ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCES

DESIGNING BUSINESS – INFORMATION TECHNOLOGY ALIGNMENT CONTINUITY MANAGEMENT FRAMEWORK FOR ETHIO-TELECOM

BY

HABTAMU ABUNE FUNSA

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ADDIS ABABA, ETHIOPIA

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A Thesis Submitted to the College of Natural and Computational Sciences of Addis Ababa University in Partial Fulfillment of the Requirement for the Master of Science in Information Systems

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By

Habtamu Abune Funsa

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Declaration

I, Habtamu Abune, declare that the study which is presented in this thesis with the title "Designing Business-Information Technology Alignment Continuity Management Framework for ethio-telecom" is an original work of mine and was prepared under the guidance and supervision of my advisor, Dr. Million Meshesha. It has not been presented for any scholarship achievement at any university, and the source material presented under this thesis is acknowledged properly.

Habtamu Abune **Signature:** _____

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

Million Meshesha (Ph.D.) **Signature:** _____

Dedication

This work is dedicated to my beloved family, those who encouraged and inspired me throughout my life, as well as, above all, to the almighty God for giving me the strength to succeed in my dream.

Acknowledgment

First and foremost, I would like to give heartfelt thanks to the almighty God for helping me to accomplish my dream. I would like to give thanks to my advisor, Dr. Million Meshesha, for his constructive and supportive comments and guidance, which helped me to get the right way of conducting research work and encouraged me throughout this study. Moreover, I want to thank Dr. Million Meshesha for being available to me at any time I needed him throughout the journey of this study. My sincere thanks go to Dr. Workshet Lamenew for giving me great insight into information system strategy and management as well as the business-IT alignment domain and for never hesitating to share ideas.

I would like to thank the ethio telecom business and the IS division management for their kind cooperation in making this study a success. I would like to thank Addis Ababa University for granting me a two-year study leave to complete my studies. I would like to thank my colleagues and friends for their encouragement and sharing of ideas.

I would like to thank the staff of Addis Ababa University School of Information Science and Systems for their support in the study and for giving me valuable knowledge throughout the course work. Last but not least, I would like to give thanks to my parents for their encouragement in proceeding with my education.

Abstract

Achieving and maintaining continual business-information technology alignment (BITA) is a crucial enabler of corporate success in today's changing business environment, technological innovation, and competitive business world. However, maintaining and managing continuous BITA remains the main challenge in ethio telecom. Therefore, the main purpose of this study is to design a BITA continuity management framework that guides the company on how to maintain and manage continuous BITA within a changing business and technology environment. The study follows a design science research methodology to design the proposed framework. The research entry point followed is problem-centered approach. A qualitative research approach was followed to collect and analyze the data. Primary data was collected using interviews and observation. Also, secondary data was collected using document analysis. Two chief officers, seven directors, and twelve managers were selected using purposive sampling techniques from ethio telecoms business and information system divisions management. Thematic analysis techniques were used to analyze the collected data. The result of the study shows that there are challenges at ethio telecom towards maintaining and managing BITA continuity due to a lack of mutual leadership and shared understanding between business and IS, in addition to minimal executive leadership support and shared domain knowledge, as well as change in a telecom environment. Moreover, based on the thematic analysis four main themes were generated, these are continuous assessment, continuous alignment, change management, and organizational culture. These themes are used to formulate design requirements and define the objective of the solution. In this study, the researcher proposes the BITA Continuity management framework with five core components: executive leadership support, change management, continuous BITA assessment in a regular time interval, continuous alignment (plan, implement, and monitor), and creation of shared domain knowledge through building a strong organizational culture. All the core activities are critical to maintaining and managing BITA continuity at ethio telecom. The proposed framework is demonstrated through an illustrative case study with an example by taking a real telecom industry scenario and evaluating it using a question-based method that consists of survey evaluation questioners and expert interviews for user's acceptance by selected experts from ethio telecom business and IS division management. The evaluation result shows 93.72% of the proposed framework was accepted by the ethio telecom Management. The proposed framework has a great contribution to the ethio telecom industry by guiding them towards maintaining and managing BITA continuity within a changing business and technology environment as well as a competitive business world. The evaluation result shows that 6.28% of the proposed framework was not accepted because it is not in operation yet. Future research needs to consider applying the BITA continuity management framework in other organizations or the telecom sector to further evaluate the acceptance of the framework.

Keywords:

ethio telecom; Business IT Alignment; Continuous Business-IT Alignment; Alignment Continuity Management; BITA Continuity Management Framework

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List of Abbreviations

BITA	Business-Information Technology Alignment
BRIDGE	Best customer experience, Reputable brand, Innovative Product/ Service, and Technology Excellence, Develop People-Oriented Learning Organization, Growth in financial Capacity, and Excellence in operation
CCO	Chief Customer Officer
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CIO	Chief Information Officer
CMO	Chief Marketing Officer
CSF	Critical Success Factor
CTO	Chief Technology Officer
DLD	Detail Level Design
DSR	Design Science Research
FRS	Functional Requirement Specification
HLD	High Level Design
IEC	International Electrotechnical Commissions
ISO	International Standardization Organization
LLD	Low Level Design
SLA	Service Level Agreement
SAM	Strategic Alignment Model
SAMM	Strategic Alignment Maturity Model
SDP	Specification Design Package

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CHAPTER ONE
INTRODUCTION

1.1. Background

Achieving and maintaining continual business information technology alignment (BITA) is a crucial enabler of corporate success in today's changing business environment, technological innovation, and competitive business world [1]. Information technology has subsequently grown to become the fundamental driver or enabler of business strategy and firm objectives. Technology enables effective communication between internal and external customers, faster time-to-market product and service delivery, improves business agility and responsiveness, and increases operational and functional efficiency. However, since customer needs, business environment, and technological advancements change over time; organization must become adaptable and flexible enough to respond quickly to emerging changes and competitors. Integrating business strategy with IT strategy is critical if the company needs to enhance its performance, meet stakeholder expectations, and gain competitive advantage. Moreover, keeping up mutual alignment between business and IT may also allow the organization to ensure that technology investments are effectively and properly utilized to gain a competitive advantage and increase productivity in a fast and dynamic market.

Scholars agree that achieving and sustaining mutual alignment between business and IT in a dynamic environment with a change in operational processes, management, business and IT structure, customer needs, strategy, and technology is difficult and has been identified as the top challenge IT executives face [2] [3] [4] [5]. However, there is few empirical researches conducted that gives a guide on how to sustain continuous BITA in general. Coltman et al. [5], pointed out that models of strategic alignment and its components have been proposed and extended over time as a way to provide managers with more practical ways to achieve alignment. However, research also indicates that an organization can fall into a rigidity trap where tight or inflexible links between business and IT can impede an organization's ability to respond quickly to environmental change [6]. Having this in mind, since alignment is not a static process, but rather a dynamic process, companies must have to maintain continuous strategic alignment [7]. They should have to keep up adjusting mutual alignment between business and IT to gain competitive advantage. A practical framework should exist to guide executives on how to achieve and sustain continuous BITA alignment with change in organizational environment; and how to detect misalignment early enough to plan, implement, and monitor continuous alignment among corporate strategy, business strategy, IS strategy, business process, IS process and IT infrastructure.

According to Imgharene, et al. [8] recently, organizations are facing rapid and dynamic changes in the business environment and technological advancements that affect their ability to achieve competitive advantages. As a result, achieving and sustaining BITA in a changing business environment is challenging and complex for top managers. Such a change affects the whole organization, including business and IT alignment, which leads to misalignment that effects organization's performance and success [8]. Peppard and Ward [9], described strategic alignment as the extent to which the organization's portfolio of IT investment directly enables and supports its business strategy. Lack of strategic alignment is the main reason organizations fail to realize values from IS/IT investment and loses competitive advantage.

Currently, scholars [4, 10, 8], researched the theme of business-IT alignment; however, little research was conducted towards achieving and sustaining BITA in a dynamic and rapid change in business environment and technology advancement. Moreover, as ethio telecom is one of the major IT enabler organizations in the country, change in the business environment greatly affects IT and also change in IT greatly affects business environment unless the organization manages and maintains continuous mutual alignment between business and IT. Malta and Sousa [11], also noted that "looking for effective ways of achieving and maintaining alignment remains a challenge calling for more research to address what is still a major concern for IT executives".

Rapid changes in market structures and technology often lead to misalignment between strategy and operations. Literature reports that this phenomenon is most prevalent in technology-based manufacturing industries [12]. One of the organizations that use IT as its key asset for business transactions is the telecom industry [13]. IT has created an enormous opportunity for the telecom sector to achieve its business goals and objectives [13]. Hence, to achieve its organizational objectives and gain a competitive advantage, the company should have to maintain continuous harmony between its business and IT. However, ethio telecom, the only telecom service provider in Ethiopia, has a challenge in maintaining and managing continuous business-IT alignment.

Therefore, a framework for maintaining and managing continuous alignment between business and information technology strategy and structure is essential within the telecom industry in order to enhance corporate success gain competitive advantage. This study seeks to guide researchers and practitioners in maintaining continuous alignment within the current fast and dynamic telecom environment by providing a framework for managing BITA continuity.

