to propose tailored ITSM processes in the Ethiopian context based on ITIL best practices. The motivation for this study was the desire to learn challenges or difficulties from current trends of ITSM processes, and develop tailored ITSM Framework based on ITIL best practices successfully by giving due attention to the desired state too.

The main purpose of the study was to identify ITSM practices and develop tailored ITSM Framework based on ITIL best practices for Bunna International Bank ITSM processes. For this purpose, the researcher has formulated the following main research questions:

- What are the current and desired states of ITSM processes in Bunna International Bank?
- How can one develop tailored ITSM Framework based on ITIL best practices?

### 1.3 General Objective of the Study

The main purpose of this study was to identify current ITSM practices of Bunna International Bank and develop tailored ITSM Framework based on ITIL best practices by address shortcoming of the existing practice.

### 1.4 Specific Objectives of the Study

- To review related literature and overview different IT Governance frameworks
- To identify and document the current and desired states of ITSM processes of the organization
- To deliver tailored ITSM framework for ITSM processes of Bunna International Bank.

### 1.5 Significance of the Study

This study will be a significant endeavor in promoting best practices of ITSM processes for Bunna International Bank. This study will also be beneficial to the Ethiopian Banking Industries to review their ITSM practices and develop tailored ITSM Framework based on ITIL framework by understanding the needs and benefits of ITIL best practices. By detailing and comparing the ITIL adoption, this research helps bridge the gap between practitioner and academic research and provides valuable insights to both communities. Moreover, the result of this study can be used as an input for future studies on related topics.

### 1.6 Scope of the Study

The scope of the study enclosed to investigate and analyze the current and desired state of ITSM processes of Bunna International Bank S.C to develop tailored ITSM Framework based on ITILv3 Framework to address shortcoming of the existing practice and challenges if any. The study only delimited ITSM processes, not in the technology for implementing it. The focus of the study is to develop tailored ITSM Framework based on ITILv3 Framework for the organization processes which considered as the latest version of ITIL framework. The ITSM process owners have been active participants of the study and also information from the management team of Information Systems Directorate of the organization was useful to enrich the data. The ultimate goal was to develop tailored ITSM Framework based on ITIL best practices for the case study organization's IT department.

Consequently, this thesis research began with a literature review on IT Governance, IT Services, IT Service Management, IT Governance Frameworks and ITIL. These were followed by a description of the methodology used for this research. Results of the survey analyzed to develop ITIL framework and then outcomes discussed. Finally, after the limitations of the study the conclusions and future research sections are drawn.

### 1.7 Organization of the Thesis

The thesis organized into five chapters. The following Table 1-1 has shown how the thesis was prearranged.

| Chapters | Contents and organizations |
|---|---|
| Chapter One | In the first chapter, the arrangement of the thesis is discussed. Some issues like the background of the research, statement of the problem, purpose of the study, research questions, significance and scope of the study are provided. |
| Chapter Two | The second chapter reviewed the related literature on IT Governance, IT services, ITSM and ITIL framework. |
| Chapter Three | The third chapter discussed methodologies which researcher applied to his research study. In this section the research approach, the research design, data collection and analysis procedures and techniques as well as strategies for validating the thesis along with the reliability of the research are presented. |

| Chapters | Contents and organizations |
|---|---|
| Chapter Four | In the fourth chapter, results and the relationship of the result with reviewed literatures were discussed. In this chapter the proposed Framework also presented and discussed. Besides, the limitation of the study is set. |
| Chapter Five | In the final chapter, the conclusion of the study is provided by the researcher. Moreover, in this part the researcher evaluates the research and presents ideas for developing the concept for practitioner and future research. |

*Table 1-1: Structure of the thesis*

# CHAPTER TWO
# LITERATURE REVIEW

Conducting a literature review is essential to any program of research as it provides an assimilation of extant literature, assists in positioning and scoping the research, and builds knowledge (Paul & Jeanne, 2009). The purpose of the literature review is to understand concepts, theories, and current knowledge on IT Governance and ITSM processes in general and ITIL Framework in particular including but not limited to the adoption of ITIL. This helped the researcher to identify approaches to assess ITSM processes and adopt ITIL framework based on the world experienced.

## 2.1 IT Governance

IT Governance (2005) stated that IT Governance is not just an IT issue or only of interest to the IT function. In its broadest sense it is a part of the overall governance of an entity, but with a specific focus on improving the management and control of Information Technology for the benefit of the primary stakeholders.

IT Governance is not a one-time exercise or something achieved by a mandate or setting of rules. It requires a commitment from the top of the organization to instill a better way of dealing with the management and control of IT. IT Governance is an ongoing activity that requires a continuous improvement mentality and responsiveness to the fast changing IT environment (ITG, 2005, p. 8).

IT Governance Institute (2008) revealed that they have been working to define IT governance for a number of years and the definition has changed over time. Its origins were in control and measurement but it has moved and progressed into more front-end planning, putting the processes in place. It is more preventive, rather than taking action afterwards. It is the framework to do business, make decisions and monitor progress. This means that the IT governance is very important to the enterprise and important way to improve business and to achieve enterprise objectives.

According to the IT Governance Institute (2007), the IT governance is a management process based on best practices allowing the company directing the IT functions in the goal to support its

objectives of creating value, improve the performance of IT processes, master the financial aspects of IT, develop IT solutions and skills that the company will need in the future and ensure that the IT risks are managed while developing transparency

Chekli & Namir (2015, p. 1) stated IT governance as “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”. Van & De (2009) described Information Technology Governance (ITG) as the specification of decision-making structures, processes, and relational mechanisms for guidance and control.

From the definitions stated above it could be understood and identified that ITG is an organizational skill of great importance for alignment and organizational value achievement through information technology.

### 2.1.1 IT Governance Trends

The IT Governance Institute (ITGI) was established in 1998 to advance international thinking and standards in directing and controlling an enterprise’s information technology.

The need for strong IT governance has been recognized since the advent of IT itself. Methods and frameworks to support this have existed for decades. According to Mathias Sallé (2004, p.2), when evolving from technology providers into strategic partners; IT organizations typically follow a three-stage approach as depicted in Figure 2-1. Each evolutionary stage builds upon the others beginning with IT infrastructure management (ITIM). During this stage, the IT organizations focus on improving the management of the enterprise infrastructure. Effective infrastructure management means maximizing return on computing assets and taking control of the infrastructure, the devices it contains and the data it generates. The next stage, IT service management (ITSM), views the IT organizations actively identifying the services its customers need and focusing on planning and delivering those services to meet availability, performance, and security requirements. In addition, IT is managing service-level agreements, both internally and externally, to meet agreed-upon quality and cost targets. Ultimately, when IT organizations evolve to IT business value management (IT Governance), they are transformed into true business partners enabling new business opportunities. In that stage, IT processes are fully

integrated with the complete lifecycle of business processes improving service quality and business agility.

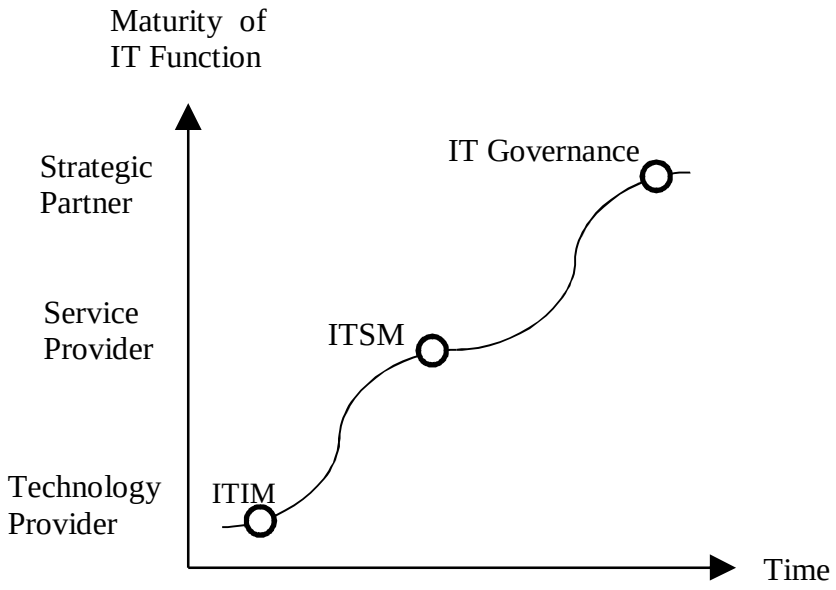


*Figure 2-1: Evolution of the IT Function within organizations, adopted from Mathias Sallé (2004)*

Information and communication technologies are now widely accepted by developing countries like Ethiopia as a critical tool in their efforts to eradicate poverty and enhance human development by the United Nations, through its UN Development Program which actively promotes ICT4D (Information and Communications Technologies for Development) as a powerful tool for economic and social development around the world. According to the study made by the Ethiopia Ministry of Communication and Information Technology (2011, p. 39) to prepare e-Government Strategy and Implementation Plan the following gaps were identified:

i. Lack of a holistic coordination and cooperation across the Government for properly developing and utilizing IT;
ii. IT organization structures, roles, and responsibilities are not properly defined nor approved, resulting in IT organizations in the Government Entity with varying levels of maturity in terms of design and resourcing;

iii. Lack of a clear program and project management framework and tools to ensure all e-Government initiatives apply the same controls and quality measures and proper planning is in place for IT development;

iv. Lack of knowledge sharing and resources sharing which can speed the process of IT implementations in common domains; and

v. IT expenditure is not recognized among the Ministries/Agencies budget, in addition, there is no allocation of a central fund to support central IT projects implementation.

Even though the assessment was based on the 13 Ministries and 11 Agencies, the Ministry of Communication and Information Technology mission is to develop, deploy and use ICT to improve the livelihood of Ethiopians and optimize its contribution for the development of the country. The gap indicated at number ii and iii also motivated this thesis paper to assess ITSM processes of the financial industry in Ethiopia and develop tailored ITSM framework.

### 2.1.2 Core Focus Areas of IT Governance

The IT governance concept has received considerable attention in the academic literature over the last decade. Wilkin & Chenhall (2010) in a recent survey of IT governance, establish taxonomy of IT governance. They see concepts of strategic alignment, performance measurement, risk management, and value delivery as the most significant enablers of IT governance. ITG (2005) stated IT Governance spans the culture, organization, policy and practices that provide for IT management and control across five key areas:

#### 2.1.2.1 Strategic Alignment

ITG (2005) stated that, “Strategic Alignment provides for strategic direction of IT and the alignment of IT and the business with respect to services and projects”. Mathias (2004) indicated Strategic alignment concerns all the characteristics of the IT Utility and thus must apply holistically to the various management disciplines that will regulate the infrastructure. It also suggested that strategic alignment can be achieved in a utility infrastructure by introducing the discipline of management by objectives.

#### 2.1.2.2 Value delivery

ITG (2005) described the Value delivery IT Governance domain to be used to confirm the IT/Business organization is designed to drive maximum business value from IT. Oversee the

delivery of value by IT to the business, and assess Return on Investment. According to Mathias (2004) value delivery is focused on the creation of business value and concentrating on optimizing costs and proving the value of IT.

#### 2.1.2.3 Performance management

According to ITG (2005), there is no doubt that a practical and effective way to measure IT performance is an essential part of any IT Governance program, just as transparency and reliability of financial results is a Corporate Governance necessity. Performance management is important because it verifies the achievement of strategic IT objectives and provides for a review of IT performance and the contribution of IT to the business (i.e. delivery of promised business value). It is also important in providing a transparent assessment of IT's capability and an early warning system for risks and pitfalls that might otherwise have been missed. Performance measurement provides transparency of IT related costs, which increasingly account for a very significant proportion of most organizations' operating expenses. As ITG points:

> *"If you can't measure it, you can't manage it"* (ITG, 2005, p. 11)

Thus, performance measurement is a key component of IT Governance. It verifies the achievement of strategic IT objectives and provides for a review of IT performance and the contribution of IT to the business (i.e. delivery of promised business value).

#### 2.1.2.4 Resource Management

According to ITG (2005) Resource Management IT Governance domain:

- Provides high-level direction for sourcing and use of IT resources
- Oversees the aggregate funding of IT at enterprise level and
- Ensures there is an adequate IT capability and infrastructure to support current and expected future business requirements.

Thus, Resource Management optimizing knowledge and IT infrastructure

#### 2.1.3.5 Risk Management

ITG (2005) described the management of risks is a cornerstone of IT Governance, ensuring that the strategic objectives of the business are not jeopardized by IT failures. IT related risks are increasingly a Board level issue as the impact on the business of an IT failure, be it an

operational crash, security breach or a failed project, can have devastating consequences. However, managing IT risks and exercising proper governance is a challenging experience for business managers faced with technical complexity, a dependence on an increasing number of service providers, and limited reliable risk monitoring information. As a consequence, management is often concerned whether risks are being cost effectively addressed, and they need assurance that risks are under control.

In summary IT Governance is concerned about IT delivers value to the business and that IT risks are mitigated. This leads to the above main focus areas of the IT Governance, all driven by stakeholder value. Two of them are outcomes: value delivery and risk mitigation. Two of them are drivers: strategic alignment and performance measurements, as noted by Van (2004).

### 2.2 Information Technology Services

Software Engineering Institute (2010) defined a service as "service is a way of delivering value to customers, while facilitating the achievement of the results they want to obtain without having to deal with unnecessary and risky costs".

Based on this definition of service, Diirr & Santos (2014, p. 1) defined Information Technology (IT) service as a set of resources, whether IT or non-IT, perceived by the client as whole, and maintained by an IT service provider. Such services aim to satisfy one or more needs of a client and support the strategic goals of his business.

For the purpose of this study the definition given by Office of Government Commerce (OGC) was used for services and IT Services, as it owns the ITIL brand (copyright and trademark). OGC (2007, p. 5) stated that:

> *A service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risk. A Service provided to one or more Customers by an IT Service Provider. An IT Service is based on the use of Information Technology and supports the Customer's Business Processes. An IT Service is made up from a combination of people, Processes and technology and should be defined in a Service Level Agreement.*

Joe & John (2016, p. 401) classified IT services in four broad categories with their relationship to business strategy and operations:

- **Application Services:** refer to those services delivered via software applications. These services are derived from the 'information handling' abilities of technology. These services include information processing, sharing, storage and access services.
- **Operational Services:** are those services that relate to assembling and operating the core IT environment. Such services include installation of hardware and software, maintaining the communications network and servers.
- **Value enabling services:** are services that are provided to enhance the value of information assets or identify opportunities provided by IT to better manage information.
- **Infrastructure services:** are those services that are derived directly from the infrastructure investment, essentially the technology itself.

There is high level of dependency between these categories of IT services. This dependency is depicted by Figure 2-2.

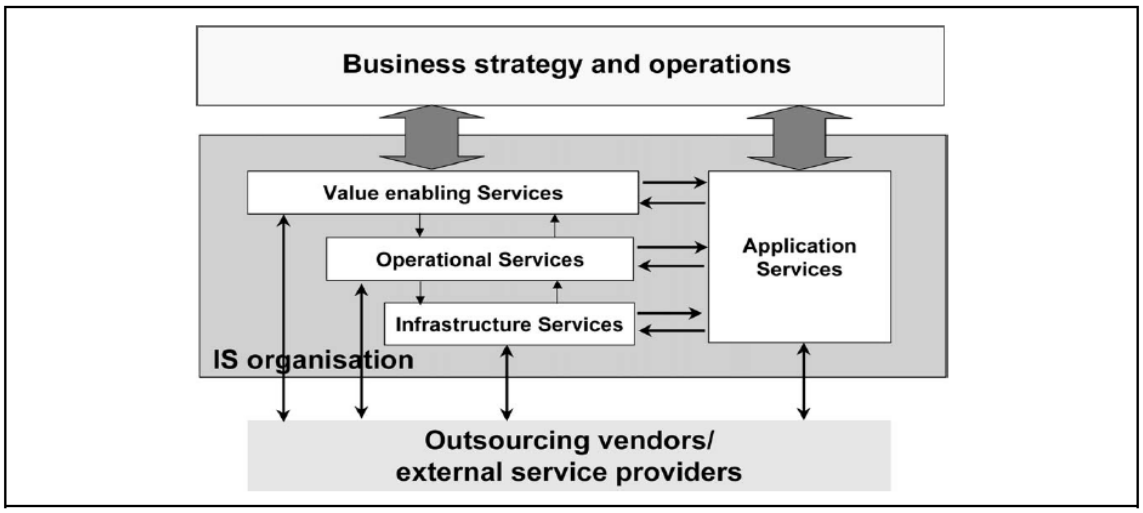


*Figure 2-2: Relationships between the Four IT Service Categories, Business Strategy and Operation (Joe & John, 2016).*

Companies are increasingly and critically becoming dependent on IT services to perform their day to day businesses, and gain competitive advantage. As a result, they spend larger share of their IT budget on the development and management of IT services. To further elaborate this fact

Marrone & Kolbe (2010, p. 5) stated that IT services account for an estimated 70% to 80% of the expenditure of an IT organization.

In the current organization paradigm, Information Technology (IT) provides essential services for the organization to support its business. As the dependency upon IT increases, IT, previously as a supporting role, has become the determining asset that can generate business value and gain the competitive advantages for organizations. This transformation has resulted in an imperative need for the quality of the IT services (Ada & Shrane-Koung, 2010). With this in light, IT organizations started to look for a typical management system which ensured the development and provision of quality and customer focused IT services in efficient and cost effective approach. That interest triggered the emergence and development of Information Technology Service Management (ITSM) as a distinct discipline. With this respect Conger et al. (2008) indicated that the concept of services and service management evolved from the increasing complexity of IT systems and the growing maturity of IT management.

### 2.3 Information Technology Service Management (ITSM)

OGC (2007) defined ITSM as:

> *Specialized set of organizational capabilities for providing value to customers in the form of services, these specialized organizational capabilities include all of the processes, methods, functions, roles, and activities that a service provider uses to enable it to deliver services to its customers. IT Service Management is performed by IT Service Providers through an appropriate mix of people, Process and Information Technology.*

**People:** manpower to provide better IT service level and arranges proper tasks in organization (OGC, 2007).

**Process:** A structured set of activities designed to accomplish a specific objective. A Process takes one or more defined inputs and turns them into defined outputs. A Process may include any of the Roles, responsibilities, tools and management Controls required to reliably deliver the outputs. A Process may define Policies, Standards, Guidelines, Activities, and Work Instructions if they are needed (OGC, 2007, p. 208).

**Information Technology:** The use of technology for the storage, communication or processing of information. The technology typically includes computers, telecommunications, Applications and other software. The information may include Business data, voice, images, video, etc. Information Technology is often used to support Business Processes through IT Services (OGC, 2007, p. 197).

Similarly, Pollard et al., (2009) defined IT Service Management as an approach by which Information Technology services are offered under contract to customers, and where performance is managed as a service. Conger et al. (2008) added that ITSM "focuses on defining, managing, and delivering IT services to support business goals and customer needs, usually in IT Operations". ITSM is a newly emerging field focusing on processes and services. The domain of ITSM covers several frameworks, models or methods aimed to support efficient ITSM work in organizations. One of the most well-known ITSM-frameworks is the Information Technology Infrastructure Library (Hjalmarsson, et al. 2016, p. 1). Alan & Robert (2016) whitepaper complemented, ITIL is a best practice framework of IT processes that support the implementation and delivery of ITSM.

Conger et al. (2008) also supported the notion that ITSM "focuses on defining, managing, and delivering IT services to support business goals and customer needs, usually in IT Operations". There are various concepts of ITSM frameworks. The most common approach is the ITIL which is a de facto standard for IT Service Management. Jan (2005) reflected that a variety of ITSM frameworks have been developed using ITIL as a reference, such as Hewlett-Packard (HP ITSM Reference model), IBM (IT Process Model) and Microsoft's MOF.

ITIL is specific to IT service management and it is not prescriptive, and it orders the processes in sets. To explain the relationship between ITSM and ITIL, Iden & Eikebrokk (2013, p. 2) stated that "ITSM is the concept and ITIL is the framework IT functions can apply to adopt ITSM to IT operations".

## 2.4 IT Service Management and its Organizational Impact

Brooks (2012) stated that the needs of ITSM in organizations can be changes in the ways they operate, communicate and do business and also develop and innovate, gain market advantage and differentiate themselves to their end customers.

For better understanding of the ITSM concept in organization, reviewing the ITSM component would be useful. ITSM components consist of Process, Technology, People, Organization, and Security which is recently added to organization construction to develop the system security (McNaughton B, et al., 2010). Figure 2-3 illustrates the component of ITSM.

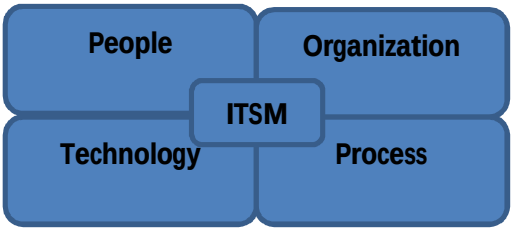


*Figure 2-3: ITSM components*

**Processes:** the most important element to construct ITSM system (e.g. IT business process facilitates and keeps up IT service).

**High secure manpower and organization:** to provide better IT service level and arranges proper tasks in organization.

**Technology and security:** to provide best possible tools and automated solutions to develop process in higher level of efficiency and safety

As mentioned earlier and depicted at Figure 2-2, when IT services is connected to the four fundamentals of Information Technology Service Management (ITSM) components of Figure 2-3, IT will be aligned with the business strategy and the organization, so that it can do what it wants to do.

## 2.5 IT Governance versus IT Management

IT Governance is often confused with IT Management practices in many organizations. Mathias Sallé (2004, p. 3) stated that "*the difference between IT Service Management and IT Governance has been subject to confusion and myths"*. Van (2004, p. 57) described the differences between these two notions as follow:

> "*Whereas the domain of IT Management focuses on the efficient and effective supply of IT services and products, and the management of IT operations, IT Governance faces the dual demand of: (1) contributing to present business operations and performance, and (2) transforming and positioning IT for meeting future business challenges*".

Van (2004) also emphasized that this does not undermine the importance or complexity of IT management, but goes to indicate that IT Governance is both internally and externally oriented, spanning both present and future time frames.

## 2.6 IT Governance frameworks

The terms "standard" and "framework" mostly used by some people and organization interchangeably; however they have different definition and depiction.

Dictionary definition - Standard: "*something used as a measure, norm, or model in comparative evaluations*"

Dictionary definition - Framework: "*a basic structure underlying a system, concept, or text*"

The ITIL/ISO 20000 Knowledge base also defined them as:

> *Standards are sets of clearly defined and measurable rules and requirements that have to be met in order to consider something compliant with the standard in question. Frameworks, or best practices, offer only guideline on the subject in hand: "what to do," without "how to do it," with the possibility to implement them partially, selectively or not at all.*

There are many different IT Governance frameworks that can be used for managing the delivery of cost-effective IT services. Some frameworks only cover a specific aspect of IT (such as

information security, service management, quality etc.). Today there are many IT Service Management frameworks and standards, with the most notable being ITIL. Therefore, in this thesis, I will be explored ITIL and complementary frameworks and standards

The IT industry has developed a number of frameworks, method and standards to manage a growing number of needs. Organizations can face uncertainty in understanding which framework, method or standard of practice they need in order to excel at managing IT services. Some frameworks were developed to address regulatory and legal compliance, others to streamline or re-engineer practices and most have origins in financial and manufacturing industries.

ITIL and many of other frameworks have a solid harmony and can co-exist within an organization to meet a range of service management needs. Some of the more commonly known frameworks and standards that have synergy with ITIL are COBIT, ISO/IEC 20000, ISO/IEC 15504, ISO/IEC 19770:2006, M_o_R , PMBOK, CMMI and Six Sigma (OGC, 2007, p. 145).

### 2.6.1 COBIT

COBIT® stands for Control OBjectives for Information and related Technology. Originally created in 1995 as an IS audit framework, COBIT has matured to become an overall IT management framework. COBIT processes and principles are often used by IT and SOX (The Sarbanes-Oxley Act of 2002) auditors. COBIT is governed by the IT Governance Institute (OGC, 2007).

According to IT Governance Institute (2008) the current version COBIT 5 was published in early 2012, superseding COBIT 4.1. It builds and expands on the guidance in COBIT 4.1 by integrating many frameworks and standards, including ISACA©'s VAL IT and Risk IT, ITIL, and ISO standards including ISO 38500 and ISO27001.

The main focus of COBIT is the development of clear policies and good practices for security and control in IT for worldwide endorsement by commercial, governmental and professional organizations (ITGI, 2012).

### 2.6.2 ISO/IEC 20000

According to ISO/IEC 20000 (2011), ISO20000 consists of five standards:

**ISO20000-1:** referred as service management system (SMS) requirements, which is the formal specification of standard.

**ISO20000-2:** known as code of practice describes the best practice in detail and provides guidance to auditors and recommendations for service providers planning for service improvements defined in 'should' statements.

**ISO20000-3:** provides guidance on determining the scope of certification and the applicability of the standard of ISO20000-1.

**ISO20000-4:** known as process reference model which facilitates the development of a process assessment model.

**ISO20000-5:** considered as exemplar implementation plan for ISO20000-1 which provides guidance on the implementation of the standard's requirements.

OGC (2007) added ISO/IEC 20000:2005 promotes the adoption of an integrated process approach to effectively deliver managed services to meet business and customer requirements. For an organization to function effectively it has to identify and manage numerous linked activities. Coordinated integration and implementation of the service management processes provides ongoing control, greater efficiency and opportunities for continual improvement. ISO 20000 is based on the ITIL service management processes.

### 2.6.3 ISO/IEC 15504

Also known as SPICE – Software Process Improvement and Capability dEtermination – it provides a framework for the assessment of process capability. This framework can be used by organizations involved in planning, managing, monitoring, controlling and improving the acquisition, supply, development, operation, evolution and support of products and services. It is also intended for use by assessors in the performance of process assessment, and by organizations involved in the development of process reference models, process assessment models or process assessment processes (OGC, 2007).

### 2.6.4 ISO/IEC 19770:2006

Developed to enable an organization to prove that it is performing software asset management (SAM) to a standard sufficient to satisfy corporate governance requirements and ensure effective

support for IT service management overall. It is intended to align closely to, and to support, ISO/IEC 20000. Good practice in SAM should result in several benefits, and certifiable good practice should allow management and other organizations to place reliance on the adequacy of these processes. The expected benefits should be achieved with a high degree of confidence (OGC, 2007).

### 2.6.5 Management of Risk

Management of Risk (M_o_R®) was originally developed by the UK Office of Government Commerce (OGC) as a methodology to deal with the effective control of risk. It is used in both public and private sectors internationally by any type or size of organization to identify, manage, reduce and eliminate risk. M_o_R provides an alternative generic framework for the management of risk across all parts of an organization – strategic, program, project and operational. It incorporates all the activities required to identify and control the exposure to any type of risk, positive or negative, which may have an impact on the achievement of organization's business objectives. M_o_R adopts a systematic application of principles, approach and processes to the task of identifying, assessing and then planning and implementing risk responses (OGC, 2007).

### 2.6.6 Project management Body of Knowledge

The complete Project Management Body of Knowledge includes proven traditional practices that are widely applied, as well as innovative practices that are emerging in the profession, including published and unpublished material. As a result, the Project Management Body of Knowledge is constantly evolving. PRINCE2™ (PRoject IN Controlled Environments, v2) is a structured project management method owned by the OGC. Structured project management means managing the project in a logical, organized way, following defined steps. A structured project management method is the written description of this logical, organized approach (OGC, 2007).

### 2.6.7 CMMI

CMMI (Capability Maturity Model Integrated) was created by SEI (Software Engineering Institute) at Carnegie Mellon University in 1991. In the beginning CMM was a model for demonstrating the maturity of software development processes in the belief that more mature development processes led to better software. The basic Software CMM model has grown and been revised. CMM is now the de facto standard for measuring the maturity of any process.

Organizations can be assessed against the CMM model using SCAMPI (Standard CMMI Appraisal Method for Process Improvement) (OGC, 2007).

Michael, et al. (2006) described the Capability Maturity Model as it "*is a methodology used to develop and refine an organization's software development process*". The model describes a five-level evolutionary path of increasingly organized and systematically more mature processes (i.e. the initial, repeatable, defined, managed and optimizing level).

### 2.6.8 Six Sigma

The fundamental objective of the Six Sigma methodology is the implementation of a measurement-based strategy that focuses on process improvement and variation reduction through the application of Six Sigma improvement projects. This is accomplished through the use of two Six Sigma sub-methodologies: DMAIC and DMADV. The Six Sigma DMAIC process (Define, Measure, Analyze, Improve, and Control) is an improvement system for existing processes falling below specification and looking for incremental improvement. The Six Sigma DMADV process (Define, Measure, Analyze, Design, and Verify) is an improvement system used to develop new processes or products at Six Sigma quality levels. It can also be employed if a current process requires more than just incremental improvement (OGC, 2007).

Six sigma stands for Six Standard Deviations from mean. The Six Sigma methodology provides the techniques and tools to improve the capability and reduce the defects in any process. The Six Sigma methodology improves any existing business process by constantly reviewing and retuning the process (Michael et al., 2006).

### 2.6.9 ITIL

Information Technology Infrastructure Library (ITIL) is a framework of best practice documents; its main focus is on processes, customers, and cost equation (Soomoro & Hesson, 2012, p. 1).

According to Sallé (2004, p. 10), in response to the serious economic downtown in the late 1980s, the Central Computer and Telecommunications Agency (CCTA) in the United Kingdom developed the IT Infrastructure Library framework to reduce costs and to better manage IT service delivery. The ITIL framework is now administrated by the Office of Government

Commerce (OGC) and its best-practice processes are supported by the British Standards Institute's BS 15000 Standard for IT Service Management.

Mauricio & Lutz (2011, p. 16) revealed over 90 percent of companies are estimated to use IT Service Management (ITSM) frameworks, yet there is little research on their benefits to the Information Technology (IT) department and the business units. An international survey of 491 firms was conducted to assess the benefits of the IT Infrastructure Library (ITIL), the de-facto ITSM framework, specifically on how these benefits evolve as companies increase their adoption of the ITIL model.

Several studies have focused on the adoption of ITSM frameworks as well as on specific service oriented IT frameworks. The IT Governance Institute (2008) estimates that the IT operational framework with the highest adoption rate is IT Infrastructure Library (ITIL) with 24%, followed by Control Objectives for Information and related Technology (COBIT) with an adoption rate of 14%. ITIL is the widely implemented ITSM framework in the world and these are some of the reasons why ITIL has selected to tailor for ITSM Framework than other IT Governance frameworks.

#### 2.6.9.1 Evolution of ITIL Framework

ITIL version 1 was developed during the 1980s by a British public body called the Central Computer and Telecommunications Agency (CCTA), and it grew from a collection of best practices observed in the industry. The aim was to develop an approach for organizing the work in the IT operation independent of any supplier (Iden, & Langeland, 2010).
itSMF (2011) also stated that "ITIL was first published between 1989 and 1995 by Her Majesty's Stationery Office (HMSO) in the UK on behalf of the Central Communications and Telecommunications Agency (CCTA). Its early use was principally confined to the UK and The Netherlands".

The initial version of ITIL consisted of a library of 31 associated books covering all aspects of IT service provision. Between 2000 and 2004 this initial version was revised and replaced by ITIL V2; this consisted of seven more closely connected and consistent books consolidated within an overall framework. Following a major 'refresh' ITIL V3 was published in 2007, consisting of

five core publications covering the service lifecycle. In 2011, the ITIL 2011 editions were published to address feedback, improve clarity and consistency across the five ITIL core publications, and introduce some minor additions to stay current and meet industry demand (itSMF, 2011). The following Table 2-1 is shown the ITIL V2, V3 and V3 (2011) processes and functions.

| **ITIL V2.0** | **ITIL V3.0** | **ITIL V3.0 - 2011** |
|---|---|---|
| • Service Desk *<br>• Incidence Management<br>• Problem Management<br>• Service Asset & Configuration Management<br>• Change Management<br>• Release & Deployment Management<br>• Service Level Management<br>• Capacity Management<br>• Availability Management<br>• Financial Management<br>• IT Service Continuity Management | **Service Strategy**<br>• Portfolio management<br>• Demand management<br>• Financial Management<br>**Service Design**<br>• Availability management<br>• Capacity management<br>• IT service continuity management<br>• Service level management<br>• Information security management<br>• Supplier management<br>• Service catalog management<br>**Service Transition**<br>• Change management<br>• Service asset and configuration management<br>• Knowledge management<br>• Release and deployment management<br>• Service validation and testing<br>• Evaluation | **Service Strategy**<br>• Strategy management for IT Services<br>• Service Portfolio management<br>• Demand management<br>• Financial Management<br>• Business relationship management<br>**Service Design**<br>• Design coordination<br>• Service level management<br>• Availability management<br>• Capacity management<br>• Supplier management<br>• Information security management<br>• Service catalog management<br>• IT service continuity management<br>**Service Transition**<br>• Change management<br>• Release and deployment management<br>• Knowledge management<br>• Transition planning and support<br>• Change Evaluation |

| | | |
|---|---|---|
| | • Transition planning and support<br>**Service Operation**<br>• Event management<br>• Incident management<br>• Problem management<br>• Request fulfillment management<br>• Access management<br>• Service Desk Management*<br>• Technical Management *<br>• IT Operations Management *<br>• Application Management *<br>**Continual Service Improvement**<br>Service Measurement<br>Service Reporting (Monitor)<br>Service Improvement | • Service validation and testing<br>• Service asset and configuration management<br>**Service Operation**<br>• Incident management<br>• Problem management<br>• Event management<br>• Request fulfillment management<br>• Access management<br>• Service Desk *<br>• Technical Management *<br>• Application Management *<br>• Operations Management *<br>• IT Operations control *<br>• Facility management *<br>**Continual Service Improvement**<br>• 7step Service Improvement process |

* Refers Function

*Table 2-1: ITIL V2, V3 and V3-2011 processes and functions (source: OGC)*

According to OGC (2007) the functions and processes have the following concepts:

**Functions:** are units of organizations specialized to perform certain types of work and responsible for specific outcomes. They are self-contained with capabilities and resources necessary to their performance and outcomes. Capabilities include work methods internal to the functions. Functions have their own body of knowledge, which accumulates from experience. They provide structure and stability to organizations (OGC, 2007, p. 20).

**Processes:** are examples of closed-loop systems because they provide change and transformation towards a goal, and use feedback for self-reinforcing and self-corrective action. It is important to consider the entire process or how one process fits into another. Process definitions describe actions, dependencies and sequence. Processes have the following characteristics:

- They are measurable and are performance driven. Managers want to measure cost, quality and other variables while practitioners are concerned with duration and productivity.
- They have specific results. The reason a process exists is to deliver a specific result. This result must be individually identifiable and countable.
- They deliver to customers. Every process delivers its primary results to a customer or stakeholder. They may be internal or external to the organization but the process must meet their expectations.
- They respond to a specific event. While a process may be ongoing or iterative, it should be traceable to a specific trigger (OGC, 2007, p. 20).

The ITIL v2 framework was heavily process-focused. It was built on the philosophy of "Modeling the organizations and their IT Service Management approach". All the processes were derived from the best practices in the industry and simply aimed to provide efficient and cost effective use of technology for the business. The ITIL v2 was built around the 1 function and 10 processes as it is depicted at Figure 2-4.

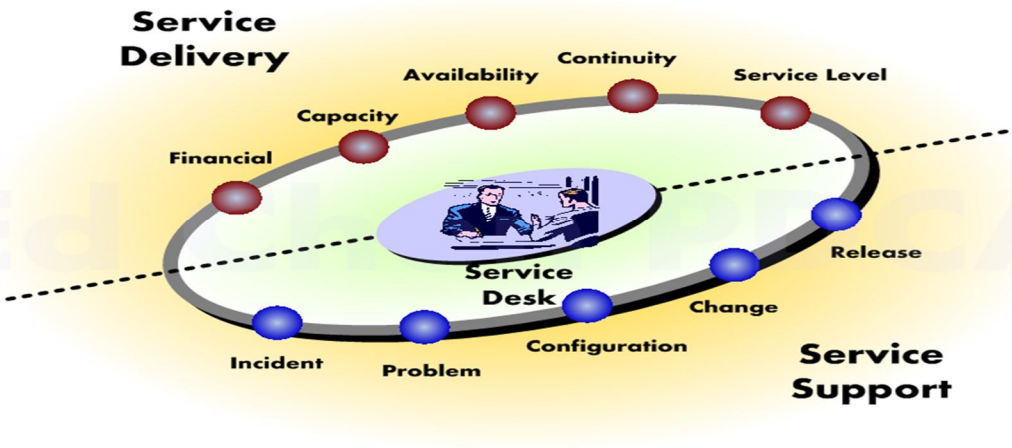


*Figure 2-4: ITIL V2 Framework (Source: OGC)*

ITIL v2 covered “What” should be done in Service Management. In contrast, in ITIL v3 the change to the “Life Cycle approach” was done with the intent to provide the guidelines as to “How” Service Management should be done in various processes. In ITIL v3 framework the philosophy of Service Management was changed to “a Life Cycle approach” and the processes and functions were expanded to 4 functions and 26 processes.

#### 2.6.9.2 Service Life Cycle of ITIL V3 Framework

The Service Lifecycle contains five elements as shown in Figure 2-5, each of which rely on service principles, processes, roles and performance measures. The Service Lifecycle uses a hub and spoke design, with Service Strategy at the hub, Service Design, Transition and Operation as the revolving lifecycle stages, and anchored by Continual Service Improvement. Each part of the lifecycle exerts influence on the other and relies on the other for inputs and feedback (OGC, 2007).