1.2.Statement of the problem

In this dynamic world, achieving and sustaining continuous business-IT alignment (BITA) is a key enabler of corporate success and customer satisfaction. In ethio telecom business-IT alignment is the first pillar in the IT strategic roadmap. However, as per the preassessment made by researcher at ethio telecom maintaining and managing continuous business-IT alignment is the most difficult challenges ethio telecom faces todays. There is a gap in having and sustaining a continuous business-IT strategic, operational and cultural alignment due to the fact that, the current fast and dynamic change in business and telecom technology environment affect BITA. Moreover, unpredictability in customer behavior, a lack of mutual leads and limited shared understanding between business and information systems divisions, as well as minimal executive leadership support or commitment on promoting BITA, is challenges in having continuous BITA. Hence, since ethio telecom is the only telecom service and product provider in the country, it has a great impact on socio-economic growth and other technology-enabled industry sustainability. Having this in mind, ethio telecom should have to maintain and manage BITA consistency at a corporate level to enable its corporate success and other industry sustainability.

On the other hand, the fast and rapid change that emerged from an uncertain customer experience, business and telecom environment, as well as a lack of a framework that guides ethio telecom towards maintaining and managing BITA continuity by taking change in business and telecom technology environment as well as competitive business world, are the main challenges. Moreover, as described by Adame [14], in ethio telecom the IT infrastructure is not quick enough to respond to business demand and there is shortage of effective telecom service which is another challenge.

Having this in mind, to successfully maintain and manage BITA continuity and enhance company success, ethio telecom requires a framework that guides the company to have adjustable and flexible alignment at the functional and corporate level in an appropriate response to emerging change and early detected misalignment sign.

Maintaining and managing BITA continuity enables the company to use technology resources effectively in line with business demands within changing business and technology environments. As pointed out by Tordrup & Trætholt [14], BITA is an ongoing process of mutual adoption in which IT response to change in the business environment and business response to a change in the IT environment are coordinated. Having this in mind, the existing alignment model couldn't address how the organization maintains and manages continuous BITA within a fast and rapid change environment. Moreover, various alignment model treats BITA as a static process instead of a dynamic one [5] [7]. On the other hand, failure to maintain mutual alignment between business and IT in response to change results in misalignment, which affects organizational performance, reduces the return on investment and results in a loss of competitive advantage [1].

Furthermore, industry publications such as CIO magazine and Information Week, for example, devote cover stories, articles, and blogs to the challenges of achieving and maintaining BITA in a fast-changing market and technology [5]. Luftman et al. [7]describe in their study that achieving and sustaining BITA is the key to organizational success and gaining competitive advantage within a turbulent environment. However, many BITA models don't consider treating alignment as a dynamic process, and there is a lack of a framework that guides companies on how to sustain BITA. As noted by Zhang, et al. [15], there is a gap in the literature that demonstrates to organizations how to maintain and manage BITA continuity in order to respond to fast and rapid emergent change from the turbulence of the organizational environment.

For any organization to achieve long-term sustainable success within a changing business and technology environment, ensuring all elements that comprise the organization, in particular IT, fully understand the business objectives and work together in a duly controlled and coordinated way is essential to achieve organizational objectives [1]. In recent years, the environments of business and IT have demanded agility and flexibility to meet stakeholders' expectations and gain a competitive advantage. Thus, it becomes important to align business and IT quickly, efficiently, and continuously [15]. Alignment is a dynamic, ongoing, and complex process that takes time to design and even requires more effort to sustain. However, companies that achieved and maintained alignment builds a strategic competitive advantage that provides them with increased visibility, efficiency, and profitability to compete in today's changing markets [10].

Moreover, many scholars [16] [17] [7] [18] pointed out that maintaining BITA in today's dynamic world has become a problem and remains a top concern for business and IT executives. In addition, literature reports that this phenomenon is most prevalent in technology-based industries [12] such as the telecom industry. Therefore, maintaining and managing BITA is critical to enhance corporate success and gain competitive advantage in today's dynamic world.

There is various research conducted locally towards the theme of business-IT alignment within government and financial industries. King [19], conducted a case study on exploring and bridging the business strategy and IT strategy gaps in an Ethiopian private bank called Zemen Bank. Minilik [20], conducted a case study on a business-IT improvement framework in a private bank called Bank of Abyssinia. Ashenafi [21], explored the impact of business-IT strategic alignment on organizational performance in the Ethiopian Revenue and Customs Authorities. As to the

researcher's knowledge in Ethiopia, there is no research conducted on achieving and sustaining continuous BITA on key IT-based organizations in general and ethio telecom in particular. Furthermore, there is limited foreign research conducted that considers business-IT alignment as a continuous process that requires continuous adjustment among corporate, business, and IT/IS strategy and process within the current dynamic environment. Therefore, this study aims to fill the research gap that exists in maintaining and managing continuous mutual alignment between business and IT strategy, operational and cultural within a change in the business environment, stakeholder needs, organizational structure, and technology itself.

It is therefore the aim of this study to design a business-IT alignment continuity management framework for ethio telecom, which allows the company to have adjustable and flexible alignment within a change in the business and telecom technology environment.

1.3. Research questions

To explore and solve the problem at hand, the following research questions are formulated and answered.

1. What is the existing business-IT alignment practice and challenges at ethio telecom?
2. What framework can be designed to maintain and manage BITA continuity at ethio telecom?

1.4.Objective of the study

1.4.1. General objective

The general objective of the research is to design a BITA continuity management framework that guides ethio telecom to maintain and manage BITA continuity within changing business and technology environment.

1.4.2. Specific objectives

The study focuses on the following specific objectives to achieve the general objective of the study.

1. To conduct an extensive literature review on BITA to identify approaches, models, and frameworks that can be used as a reference and guide.
2. To assess and understand BITA practice at ethio telecom and identify design requirements.
3. To propose a BITA continuity management framework for ethio telecom
4. To demonstrate and evaluate the proposed BITA continuity management framework by an expert from ethio telecom business and IS division management

1.5.Scope and limitation of the study

The study focuses only on designing the BITA continuity management framework by assessing and understanding the current BITA practice and challenges at ethio telecom headquarters office, marketing division office, and IS division office located in Addis Ababa, Ethiopia. The study assesses BITA from strategical, operational, and cultural perspectives. The study collects primary and secondary data from ethio telecom business and information systems division managements.

The primary data was collected through semi-structured interviews with ethio telecom business and IS division chief officers, directors, and managers. Secondary data is gathered by analyzing ethio telecom documents such as strategy and action plans, six-month and annual reports, design specification documents, business requirement preparation templates, Detail Level Design (DLD) Functional Requirement Specification (FRS), High-Level Design (HLD), and Low-Level Design (LLD), as well as the company's intranet and extranet webpages. The study evaluated the proposed framework to ensure its acceptance by ethio telecom through question-based evaluation method.

The study was planned to collect interviews and to demonstrate the proposed framework through focus group discussion in order to save time and reach various respondents such as vendors, supervisors, and other staff. However, it's not possible due to the unavailability of the participants at the same time because of their busy schedule at work. Therefore, the primary data was collected using face-to-face interviews only with individual from business and IS division management.

The study focused only on one industry, which is ethio telecom because it is the only telecom service provider in Ethiopia. However, there are new emerging telecom companies in the country that are not in operation yet.

1.6.Significance of the study

The study benefits both researchers and practitioners. The proposed framework has a contribution to the telecom industry by adding knowledge towards how to maintain and manage BITA continuity within a changing business and information technology environment as well as a competitive business world. In turn, ensuring continuous and sustainable BITA in ethio telecom allows the company to meet stakeholder expectations, and maximize return on investment and organizational performance.

Moreover, having a sustainable BITA allows ethio telecom to gain competitive and fulfill its vision of becoming a world-class telecom company. On the other hand, the BITA continuity management framework gives ethio telecom the ability to have adjustable and flexible BITA to the emerging change from the new coming competitive telecom service provider's environment as well as internal and external change.

The proposed framework will also give ethio telecom the ability to create good or trusted working relationships and shared domain knowledge among employees at the functional and corporate levels through the establishment of a strong organizational culture that supports the change and believes in knowledge sharing. Thus, ethio telecom enhances the innovative entrepreneurial environment and interpersonal interaction, as well as properly manages complaints and risk issues, and increases productivity.

As ethio telecom is the only telecom service and product provider as well as the main enabler of the digital economy in the country, managing successful BITA continuity in the company has a positive impact on socio-economic growth and other technology-enabled industry sustainability in the country. The output of this study also initiates other studies or related research as well as serves as an input for future research work in the telecom industry or other related areas.

1.7.Organization of the thesis

This thesis is organized into six chapters. The first chapter introduces the study by providing background information, motivation, a statement of the problem, research questions, research objectives, scope and limitations of the study, and significance of the study.

The second chapter is dedicated to presenting the literature review conducted to identify concepts, approaches, models, and frameworks that can be used as a reference and guide in this study. This chapter includes an overview of the concept of BITA, benefits of BITA, the critical success factor of BITA, BITA models, foreign and local related work, and research gaps.

The third chapter covers the research methodology followed to answer the research question and meet the research objectives by including research design and the six steps of the design science research process model proposed by Peffers (problem identification, objectives of a solution, design and develop artifact, demonstration, evaluation, and communication).

The fourth chapter presents the survey conducted to identify problems at ethio telecom and identify design requirements by consisting of an overview of the chapter, about ethio telecom, the six thematic data analysis steps, interpretation of the theme, challenges of BITA at ethio telecom, design requirements, objectives of the solution, the proposed framework.

The fifth chapter presents and discusses how the framework was demonstrated and evaluated for ethio telecom business and IS division management. This chapter consisted of a demonstration and evaluation of the proposed framework, as well as a discussion of the result. The last six chapters finalize the study by providing a conclusion, recommendations, and the way forward.

CHAPTER TWO
LITERATURE REVIEW

2.1. Overview

Alignment is a leading principle both for research programs and practical methods dealing with the business-IT relationship [22]. Though alignment has been studied broadly, scholars have used multiple conceptualizations and definitions for alignment [18]. Some of the terms used are *fit* [23], *integration and linkage* [2] , *integration* [24], *harmony* [25] , *balance* [26], *bridge* [27]. However, in all cases, alignment concerns the integration of the strategies, processes and culture related to business and information systems (IS) or information technology.