**i. IT Service Strategy**

OGC (2007, p. 25) stated that “as the core of the ITIL Service Lifecycle, Service Strategy sets the stage for developing a service provider’s core capabilities”. According to Alan & Robert (2016) Service strategy is the planning stage in which we are striving for an effective means of delivering services. At this stage we look strategically at how we can leverage the capabilities of technology and business processes and provide guidance on how to effectively design and development of service management capabilities as a strategic asset.

**ii. IT Service Design**

Following on from Service Strategy, Service Design is the next stage in the ITIL Service Lifecycle. While the lifecycle is not entirely linear, we will portray each stage from a logical progression. The main aim of Service Design is the design of new or changed services. The requirements for these new services are extracted from the Service Portfolio and each requirement is analyzed, documented and agreed and a solution design is produced that is then compared with the strategies and constraints from Service Strategy to ensure that it conforms to corporate and IT policies (OGC, 2007, p. 46).

### iii. IT Service Transition

Once services are creating and improving through the design stage of the lifecycle then we must ensure that what is planned to be implemented will achieve the expected objectives. It is at this point the knowledge that has been generated and that will be needed to manage services once in the live environment, must be managed and shared across the organization. This is done through Service Transition (OGC, 2007).

### iv. IT Service Operation

According to OGC (2007, p. 93) Service Operation is the phase in the ITIL Service Management Lifecycle that is responsible for business-as-usual activities. Service Operation can be viewed as the 'factory' of IT. This implies a closer focus on the day-to-day activities and infrastructure that are used to deliver services. The overriding purpose of Service Operation is to deliver and support services. Management of the infrastructure and the operational activities must always support this purpose.

### v. Continual Service Improvement

OGC (2007, p. 125) described that continual Service Improvement (CSI) provides practical guidance in evaluating and improving the quality of services, overall maturity of the ITSM Service Lifecycle and its underlying processes, at three levels within the organization:

- The overall health of ITSM as a discipline
- The continual alignment of the portfolio of IT services with the current and future business needs
- The maturity of the enabling IT processes required supporting business processes in a continual Service Lifecycle model.

The primary purpose of CSI is to continually align and realign IT services to the changing business needs by identifying and implementing improvements to IT services that support business processes. These improvement activities support the lifecycle approach through Service Strategy, Service Design, Service Transition and Service Operation. In effect, CSI is about looking for ways to improve process effectiveness and efficiency as well as cost effectiveness.

The ITIL V3, five service lifecycle stages along with their processes and functions are shown on Figure 2-5.

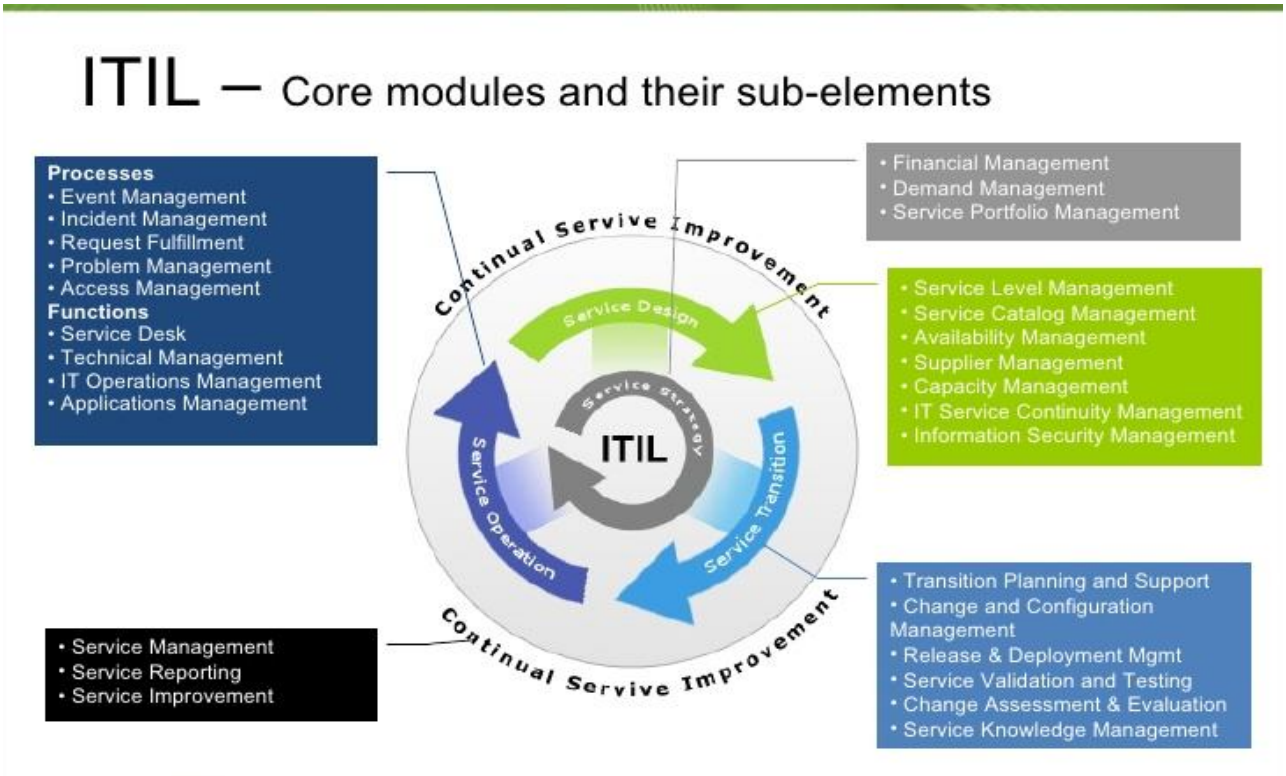


*Figure 2-5: ITIL Service Life Cycle stages and processes*

### 2.6.9.3 Characteristics of ITIL Framework

According to OGC (2007, p. 3) ITIL is intentionally composed of a common sense approach to service management – do what works. And what works is adapting a common framework of practices that unite all areas of IT service provision toward a single aim – delivering value to the business. The following list defines the key characteristics of ITIL that contribute to its global success:

**Non-proprietary** – ITIL service management practices are applicable in any IT organization because they are not based on any particular technology platform, or industry type. ITIL is owned by the UK government and not tied to any commercial proprietary practice or solution.

**Non-prescriptive** – ITIL offers robust, mature and time-tested practices that have applicability to all types of service organizations. It continues to be useful and relevant in public and private sectors, internal and external service providers, small, medium and large enterprise, and within any technical environment.

**Best practice** – ITIL service management practices represent the learning experiences and thought leadership of the world's best in class service providers.

**Good practice** – Not every practice in ITIL can be considered 'best practice', and for good reason. For many, a blend of common, good and best practices are what give meaning and achievability to ITSM. In some respects, best practices are the flavor of the day. All best practices become common practices over time, being replaced by new best practices.

#### 2.6.9.4 Benefits of ITIL

Rui & Paulo (2013, p. 506) stated that "the resistance against Information Technology Infrastructure Library (ITIL) implementation starts immediately when the organization plans to adopt it".

ITIL is the world's most appealing IT management framework precisely because, by following its process and operational guidance correctly, one can reduce costs, improve quality, align IT with business and comply with ever increasing legislation and regulation - achieving many of the goals of every business and IT manager (Hank, 2007).

The justification for implementing ITIL framework for managing IT services is normally based on the benefits it generates to the organization. A good implementation can reduce the occurrence of IT failures, improve service levels and customer satisfaction, and reduce both fixed and variable costs. It allows IT service to gain credibility, improve performance, reduce cost and maximize efficiency in the company by a more productive use of information system (OGC 2007). Marrone & Kolbe (2010) discovered the benefits of ITIL by reviewing conference papers and peer reviewed articles as shown in Table 2-2:

| Improvement of… | Hochstein et al., 2005 | Potgieter et al., 2005 | Kießling et al., 2009 | Cater-Steel et al., 2006 | Cervone, 2008 |
|---|---|---|---|---|---|
| Service Quality | X | X | X | X | X |
| Standardization of Service | X | | X | X | |
| Customer Satisfaction | | X | X | X | |
| Return on Investment | | | X | X | X |
| Reduction of Downtime | | | | X | X |
| Best Practice | X | | | | |
| Financial Contribution Control | | | | X | |
| Call Fix Rate | | | | X | |
| Morale of IT | | | | X | |

*Table 2-2: Summary of benefits of ITIL (Marrone and Kolbe 2010)*

Table 2-2 revealed that from among the listed benefits of ITIL, improving service quality was taken as a major benefit in all of the reviewed researches. Besides, standardization of services, customer satisfaction, and return on investment were considered as second important benefits in most of the reviewed researches.

### 2.7 Previous Researches

To the best of the researcher's knowledge there is no obtainable work which performs Developing a tailor ITSM Framework based on ITIL best practices for ITSM processes in Ethiopian Banks. Nevertheless, there are several works that are highly related to this academic work. Some of them are listed below:

Alemeye (2015) explored influencing factors that act as barriers and critical success factors to the implementation of ITIL in EthioTelecom. The study was used the inductive approach as research design and pattern matching as mode of data analysis.

Senait (2011) proposed IT Governance Framework for Commercial Bank of Ethiopia. The research used a case study approach and analyzed data with respect to the four domains of COBIT framework, such as Strategic Alignment, IT Resource management, Risk Management and Performance Measurement.

Meseret (2010) developed ICT adoption models for Ethiopian banking industry that could be used as a framework for enterprise level ICT policy by pinpointed driving factors of ICT adoption, identified perceptions on the influence of ICT on the industry and constructed level of ICT adoption among the banks. The research was conducted using mixed approach and quantitative data was analyzed based on a set relation of summery statistics.

Bergen & Berlin (2010) attempted to acquire general knowledge about how to make the best use of ITIL and how to implement it sensibly in real-life situations. The study was applied both qualitative and quantitative approach and data analyzed with meaning condensation and explanation.

McNaughton, et al. (2010) predicted and showed that there is a lack of research and study on benefits of implementing and using ITIL processes. The authors presented a design of a holistic evaluation framework for improvement of ITSM framework with particular focus on ITIL. The study discovered ITSM-ITIL benefits in organizations framework.

Apart from the other works on Adopting ITIL Framework for IT service management processes, there is a real life example of a case study, Bovim, et al. (2014) which is focusing on ITIL adoption in South African through the lens of the Capability Maturity Model; which are related to the subject area of this thesis. The study used the CMMI appraisal methodology to measure the maturity of the ITIL processes using a case study approach. The result revealed how the service desk and the development of the incident management process was the initial drivers for ITIL adoption and quick wins with tangible benefits were crucial to gain continued management commitment for the further implementation of ITIL processes. The report makes a contribution to the empirical examination of ITIL adoption; however more in depth analysis of all the ITIL processes are not assessed.

### 2.8 Chapter Summary

The ITSM, ITIL processes and ITIL adoption and development are the focus of this chapter. The study of developing a tailor ITSM Framework based on ITIL best practices cannot be done in isolation from the broad IT Service Management and organizational IT governance context. Therefore, the literature review first examined the definition, historical development and core

focus area of IT governance and then discussed IT Services, IT Service Management, ITSM and its organizational impact and finally the IT Governance framework. The details of ITIL, which is one of the most widely adopted IT Service Management frameworks and the focus of this research paper were presented.

It is established in the literature review that organizational ITSM is increasingly being managed by a combination of People, Processes and Technology. IT Service Management drives the alignment between IT services and business, and by doing so, contributes to the overall success of organizational IT governance such as ITIL. The literature showed that IT Service Management is a strategic part of organizational IT governance. The ITIL framework, as an IT Service Management framework, is also compatible with IT Governance frameworks such as COBIT, ISO 20000 and Management of Risk.

The benefits of ITIL framework adoption also reflected in the review along with shown as the area in in early stage of study. Finally the detail of ITIL processes and functions as well as service life cycle and its integrated processes discussed with the indication of the motivation for this thesis.

To the best of my knowledge and as checked on different academic resources and peer reviewed journals so far the area still need to be research and besides no academic studies made on Developing a tailor ITSM Framework based on ITIL best practices for IT Service Management Processes in Ethiopian Commercial Banks. Therefore, this is why I am interested to work on Developing a tailor ITSM Framework based on ITIL best practices for IT Service Management Processes in Ethiopian Commercial Banks: The Case of Bunna International Bank S.C. The next chapter three is shown how the thesis was done.

# CHAPTER THREE
# RESEARCH DESIGN AND METHODOLOGY

In this chapter the researcher outlines the research method, the research approach, the methods of data collection, the selection of sample, the research process, data analysis, the ethical considerations and the constraints of the thesis.

## 3.1 Research Approach

The researcher chose case study to enquire into a contemporary phenomenon in its natural context (Yin, 2014). The case study approach seeks to understand the problem being investigated. It provides the opportunity to ask powerful questions and to capture the richness of organizational behavior, but the conclusions drawn may be specific to the particular organizations studied and may not be generalizable (Gable, 1994).

Case study enables a researcher to closely examine the data within a specific context. In most cases, a case study method selects a small geographical area or a very limited number of individuals as the subjects of study. Case studies, in their true essence, explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships (Zaidah, 2007).

Broadly there are two types of research approaches, namely inductive approach and deductive approach. The deductive researcher "works from the 'top down', from a theory to hypotheses to data to add to or contradict the theory"; in contrast, the inductive researcher "works from the 'bottom-up' using the participants' views to build broader themes and generate a theory interconnecting the themes" (Karen, 2010).

In research, the two main types of analysis typically used are quantitative and qualitative. Karen (2010) described the major difference between the two methods against how they view the nature of reality. The quantitative theorists believe "in a single reality that can be measured reliably and validly using scientific principles", whereas qualitative theorists "believe in multiple constructed realities that generates different meanings for different individuals, and whose interpretations depend on the researcher's lens".

As discussed above the purpose of the study was to identify the current and desired state of ITSM processes of Bunna International Bank and then develop tailored ITSM Framework based on ITIL best practices, so that the research approach used in this study is inductive approach. Karen (2010) indicated that, inductive approach give the possibility to get and use visual representations for the data using graphs, plots, charts, and tables. For this research using inductive research, the conclusions are drawn from logic and evidence.

The following Figure 3-1 presents process of the research followed to identify the current and desired state of ITSM processes at Bunna International Bank to develop tailored ITSM framework based on ITIL best practices.

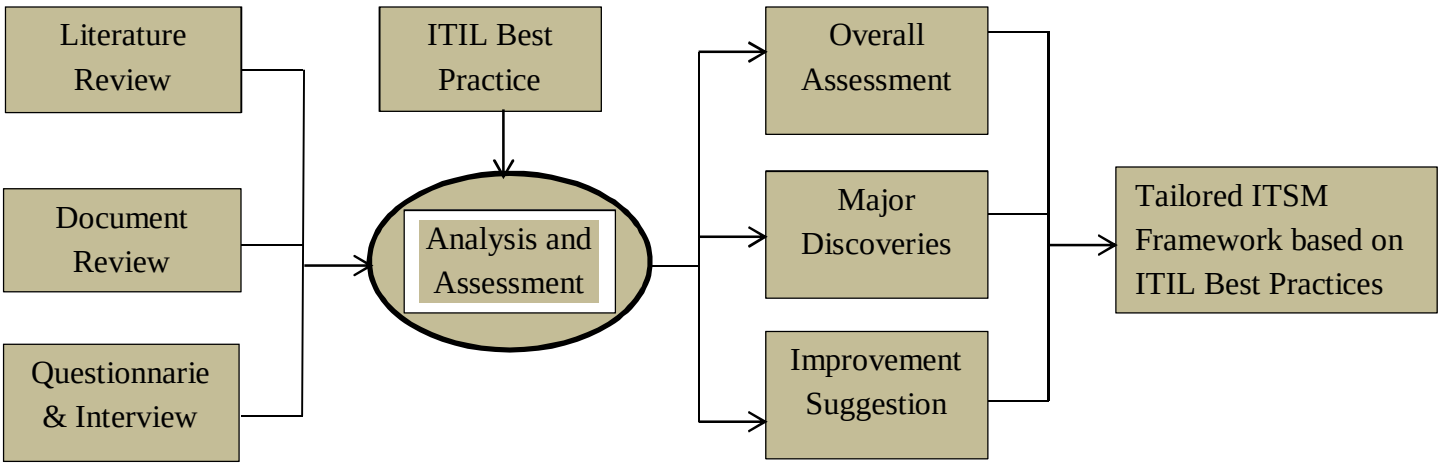


*Figure 3-1: Process of the Research*

**3.2 Research Method**

The proposed research strategy is a case study. The objective of the thesis is to identify current ITSM practices of Bunna International Bank and develop tailored ITSM Framework based on ITIL best practices. In order to gather information on the existing IT service management processes questionnaire and interview used. These helped the researcher to find answers to the key research question "What are the current and desired states of ITSM processes in Bunna International Bank?".

Considering the rich history of the ITIL framework, its global increase and varying levels of successful adoptions, it would be appropriate to conduct a SWOT analysis on the existing trends of ITSM processes of the organization based on the ITIL v3 Framework as per the response of

the questionnaire elements and interviews. This analysis helped to pinpoint some challenges and improvement suggestion to develop tailored ITSM Framework based on ITIL best practices. Also, SWOT analysis was an important element of finding the answer to the key research question: “How one can develop tailored ITSM Framework based on ITIL best practices?”

According to Wang (n.d), the SWOT analysis is concerned with the analysis of an organization’s internal and external environment with the aim of identifying its internal strengths in order to take advantage of its external opportunities and avoid its external threats, while addressing its weaknesses. As a strategic planning tool, the SWOT analysis is used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture or in any other situation of an organization requiring a decision in pursuit of an objective. It involves monitoring the marketing environment internal and external to the organization or individual.

The aim of any SWOT analysis is to identify the key internal and external factors that are important in achieving the objective. SWOT analysis groups key pieces of information into two main categories:

- **Internal factors:** the 'strengths' and 'weaknesses' internal to the organization.
- **External factors:** the 'opportunities' and 'threats' presented by the external environment.

### 3.3 Research Design

Every type of empirical research has an implicit, if not explicit, research design. In the most elementary sense, the design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions. Colloquially, a research design is an action plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about these questions. Between "here" and "there" may be found a number of major steps, including the collection and analysis of relevant data (Yin 2014, p. 19).

- **Empirical Study:** in this thesis, case study is used as empirical research approach to analyze specific research unit. In empirical study, the researcher gathered some practical information about the current ITSM processes of the organization by conducting interview and questionnaire that has described in detail at the result and analysis part.

- **Case Study:** as discussed in section 3.1 the proposed research strategy is a case study. Case studies have advantages with respect to construct and internal validity. The argument for better construct validity is based on the fact that case studies can use more and more diverse indicators for representing a theoretical concept and for securing the internal validity of causal inferences and/or theoretical interpretations for these cases.
- **Theoretical Study:** as discussed in section 3.2 in the analysis and result chapter SWOT analysis method is used to develop new tailored ITSM framework.