This chapter discusses both conceptual and related works review on the theme of business-IT alignment. The study reviews various existing literature to identify approaches, models, and frameworks that help the researcher as a reference and guide for conducting current research.

A detailed literature review was conducted to give an overview of BITA, particularly in achieving and sustaining continuous alignment. There is much literature conducted towards the challenges and benefits of achieving BITA. However, few of them guides company on the way to maintain and manage BITA continuity within change in business and information technology environment.

2.2. Business-IT Alignment (BITA)

The notion of BITA has drawn research attention dating back to the 1970s [5] . However, achieving and sustaining successful alignment between IT and business is always a critical process, as pointed out by business executives and managers. At an early stage, BITA often meant the existence of a linkage between the business plan and the IT plan [28]. Nowadays, business-IT alignment generally refers to the balance between choices made across four domains (see table 2.1.). These four domains are business strategy, IT strategy, organization infrastructure and processes, as well as information systems infrastructure and processes.

Furthermore, Luftman and Brier [10], suggest the twelve components of alignment on which BITA needs to be defined as shown in table 2.1. Aligning these components focuses on the activities that management performs to achieve cohesive goals across information technology and other functional organizations (e.g., finance, marketing, human resources, manufacturing). Therefore, alignment addresses both how IT should be in harmony with the business and also how the business in harmony with IT. On the other hand, alignment require strong support from senior management, good working relationships, strong leadership, appropriate prioritization, trust, and effective communication, as well as a thorough understanding of the business and technical environments [29]

Business Strategy
Business Scope – Includes the markets, products, services, groups of customers/clients, and locations where an enterprise competes as well as the competitors and potential competitors that affect the business environment. Distinctive Competencies – The critical success factors and core competencies that provide a firm with a potential competitive edge. This includes brand, research, manufacturing and product development, cost and pricing structure, and sales and distribution channels. Business Governance – How companies set the relationship between management, stockholders, and the board of directors. Also included are how the company is affected by government regulations, and how the firm manages its relationships and alliances with strategic partners
Organization Infrastructure and Processes
Administrative Structure – The way the firm organizes its businesses. Examples include central, decentral, matrix, horizontal, vertical, geographic, federal, and functional. Processes - How the firm's business activities (the work performed by employees) operate or flow. Major issues include value-added activities and process improvement. Skills – H/R considerations such as how to hire/fire, motivate, train/educate, and culture.
IT Strategy
Technology Scope - The important information applications and technologies. Systemic Competencies - Those capabilities (e.g., access to information that is important to the creation/achievement of a company's strategies) that distinguish the IT services. IT Governance - How the authority for resources, risk, conflict resolution, and responsibility for IT is shared among business partners, IT management, and service providers. Project selection and prioritization issues are included here
IT Infrastructure and Processes
. Architecture -The technology priorities, policies, and choices that allow applications, software, networks, hardware, and data management to be integrated into a cohesive platform. . Processes - Those practices and activities carried out to develop and maintain applications and manage IT infrastructure . Skills – IT human resource considerations such as how to hire/fire, motivate, train/educate, and culture.

Table **2. 1** Twelve component of business-IT alignment **[10]**

Mongale [30] pointed out that business-IT alignment is the process of aligning the IT strategy with the business strategy and processes. The phrase "business-IT alignment" refers to the process of increasing the alignment of dynamic business goals with the particular technical support offered

by IT [31]. Business leaders and managers have highlighted the critical importance of successfully aligning business and IT objectives. However, as many business executives and managers have discovered, achieving and maintaining successfully aligned business with IT is never an easy task.

Various business-IT alignment definitions exist in literature. Luftman [32] defines business-IT alignment as applying Information Technology (IT) in an appropriate and timely business-IT alignment as the degree to which the IT mission, objectives, and plans support and are supported by the business mission, objectives, and plans. According to Henderson et al [2], business-IT alignment refers to strategic fit and functional integration among four domains: business strategy, business infrastructure and process, IT strategy, and IT infrastructure and process. In this study, the researchers adopted Henderson et al [2] definition and came up with a modified definition, which is business-IT alignment refers to the continuous adjustment of strategic fit and functional integration among five components of alignment, such as corporate strategy, business strategy, IT strategy, business process, and IT infrastructure and process to react to changes in the business and information technology environment.

Ullah & Lai [33], pointed out that in the context of business-IT alignment, both the fields of business and IT are interrelated, with IT providing services at all levels of the business to enable it to effectively achieve its goals and objectives. To heighten alignment in any business organization, the following aspects need to be addressed. First, the business strategy must be understood by both business and IT. Second, a strong cultural relationship between business and IT needs to be fostered. Third, a level of successful communication between both groups needs to be sustained. Fourth, IT and business strategies must be understood by both groups. Fifth, business and IT strategies must agree. The other is IT must provide support for the business strategy and vice versa. Lastly, the people belonging to each group must trust each other. Ullah & Lai [33], suggests that earlier alignment methodologies failed to capture the real benefits of alignment, due to an unknown or unclear business strategy, rapid changes in the business organization, changes in technology, and poor support from IT. Researchers regarded these failures as a challenge and undertook invaluable research on alignment through tackling different organizational factors [6].

2.3. Benefits of BITA

According to Ullah & Lai [33], business-IT alignment is seen to assist a firm in three ways; maximizing return on IT investment, achieving competitive advantage, and providing direction and flexibility to react to new opportunities. A key success factor for a successful company in a dynamic environment is effective and efficient information technology (IT) supporting business strategies and processes [34]. Accordingly, to maximize investment in technology, an organization needs to align business strategies and IS strategies and ensure cooperation between business and IT units [27].

However, achieving alignment between business and IT has been a critical issue for many years; researchers, business and IT executives, and consultants have seriously considered and worked on this issue since the early 1970s [35] [33]. By concentrating on the alignment of strategy and

infrastructure, firms may not only achieve synergy and facilitate the development of business plans, but also increase profitability and efficiency. These tangible benefits allow management to focus on the application of IT as a means to leverage their core competencies, skills, and technology scope, resulting in improved efficiency [27] [36] .

The literature suggests that organizations cannot be competitive or successful if their business strategies and information technology strategies are not mutually aligned. Njanka & Colomo-Palacios [1], pointed out that the main benefits of IT-business alignment in an organization are enhancing cooperation, enhancing competitive advantage, facilitating organizational processes and growth, higher return on investment, and performance enhancement which are discussed as follows.

Enhanced cooperation: Cooperation refers to the shared domain knowledge and common understanding between business and IT managers about a specific business process and how IT can be used to improve the performance of that process [37]. This shared business-IT understanding is the knowledge that IT managers possess about a specific process, the knowledge the line managers possess about the potential opportunities to apply IT to improve the process, and the common understanding between business and IT managers regarding how IT can be used to improve the performance of business process. In other words, shared IT-Business understanding enables the organization to conceive, implement, and use innovative IT applications to improve business process performance.

Enhanced competitive advantage: This refers to a sustained advantage or an edge a company has over its competitors. Alignment of IT and business strategy plays an important role to achieve company goals. Indeed, the business and IT performance are tightly coupled, and the company cannot be competitive if its business and IT strategies are not well aligned [38]. In this dimension, CIOs and CEOs today have a great role in the alignment of IT and business strategy. They are responsible for matching IT strategy to organizational orientation to achieve competitive advantage. CIO and CEO also play critical leadership roles such as decision making, informational role, leader for change management, and provocateur for technology initiatives, among others.

Facilitates organizational processes and growth: When alignment exists, IT delivers systems and services that are crucial to the company's strategies, operations, or user needs [39]. As a result, executives can perceive the contributions of IT there by users are more likely to accept and utilize IT resources. Its potential does not stop there. By making plans based on the business strategy, IT can anticipate what business requires in the future, and layout a trajectory to meet those upcoming needs [40].

Higher return on investment and performance enhancement: Business-IT alignment has shown to improve return on investment, cost savings, and time efficiency. This is because huge investments spent on IT by companies are highly managed and controlled. Research has also shown that small and medium enterprises (SMEs) with a high level of business-IT alignment indicate better performance and profit than SMEs with a low level of business-IT alignment. This means that

there is a positive relationship between business-IT alignment and organizational performance based on a strategic perspective [40].

On the other hand, literature explains the importance and benefits of achieving and sustaining BITA in the organization [14] . However, despite the body of knowledge on BITA, for most companies' alignment is still seen as an unreachable goal to achieve: it is not clear how to employ alignment to cope with the fast-changing external environment that is increasingly dependent on technology [31].

Moreover, scholars [16] [17] [7] [18] agree on achieving and maintaining the alignment of IT with business in today's dynamic competitive business environment and technological change has become a problem and remains a top concern for business and IT executives. Hence, considering the challenges of achieving and sustaining continuous alignment within a changing environment, this study was conducted with the objectives of designing a framework that guides a company on the way to maintain and manage BITA continuity within the change in business and technology environment, by having adjustable and flexible alignment.

2.4. The critical success factor for BITA

Researchers both academic and practitioners have pointed out various factors that affect business-IT alignment [41] [42] [25]. Management needs to pay special attention to critical success factor so as to enhance the chances for achieving and improving alignment [43]. Luftman [29] pointed out that most of CFSs can serve both as enablers and inhibitors of business-IT alignment. Table 2.2 below lists some of the enablers and inhibitors of BITA.