### 3.4 Sampling Method

The sampling method was purposive. According to Lisa (2008), purposive sampling is virtually synonymous with qualitative research and it is about defining the population of eligible data sources, prior to selecting the actual sample. In essence, determining which data sources met the goal of purposive sampling for a qualitative study is equivalent to defining a set of eligibility requirements for the population. Besides, purposive sampling refers to a process where participants are selected because they meet criteria that have been predetermined by the researcher as relevant to addressing the research question. Hence, the source of the population was taken from the Information Systems Directorate. The respondents were chosen because of the role in IT and the functions they performed within the process areas. From a target population of twenty-four; four management members from the sample interviewed and twenty were invited to participate to respond for questionnaire.

Bunna International Bank was chosen because it has not yet implemented ITIL framework according to the response got from the preliminary study made; however the preliminary study has shown that some processes which are related to ITIL processes are exercised such as Service Desk, Incident Management and Problem Management processes. The organization also has a mature Knowledge Management Database where one can find solution for historical incidents and useful knowledge on IT operation. The case study was cross sectional as it represents the state of the organization at a point in time.

### 3.5 Data collection Method

The pilot test made on similar organization by inviting six IT staffs to check the soundness of the questionnaire contents and constructs. The result indicated that out of the twenty-four processes in scope nine of them were not understandable and of which for one of the process the expected

option was not available. Based on the response, the questionnaire elements refined without distressing its contents; furthermore to get the most out of the respondents and to minimize loss of data due to misunderstanding and not understanding the questionnaire elements the researcher made workshop on overview of ITIL V3 processes for an hour by arranged two sections before the respondents answer the questionnaire. From the targeted twenty-four attendants; nineteen of them were attended the workshop. Finally, the questionnaire distributed for sample population. The aim of questionnaire was to compare what at Bunna International Bank against the ITIL V3 best practices. Thus, it was used as a checklist.

The objective of the interviews was to understand the overall process area; understand the trends of the ITSM processes and to gain extra information and insights into the process areas. The interviewees selected based on their role and involvement in service management within the case study organization. The semi-structured interview method is selected due to it is focused on a co-operative engagement between researcher and participant; with the interviewer exploring and building upon each response. According to Andrea (2015), the semi-structured interview highlights the unique knowledge and interaction within the interview. This emphasizes the importance of developing and using an interview protocol to provide the undergirding of a responsive interview. During the semi-structured interviews, various forms of documentation supporting the organizations ITSM processes such as IT Department structure, IT Policies and procedures examined to gain further insights and evidence.

As mentioned in chapter one in the structure of thesis part, this research first went to have a review on the literature related to the thesis area. After gathered valuable academic information from valid resources the researcher continued the study by collecting the required information from the targeted organization. Data used in this research can be categorized in two main parts: Primary Data and Secondary Data.

### 3.5.1 Primary Data

Primary data is the one that comes from practical experiences. Personal experiments such as interviews and direct observation are the example of this type of data. In this research study, the researcher selected the questionnaires and interview methods to gather appropriate information for identifying the current and desired state of ITSM processes in the organization.

In collecting empirical data through semi-structured interview, interviewee was informed about interview questions and the purpose of the research earlier to the interview. This may help them to get prepared for the interview. After conducting one interview and taking notes, the process of writing complete transcript from the note was done immediate and on the same date. This helped the researcher to remember main points of the interview, and minimize loss of information.

### 3.5.2 Secondary Data

Lisa (2008, p. 803) stated that "secondary data are preexisting data that have been collected for a different purpose or by someone other than the researcher. These data may have been gathered originally for another research study or for administrative purposes".

Secondary data includes information from scientific articles, documents, websites and other valuable records. This data built the foundation of the research and considered as a valuable resource to evaluate and validate the study. For this study IT Department's structure, IT Policies and procedures examined to gain further insights and evidence.

## 3.6 Data Analysis Procedure

A research design should lay the foundations for data analysis in case study research; according to Lisa (2008, p. 186) data analysis is an integral part of qualitative research and constitutes an essential stepping-stone toward both gathering data and linking one's findings with higher order concepts.

Lisa (2008, p. 190) also stated that, for qualitative researchers the term data most often is associated with words. Consequently, when qualitative researchers speak of "analyzing data," they mean that participants' words or other empirical evidence were assessed. As such, qualitative research is a means of empirical investigation in the purest sense.

Yin (2014) discussed three main modes of data analysis procedures such as pattern matching, explanation building, and time series analysis for case study research. This study used pattern matching as mode of data analysis due to the need for searching the data for "patterns" which may explain or identify causal links in the data. In the process, the researcher concentrates on the whole data first to identify the observed pattern based on the research questions, then attempts to take it apart and re-constructs it again more meaningfully to match the observed patterns with their theoretical patterns.

The assessment was made based on ITIL V3 framework and ISO/IEC 15504 Process Assessment Model along with SWOT analysis. The SWOT Analysis of the results in the light of the organization's current practices and needs identifies strengths, weaknesses, opportunities and risks inherent in the processes. ISO/IEC 15504 Process Assessment Model used based on ITIL's definition of ITSM methodology but went one step further to make more practical and easy to know the desired and future state of ITSM processes in Bunna International Bank.

The assessment tools used are originally provide by OGC （The Office of Government Commerce） which is the author and advocator of ITIL best practice and customized to be more realistic to fit for purpose.

According to OGC (2007), ISO/IEC 15504 framework can be used by organizations involved in planning, managing, monitoring, controlling and improving the acquisition, supply, development, operation, evolution and support of products and services. It is also intended for use by assessors in the performance of process assessment, and by organizations involved in the development of process reference models, process assessment models or process assessment processes.

Process assessment has two principal contexts for its use, such as process improvement and process capability determination. Jäntti et al. (2013) explored the benefits from the use of ISO/IEC 15504 and ITIL. Within a process improvement context, process assessment provides the means of characterizing the current practice within an organizational unit in terms of the capability of the selected processes.

ISO/IEC 15504 is complementary to several other International Standards, Frameworks and other models for evaluating the capability and effectiveness of organizations and processes. As it was explained, the ITIL framework has selected to be initial framework to develop a tailor ITSM Framework, and has proven best practices that can be easily used within organizations with previously existing methods. Therefore ISO/IEC 15504 Process Assessment model has selected to assess the existing practices of ITSM processes of Bunna International Bank based on the ITIL Framework best practices to find a process description, approach, process definition with process goals, outcomes, inputs, outputs, and base practices. Beyond the process model, an

international standard like ISO/IEC 15504 has a major role to play to support the Process Assessment.

A combination of ITSM processes of Bunna International Bank, ITIL best practice, customized ISO 15504 Process Assessment Model and SWOT analysis helped the researcher to get the first-hand knowledge on the current ITSM operational facts at Information Systems Directorate of Bunna International Bank and to list out areas in which improvement is needed and suggestions required to develop tailored ITSM framework.

### 3.7 Quality of the Research Design

According to Yin (2014) the case study research shall take in to consideration the quality of research design with four aspects:

- **Construct validity:** establishing correct operational measures for the concepts being studied.
- **Internal validity:** using for explanatory or causal studies only, and not for descriptive or exploratory studies. It is establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.
- **External validity:** establishing the domain to which a study's findings can be generalized.
- **Reliability:** demonstrating that the operations of a study-such as the data collection procedures can be repeated, with the same results

Thus, for the purpose of this study, construct validity and reliability are applicable.

For construct validity, data triangulation was done by collecting data from different sources; such as from ISD management team (Interview). To determine the observed patterns for current trends of ITSM processes data from the different sources were triangulated and reached at a final result as shown in Chapter Four of Table 4-1. The reason for taking the data from those working at different levels was to have an in-depth understanding of the issue under discussion. Besides, the draft case study report revised by four of the interviewees and confirmed that there is no misunderstanding or misinterpretation of their ideas.

On the other hand for accepting the reliability of this study, since the basis of this research was built on academic resources, the researcher tries to select the most important and reliable

information in the area of ITSM and ITIL concepts. So it can be assumed that the theoretical part has the accepted level of reliability from the researcher's point of view. The researcher has selected the case study organization by doing the preliminary study and run interviews and questionnaires to gather appropriate information. The people who had been interviewed and participated in questionnaires are experts in the related area and the researcher used his knowledge which was acquired from theoretical part to make the empirical part as reliable as possible.

### 3.8 Confidentiality Agreement

Participants in the assessment assured of absolute confidentiality for the information they provide during the assessment processes. The data obtained from participants cannot be attributed to a particular individual in the report. All discussions about the results have been held in private. The result and analysis part didn't include details of the assessment results of individual responses. The Process Profile is the result of the consolidation of various responses.

### 3.9 Assessment Constraints

Due to the commercial sensitivity of the information, some of the organization's documents cannot be disclosed.

### 3.10 Chapter Summary

In this chapter the research strategy selected and used in this thesis research was presented. According, case study is selected as research strategy while the research approach employed was qualitative. In the research method, data was collected using both questionnaire and semi-structured interview. Finally data collected from various sources were analyzed using ISO 15504 Process Assessment Model along with pattern matching and SWOT analysis techniques. Besides, the quality of the research design was assured through construct validity and reliability.

# CHAPTER FOUR

## RESULT AND DISCUSSION

In this chapter, the results of the empirical data collected through questionnaire, semi-structured interview and analysis of company documents presented and finally tailored ITSM proposed with detail discussion of components and processes function. The first part presented the coverage of assessment and profile of interviewees, the second part dealt with the interpretation of data collected through questionnaire and interview. Then SWOT analysis and the current operational model are presented. Finally the tailored ITSM Framework proposed with detail explanation about its components and relationships along with whom and when to use the proposed Framework is presented.

### 4.1 Coverage of assessment and Profile of Interviewees

The assessment was done in the form of questionnaires and face-to-face semi-structured interview along with review of provided documents. The interview covered the management team of Information Systems Directorate, such as Information Systems Director and Three Division Managers. From the target population for interview, all of them were interviewed which has shown 100% of the sample partaken. The questionnaire was targeted twenty of IT technical experts and operational technicians at Bunna International Bank from Information Systems directorate, and of which eighteen were responded the questionnaire which indicated 90% of the sample responded. Through comprehensive interview, the tactical operational ITSM processes at Bunna International Bank were concluded. These helped to identify the current and desired state of ITSM processes at Bunna International Bank. The questionnaire assessment was covered the following IT Service Life Cycle stages in addition to the overall ITSM practices:

- Service Strategy
- Service Design
- Service Transition
- Service Operation and
- Continual Service Improvement

### 4.2 Result

According to the consolidated interview response for the interview question *"What core IT services currently your department provided?"*, the following key activities have been identified.

Besides, the Information Systems Directorate is organized to provide IT services to all branches and head office of the bank. Specifically Information Systems Directorate is responsible for:

- Design and implementation of IT infrastructure
- Key application (Core banking) operation and maintenance
- IT Project Management
- Design, develop, customize and integrate different applications
- Support for office IT environment at branches and head office
- Monitoring of datacenter facilities
- Network management, system Management, storage management, user access management, event management and customer support service.
- IT Security Management

Information Systems Directorate consists of four divisions:

- ICT Infrastructure Setup & Support Division
- Central Systems Operation, Application & Support Division
- Information System & Infrastructure Security Division
- Electronic & Channel Banking Division

The Information Systems Directorate structure, which is part of Bunna International Bank S.C organizational structure has gotten from the organization provided documents, is presented at the following Figure 4-1.

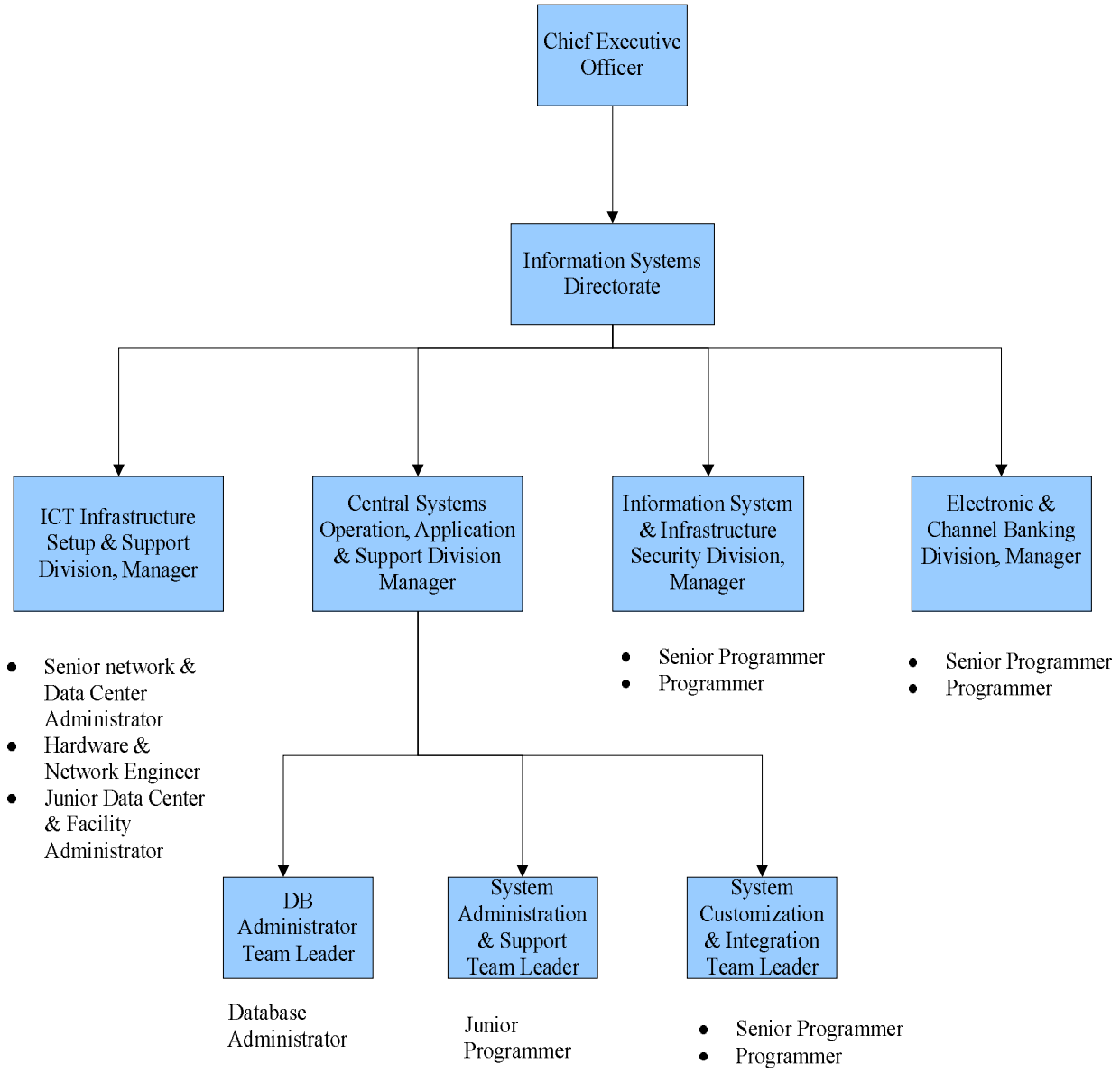


*Figure 4-1: Information Systems Directorate Structure*

### 4.2.1 Core IT Services

Currently, most IT Service Management activities are ad-hoc. Based upon the response for interview question *"what core IT services currently your department provided?"*, the Information Systems Directorate's current core IT Services are concluded. The following diagram Figure 4-2, drawn to illustrate the current core IT services Information Systems Directorate provides after the analysis of the interviewees response.

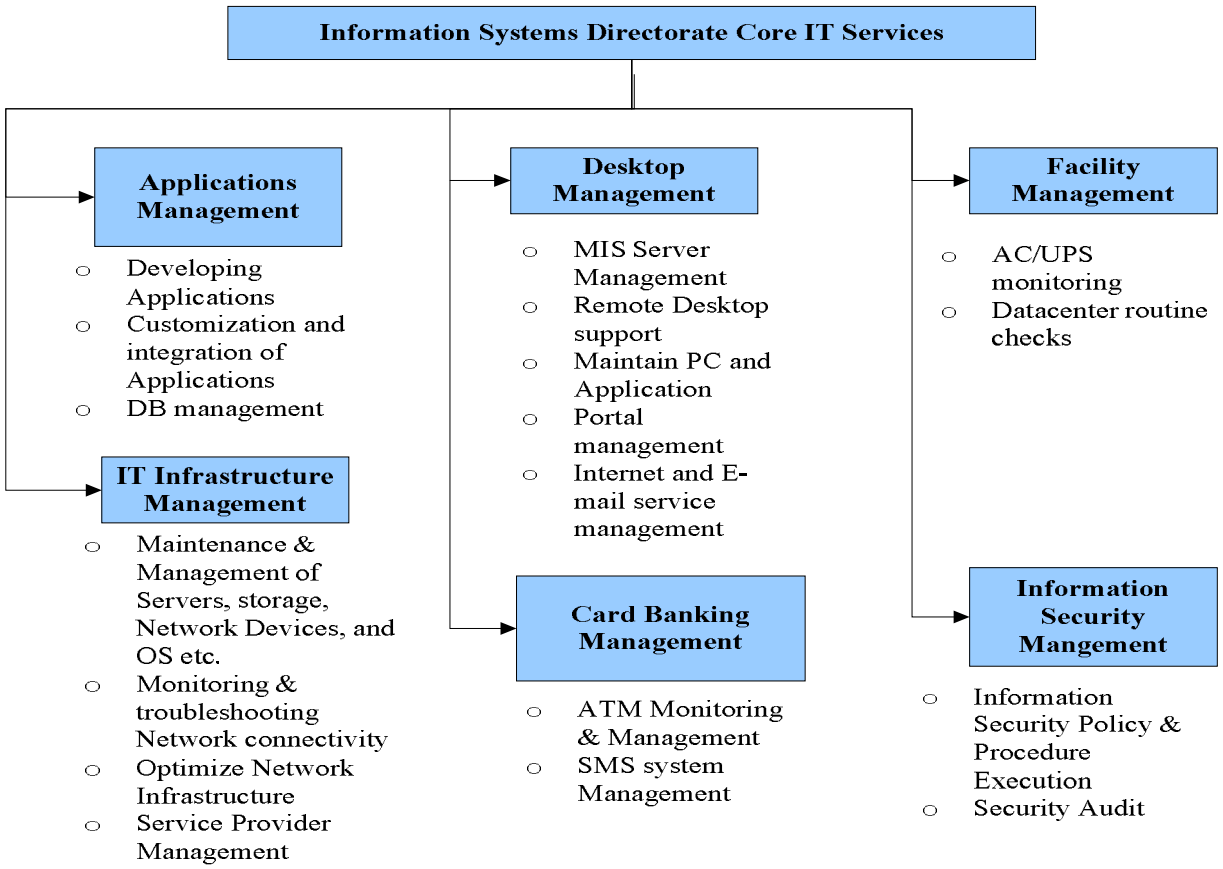


*Figure 4-2: Information Systems Directorate Core IT Services*

- **Application Management:** responsible for Key business applications. So far there are core banking application which supplied by external vendor and in house developed applications such as Inventory Management and Human Resource Management Systems.

- **Desktop Management:** responsible for providing first and second line support service to all users in BIB that are using desktop PCs, laptops, the hardware/software peripherals, email system, internet access and information portal for business purpose. The services include maintenance tasks such as fault resolution, software install; patch install, virus scan and business software install. Occasionally, ISD staffs may have to get on site for desktop support as well as for preventive maintenance.
- **IT Infrastructure Management:** responsible for the deployment, management, maintenance and support of IT infrastructure at BIB including the Data Centre and Disaster Recovery site. This infrastructure include: Servers, storage device, network, network devices, operation systems and middleware. It also responsible for monitoring of service provider's network on a daily base including conduct user satisfaction survey and service quality review.
- **Facility Management:** responsible for the monitoring and management of datacentre and Disaster Recovery Site facilities. These include Air-Conditioners, Power Supply and UPS. Daily activities of routine server room checks also included. The maintenance of facility devices are out sourced for Third Party Company.
- **Card Banking Management:** responsible for managing and monitoring the ATM service and SMS transaction information for customers.
- **Information Security Management:** responsible for Managing, monitoring and controlling the information system security at BIB Data Centre. The activities include building up of information security framework, defining information security policies and procedures and give guidance on the operational security compliance.

### 4.2.2 The Current Operation Model

The current operational model is made based on the assessment done from interview responses for question *"How well are you currently meeting your ITSM objectives?"*. The model shows the current situation which reflects how they are doing now and what is the gap. Currently, the service desk receives user requests most via telephone with a little number of requests via fax machine and memo. Anyone who happened to receive a call from the customer can act as a service desk agent and ad-hoc support activities are done afterward. If the support requested need 3rd party involvement, the request will forwarded to the respected Management team to

communicate the supplier. For some incidents there are self-guidance documented procedures in Knowledge Management Database which one can find solutions for Known error incidents.
The service window for accepting user requests is classified in to two parts, namely office hours and non-office hours. The office hours are 6x8 from 8:00AM to 5:00PM excluded an hour for lunch time and non-office hours are framed from 5:00PM to 9:00PM, during non-office hours a virtual team will stay in ISD even more than 9:00PM for responding to user calls and other operational tasks.

User can either call the five phone lines at ISD for request or call individual's mobile phone for support. The following Figure 4-3, demonstrated the current IT service Request and Support model.

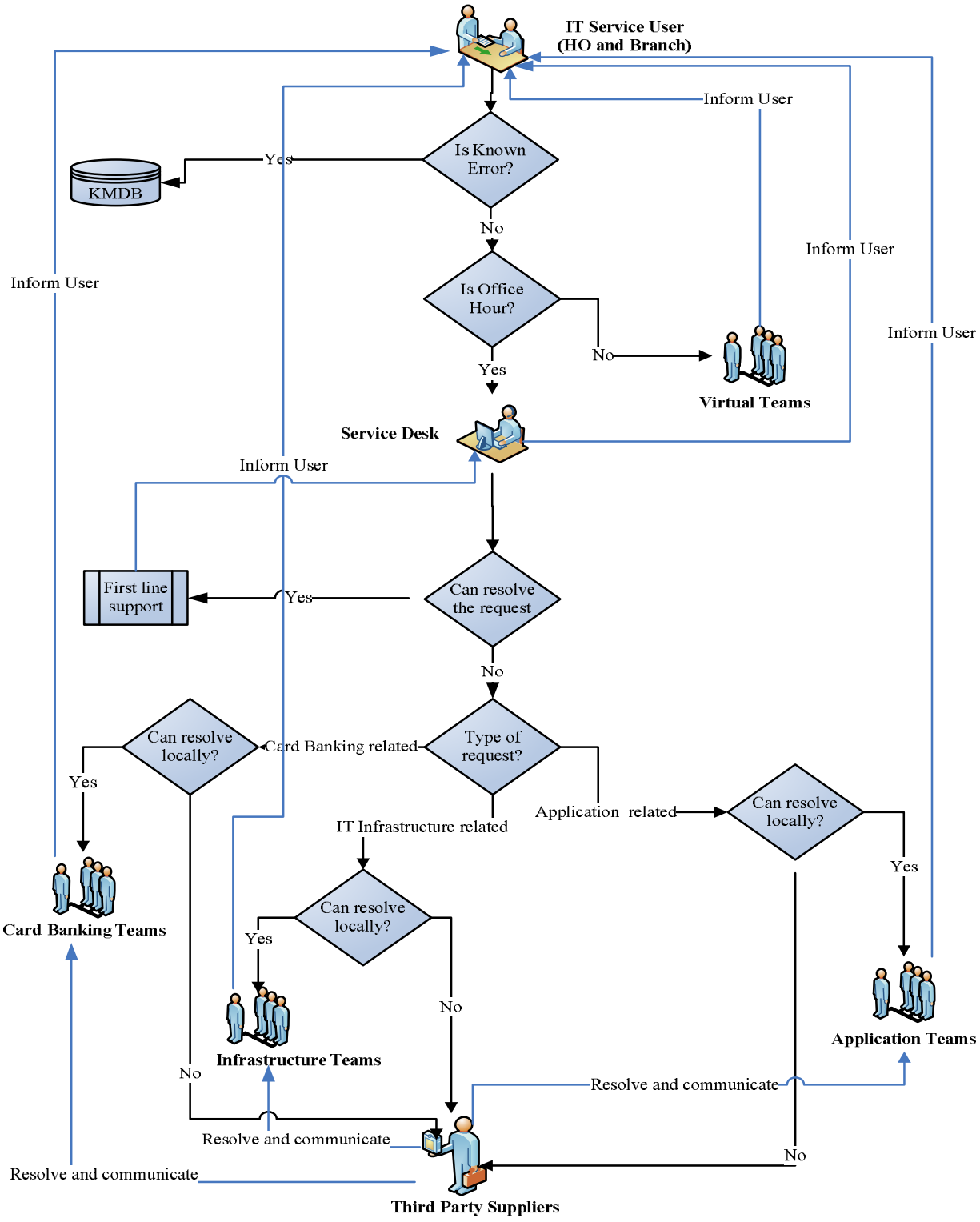


*Figure 4-3: The current operation model*

So far based on the current support operation model at Information Systems Directorate, user request are classified into the following categories:

| Support Request Category | Support Procedures | Level 1 Support | Level 2 Support |
|---|---|---|---|
| Core Banking Application | Any employee can pick the phone and act as SD | Central Systems Operation, Application & Support team/ Virtual team | Division Manager |
| Non-Core Banking Application | Any employee can pick the phone and act as SD | Central Systems Operation, Application & Support team/ Virtual team | Division Manager |
| Desktop Support | Any employee can pick the phone and act as SD | ICT Infrastructure Setup and Support team/ Virtual team | Division Manager |
| Network Support | Any employee can pick the phone and act as SD | ICT Infrastructure Setup and Support team/ Virtual team | Division Manager |
| Card Banking related Support | Any employee can pick the phone and act as SD | Electronic & Channel Banking/ Virtual team | Division Manager |
| Complaints | Any employee can pick the phone and act as SD | Division Manager/ Virtual team | Director |

*Table 4-1: Categories of User Request and Support Matrix*

### 4.2.3 SWOT Analysis

According to Osita (2014) the purpose of SWOT analysis is to gather, analyze, and evaluate information and identify strategic options facing a community, organization, or individual at a given time. The SWOT analysis performed on IT services and process management gave the big picture of the most important factors that influence the successfulness of the current ITSM trends.

Based on the combined interview response for the following interview questions and questionnaire result the SWOT analysis has done (the detail questionnaire and interview response has attached as Appendices C and E respectively):

- What does 'ITSM Processes and ITIL' mean to you?

  The interviewee's told about their understanding about ITSM Processes and ITIL Framework, and observed that they have extensive knowledge on ITIL theory with clear objective on ITSM and process oriented IT Service Management.
- What is the tactical objective of IT Service Management for the next three years?

  The interview result indicated that the case study organization strategic plan is setting for 5 years based on the direction given from National Bank of Ethiopia to align with the GPT-II strategic plan of the country.
- Are you currently using tools that support the ITSM processes?

  As per the responses of the interviewee's there are some tools in use, which are mostly used for real time monitoring of network and ATM status; however the tools do not provided the required level of information.
- Do you have policies and procedures that support ITSM processes?

  The interviewee's are informed that they have matured Business Continuity and Disaster recovery policies and procedures.
- Do you think that there is a need for ITSM processes to change to meet the needs of your customer?

  Based on the interviewee's responses, they want to have standard ITSM best practices in general and the processes that will change the IT department from business support role to business value creation role in particular. Besides a single point of contact for IT service support and delivery processes with well controlled IT services managements will be their desired and required practices.

The following SWOT analysis has identified based on the interview and questionnaire responses:

**Strengths:**

- The management team has extensive knowledge on ITIL theory with clear objective on ITSM.
- The management teams understand the value of process oriented IT Service Management.

- The team is well equipped with different management tools that will potentially increase operational efficiency.
- Tiers of technical expertise are there capable of different level of support skills and experiences.
- Template exists for change management process and it is the most mature and accepted process in the department, and procedures may be well documented
- For some services there are SLAs defined and executed.
- There were effective configuration management techniques including the real-time monitoring tool
- There are efforts being made to track Incidents and Problems by logging known errors with resolution made at Knowledge Management Database.

**Weaknesses:**

- Some technical IT staffs are not aware of ITIL even though their jobs are more ITIL affiliated
- The primary weakness is the lack of distinguishing the inter-process dependency, and a lack of how one process may impact another.
- Some tools at hand not provided the required level of information.
- No single unit is solely responsible for first line support; the responsibility of first line support is shared by different technical teams.
- Problems are not differentiating from incidents, so that problems are treated like major incidents.
- There is no management and review of process work products, and key policies around processes are not established.
- Not achieving the Service Level Management may significantly hinder the effectiveness of the IT Service Continuity Management process.

**Opportunities:**

- The desire to have service Level management, Incident Management and Change Management may present an opportunity to introduce formal ITSM processes.

- The desire to benchmark IT service with other institution is forcing a re-design of some IT services may providing an opportunity to redefine IT services delivery and supporting process.
- There may be existing procedures that can serve as the basis for ITSM and tailoring of the process such as Information Security Management and Service Evaluation are reasonably well deployed, providing a basis for implements in this process area.

**Threats:**

- Lack of related process areas will continue to inhibit development of the Change management Process.
- The most significant threat may be a driving force to benchmark IT services with other institution. While this may map well to supporting IT services, it may not map well to other services.
- There is low and none relationship between and among some related process areas such as incident, availability, service asset & configuration, etc. and may present significant challenges to process adoption

The result of current levels of process capability at Information Systems Directorate against the ITIL V3 Framework based on ISO/IEC 15504 Process Assessment Model is indicated in Table 4-1. An assessment is performed using information provided through questionnaire and the assessment profile presents consolidated results (the detail of questionnaire response is attached as Appendix C). During data interpretation, non-responded elements of the questionnaire analysed based on the responded values. For each process there were five states with each state has different rating factors. Through the assessment of each individual element, with consideration of rating factor, the overall status of each process is concluded based on using the maximum rating scale identified. This assessment helped to make comparison between what is at Bunna International Bank along with their desired state and what should be as defined in ITIL best practice in areas including the overall ITSM practice and tools in use. This result also helped the researcher to develop a tailor ITSM Framework based on the ITIL Framework and best practices which will be played its own role to resolve the shortcomings of the existing practices.

The following keys were used:

- N.A. – Not achieved the process
- P.A. - Partially achieved the process
- L.A. – Largely achieved the process
- F.A. – Fully achieved the process
- D - Not achieved but Desired to have the process

| **Service Life Cycle Stages** | **Process** | **Process Status** |
|---|---|---|
| Service Strategy | Strategy Generation | P.A. |
| | Financial Management | P.A. |
| | Demand Management | P.A. |
| | Service Portfolio Management | P.A. |
| | | |
| Service Design | Service Catalog Management | P.A. |
| | Service Level Management | N.A. & D |
| | Capacity Management | P.A. |
| | Availability Management | P.A. |
| | IT Service Continuity Management | P.A. |
| | Information Security Management | L.A. |
| | Suppler Management | P.A. |
| | | |
| Service Transition | Transition Planning & Support | P.A. |
| | Change Management | N.A. & D |
| | Service Asset & Configuration Management | P.A. |
| | Release & Deployment Management | P.A. |
| | Service Validation & Testing | P.A. |
| | Evaluation | L.A. |
| | Knowledge Management | P.A. |
| | | |
| Service Operation | Event Management | P.A. |
| | Incident Management | N.A. & D |
| | Request Fulfillment Management | P.A. |
| | Problem Management | P.A. |
| | Access Management | P.A. |
| | | |
| Continual Service Improvement | Service Improvement | P.A. |

*Table 4-2: Consolidated Questionnaire Result*

### 4.3 Discussion

The thesis aims to identify the current trends and desired state of ITSM processes of the case study organization; and then to develop tailored ITSM Framework based on ITIL best practices. The thesis is also collection of theoretical and empirical research study that generated answers to the research questions.

The result indicated that, there is no guidance on how different user requests should be handled as it is demonstrated at Figure 4-3. Whether or not user requests are handled to maximum efficiency is dependent on individual's experience, knowledge and attitude. Thus, the IT services provided by Information Systems Directorate are not yet very systematic. There is no specific service desk function, nor are there any Key Performance Indicator defined for each service. User can demand arbitrary service qualities and support team can also provide any level of service without constrain. This uncertainty and negotiation may lead to unhappy user and in-efficient support work. Thus it needs to add Service Desk function on the proposed Framework to elude this problem. This function has team or group of people which receive IT user request and provide the level 1 support.

The per-process findings under each Service Life Cycle stage are discussed below with inclusion of the researcher's interpretations.

#### 4.3.1 Service Strategy Life Cycle

All processes under Service Strategy Life Cycle namely Strategy Generation, Financial Management, Demand Management and Service Portfolio Management have partially achieved their purpose. Service Portfolio Management performed based on projects which are initiated by the IT department and driving force comes from competent organization and not from IT end users or customers. These may come from lack of largely achieving Demand Management process. There was information indicating that tactical objectives are grounded on the organization business strategic intent and investments are not analysed in terms of services, thus defining IT services that are relevant to the business may be challenging and come from not largely or fully achieved the Service Portfolio Management process. As a result it is necessary to tailor the Business Assessment Process through a tailor IT-Business alignment component to enable the proposed ITSM Framework aligns with the corporate business strategy and plan, and these will give more flexibility for the proposed framework to focus on service values.

### 4.3.2 Service Design Life Cycle

Service Design Life Cycle process enables the definition, agreement, on-going monitoring and reporting of Service Level Management. Service Level Management in the case organization does not achieve their purpose but revealed the desire to have the process. While some Service Level Agreements (SLAs) are established; Service Level Management activities are not performed in general and this may consider as major weaknesses in key attributes. Similarly, processes that directly interface with users of IT services such as Service Catalogue and Problem Management are highly fragmented and may only partially achieve their purpose.

The significant efforts being made at establishing an Information Security Management may tends to focus on safekeeping contents and structure rather than on services. While most of the activities are performed, weaknesses in Service Catalogue and Service Level Management may be hindering service definition. Thus, it is essential to tailor 3rd Party Integration Sub-Component to effectively manage Service Level Management and the Service Catalogue process to on shelf IT services in operation, IT services in pipeline and retired IT services.

On the other hand Capacity and Availability Management is mainly limited to technical areas. The process is reactive, fragmented and may be ineffective due to partially meet their purpose. Therefore it is crucial to add the Project Management Sub-component at this stage of life cycle to incorporate process models and predefined templates to make related artifacts more consistent. There may be opportunities to consolidate artifacts and agree on key base line points based on the models and project management guidelines. This can help IT Operators understand what IT services are required to be defined as a project while move through the service lifecycle.

The major obstacle for achieving the IT Service Continuity and Supplier Management processes purposes and outcomes may a lack of clear required and agreed business timescales for resolution of services. Since the organization has matured Business Continuity and Disaster Recovery Plan as it is investigated through interview and company provided documents, it is courteous to tailor it through Disaster Recovery Sub-component.

### 4.3.3 Service Transition Life Cycle

In part of Service Transition Life Cycle, the Change Management process is the one desired to have it even though it is not yet achieved as it is indicated on the questionnaire response; however related processes such as Service Asset & Configuration Management, Transition

Planning & Support and Release & Deployment Management are partially achieved their purpose. This result constrained and contradicted with the expected result from best practices due to they are highly inter-related processes. While Change Management, Service Asset & Configuration Management, Transition Planning & Support and Release & Deployment Management activities taking place within technical domains, these may indicated that there is a significant lack of cross-domain dependency. Thus, to overcome such problems the proposed Framework has shown and described the inter-dependent processes.

Solutions for Known errors contained in databases (KMDB) are not updated on time and the Knowledge Management process partially achieved its purpose.

Service Validation & Testing processes are partially achieved; however Evaluation Management process is the only process under Service Transition Life Cycle largely achieved its purpose as it is indicated on the questionnaire response. This may be because Information System Directorate is not spending sufficient time for understanding and differentiating core services delivery and support process to interface interdependent processes. In general this inhibited results may are not easily integrated with other ITSM processes. Therefore, the proposed framework has included the processes that enable the organization to meet the customer needs that was observed from the interview question "*Do you think that there is a need for ITSM processes to change to meet the needs of your customer?*".

### 4.3.4 Service Operation Life Cycle

Measurement and reporting of Event Management process is not regularly carried out; however there are some activities performed and the process is partially achieved. Request Fulfillment has not formally defined service request opening interfaces and is not uniform but process activities are performed and it achieves its purpose, however procedures may not be well controlled.

Both Problem and Incident Management processes are ad hoc and reactive, besides both processes are not distinguished and handled in the same way, thus key inputs may absent and the purpose is not achieved or partially achieved. To get-out such anomalies the separate Incident Management and Problem Management are introduced in the proposed Framework. Incident Management informs all involved IT Service Management activities by an IT Service Consumer or an IT operator about a recognized malfunction of an IT system or an IT system component with their elimination. The Problem Management process will inform all involved IT Service

Management activities about open problems and problems in process and the related solutions and Workarounds.

According to the questionnaire response, Access Management process interfaces to both incident and change management processes and partially achieves its purpose. This process is ideally important for granting authorized users the right to use a service, while preventing access to non-authorized users. The response from the interview also reflected that it is one of the organization interests to change to meet the needs of their customer in ITSM processes, thus this process incorporated in the proposed Framework.