Enablers	Inhibitors
Senior executive support for IT	IT/business lack close relationships
IT involved in strategy development	IT does not prioritize well
IT understands the business	IT fails to meet its commitments
Business/IT partnership	IT does not understand business
Well-prioritized IT projects	Senior executives do not support IT
IT demonstrates leadership	IT management lacks leadership

Table 2. 2 Enabler and Inhibitors of BITA **[29]**

Kurti et al [44], classify critical success factors of BITA based on three dimensions. The first one is *Human Dimension* which includes IT skills and knowledge of business executives, Top management commitment, Business skills and knowledge of IT executives, Leadership skills of IT executives, Technical skills and knowledge of IT employees [44]. The other is the Social *Dimension* which further includes *a Shared* understanding of business and IT executives as well as mutual trust and respect between business and IT executives. The last one is the *Intellectual Dimension* which includes alignment of business and IT strategy/goals/plans, shared application, IT infrastructure alignment as well as alignment of IT strategy and structure with business strategy and structure [44].

Ullah & Lai [33], point out other factors that negatively influence the process of alignment as follows:

- Limited involvement of the CEO and CIO in strategy development.
- The weak relationship between business and IT
- The communication gap between business and IT
- Short-term planning between business and IT
- Lack of business and IT skills.
- A complex organizational structure
- Organizational culture
- IT is used as an organizational tool.
- Formal and informal business planning
- Lack of IT belief

The researcher argues that most CFS identified studies focus on the internal organization factor. However, they don't consider the external environment or change in technology, which seriously affects the effectiveness and efficiency of BITA continuity.

2.5. BITA Model and framework

In this section, the different business-IT alignment models and frameworks such as MITS90s, SAM, SAMM, and Unified framework are discussed in detail.

2.5.1. MIT90S framework

MIT90s framework encourages professionals to understand the dynamic nature of change and the acquisition of new technologies. This model is used as the basis for constructing different organizational models by various researchers and practitioners, especially for the strategic alignment model [5]. The MIT90s Model is a process framework that shows how five critical structures interact, which are strategy, structure, technology, people, and management processes. (see figure 2.1).

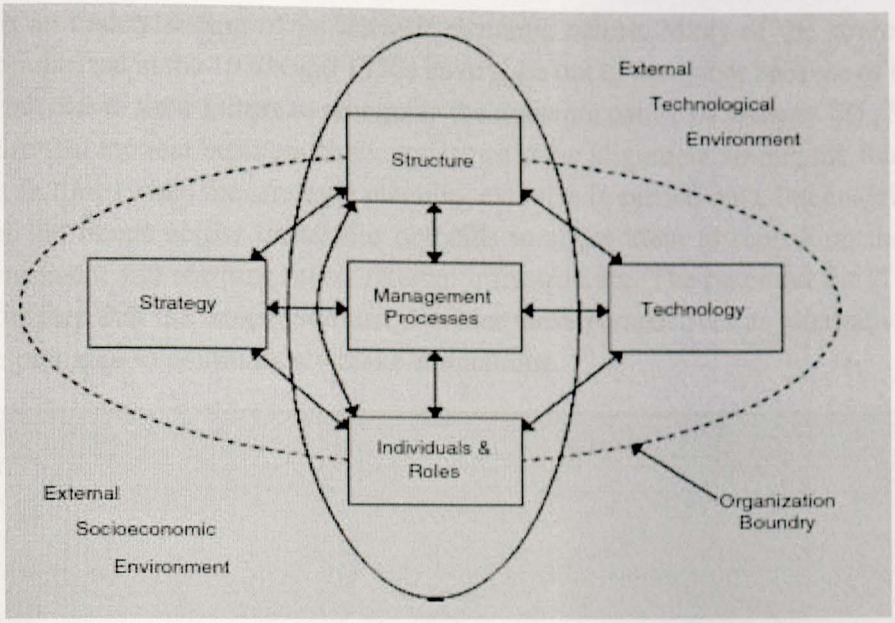

Figure 2. 1 MIT90s framework [45].

According to Rockart and Morton [28], all the elements of corporate functioning such as technology, strategy, organizational structure and culture, managerial processes, and individuals and their roles must be balanced. However, today's technology advancement which comes from external and internal technology environment is driving the elements of corporate functioning. On the other hand, the researcher argues that due to the fast and dynamic organizational and technology environment to succeed and gain competitive advantage the corporate should have to maintain mutual alignment between business and information technology.

2.5.2. Strategic Alignment Model (SAM)

According to Henderson [2], the Strategic Alignment Model (see Figure 2.2) identifies the need to specify two types of integration between business and IT domains. The first is strategic integration, which is the link between business strategy and IT strategy reflecting the external components [46]. More specifically, it deals with the capability of IT functionality to both shape and support business strategy. This capability is particularly important as IT has emerged as an important source of strategic advantage to firms. The second termed operational integration, is the link between organizational infrastructure and processes with IT infrastructure and processes [46]

Maes et al [22] , describe that the objective of SAM is to provide a way to align information technology with business objectives to realize value from IT investments. The authors argued that the potential strategic impact of information technology requires both an understanding of the critical components of IT strategy and its role in supporting and shaping business strategy decisions and a process of continuous adaptation and change. Hence, they presented a model that defines the range of strategic choices facing managers. This model serves as the foundation for all subsequent models and consulting techniques that are aligned with it. [22] .

SAM requires an understanding of its intrinsic dynamic nature. Many of the strategic planning techniques popularized in the 1970s and 1980s have gone out of favor-not because of the weakness in their logic but due to their failure to recognize the dynamic nature of strategy [2] . Managers are painfully aware that the real business challenge is not static alignment among the four domains at any one point in time (when the strategic planning exercise is carried out), but ensuring continual assessment of the trends across these four domains to allow them to reposition the firm in the external environment and rearrange their internal infrastructure. The potential for IT impact is so varied and complex that the executive must consider these perspectives as alternative conceptual lenses and be prepared to continuously make adaptations.

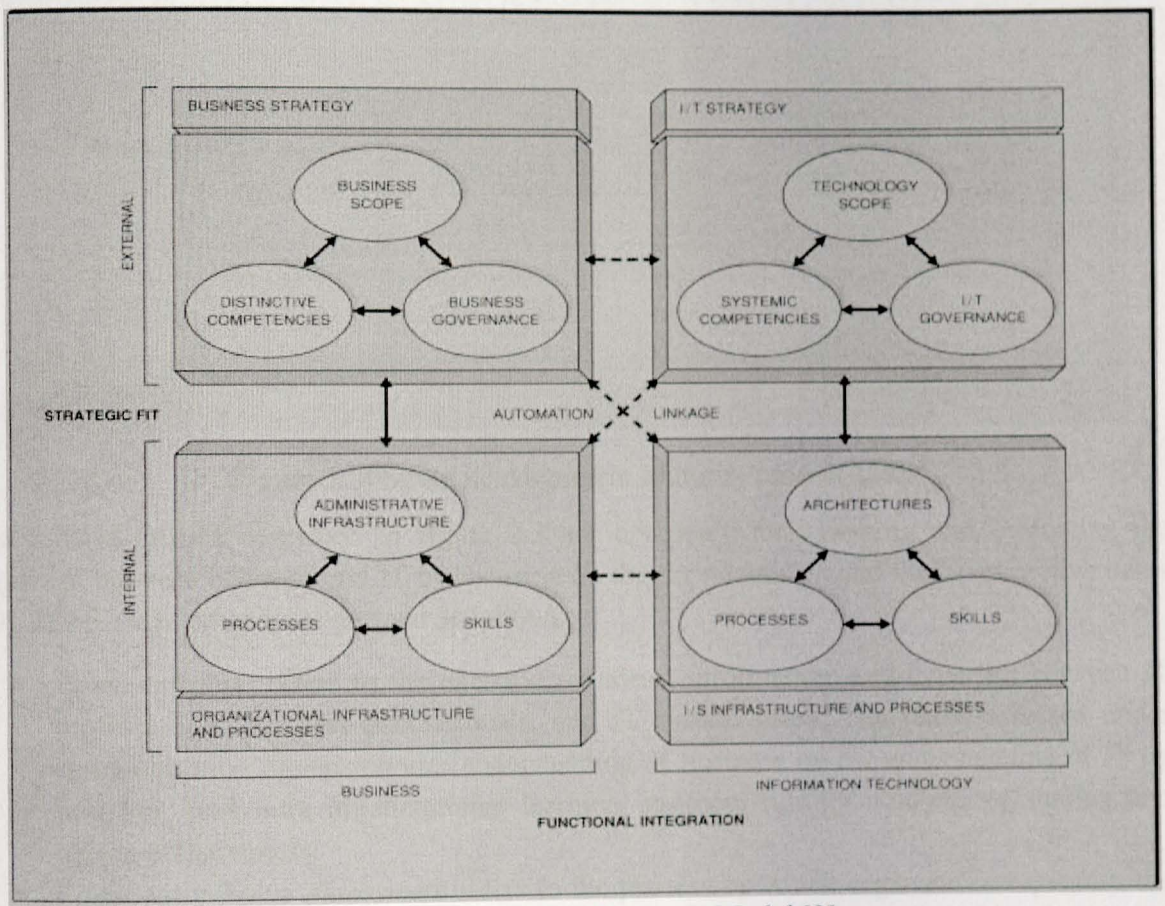

Figure 2. 2 Strategic Alignment Model [2]

2.5.3. Strategic Alignment Maturity Model (SAMM)

The Strategic Alignment Maturity Model (SAMM) is developed based on the strategic alignment model (SAM). According to Luftman [29], SAMM offered assessments that may help organizations in improving the degree of business-IT alignment maturity. SAMM defines six constructs for assessing the maturity of business-IT alignment as presented in figure 2.3.

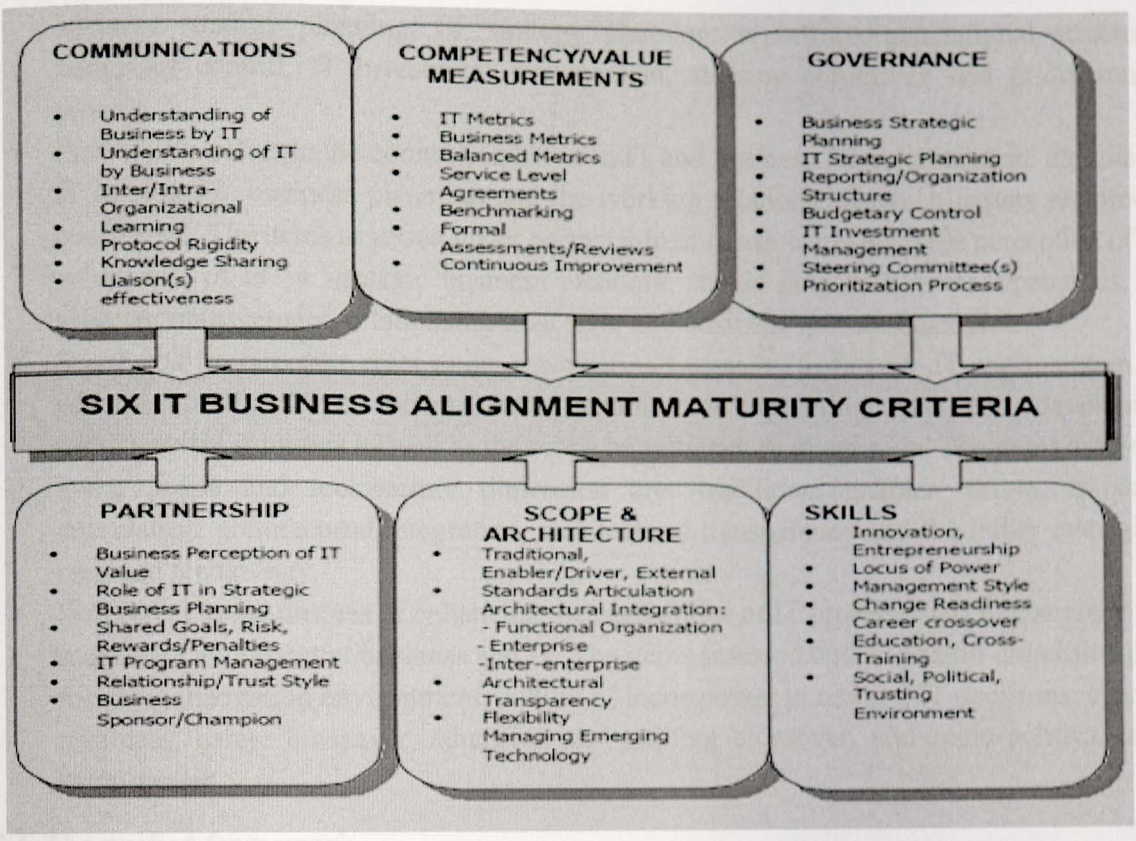

Figure 2. 3 Strategic Alignment Maturity criteria **[29]**

The SAMM criteria described in figure 2.3 are necessary for assessing and evaluating the alignment between business and IT by focusing on the six dimension and their perspective items [30]. The SAMM criteria are defined as follows.

- *Communication refers* to the exchange of ideas, information, and expertise between IT professionals, business professionals, and IT system users. The items assessed under communication dimension are: understanding of business by IT, understanding of IT by business, Inter/Intra organizational learning, protocol rigidity, knowledge sharing and liaison effectiveness.
- *Competence/Value Assessment* refers to the process by which organizations quantify the value of IT in a manner that is acceptable to IT and all stakeholders as well as the integrated metrics used to measure value business to IT and IT to business. The items assessed under competency/value assessment dimension are: IT metrics, business metrics, balanced metrics, service level agreement, benchmarking, formal assessment/review and continuous improvement.
- *Governance* refers to how an organization makes IT decisions and IT priorities as well as the involvement of IT in business strategic formulation and involvement of business in IT strategic formulation. Governance is important for defining the value of IT and also for defining how IT decisions are made. The items assessed under governance dimension are:

business strategy planning, IT strategy planning, reporting/organizational structure, budgetary control, IT investment management, steering committee and prioritization process.

- *Partnership* refers to the connection between IT and business for collaboration, the role of IT in strategic business planning, and the working relationship which fosters reciprocal confidence. The items assessed under partnership dimension are: business perception of IT value, role of IT in strategic business planning, shared goals/risk/rewards/penalties, IT program management, relationship/trust style and business sponsor/champion.
- *Scope and architecture* refer to an organization's capacity to finance IT and maintain an adaptive and flexible infrastructure capable of supporting new and developing technological solutions as well as the scope of architecture integration. The items assessed under scope and architecture dimension are: traditional enabler/ driver, standard articulation, architectural integration, architectural transparency and flexibility managing emerged technology.
- *Skill* refers to the process of enhancing the capabilities of IT professionals to guarantee the successful alignment of business and IT. The items assessed under the skill dimension are: fostering innovation environment, culture of locus power in making IT decisions, change readiness, career crossover, education and training crossover, and socio-political trust environment.

2.5.4. The unified framework

The main purpose of the Unified framework is to indicate the relationships between the main areas of concern and between the different levels, including the implied management and design processes, and not to visualize the areas or levels as such [22]. Moreover, the Integrated Architecture Framework, is a design tool, aiming at the development of mutually aligned business and IT systems through a unified architecture [22].

As shown in figure 2.4 at the strategy level, strategic alignment concerns decisions concerning variables like the mission, scope (boundaries and granularity), governance, and core capabilities at structure level such as contextual design, transformation, physical, logical and conceptual as well as at the operational level such as business, information and communication, technology system and infrastructure. The following alignment aspects have to be considered. Over the different areas (horizontal) and with the policies regarding the structural level (vertical) [22].

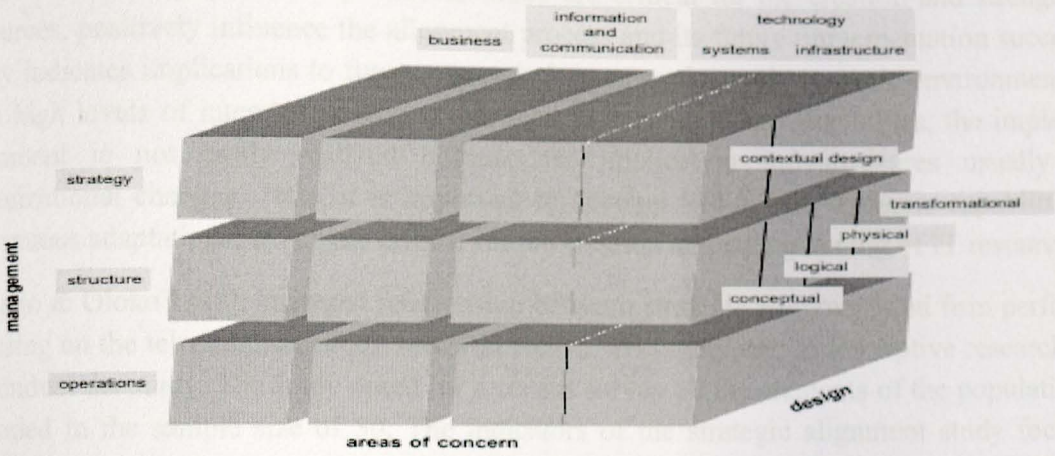

Figure 2. 4 Unified framework **[22]**

The adopted model

The study uses the strategic alignment model (SAM) and strategic alignment maturity model (SAMM) to assess and understand the current business-IT challenges and practices at ethio telecom as well as a basis to design the proposed framework in line with design requirements identified in the current context of ethio telecom. Because SAM and SAMM are critical in order to assess and understand the existing BITA practice as well as to ensure the successful achievement of BITA and improve corporate results.

2.6. Related Works

This section discusses related works conducted by various researchers on business-IT alignment, with a focus on those studies relevant to the current study. To investigate the research method or approach, sampling method, data collection techniques used by prior research, and analyze the findings and concluding remarks for use as an input for this research. While there have been much studies that identify benefits and challenges for achieving continuous business-IT alignment, few researches have been conducted on how to achieve and sustain continuous BITA by taking the changing business and IT environment into consideration. Accordingly, the next section explains and discusses related works done by foreign and local scholars.

2.6.1. Foreign works

Chen & Jih [47], conducted research on aligning information technology and business strategy with a dynamic capability. A qualitative, interpretive, research strategy was selected and a single longitudinal case study was employed to conduct the research. The company selected for this case study is a semiconductor company focusing on advanced integrated circuit packaging technology. The results of the study indicate lack of strategic IT alignment impedes the development of IT competency. A long-term view of IT strategy focused on IT resources with a clear understanding of the overall business vision, would be beneficial to link IT resources to the overall development

of IT. In addition, dynamic capabilities, which are critical for the creation and strength of IT resources, positively influence the alignment process and its future implementation success. The study indicates implications to future research for companies with dynamic environments, even with high levels of intended alignment between IT managers and executives, the implemented alignment is not easily realized because the application infrastructures usually follow organizational changes. Thus, it is important to develop BITA with dynamic capabilities with continuous adaptations, which are critical for the creation and strengthening of IT resources.