### 4.3.5 Continual Service Improvement Life Cycle

Service Improvement process need to interface to Service Strategy, Service Design, Service transition and Service Operation management Life Cycle processes in iterative manner when needed by taking into consideration the following Seven Service Improvement Steps:

- What has to be measured?
- What can be measured?
- Gather data
- Process data
- Analyze data
- Present and use information
- Corrective action

Even though Service Improvement process partially achieve its purpose, no evidences shown whether the above seven Service Improvement steps are followed.

In general out of the twenty-four processes in scope, twenty-two did not fully or largely achieve their purpose as they were indicated in Table 4-1.

The following Table 4-2 is indicated the processes transformed state by taking in to consideration best practices of ISO/IEC 15504 Process Assessment Model. The ISO/IEC 15504 model is recommended that the process status said to be achieved only if it is either largely or fully archived its purpose otherwise it is considered as not achieved. This in turn leads to the ability to determine whether the processes are effective in achieving their goals, and to identify

significant causes of poor quality. These also provide the drivers for prioritizing improvements to processes. Based on this the following statute defined for transforming the result of Table 4-1 into Table 4-2.

- Not Achieved (N.A.), Not Achieved but Desired to have (D) and Partially Achieved (P.A.) processes are being considered as No-Achieved.
- Fully Achieved (F.A) and Largely Achieved (L.A.) processes are being considered as Yes-Achieved.

| **Service Life Cycle Stages** | **Process** | **Is purpose of the process achieved?** |
|---|---|---|
| Service Strategy | Strategy Generation | No |
| | Financial Management | No |
| | Demand Management | No |
| | Service Portfolio Management | No |
| | | |
| Service Design | Service Catalog Management | No |
| | Service Level Management | No |
| | Capacity Management | No |
| | Availability Management | No |
| | IT Service Continuity Management | No |
| | Information Security Management | Yes |
| | Suppler Management | No |
| | | |
| Service Transition | Transition Planning & Support | No |
| | Change Management | No |
| | Service Asset & Configuration Management | No |
| | Release & Deployment Management | No |
| | Service Validation & Testing | No |
| | Evaluation | Yes |
| | Knowledge Management | No |
| | | |
| Service Operation | Event Management | No |
| | Incident Management | No |
| | Request Fulfillment Management | No |
| | Problem Management | No |
| | Access Management | No |
| | | |
| Continual Service Improvement | Service Improvement | No |

*Table 4-2: Transformed Process Status*

Table 4-2 is shown that twenty two processes are not achieved their purpose; whereas only two of the processes are achieved their purpose, thus as a result of most processes purpose not being achieved, irregular or inconsistent process performance may introduced and lead to non-systematic IT Services management process.

The theoretical and practical Knowledge the researcher has, the current operation model and Core IT Services concluded from interview analysis; assessment findings from questionnaire and SWOT analysis become the initial context to develop tailored ITSM Framework based on ITIL Framework for Bunna International Bank ITSM processes.

### 4.5 The Proposed Tailored ITSM Framework

In today's complex IT environment IT Service providers are challenged with the need to maximize the efficiency and effectiveness of the IT Services with existing resources. These may be handled by implementing the best practice IT Service Management Framework. ITSM solutions help IT Operation teams to effectively manage IT services design, development, deployment, delivery and support processes.

Besides, because of the increasing complexity and dependency on information technology, the concept of IT best practices has become more and more important. Various frameworks have been created to help today's IT professionals optimize their use of technology in managing IT processes. Of these, ITIL (Information Technology Infrastructure Library) has become an increasingly accepted library of books on service management practices.

The proposed ITSM Framework is based on ITIL V3 Framework depicts the multiple tiers and integration points within an ITSM solution. It has addressed and encompassed the following key points as well as those facts founded from assessment which are considered as answers for the research questions:

- The current ITSM trends of the organization
- A desired future state of IT and services it needs to provide
- Architect a "roadmap" that depicts how to get the desired state from the current state
- Activities performed at each component of the Framework
- Determine the steps needed to execute the Framework

The primary focus of the proposed ITSM framework is to apply IT best practices founded on ITIL to enable IT department of the case study organization to be a more effective IT service provider across the enterprise to satisfy the organization's business requirement. Based on the above discussion, the current operation model of the organization, assessment findings and SWOT analysis as well as taking the organization experience into consideration the following framework proposed for IT Service Management processes of Bunna International Bank.

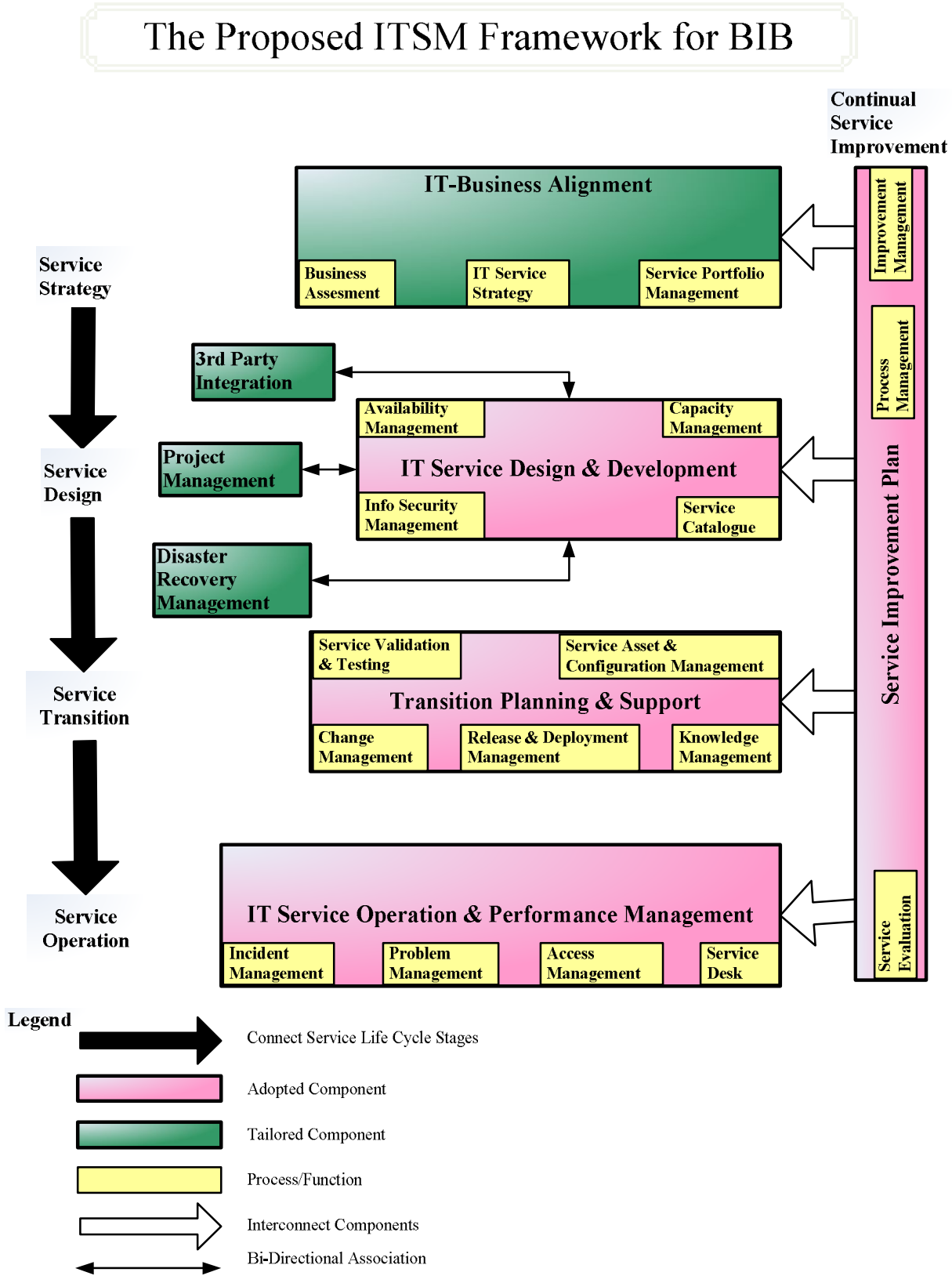


*Figure 4-4: Tailored ITSM Framework Proposed to BIB*

### 4.6 Components and Processes of the Proposed Framework

In the proposed Framework five core and three sub components with a total of eighteen processes and one function are defined. Figure 4-4, has shown also at what stage of the Service Life Cycle of the ITIL Framework each component is corresponding. The following section briefly described activities of each component and process.

#### 4.6.1 IT-Business Alignment Component

IT-Business Alignment component is the one added to tailor the ITIL Framework at the Service Strategy Life Cycle along with the Business Assessment Process. The main reason to add this component and the process are to enable the proposed ITSM Framework aligns with the corporate business plan and strategy while creating the IT Services. The overall processes contained in this component are focused on running IT Services as a business. The activities performed by this component are to determine the type of services and analyses their demand to seek and achieve a common understanding between IT services and its end users regarding business needs and IT capabilities, then formulate an IT Service strategy that will optimize IT added-value. These processes are therefore quite strategic in nature.

The Business Assessment process assesses the IT services demand, and based on the demand defines the business requirements and Service Portfolio that will drive IT's contribution to the corporate value chain. When business changes within the organization occurs or exposing opportunities for new service developments or improvements, the processes' under IT-Business Alignment component can trigger through Service Improvement Plan component to align with the corporate business.

From the ITIL Framework, Financial Management and Demand Management processes are inhibited from the proposed Framework at the Service Strategy Life Cycle stage. The main reason is the activities of both processes can be achieved through the Business Assessment process.

#### 4.6.2 IT Service Design & Development Component

The processes in this component enable IT Operators to convert the Service Portfolio developed from IT Service strategy as a result of Business-IT Alignment process into realism and to update or modify the existing IT services. Activities involving at this component are Service Availability, Service Capacity, Service Catalogue and Information Security Management. These

processes are assured IT infrastructure availability and data security. From ITIL Framework Service Level Management, Supplier Management and IT Service Continuity Processes are excluded due to activities involving the definition of service levels; the creation, negotiation, and signing of service level agreements could be preferred to be performed through tailored 3rd Party Integration component. Besides, to assure the continuity of service the organization has to be followed a separate disaster recovery plan. The organization also currently has matured business continuity and disaster Recovery plan, thus this component must be incorporated into IT Service Design & Development Component with other processes in the model.

The project management component tailored at IT Service Design & Development Component is highly desirable. The greater integration between them can incorporate process models and predefined templates to make related artifacts more consistent. There may be opportunities to consolidate artifacts and agree on key base line points based on the models and project management guidelines. This can provide the basis for the establishment of IT Service Design & Development Component controls that can help IT Operators understand what IT services are required to be defined as a project while move through the service lifecycle.

The new or changed IT Services that are considered as Project level will interface with Project Management Component for the development, and major & mission-critical services integrate with 3rd Party Integration component to be well defined and measurable. The final IT services will then be documented in Service Catalogue. Service Catalogue is the only process that visible to customer at this stage of the Lifecycle to deliver the IT services that are in operation and including those released for deployment.

### 4.6.3 Service Transition & Support Component

The Service Transition & Support Component focusing on workflow and effective means of moving services into operations and considering at core IT Service Support Management processes. Activities performing at this stage are document and control all changes in the IT Services via the Change Management process; store and record the information of all Configuration Items maintain by the Configuration Management System which contains a coherent logical model of the infrastructure of the Organization through Service Asset & Configuration Management process; Service Validation & Testing process responsible for Validation and Testing of a new or Changed IT Service and ensures that the IT Service matches

its Design Specification and will meet the needs of the Business; Release & Deployment Management activities should be planned in this stages as details due to the deployment might not be known in detail initially. Release & Deployment Management process is assuring that IT users can use the new or changed service in a way that supports the business goals.
The Knowledge Management process is responsible for the central repository of relevant knowledge information of the IT Services. Ideally it is containing a structured document that may help IT users to find solutions for Known error, guidelines and procedures. This process is visible to both IT Operators and IT users.

The Evaluation process is the one dropped from this component and moved to Service Improvement Plan component due to all evaluative tasks for IT Services are basis for monitoring and improvement of IT Services.

### 4.6.4 IT Service Operation & Performance Management

The IT Service Operation & Performance Management component is responsible for effectively managing the services on day-to-day bases. The core processes defined at this stage of the Life Cycle are Incident Management, Problem Management and Access Management. Service Desk is the only Function defined at Service Operation Life Cycle as well as on the proposed Framework. The processes and function in this component work together to provide the required support of the IT environment and to manage customer satisfaction. They also focused on service delivery and enable the on-going running, monitoring, and maintenance of the IT enterprise environment.

The Incident Management informs all involved IT Service Management activities by an IT Service Consumer or an IT operator about a recognized malfunction of an IT system or an IT system component and occurred incidents with their elimination; whereas Problem Management informs all involved IT Service Management activities about open problems and problems in process and the related solutions and Workarounds. Access Management is the process of granting authorized users the right to use a service, while preventing access to non-authorized users.

The Service Desk is the only function in the proposed Framework. This function has team or group of people which receive IT user request and provide the level 1 support which including

the knowledge base for incident and problem management. Thus this function acts as a central point of contact for the IT user and as an interface for other service management activities.

The purpose of the Request Fulfilment process is to respond to service requests from the users. A Service Request is a request from a user for information, advice, a standard change, or access to a service without any impact on current service delivery. Therefore these requests can treat through the incident, change and access management processes as well as via the Service Desk. Event Management is especially rules and methods for automated caption and analysis. Thus both Request Fulfilment and Event Management processes are withdrawn from the component.

### 4.6.5 Service Improvement Plan Component

The Service Improvement Plan Component is responsible for the permanent quality assurance and ongoing enhancement of the IT Services. This contains the review of IT Services and the review of the performance and ability of the underlying processes and methods as well. It also focuses on the full service lifecycle and understands where the organization can provide improvement in the operation, delivery and support of services, therefore this component connected with all components of the proposed Framework.

Improvement is executed in close cooperation with the other functions of IT Service Management by utilizing the following 7 step improvement approach:

- What has to be measured?
- What can be measured?
- Gather data
- Process data
- Analyze data
- Present and use information
- Corrective action

The Service Improvement Plan Component contains the Service Evaluation, Process Management and Improvement Management processes. The Service Evaluation process documents the results of the service evaluation reviews with weaknesses as well as technical and economical optimization potentials for monitoring and improvement of IT Services. Process Management activities execute the planned process reviews for IT Services for potential

improvements. The Improvement Management process provides information about planning and results of Continual Service Improvement to the other IT Service Management functions. It contains planned, actually executed and since the last report finished service- and process improvement activities and their expected respective achieved results. Furthermore proposals for future additional service improvement activities are provided.

In general the Service Life Cycle stages of the proposed Framework functions are summarized as follow:

- **Service strategy:** component corresponding to this Service Life Cycle stage is considering as the planning stage in which the organization are determining for an effective means of delivering services. At this stage the organization provide guidance on how to effectively design and development of service management capabilities as a strategic asset.
- **Service design:** components matching with this Service Life Cycle stage is planning and building IT services by taking in to consideration the scalability and cost effectiveness of the services taking into account the infrastructure, applications and service management technologies which will be used to manage the services.
- **Service transition:** the component corresponding with this Service Life Cycle stage is focusing on workflow and effective means of moving services into operations. Here the organization is looking at automating the configuration, change, and release flows too effectively deploy these services into production.
- **Service operation:** the component conforming to this Service Life Cycle stage is assuring the availability and performance of business services and infrastructure. Besides, it is monitoring to improve the reliability of services and ensure the organization has sufficient capacity and resilience to maintain service operation.
- **Continual Service improvement:** the component matching with this Service Life Cycle stage is providing continual improvement of services and processes. It also focuses on the full service lifecycle and understands where the organization can provide improvement in the operation of services.

### 4.7 Who and When to use the proposed ITSM Framework

IT Service Management activities already in progress and largely achieved processes may help to easily adopt the proposed ITSM Framework; thus the proposed tailored ITSM Framework may demand effective and efficient processes.

The IT Department of the organization can use the proposed ITSM Framework particularly for the following activities:

- To implement tactical IT solutions to align with the business strategic goals
- To assure the best practice IT Service delivery and support process
- To design and develop Incident and Problem Management processes to identify root cause problems to decrease both the number of incident calls and the length of time to resolution
- To set up the Configuration Management function to identify and register key production components
- To develop a consistent quality of Change Management System
- To design and develop a high availability and continuous system operations
- To progress a macro level Capacity Management Methodology
- To develop a Service Level Management for major and mission-critical services
- To advance IT Services by following standard project management Life cycle
- To ensure faulty and failed IT services to be restore back to normal operation as fast as possible by following a standard disaster and recovery plan
- To evaluate the service quality and define typical service improvement plan, etc.

### 4.8 Chapter Summary

Changes in IT service management process can help to overcome some of the challenges currently faced in the case organization and can resolve the ad-hoc service delivery and support processes. It is interesting also to see that most of the ITIL processes partially achieved in the organization; however it has to be noted that for the process being achieved it needs to be either largely or fully achieved their purpose.

The result for the SWOT analysis presented in the case study evaluation, it can be deducted that, the organizations should consider the opportunities and strengths they have as positive and try to

improve the weakness identified in order to successfully implement the IT service management Framework proposed.

In summary the proposed Framework can be implemented stand-alone, thus it comply the true strength of any ITSM solution which is capable to be integrated and use of ITSM as an Enterprise-wide service. Besides it has neither a beginning nor an end. In other words, one can start using the Framework from any point, but it is recommended the organization choose to typically start where their company is hurting the most. In order to support this new IT-business alignment model, IT needs to transform the traditional Business-IT paradigm from one focused on technological value to one focused on service value.

# CHAPTER FIVE

# CONCLUSION AND RECOMMENDATIONS

This chapter summarized the research effort made along with core activities done, and finally provided recommendations for both practitioners and academic researchers.

## 5.1 Conclusion

Generally, this study revealed that IT Service Management Framework is an important element to deliver and provide support for IT Services with effective and efficient way in organization. The main problem addressed in this thesis is that although there is the need to improve ITSM processes, the IT Departments often don't know how to proceed in order to achieve this goal. Thus, as a major contribution, this research ultimately proposed a tailored ITSM Framework from ITIL best practice to elude the ad-hoc IT Service delivery and support processes.

A tailored Framework is proposed after getting in-depth knowledge on the current and desired state of the ITSM practice in the case study organization. The required information and data were gathered by questionnaire and semi-structure interview, and assessment was made based on ISO 15504 Process Assessment Model following SWOT analysis. Furthermore, the Framework purposed in this thesis was developed using case and empirical study as methodology. It also has taken the organization experience into consideration with included the researcher's theoretical and practical knowledge.