Mulago & Oloko's [48], analyzed relationship between strategic alignment and firm performance focusing on the telecommunication sector in Kenya. The study uses a descriptive research design to conduct the study. The study opted for a census survey all the elements of the population were included in the sample size of 50. The indicators of the strategic alignment study focused on employee alignment, key processes alignment, IT alignment, and customer alignment. The study finding shows that all indicator of alignment had a positive and significant effect on the performance of telecommunication firms in Kenya. The study concluded that firms that have aligned their employees, key processes, information technology and customer to their long-term strategy have a clear direction on what the firm is expected to achieve and who is responsible [48].

Mondale [30] , investigated and analyzed the alignment between business and IT for organizational success, with a particular emphasis on South African development banks. The researcher used a case study research approach with purposive sampling techniques. The unit of analysis was the organization, a major national development bank. Also, the participants, who represented the organization, were purposefully chosen based on their knowledge and experience with business and IT strategy. The participants included senior managers, general managers, line managers, and operational employees. Semi-structured interviews were chosen as the most suitable data collection technique for this research. Thematic analysis was employed to manipulate the collected data. The finding of the study shows that there is a need for executives to inspire confidence in business and IT professionals to recognize the banking dynamics relative to change and the addition of disruptive technologies and new solutions. The study found that inspiring leadership, alignment of business and IT strategies, continual improvement of business-IT alignment, and capacity development for IT are critical for company competitiveness. The study argues that BITA can be achieved through triangulation of the strategic alignment models, the IT capabilities model, the MiT90s framework, and the strategic alignment Maturity Model. The triangulated models complement one another in that when one model is weak, the other offers sufficient advice and adds to the body of knowledge on business-IT alignment.

2.6.2. Local works

King [20], conducted a study with the objectives of investigating and bridging the strategic gap between business strategy and IT strategy in the banking industry with a specific focus on Zemen Bank. The researcher follows the qualitative research method with a single case study approach. purposive sampling techniques were used to conduct the study. The data was collected through interviews, observation, focus groups, and document analysis. The study collected data through

interviews with senior IT and business executives/directors of one financial organization. The researcher adopted qualitative content analysis for the semi-structured interview to address participants' perspectives/attitudes and employed Luftman et al (Luftman, et al., 2017), six business-IT alignment criteria to collect and analyze the data. The main finding of the study shows that the lack of strategies in both business and IT departments, lack of outsourcing oversight metrics, the delinquency to provide current requirements of business by IT, and lack of focus by the IT department to meet the current business need considerably influence the business-IT strategic alignment within the bank in Ethiopia as a developing country. The study identifies new enabler and inhibitor of BITA. However, this study doesn't consider achieving and sustaining continuous alignment from operational or process, infrastructure and culture perspectives.

Ashenafi [22], conducted a study to assess the current status of business and information technology strategic alignment in public organizations and recommend solutions that increase the organizational capability to utilize IT resources through BITA. The study uses a mixed modal research approach, the qualitative (like an interview, observation), and surveys research method. For data analysis, descriptive analysis and regression analysis were used. The main finding of this study is that there is a documented IT and business strategy in ERCA but a strong strategic relationship is required. The guideline was developed based on the research finding result; it contains five variables which are: government policies, business strategy, IT strategy, business strategy, and organizational performance. The study concludes that keeping a strong business and information technology strategic alignment plays an important and holistic role in the achievement of organizational goals.

Minilik [21], conducted a qualitative case study on the case of the Bank of Abyssinia. The purpose of the study was to identify the internal and external challenges that hinder business and IT strategic alignment in the context of the Bank of Abyssinia. The data collection methods followed are interviews, observations, and document analysis. The main finding of the study shows that the lack of strategies in both business and IT departments, the lack of outsourcing oversight metrics, the lack of focus by the IT department to meet the current business needs, the ineffective way to delegate the right tasks to the right people, and the lack of clear policies and procedures are the key internal and external business-IT alignment hindering factors at the Bank of Abyssinia as a developing country. According to the findings, the study proposes a solution model to improve business-IT strategic alignment in the case bank. Furthermore, the study focuses only on exploring internal and external business-IT strategic alignment challenges in the context of the Bank of Abyssinia. However, the study does not include or cover business processes, IT infrastructure, or IS process alignment.

Summary of related work

Author Name	Title	Approach	Data Collection Method	Model Strength	Model Weakness
King [20]	Bridging the gap between business strategy and IT strategy	Qualitative, single case study approach in the case of Zemen Bank	Interview, observation and document analysis	Identify new enabler and inhibitor	
Minilik [21]	a case study on a business-IT improvement framework in a private bank called Bank of Abyssinia.	Qualitative case study in the case of Bank of Abyssinia,	Interview, observation and document analysis.		Neglect operational, social and infrastructural alignment
Ashenafi [22]	Impact of Business and Information Technology Strategic Alignment on Organizational Performance	The study used mixed research approach,	Interview, observation and survey questioner		
Chen & Jih [47]	Aligning information technology and business strategy with a dynamic capabilities' perspective	Qualitative, interpretive, and a single longitudinal case study	Interview, observation and survey questioner		
Mondale [30]	Business-IT Alignment Through Triangulation of Models	Descriptive research design	Survey questioner		
Mulago & Oloko's [48]	Effect of Strategic Alignment on Firm Performance in Telecommunication Sector in Kenya	Qualitative case study	Interview and observation		

Table 2. 3 summary of related work

2.7. Research gap

As presented in the literature review, the researcher attempted to conduct an extensive literature survey on the theme of business-IT alignment to identify approaches, knowledge gaps, models, and frameworks. Several researches are being conducted to identify the BITA benefits, challenges, and critical success factors and propose various models. However, to the researcher's knowledge, no research has been undertaken on constructing a BITA continuity management framework for the telecom industry.

On the other hand, none of the business-IT alignment models discussed above guides the company on the path to maintaining and managing continuous business-IT strategic, operational and cultural alignment while reacting to fast and rapid change in the business and technology environment [5]. Hence, this study focuses mainly on designing a business-IT alignment continuity management framework that allows ethio telecom to have a flexible and adjustable BITA in order to maintain and manage continuous mutual strategic, operational or process and cultural alignment between business and IT.

The next chapter presents and discusses the research methodology followed to conduct the study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Overview

In this chapter, the research methodology followed to answer the research questions and achieve the research objectives is discussed in detail. Based on research design, the step-by-step procedures followed and the method used are discussed. Moreover, validity and reliability of the methods followed in conducting the study are also presented.

3.2. Research Design

This study follows the design science research methodology to design and develop the business – information technology alignment (BITA) continuity management framework. As scholars [49, 50, 51] suggest design science research methodology is used most widely in information system research to design a better artifact that solves the existing societal or organizational problem. To design the proposed framework through design science research (DSR), the study is guided by Peffers et al. [52], DSR process model consists of six steps: problem identification, defining objectives of the solution, design and development, demonstration, evaluation, and communication (see figure 3.1).

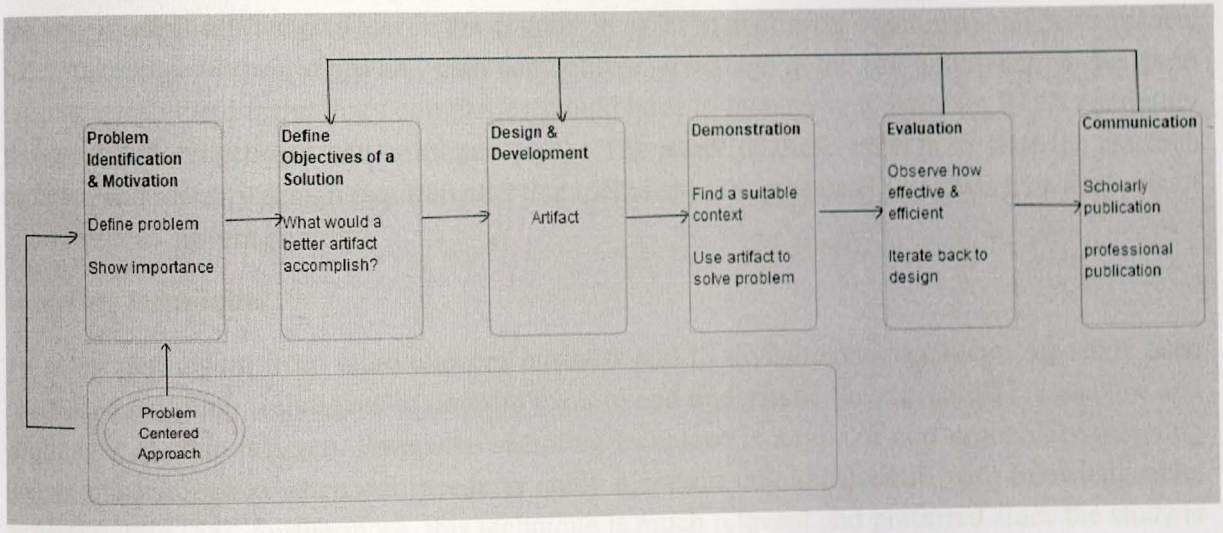

Figure 3. 1 Design Science Research Process Model **[52]**.

Problem-centered approach: *This* study uses a problem-centered approach as a research entry point, as shown in figure 3.1. Thus, this entry point is about identifying and defining the problem to be solved through an artifact by observing the environment or prior research [52] [53]. This approach enables the researcher to know what the existing BITA challenges in ethio telecom are in terms of achieving and maintaining continuous BITA, as well as the framework for addressing the problem identified. Accordingly, to conceptualize problem to be solved towards maintaining and managing BITA continuity, the researcher selected a problem-centered approach.

3.3. Problem Identification and Motivation

This is the initial step that defines the specific research problem and justifies the value of a solution. The problem definition is used to design an artifact that can effectively provide a solution [52]. The study follows problem-centered approach, document analysis, observation, and interviews with ethio telecom business and division management as well as extensive existing literature review, were conducted to identify the research problem.

The specific problem identified is achieving and sustaining continuous business-IT alignment within a changing business and technology environment which is challenging for business and IT executives or top managers, especially for ethio telecom. Therefore, the main objective of the study is to propose a framework that guides the organization on the way to maintaining and managing BITA continuity within a dynamic and fast-changing business and technology environment.

The main motivation to conduct this study is due to the fact that there is no research conducted towards constructing a BITA continuity management framework for the telecom industry and the need for further research on constructing a framework that embeds achieving and sustaining continuous alignment in a changing environment. As organizations continue to spend a significant amount of their resources on IT to improve the variety and quality of services, achieving and maintaining business and IT alignment is a timely issue [54]. Moreover, ethio telecom industry as the only internet service provider in the country in order to maximize organizational performance, meet stakeholder expectations and gain competitive advantage in the fast and dynamic change in telecom market and technology companies should have to manage and maintain BITA continuity throughout the functional and corporate level. The result of these steps is to state the research problem and identify design requirements that included in the proposed framework on the basis of ethio telecom current context.

Sampling techniques

To select participant from ethio telecom business and IS divisions management, the study used purposive sampling techniques in order to explore and understand the current BITA practice and challenges at ethio telecom. Purposive sampling technique is a type of non-probability sampling that is most effective when one needs to study a certain cultural domain with knowledgeable, experts within [55]. Furthermore, this technique is much relevant and preferred since the study is expected to get and understand feelings of executives and managers who have knowledge and experience towards business-IT alignment.

Data collection

The study follows a qualitative research approach to collect the primary and secondary data from ethio telecom. The primary data was collected using interview and observation. The secondary data was collected using the document analysis method. To collect the required data through semi structured interview, the study is guided by a conceptual framework adapted from Luftman et al (see Figure 3.2.).

Data analysis techniques

To analyze the collected data the researcher follows thematic data analysis techniques. It is a qualitative analysis method for identifying, analyzing, and reporting pattern (theme) within data by minimally organizing and describing data set in detail. According to Braun and Clerk [56] the thematic analysis method consists of six phases as presented in table 3.1.

Phases	Description of the process
Familiarizing with the collected data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
Generating initial code	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
Searching for theme	Collating codes into potential themes, gathering all data relevant to each potential theme.
Review theme	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic 'map' of the analysis.
Defining and naming theme	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
Produce report or interpretation of the result	The final opportunity for analysis. Selection of vivid, compelling extract examples, the final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis

Table 3. 1 Phases of thematic analysis **[56]**

3.4. Define objectives of a solution

This step infers the objectives of a solution from the problem definition and knowledge of what is possible and feasible [52]. The main objectives of a solution are to guide ethio telecom on how to maintain and manage BITA within a changing business and information technology environment. It also allows ethio telecom to be responsive to unexpected and rapid changes in organizational environments. By maintaining and managing BITA continuity in current change environment they were able to gain competitive advantage and fulfill it is vision of becoming world-class telecom company. The objectives of the solution are defined on the basis of the problem and design requirements identified in the ethio telecom context.

3.5. Design and development

This is the activity that creates an artifact. Conceptually, a design research artifact can be any designed object such as constructs, method, model or instantiation in which a research contribution is embedded in the design [52]. The study constructs the BITA continuity management framework for ethio telecom based on the design requirements and objectives of the solution as well as the current literature.

3.6. Demonstration

The goal of demonstration, according to Peffers et al. [52], is to show how to address an issue using the results of design science research output, which is an artifact. The designed framework was demonstrated to 17 participants of ethio telecom business and IS division management. An illustrative case study is used to show how the proposed framework works to solve the research problem by taking a real-telecom industry scenario. The case study method helps the researcher to closely examine the solution to the research problem and provides participants a deeper understanding of how the proposed framework works. The researcher iterated back to the design as per the participant's comments to further improve the proposed framework and present the latest framework for evaluation.

3.7. Evaluation

Evaluation aims to observe and measure how well the artifact supports a solution to the problem. This activity involves comparing the objectives of a solution to actual observed results from the use of the artifact in the demonstration [52]. The proposed framework was evaluated for efficiency, usability, applicability, content, and context coverage. The proposed framework is evaluated by the researcher using survey (closed-ended questions) and semi-structured interview (open-ended questions) techniques with 17 participants chosen from ethio telecom's business and information systems division experts. The researcher communicates the output of the study as per the evaluation results.

3.8. Communication

The final stage of DSR is communication that allows communication of the problem and its importance, the artifact, its utility and novelty, the rigor of its design, and its effectiveness to researchers and other relevant audiences [52]. The research output was communicated through the thesis work to the School of Information Science of Addis Ababa University and to ethio telecom management, as well as through the submission of an article for scholar publication.

3.9. Conceptual Framework

The conceptual framework is designed by the researcher based on the research problem identified from ethio telecom context and existing literature. The researcher uses the research model adopted from Luftman et al. [7] to construct the conceptual framework because the attribute or dimensions used on this model are critical to answer the research question and meet specific research objectives of the study. Moreover, the reason that the SAM model is selected is as follows:

- It is the most prominent model used to achieve, assess and maintain business-IT alignment in various organizations including the telecommunication industry [7].
- It helps to meet the specific research objectives of the study which are to assess and understand current BITA practice and challenges at ethio telecom and to answer the first research question this model is appropriate.
- The model does not view IT-business alignment as a singular (though varying) state along the four dimensions, but rather a continuous process of adjusting activities across multiple dimensions that together result in improved/better alignment [7].

- In this model, BITA is seen as a dynamic process rather than a static state. Furthermore, the SAM model is flexible or adjustable based on organizational context and in terms of scope, it focuses on assessing, achieving, and maintaining BITA.

The research model consists of five distinct constructs such as communication and collaboration, value analytics, IT governance, dynamic IT Scope, and business and IT skill development (see figure 3.2.).

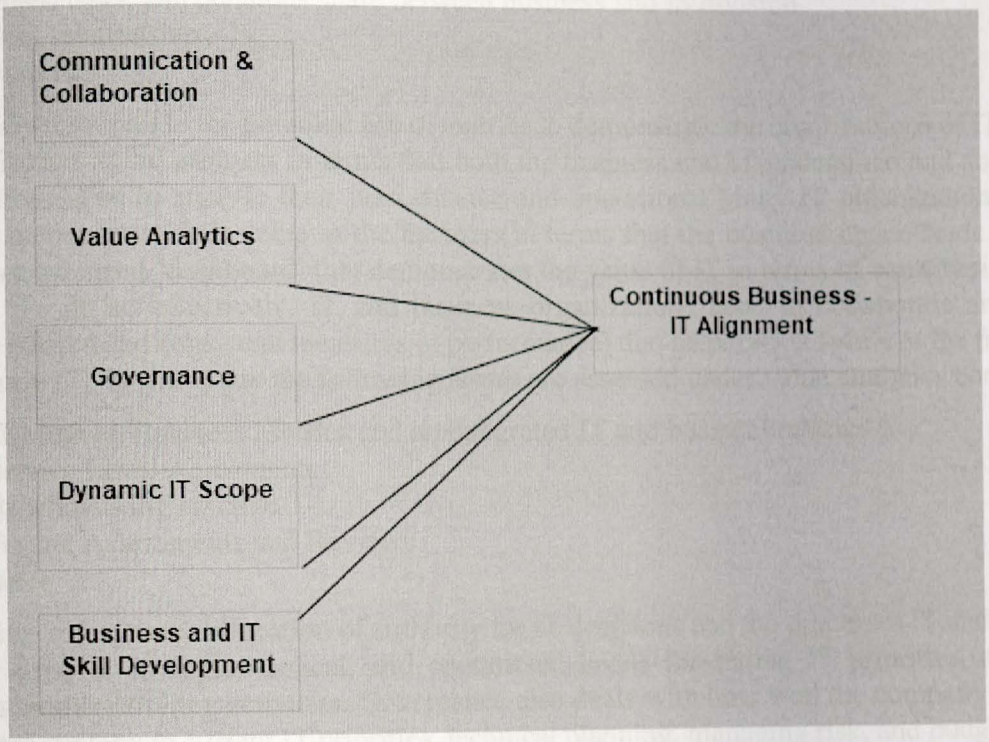

Figure 3. 2 The research model **[7]**

Details of each of the variable in the conceptual research model are discussed as follows.

Communication and Collaboration

Communications and collaboration refer to the effectiveness of the exchange of ideas, knowledge, and information between IT and business organizations that enables stakeholders to clearly understand their respective strategies, plans, business and IT environments, risks, priorities, and how to achieve them [7]. Given the dynamic business and technical environments that continuously confront organizations, knowledge sharing is paramount. Studies show that effective communications and collaboration between IT and the business lead to increased mutual understanding and influence positively alignment as understanding is instrumental in achieving coordinated activities [57]. This also facilitates the collaborative leveraging of resources that can build a competitive advantage.