The different components described at each Service Life Cycle stage of the proposed framework will be provided scalability, flexibility, and simplicity for IT Service management processes. One of the key features of the proposed Framework is - it can be implemented stand-alone, and thus one can start using the Framework from any point. This work also promotes and allows companies to improve and enhance the functionality of their ITSM practices.

Despite the fact that this work was primarily for academic purpose, it will likely be used by the case study organization as well as by similar organization.

## 5.2 Limitations of the Study

The first limitation of the study was as it is the case study for particular organization and the assessment was conducted and completed by Thanksgiving. Second, this research aimed only at surveying IT professionals, and only their views are included in this study. The third limitation is

that empirical studies are dependent on the quality of data provided by the respondents. The final limitation was lack of resources such as cost and time to test the proposed Framework in a real organization.

### 5.3 Recommendation

The result and the proposed Framework of this study offer numerous benefits for both practitioners and academics. Based on the overall result, discussion made and the proposed Framework of the study, the following recommendations were made for both practitioners and academic research.

#### 5.3.1 Recommendation for Practitioners

For IT Service Management to be successful, it is essential to define the roles and responsibilities within the organization for a variety of activities. When designing a service or a process, it is imperative that all the roles are clearly defined. The trademark of high-performance organizations is the ability to make the right decisions quickly and execute them effectively. Whether the decision involves a strategic choice or a critical operation, being clear on who has input, who decides and who takes action will enable the organization to move forward rapidly.
The RACI model will be beneficial in enabling decisions to be made with pace and confidence. RACI is an acronym for the four main roles of:

- Responsible – the person or people responsible for getting the job done
- Accountable – only one person can be accountable for each task
- Consulted – the people who are consulted and whose opinions are sought
- Informed – the people who are kept up-to-date on progress.

In the domain of ITSM, the three key elements are People, Process and Technology. None of the three can be left-out for successful ITSM operation. The combined effect of the three elements will contribute to high quality IT service to customers. Any degrade of any the three elements will affect the overall service quality.

The following key points are also recommended:

- In the long run, a team or a person that is accountable for each processes (process owner) may needed instead of taking turns by different technical groups; however in a short

period of time it is important to identify where the organization is hurting the most to prioritize the activities to be done.

- Dedicated team that is responsible for first line (Level 1) support may need to set who will be acted as a Service Desk.
- In order to achieve sustained improvement and adoption of the proposed Framework the Vision & Strategy Workshop has to be assumed.

Additionally, the organization also recommended preparing basic policies that enable process adoption; the processes that support technical domains and interface with IT users will require careful analysis of what policies and procedures can be established and the support of emerging IT Service Management structures.

### 5.3.2 Recommendation for Future Research

Even though the results of this study are promising, the future research in order to increase the generalizability of the proposed Framework and lessons learned from empirical study is recommended. In addition to this the following future studies also recommended:

- Test the Framework in a real organization, with the aim of improving the adaptability of the proposed Framework.
- Explore the critical success factors along with barriers to implement the proposed Framework.
- Future studies can carry out on exploring the business views besides the IT professionals for flexibility of the proposed Framework.
- Future studies can also carry out to propose work flows, policies and procedures to implement the proposed Framework.
- Although the Process Assessment Model used is ISO 15504, it is not the only methodology that can be used to assess the processes. Six Sigma has been appointed as a methodology with a high potential to improve IT processes. It would be very interesting to propose a framework based in Six Sigma process assessment model, with the aim of improving the proposed Framework.
- The framework proposed in this study was only applied to the ITIL v3 Management processes. It would be interesting to apply it both the processes and functions along with the technology to implement it for further reflection.

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**Appendix A: Preliminary Survey Questionnaire**

**Preface:** The questionnaire is intended to collect IT basic information, such as, current IT Service Management information, business objective, operation strategy etc.

**Questionnaire Element:** The questionnaire consists of open and optional questions. You may state your own opinion regarding open questions.

**Confidential Declare:** I hereby promise that I will comply with Standard protocol to keep all questionnaire feedback absolutely confidential. The feedback can and can only be used for the purpose of investigating ITSM Practices in Banking Industry to be used as Preliminary Survey for future study.

**For IT Department Director**

| S/N | Question | Selection | Response |
|---|---|---|---|
| 1 | What is the objective of IT service operation? | NONE | |
| 2 | What role IT Service Management is playing in your company? | NONE | |
| 3 | What is the tactical objective of IT Service Management for the next three years? | NONE | |
| 4 | As the director of IT department, What do you think ITSM has brought to your company? | NONE | |
| 5 | What is your expectation of ITSM? | NONE | |
| 6 | What do you think the objective of IT department is (In the sequence if priority)? | 1) to support other business<br>2) to resolve end users' problem<br>3) to keep IT environment controllable<br>4) to manage IT assets properly | |

| | | | |
|---|---|---|---|
| 7 | What tool do you use for daily IT service management?<br><br>Do you think it facilitates your work very effectively? | 1) Lotus Notes<br>2) IBM Service Desk<br>3) HP Service Desk<br>4) BMC Remedy<br>5) Microsoft Excel and Word<br>6) Email<br>7) Pen and paper | |
| | | 1) Yes<br>2) No | |
| 8 | Does your department have Knowledge Base, where you can find solution for historical incidents and also useful knowledge on IT operation? | 1) Yes<br>2) No | |
| 9 | What processes are in existence in IT Service Management? | 1) Service Desk<br>2) Incident Management<br>3) Problem Management<br>4) Change Management<br>5) Request Management | |
| 10 | What aspects do you think the IT department should improve itself? | 1) Working efficiency<br>2) Working process<br>3) IT Service available time<br>4) Department structure | |

## Appendix B: Pilot Test Questionnaire

Pilot Test Questionnaire on Developing tailored IT service management framework based on ITIL framework for IT service management processes in Ethiopian commercial banks: the case of Bunna International Bank S.C.

**Dear Respondent,**

I am Tadesse Dabi, a postgraduate student. Currently, I am attending Master of Science in Information Science at Addis Ababa University, Ethiopia.

As part of my accomplishment for the program, my research topic lies on Adopting ITIL Framework for IT Service Management Processes in Ethiopian Commercial Banks. Therefore, this is to kindly ask you to participate in the pilot and pretest of the questionnaire that intended to check its contents and constructs. Your response only used to address the following questions:

1) Is the questionnaire valid?
2) Is the questionnaire measuring what it intended to measure?
3) Does it represent the content?
4) Is it appropriate for the sample/population?
5) Is the questionnaire comprehensive enough to collect all the information needed to address the purpose and goals of the study?
6) Does the instrument look like a questionnaire?

This survey is anonymous. No one, including the researcher, will associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any question that you do not want to answer. Your response is extremely important and valuable to check the validity of the questionnaire.

Therefore, I appreciate if you spend few minutes from your valuable time according to the instruction for each part.

If you require any assistance or clarification, please don't hesitate to contact me through either of the following methods. Mobile +251911416321 or Email : tadedabi@gmail.com

Thank you for your willingness to participate in this study.

February 08, 2017

**Part I. Demographics**

**Education:**

- No degree/diploma
- Completed high school
- College or University degree
- Post-graduate degree (Masters, doctorate or equivalent)

**Age:**

- Less than 25
- Between 25 and 40
- Greater than or equal to 40

**Gender:**

- Female
- Male

**Which of the following best describes your level of responsibility?**

- Entry-Level (Example: associate, analyst, level 1)
- Mid-Level (Example: manager, team leader)
- Senior-Level (Example: Director, VP)
- Executive (Example: President, C-Level)

**Part II. Questionnaires**

Use the mark " √ " under appropriate letter for each process status at your organization; where N-Not achieved, P-Partially achieved, L-Largely achieved, F-Fully achieved and D-Not achieved but desired to have. In addition to these if you have any remark for each question; please indicate the appropriate number under the "R" column based on the following remarks:

1-I do not understand this question

2-The option I want is not available.

3-This is getting boring. Why is it so long?

4-I cannot find the next section.

5-Why is it asking about that? That makes me uncomfortable.

| ITIL V3 Processes | Processes status | N | P | L | F | D | R |
|---|---|---|---|---|---|---|---|
| **Service Strategy** | | | | | | | |
| Strategy Generation | Is the Strategy Generation process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| Financial Management | Is the Financial Management for IT Services process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| | Is budgeting carried out? | | | | | | |
| Demand Management | Is the Demand Management for IT Services process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| Service Portfolio Management | Is the Service Portfolio Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Is a change proposal achieved for services which enter the service portfolio? | | | | | | 1 |
| **Service Design** | | | | | | | |
| Service Catalog Management | Does the Service Catalog achieved? | | | | | | 1 |
| | Does the Service Catalog achieved with containing a Service Pipeline? | | | | | | 1 |
| | Does the Service Catalog achieved with containing Retired Services? | | | | | | 1 |
| | Is a change proposal achieved for services which enter the service Catalog? | | | | | | 1 |
| Service Level Management | Is the Service Level Management (SLM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| | Are measurement and reporting achieved and regularly carried out? | | | | | | |
| | Does SLM have completely achieved and control of the services are provided, which includes definition, documentation, agreement, monitoring (Service Level Agreement - SLA), measurement and review of the services and their respective agreements with the customer? | | | | | | 1 |
| | Does SLM provide a single point of contact for both customers and | | | | | | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | organization's management for all issues regarding service level? | | | | | | |
| | Does SLM achieved with internal service provider, i.e. Operational Level Agreement (OLA)? | | | | | | 1 |
| | Does SLM review all agreements with suppliers and third parties involved in service delivery, i.e. Underpinning Contracts (UC)? | | | | | | 1 |
| | Are Service Level Requirements achieved for all services? | | | | | | |
| | Is service performance monitored against the SLA? | | | | | | |
| | Is measuring and improving of customer satisfaction regularly performed, documented and improvement measures defined? | | | | | | |
| | Are complaints and compliments handled appropriately, i.e. complaint issues are taken care of and compliments are communicated? | | | | | | |
| Capacity Management | Is the Capacity Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Is the Capacity Plan created and maintained? | | | | | | 1 |
| | Is Business Capacity Management achieved? | | | | | | 1 |
| | Is Service Capacity Management achieved? | | | | | | 1 |
| | Is Component Capacity Management achieved? | | | | | | 1 |
| Availability Management | Is the Availability Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Is an Availability Plan produced and maintained? | | | | | | 1 |
| | Are Availability, Reliability, Maintainability, Serviceability and Vital Business Function defined and achieved? | | | | | | 1 |
| | Is availability management involved in planning and designing of new or changed services? | | | | | | 1 |
| | Is the Availability Plan re-tested after major changes? | | | | | | 1 |
| IT Service Continuity Management | Is the IT Service Continuity Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| Information Security Management | Does an information security policy exist? | | | | | | |
| | Are information security requirements defined, documented and achieved? | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Are information security controls identified, documented and achieved? | | | | | | |
| | Is risk management achieved? | | | | | | |
| | Is an internal audit carried out? | | | | | | |
| | Are roles and responsibilities defined throughout the process? | | | | | | |
| Suppler Management | Is the Supplier Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Are contracts with internal as well as external suppliers in place, without exceptions? | | | | | | 1,2 |
| | Is supplier performance regularly reviewed? | | | | | | 2 |
| | Are regular meetings with suppliers taking place with documented agenda and Minutes of Meeting? | | | | | | 1,2 |
| | Does contract review take place before contract renewal? | | | | | | 1,2 |
| **Service Transition** | | | | | | | |
| Transition Planning & Support | Is the Transition Planning & Support process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| Change Management | Is the Change Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| | Does an authorization model for different types of changes existed and achieved? | | | | | | 1 |
| | Is compliance to regulatory requirements achieved? | | | | | | |
| | Are different types of changes defined? | | | | | | |
| | Does a Change Advisory Board exist? | | | | | | |
| Service Asset & Configuration Management | Is the Service Asset and Configuration Management (SACM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Are configuration baseline and snapshot (according to the requirements, e.g. before deployment of new release) produced? | | | | | | 1 |
| | Do Definitive Media Library and Definitive Hardware Store exist? | | | | | | 1 |
| | Is the SACM plan produced and maintained? | | | | | | 1 |
| | Are Configuration Items (CIs) identified, labeled (where possible) and | | | | | | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | are attributes and relationships of CIs identified and documented? | | | | | | |
| | Is a Configuration Management System (CMS) in place? | | | | | | 1 |
| | Are statuses of CIs documented in case of any change on CIs throughout their lifecycle? | | | | | | 1 |
| Release & Deployment Management | Is the Release and Deployment Management (RDM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | 1 |
| | Are RDM plans for releases in place and are they agreed with the customer, for every new or changed service or service component? | | | | | | 1 |
| | Are release packages tested? | | | | | | 1 |
| | Is a Release Policy produced for every customer? | | | | | | 1 |
| | Is build and test of releases managed and documented? | | | | | | 1 |
| | Is deployment of releases planned, managed and verified? | | | | | | 1 |
| | Does early live support for the deployed service exist? | | | | | | 1 |
| Service Validation & Testing | Is the Service Validation & Testing process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| Evaluation | Is the Evaluation process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| Knowledge Management | Is the Knowledge Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | | | | | |
| **Service Operation** | | | | | | | |
| Event Management | Is the Event Management process achieved, so that process steps, sources of events and roles and responsibilities are defined? | | | | | | |
| | Are measurement and reporting set and regularly carried out? | | | | | | |
| | Is the scope of Event Management process defined? | | | | | | |
| | Are events categorized (e.g. Informational / warning / exceptional events)? | | | | | | |
| | Is event logging defined (i.e. which events will be logged)? | | | | | | |
| | Does an event catalogue exist? | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Are response types for different types of events defined? | | | | | | |
| | Are events correlated? | | | | | | |
| | Does an event review take place? | | | | | | |
| | Are events closed in a controlled manner? | | | | | | |
| Incident Management | Is the Incident Management process achieved, so that process steps, interfaces to open incidents and to escalate them to problem management, roles and responsibilities are defined? | | | | | | |
| | Are measurement and reporting set and regularly carried out? | | | | | | |
| | Do you have formally defined incident opening interfaces (e.g. e-mail, web-portal, unique telephone number, etc.) which are in place? | | | | | | |
| | Does an incident catalogue exist? | | | | | | |
| | Are all incidents logged? | | | | | | |
| | Does categorization of incidents exists? | | | | | | |
| | Does an incident prioritization matrix exist and are incidents prioritized according to the matrix? | | | | | | |
| | Is Initial diagnosis performed? | | | | | | |
| | Do functional and hierarchical escalation procedures exist? | | | | | | |
| | Are time constraints for incident investigation and diagnosis in place (agreed resolution time)? | | | | | | 1 |
| | Is the incident record updated as it progresses toward resolution? | | | | | | |
| | Do guidelines for incident reopening exist? | | | | | | |
| | Is handling of major incidents defined? | | | | | | |
| Request Fulfillment Management | Is the Request Fulfillment process achieved, so that process steps, interfaces to other processes, roles and responsibilities are defined? | | | | | | |
| | Do you have formally defined service request opening interfaces (e.g. E-mail, web-portal, unique telephone number, etc.)? | | | | | | |
| | Does a service request catalogue exist? | | | | | | 1 |
| | Is there a validation of service request (which need to be validated) carried out? | | | | | | |
| | Does a categorization of service request exist? | | | | | | |
| | Does a Service request prioritization matrix exist? | | | | | | |
| | Is the service request authorization model set? | | | | | | 1 |
| | Are service request execution procedures and responsibilities defined? | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Does an escalation procedure exist? | | | | | | |
| | Is the service request record updated as it progresses toward resolution? | | | | | | |
| | Do guidelines for service request reopening exist? | | | | | | |
| Problem Management | Is the Problem Management process achieved, so that process steps, interfaces to incident and change management, roles and responsibilities are defined? | | | | | | |
| | Are measurement and reporting set and regularly carried out? | | | | | | |
| | Are problem sources identified, documented and communicated? | | | | | | |
| | Are all problems logged? | | | | | | |
| | Does categorization of problems exist? | | | | | | |
| | Does a problem prioritization matrix exist and are problems prioritized according to the priority matrix? | | | | | | |
| | Is responsibility to ensure that root cause analysis is carried out defined? | | | | | | |
| | Do escalation procedures exist? | | | | | | |
| | Is handling of workaround in place and interface and proceeding toward incident resolution defined? | | | | | | 1 |
| | Is handling of Known Error set? | | | | | | |
| | Is resolution and closure of problem managed, i.e. escalation procedure (in case Target Resolution Time is breached) as well as responsibility for problem closure defined? | | | | | | |
| | Does problem history exist - is problem record updated as it progresses toward resolution? | | | | | | |
| | Is review of major problems defined? | | | | | | |
| Access Management | Is the Access Management process achieved, so that process steps, interfaces to incident and change management, roles and responsibilities are defined? | | | | | | |
| **Continual Service Improvement** | | | | | | | |
| Service Improvement | Is the Service Improvement process achieved, so that process steps, interfaces to incident and change management, roles and responsibilities are defined? | | | | | | |

## Appendix C: Questionnaire and Detail Response

| | ITIL V3 Processes | Processes status | N | P | L | F | D | Non Respond |
|---|---|---|---|---|---|---|---|---|
| **1** | **Service Strategy** | | | | | | | |
| 1.1 | Strategy Generation | Is the Strategy Generation process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | 10 | 4 | 1 | 2 | 1 |
| 1.2 | Financial Management | Is the Financial Management for IT Services process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined as well as is budgeting carried out? | 3 | 6 | 3 | 2 | 3 | 1 |
| 1.3 | Demand Management | Is the Demand Management for IT Services process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | 1 | 11 | 1 | 2 | 2 | 1 |
| 1.4 | Service Portfolio Management | Is the Service Portfolio Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **1** | **13** | | | **3** | **1** |
| **2** | **Service Design** | | | | | | | |
| 2.1 | Service Catalog Management | Does the Service Catalog set and achieved which includes Service Pipeline and Retired Services along with a change proposal? | **3** | **10** | **2** | | **3** | |
| 2.2 | Service Level Management | Is the Service Level Management (SLM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **1** | **9** | **3** | **1** | **3** | **1** |
| | | Is measurement and reporting of SLM regularly carried out and achieved? | **6** | **3** | **1** | **1** | **5** | 2 |
| | | Does SLM have completely achieved and control of the services are provided, which includes definition, documentation, agreement, monitoring (Service Level Agreement - SLA), measurement and review of the services and their respective agreements with the customer? | **3** | **6** | **3** | | **5** | **1** |
| | | Does SLM provide a single point of contact for both customers and organization's management for all issues regarding service level? | **3** | **7** | **1** | **1** | **4** | **1** |
| | | Does SLM achieved with internal service provider, i.e. Operational Level Agreement (OLA)? | **4** | **4** | **4** | **1** | **4** | **1** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Does SLM review all agreements with suppliers and third parties involved in service delivery, i.e. Underpinning Contracts (UC)? | **2** | **5** | **5** | **1** | **4** | **1** |
| | | Are Service Level Requirements for all services achieved? | **1** | **11** | **2** | **1** | **3** | |
| | | Is Monitoring the service performance against the SLA achieved? | **4** | **4** | **2** | | **5** | 3 |
| | | Is measuring and improving of customer satisfaction regularly performed, documented and improvement measures defined and achieved? | **4** | **10** | **1** | | **2** | 1 |
| | | | **28** | **59** | **22** | **6** | **35** | **11** |
| 2.3 | Capacity Management | Is the Capacity Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | 3 | 9 | 1 | 2 | 3 | |
| | | Are Business Capacity, Service Capacity and Component Capacity Management Plan created and achieved? | 2 | 9 | 1 | 1 | 4 | 1 |
| | | | **5** | **18** | **2** | **3** | **7** | **1** |
| 2.4 | Availability Management | Is the Availability Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **2** | **9** | **2** | **2** | **2** | **1** |
| | | Are Availability, Reliability, Maintainability, Serviceability and Vital Business Function defined and achieved? | | **12** | **2** | **1** | **3** | |
| | | Is availability management involved in planning and designing of new or changed services and re-tested after major changes processes achieved? | **1** | **9** | **2** | **1** | **3** | **2** |
| | | | **3** | **30** | **6** | **4** | **8** | **3** |
| 2.5 | IT Service Continuity Management | Is the IT Service Continuity Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **2** | **12** | **3** | **1** | | |
| 2.6 | Information Security Management | Does an information security policy exist and implement? | | 8 | 7 | 3 | | |
| | | Are information security requirements and controls defined, documented and achieved? | | 8 | 8 | 1 | 1 | |
| | | Are risk management and an internal audit carried out, so that roles and responsibilities defined throughout the process achieved? | | 6 | 8 | 3 | 1 | |
| | | | **0** | **22** | **23** | **7** | **2** | **0** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2.7 | Suppler Management | Is the Supplier Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | 10 | 3 | 1 | 3 | 1 |
| | | Are contracts with internal as well as external suppliers in place, without exceptions and supplier performance regularly reviewed and achieved? | | 9 | 5 | 1 | 2 | 1 |
| | | Are regular meetings with suppliers taking place with documented agenda, Minutes of Meeting and contract review take place before contract renewal? | 3 | 9 | 2 | 1 | 2 | 1 |
| | | | **3** | **28** | **10** | **3** | **7** | **3** |
| **3** | **Service Transition** | | | | | | | |
| 3.1 | Transition Planning & Support | Is the Transition Planning & Support process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **2** | **6** | **4** | **1** | **4** | 1 |
| 3.2 | Change Management | Is the Change Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **3** | **8** | **2** | **1** | **4** | |
| | | Does an authorization model for different types of changes existed and achieved? | **3** | **6** | **3** | | **5** | **1** |
| | | Are a Change Advisory Board exists and different types of changes defined and achieved with compliance to regulatory requirements? | **4** | **6** | | | **7** | 1 |
| | | | **10** | **20** | **5** | **1** | **16** | **2** |
| 3.3 | Service Asset & Configuration Management | Is the Service Asset and Configuration Management (SACM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | **9** | **3** | **1** | **5** | |
| | | Are configuration baseline and snapshot (according to the requirements, e.g. before deployment of new release) produced? | | **11** | **4** | **1** | **2** | |
| | | Do Definitive Media Library and Definitive Hardware Store exist? | **5** | **6** | **2** | | **4** | 1 |
| | | Are Configuration Items (CIs) identified, labeled (where possible) and are attributes and relationships of CIs identified, documented and these processes achieved through a Configuration Management System (CMS)? | **2** | **10** | **2** | **1** | **2** | **1** |
| | | | **7** | **36** | **11** | **3** | **13** | **2** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3.4 | Release & Deployment Management | Is the Release and Deployment Management (RDM) process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | **2** | **12** | **2** | | **2** | |
| | | Are RDM plans for releases in place and achieved, for every new or changed service or service component? | **3** | **9** | **3** | | **2** | **1** |
| | | | **5** | **21** | **5** | **0** | **4** | **1** |
| 3.5 | Service Validation & Testing | Is the Service Validation & Testing process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | | 10 | 6 | 1 | 1 | |
| 3.6 | Evaluation | Is the Evaluation process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | 2 | 6 | 7 | 1 | 2 | |
| 3.7 | Knowledge Management | Is the Knowledge Management process achieved, so that process steps, interfaces to other processes and functions inside the organization, roles and responsibilities are defined? | 3 | 10 | 3 | | 1 | 1 |
| **4** | **Service Operation** | | | | | | | |
| 4.1 | Event Management | Is the Event Management process achieved, so that process steps, sources of events and roles and responsibilities are defined? | **2** | **11** | | **1** | **3** | **1** |
| | | Is measurement and reporting of Event Management regularly carried out and achieved? | **1** | **7** | **2** | **1** | **6** | **1** |
| | | Is the scope of Event Management process and event logging defined and achieved with events categorization (e.g. Informational / warning / exceptional events)? | **3** | **6** | **3** | | **5** | **1** |
| | | Are response types for different types of events defined, events correlated and events closed in a controlled manner achieved? | **2** | **9** | **1** | **1** | **5** | |
| | | | **8** | **33** | **6** | **3** | **19** | **3** |
| 4.2 | Incident Management | Is the Incident Management process achieved, so that process steps, interfaces to open incidents and to escalate them to problem management, roles and responsibilities are defined? | **2** | **10** | **2** | | **4** | |
| | | Is measurement and reporting of Incident Management regularly carried out and achieved? | **2** | **9** | **1** | | **6** | |
| | | Do you have formally defined incident opening interfaces (e.g. e-mail, web-portal, unique telephone number, etc.) which are in place and achieved? | **3** | **9** | **1** | **1** | **4** | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Are incident catalogues exists and incidents logged with categorization of incidents? | **4** | **8** | **1** | | **4** | **1** |
| | | Are incident prioritization matrixes existed and incidents prioritized according to the matrix achieved? | **7** | **3** | | | **7** | **1** |
| | | Are functional and hierarchical escalation procedures existed and achieved? | **4** | **7** | **1** | **1** | **4** | **1** |
| | | Are time constraints for incident investigation and diagnosis achieved and in place with agreed resolution time? | **5** | **6** | **3** | | **4** | |
| | | Is handling of major incidents defined and achieved? | **1** | **10** | **1** | **1** | **4** | **1** |
| | | | **28** | **62** | **10** | **3** | **37** | **4** |
| 4.3 | Request Fulfillment Management | Is the Request Fulfillment process achieved, so that process steps, interfaces to other processes, roles and responsibilities are defined? | **2** | **11** | **3** | | **2** | |
| | | Do you have formally defined service request opening interfaces (e.g. E-mail, web-portal, unique telephone number, etc.) and achieved? | **5** | **5** | **5** | **1** | **1** | **1** |
| | | Is a validation of service request (which need to be validated) carried out and achieved? | **4** | **9** | **3** | | **1** | **1** |
| | | Does a categorization and prioritization matrix of service request existed and achieved? | **3** | **7** | **1** | | **6** | **1** |
| | | Is the service request authorization model defined and achieved such as service request execution procedures and responsibilities? | **4** | **9** | **1** | | **3** | **1** |
| | | | **18** | **41** | **13** | **1** | **13** | **4** |
| 4.4 | Problem Management | Is the Problem Management process achieved, so that process steps, interfaces to incident and change management, roles and responsibilities are defined? | **1** | **10** | **2** | **1** | **3** | **1** |
| | | Is measurement and reporting of Problem Management regularly carried out and achieved? | **1** | **11** | **1** | **1** | **3** | **1** |
| | | Are problem sources identified, documented and communicated? | **2** | **9** | **3** | **2** | **2** | |
| | | Are all problems logged and categorized as well as problem prioritization matrix existed and achieved according to the priority matrix? | **2** | **10** | **1** | | **5** | |
| | | Is responsibility to ensure that root cause analysis is carried out defined and achieved? | **1** | **10** | **2** | **1** | **4** | |
| | | Do escalation procedures existed with handling of workaround in place and interface and proceeding toward incident resolution defined and achieved? | **1** | **8** | **4** | **1** | **3** | **1** |
| | | Is handling of Known Error defined and | | **11** | **3** | **1** | **2** | **1** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | achieved? | | | | | | |
| | | Is resolution and closure of problem managed, i.e. escalation procedure (in case Target Resolution Time is breached) as well as responsibility for problem closure defined and achieved? | **3** | **11** | **2** | | **2** | |
| | | Is review of major problems defined and achieved? | | **10** | **2** | **1** | **3** | **2** |
| | | | **11** | **90** | **20** | **8** | **27** | **6** |
| 4.5 | Access Management | Is the Access Management process achieved, so that process steps, interfaces to incident and change management, roles and responsibilities are defined? | 1 | 9 | 4 | 1 | 3 | |
| **5** | **Continual Service Improvement** | | | | | | | |
| 5.1 | Service Improvement | Is the Service Improvement process achieved, so that process steps, interfaces to Service Strategy, Service Design, Service transition and Service Operation management? | 1 | 13 | 4 | | | |

**Appendix D: Interview Guide**

**ITSM Processes Assessment Semi-Structured Interview Questions**

Name: _____ Date Of Interview: _____

Position: _____ Interviewed By: _____

Dept: _____ Interview Method: □ Phone

Location: _____ □ In Person

Phone: _____

1) What does 'ITSM Processes and ITIL' mean to you?
   Probe: Let the interviewee tell me what they understand ITSM Processes and ITIL to be.
2) What is the tactical objective of IT Service Management for the next three years?
   Probe: Let the interviewee tell me the strategic objective ITSM.
3) How well are you currently meeting your ITSM objectives?
   Probe: Let the interviewee tell me about the current trends of ITSM.
4) What core IT services currently your department provided?
   Probe: Let the interviewee tell me the list of core IT services.
5) Are you currently using tools that support the ITSM processes?
   Probe: If yes, which ones?
   Probe: If yes, what are the strengths and weaknesses of these tools?
6) Do you have policies and procedures that support ITSM processes?
   Probe: If yes, what key contents are included?
7) Do you think that there is a need for ITSM processes to change to meet the needs of your customer?
   Yes?
   No?
   Probe: If yes, what are the changes you feel needed to occur?
   If yes, what would be the main features of the 'new' process?
8) Thank you for your time. Do you have any questions that you would like to ask of me?

General Observations / Comments:

**Appendix E: Interview Response**

| Questions | Response-1 | Response-1 | Response-3 | Response-4 |
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| *What does 'ITSM Processes and ITIL' mean to you?* | ITSM mean a management function which undertake the five management functions, such as Planning, Organizing, Staffing, Coordinating and Controlling to meet the business goal of the organization with the hierarchy of the structure of the department. Currently we have policies of do and don't do to achieve the ITSM process in the department. ITIL stands for Information Technology Infrastructure Library and used for IT | ITSM process related to how handling the IT services providing to the end users whereas ITIL more of a standard to be followed to meet the strategy of IT Management, business continuity and handling of transition including the processes like incident and problem management. | As per my understanding both reflected the process oriented architecture to be exercised across the organization. They will help the organization to measure the effectiveness and efficiency of each activity and process. They also improve time to execute every action. The process relationship may also easily establish and identified when the organization has standard ITSM such as ITIL. This also | ITSM and ITIL in my opinion are the service management standard help the organization to meet and deliver the quality IT services to customer. Specifically ITIL is used for infrastructure and system support & delivery framework. I think unless there is some way of delivering IT services for customer that follows a certain standard it may not be effective and efficient. So that may be a reason also to market like ITIL to support the business. |

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| | Governance standard and framework which is similar to like COBIT and CMMI, but I think ITIL is the one preferred and recommended for ITSM. | | improve the delivery time and quality of IT services and products. | |
| *What is the tactical objective of IT Service Management for the next three years?* | The bank's strategic plan is setting for 5 years based on the direction given from National Bank of Ethiopia to align with the GPT-II strategic plan of the country. Specifically the tactical objective of ITSM is to meet the business need and mostly we follow time to market principles within the bank and the department too. The bank has also a short term plan:<br>• To make the current IT system running | Currently no separate strategy set for the division, we focus to meet department base strategy; however we follow the ETSwitch strategy to meet the customer need. | The bank planned for five years, for the next five years we planned to execute the service desk to improve the service management process, which may also excel our IT service support and delivery mechanisms. Due to our bank is at early stage as compared to other banks it may be good for us bench marking other banks practices and develop strategy for ITSM plan. | Our division tactical objectives depend on the bank's five years strategy objectives, so we try to meet it. I think it also based on GDP-II strategy of the country; however our department is on the earth stage of to lead the business and currently we try to meet and enable the business requirements. As a division we planned to develop a value added services to our customer and deliver those services in a very good |

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| | with minimal interruption<br>• To provide support of IT end users with effective and efficient way<br>• To utilize the resource at minimal cost and meet the required security level – CIA<br>• To make zero time cost, resource and time to complete the project.<br>Sometime the driving force also came from competent similar organization, so that we may bench marking them to review our plan. | | | management processes. |

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| | National Bank of Ethiopia also directed as towards the required level of the country requirements to meet the financial industry facilities and services. | | | |
| *How well are you currently meeting your ITSM objectives?* | User request came from branches and head office organs through telephone & memo and sometime through fax and e-mail. For instance user setup request via memo and ISD management team approve it for execution. The user can call to 5 phones of the department and sometime on personal phone (mobile) and anyone who pick up the phone act as a service desk | No customer facing; however there are ATM users who are directly connected the branch staffs, then our division take the request from branch staff and then contact the customer to make the shortest confirmation from the end user about the | The current ITSM practice is not as such efficient and sufficient to meet the customer needs, but we tried to execute a workshop like to make basic awareness on security related issues. | Currently our ITSM process is just like as ad-hoc; anyone who picks the phone responsible to take the request then if he/she capable to resolve it they will provide the solution. If not they will forward the request to the more senior staff or to division manager when it needs more decision and support. Customer can call on any of the 5 phones in the directorate and sometimes |

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| | to provide solution. But if it is after an office hour they are virtual team set here to provide a support, support not time and place bounded. When the person picks up the phone unable to resolve the request he/she will escalate it to the respected division to get additional support. Sometime if the request need the involvement of the supplier the ISD personnel communicate to get support from them and finally when the request get the solution the end user will be informed. For some problem there is in house built knowledge Management system which | request and sometimes a kind of complain. | | they also call to personal phone for support request. Our support not only at the office hours from 8:00A.M to 5:00PP.M, but also extended to up to 9:00PP.M due to the nature of the job by assigning mixed skilled staff. |

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| | has quick solution for quick fix which accessible for all IT end users, which we consider it a solution for Known Error. Even though our current IT service delivery and support system is ad-hoc, always the user informed about the status of the support requested.<br>For new, customized and changed system the department holds them as project often and used standard project management principles; however there is no any chosen project management standard, hence the team has | | | |

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| | an option to use any familiar with them project management standards. | | | |
| *What core IT services currently your department provided?* | Core IT services can be divided in to four main categories:<br>• ICT Infrastructure Service including Desktop & Facility Management<br>• Customer Account and Application Service<br>• Alternate Channel Service<br>• IT Security Service | ATM management including deployment and monitoring, SMS service and generally all services related to card banking system. | We generate report that related to infrastructure and system security to respected body as per the requirements and definition of policies and procedures. Design and configuration of service and product document also inspected whether it meets the requirement level of security. | Due to our division task more focused and related to application, I can say that developing, customizing and integration of applications, DB management and related tasks as our core IT services. |
| *Are you currently using tools that support the ITSM processes?* | Yes, such as KMDB, PRTGS, e-mail, Portal, Bank's web site, etc.<br>Strength: for instance portal service serves for the user as an alternate channel to get | Yes, ATM monitoring tool, Card transaction monitoring tool and remote administration tool for ATM<br>Strength: All tools are real-time, descriptive and detail. | Yes, such as Oracle Integrated light Out Manager, Security Device Manager.<br>Strength: ILOM provide summarized information | Yes, such as KMDB that helps IT users to get solutions for Known Error.<br>Strength: it highly minimizes the support time used to even for minor problems. |

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| | the list of services with single sign on, just used as service catalogue. E-mail communication is fast. Bank's web site used as an alternate way of delivery and promoting some message for public<br>Weakness: Portal not full contents with all services and e-mail not guaranteed for the delivery of the message on time. Bank's web site may not accessed by all people. | Reduce on site visit<br>Weakness: remote administration tool is shared with EtSwitch. | about the server status and SDM to monitor real-time status and operation of security device.<br>Weakness: ILOM not showed all the required information, for instance like memory and processor utilization. SDM is Cisco proprietary tool, thus not used for non Cisco devices. | Weakness: some solution features may not be able to code at KMDB |
| *Do you have policies and procedures that* | Yes, there are around 60 policies with procedures, out of which such as | Yes, but some of them are under refine to be more to meet the needs of the | Yes, we cannot share the contents for security reason. | Yes, most ITSM processes are based on policies and procedures. |

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| *support ITSM processes?* | Change Management, Project Management, Configuration management, Access Management, etc. however due to commercial sensitivity of the document we cannot share the detail contents. | division | | |
| *Do you think that there is a need for ITSM processes to change to meet the needs of your customer?* | Yes, first I feel we need to have a single point of contact to customer for both service delivery and support management, second to remain competitive within the market we need to change ad-hoc ITSM to the standard one.<br>The main feature shall be scalable and flexible to | Yes, the current organizational IT service management is ad-hoc. We have to change most of them and would like to have like help desk and the system that track end-to-en support process which include escalation matrix. | Yes, according to the security division we need to change the processes related to us, such as our division limited to generate the report, but it is better for us to participate and being the part of the implementation team. This can help the division to investigate in depth each infrastructure and | Yes, even if our current ITSM process is not systematic, we have to be documented and used registered system to track what time has taken to resolve the request, also to identify how often the same problem or kind of support requested from branch and head office organs. If such process registered and |

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| | easily interface with the current good practices of the bank. It is also good to easily interface with social network, automate and support 24x7 availability and accessibility. | | system deployment and configuration whether enhance the requirement level of security. So the new process better to be consider the security control process. | managed it may help as to improve our ITSM process better. |
| *Thank you for your time. Do you have any questions that you would like to ask of me?* | Yes, not question but a kind of comment. Please keep the confidentiality of my response as well as not disclose sensitive information. Thank you! | Yes, do you satisfy with my response?<br>Ans: Absolutely Yes! Thank you! | Yes, In my opinion process oriented architecture is not so far executed, how you are gain to meet the needs and your level of commitment to make it operational at real world?<br>Ans: I think most organization failed to succeed in the deployment of process oriented ITSM, may | No, but I have a comment for you. I'm very interesting on what you are going to do, if so please try to make it operational as much as you can. Thank you! |

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| | | | be due to lack of adoptability that will best fit and suit to the organization culture and operational mode. Since this research is the one that can fined and proposed tailored ITSM process based on the current trends and organizational culture, it may be meet the needs and with full commitment being practical. | |