Finally, effective communications and collaboration result in having trusting relationships between IT and business executives. This understanding is important as organizations grow, and the need for integration across the enterprise and its external partner's increases. This permits

higher risk-taking, faster responses, and better accountability [7]. Thus, issues assessed under communication and collaboration construct are:

- IT's understanding of business and business's understanding of IT
- Inter-organizational Learning and knowledge sharing practices
- the existence of an efficient communication channel between IS and the business division.
- The value of IT in the eyes of business
- The role of the information systems division in strategic business planning
- Goals, risks, and penalties share between business and IS division.
- work relationship

Value Analytics

Value analytics refers to the potential use of metrics to demonstrate the contributions of IT and the IT organization to the business in terms that both the business and IT understand and accept. All organizations need to analyse their performance and operations. Many IT organizations cannot currently demonstrate their value to the business in terms that the business understands. What is needed is a balanced 'dashboard' that demonstrates the value of IT in terms of contribution to the business. To do so effectively, IT and business organizations need to collaborate and create analytics (shared and consistent measures of performance) that help track a firm's or the function's performance [7]. In this study the following issues are assessed under value analytics constructs:

- IT Metrics, Business Metrics and an integrated IT and business metrics
- Service Level Agreements
- Benchmarking practice
- Formal Assessments and Reviews

Governance

Governance refers to the allocation of authority for IT decisions and the processes IT and business manager's use at strategic, tactical, and operational levels for setting IT priorities, allocating resources, and controlling activities. Governance also deals with how well the company connects its business strategy to current IT priorities, technical planning, managing risk, and budgeting [7]. Governance related activities contribute to alignment because they help: recognize the value of IT; define a business vision and strategies and the role of IT in achieving them; and make informed IT investment decisions. The key activities for governance include: steering committees, IT-business liaisons, budget and human resource/sourcing allocation processes, boundary management of the IT function, and assessments of IT services by business executives. Governance should be focused on providing those activities that create a shared direction rather than merely trying to monitor IT initiative [7]. Thus, the following issues assessed under IT governance constructs:

- IT Strategic Planning and Business Strategic Planning
- IT Organizational Structure
- IT Reporting
- IT Budgeting
- IT Investment Decisions
- Steering committee
- IT Prioritization Process and IT Reaction Capacity

Dynamic IT Scope

Dynamic IT scope refers to the continuous process of provisioning a flexible infrastructure, its evaluation, and the application of emerging technologies and delivery of customized solutions to business units and external customers or partners. This dimension taps into the broader impact of IT services through appropriate and innovative scoping of what the IT function does to provide demonstrable business value. Scoping is the only set of technical activities included in the alignment processes [7].

Dynamic scoping is needed because as companies change their business scope their infrastructure needs to be re-scoped. Therefore, IT Scoping is about the generation of shared activities that create a flexible IT infrastructure, evaluate and apply emerging technologies, and foster IT-related activities that drive direct business process change or deliver customized solutions/ services. The scoping activities include among others shared application development considerations, standards articulation, architectural integration and architectural transparency, agility principles, and activities that promote infrastructure flexibility [7]. Thus, issues assessed under dynamic IT scope construct are:

- Traditional, Enabler/Driver, External
- Standards Articulation
- Architectural Integration
- Architectural Transparency to Changes
- IT infrastructure flexibility

Business and IT Skill development

Business and IT skill development refer to the process of enhancing the capabilities of IT professionals to guarantee the successful alignment of business and IT. IT skills capture critical human resource activities, such as hiring, retention, training, performance feedback, innovation encouragement, career opportunities, and individual skill development. It also covers activities that promote to IT organization's readiness for change, learning, and ability to leverage new ideas [7]. Thus, issues assessed under business and IT skill development construct are:

- Innovative Entrepreneurial Environment
- Cultural Locus of Power / organizational culture building
- Change Readiness
- Career Crossover
- Training/Talent improvement to Learn
- Interpersonal Interaction

3.10. Validity and Reliability

To apply the output knowledge of the research in a real environment validity and reliability of data during research are essential [58]. Hence, the researcher uses the methods below to ensure the validity and reliability of the study:

The researcher performs a rigorous evaluation to validate the acceptance of the framework by the ethio telecom business and IS division experts. Furthermore, the researchers used triangulation techniques to ensure the reliability and validity of the study. Triangulation is about conducting research from different perspectives. Therefore, the researcher collects the data from both the business and IS divisions of ethio telecom management to apply triangulation.

3.12. Summary

The study uses design science research methodology to design the proposed framework by implementing Peffers et al. [52] DSR Process Model. The researcher collects primary data through open-ended interview questions and observation; while secondary data is collected through document analysis. 21 respondents were selected for sampling from both business and IS divisions management of ethio telecom.

In the next chapter, a discussion of problem identification is made through understanding the current practice of ethio telecom. To this end, the data collected based on semi-structured is presented following the principle of thematic analysis.

CHAPTER FOUR
PROBLEM IDENTIFICATION

4.1. Overview

In this chapter, data collected through interviews, observations, and document analysis are presented, analyzed, and discussed in line with the specific research objectives, research questions, and the literature review conducted. This enables to understand the current practice and challenges of business-IT alignment at ethio telecom and answer the research questions by aligning with the existing literature review.

For the purpose of analysis, the thematic data analysis technique is followed to identify, analyze, and report on the pattern of data collected from different sources. As pointed out by Braun and Clerk [56], thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data. It organizes and describes data collected in (rich) detail and consists of six steps, such as familiarizing with the data collected, generating initial code, searching for a theme, reviewing themes, defining and naming themes, and producing reports or interpretation results. Moreover, the thematic analysis step is not a linear process of simply moving from one step to the next. Instead, it is a more recursive process, where movement is back and forth as needed throughout the steps [56]. Accordingly, the researcher has generated transcript data from the discussion issues, extracted initial codes from the transcript, identified main themes from sub themes that were generated from the initial code, and finally, produced an interpretation report in line with the research questions and specific research objectives.

To conduct the interview, 21 respondents participated from both the business division and the IS division of ethio telecom. Table 4.1 shows the positions of the respondents who participated in this study.

Title	Respondent categories	Total population	Sample size
Chief Officer	Top-level managers	6	2
Director	Middle-level managers	12	7
Manager	Low-level manager	25	12
	Total	**43**	**21**

Table 4. 1 Respondent information from both business and IS divisions of ethio telecom.

The data collected through interviews is based on the conceptual model presented in figure 3.3. Five variables are used for assessing the current BITA practice and challenges at ethio telecom, such as communication and collaboration, value analytics, IT governance, dynamic IT scope, and business-IT skill development. Accordingly, the collected data from primary source is analyzed, presented, and discussed to understand the current BITA practice and challenges at ethio telecom. In addition, the theme identified from the finding is discussed in detail on the basis of the current company context and existing literature. The final section consists of the design requirements, the objectives of a solution, and the proposed framework with a detailed description.

4.2. ethio telecom

The researcher presents the following discussion about ethio telecom based on the primary data collected through semi-structured interviews and company document analysis such as functional requirement specification (FRS), service design package (SDP), detail level design (DLD) high level design (HLD), strategic roadmap, strategy from 2021 to 2022, six-month and annual report, business requirement template, organizational structure, and official intranet and extranet webpage.

Ethio telecom formerly Ethiopian Telecommunication service is Africa's oldest public telecommunication operator established in 1894 [59]. The company changed its name from Ethiopian Telecommunication to ethio telecom in November 2010 [59]. As the country's sole telecom product and service provider [59], ethio telecom should strive for and maintain continuous business-IT alignment in order to improve organizational performance, meet stakeholder expectations, and gain a competitive advantage. As a result, the company contributes to society's economic growth and towards other industries' sustainability.

The company follows a top-down approach. Accordingly, its overall organizational strategy is prepared and designed at the corporate level by a corporate strategy management of the company, which consists of chief officers, board executives, managing directors and strategy directors from both divisions. Then, the overall company strategy distributed to the business and Information Systems (IS) divisions so that; they prepared their strategic plans on the basis of the corporate strategy.

The business division contains four functional units; marketing, sales, customer service, and customer expectation. The marketing unit is responsible for assessing the market and bringing new product or service ideas to the company by preparing business requirement documents based on market analysis and customer needs. The sell unit is responsible for selling the product or service to the customer. The company's customer service units help customers acquire ethio telecom services or products. Customer experience is the newly emerged unit that is responsible for assessing customer satisfaction and acting as a customer to ensure user involvement before the product or service goes to market.

The information systems division is the main driver of business transactions and strategy. Moreover, the IS division also serves as the intermediary between the business and vendor for business requests that need vendor assistance, like customization of the system or solution. The main blocks of a service requested by the business from the IS division are product, system, service, and infrastructure requests. The information systems division of ethio telecom is responsible for delivering the highest quality of technology-based IT solutions, products, and services in the most cost-effective manner that fulfills internal stakeholders' requirements to support the company's processes as well as brings external customer satisfaction. Moreover, its main duties are to develop and implement an IT strategy and governance based on the business strategy, technology trends, and emerging telecom businesses. The IS division is dedicated to provide telecom IT services by organizing itself into four main units;

1. IT Service Strategy Plan and Management: They are responsible for managing the whole IT strategy and for assessing and preparing performance reports. Moreover, they are mainly responsible for the program, performance, and change management of the division.
2. IT Service Design: They are responsible for preparing service design package documents that contain LLD and FSD for any project based on business requirement documents presented by the business division, mainly the marketing unit. Moreover, it is the main unit that frequently communicates with the business division regarding the business requirements and new product ideas.
3. IT Service Rollout: They are responsible for building and implementing solutions or projects based on service design package documents provided by the IT service design unit. Moreover, they are responsible for implementing whatever solution is requested by the IT service design unit, such as infrastructure, service, and system requests.
4. IT Service Operation: This unit is the backbone of the company. It is responsible for providing IT service operations and managing corporate and business support systems.

The business division works with IS division regrading requests of infrastructure, system, product, and service from the IS division and also to request suggestions on how to sell the product easily and to bring new product ideas by analyzing the market. The IS division is responsible to provide effective and efficient IT service based on business needs or requests. Moreover, the IS division is an intermediate between the business and vendor, particularly for business requests that need a customized solution or system.

Business - IT alignment is the first pillar in the IT strategic roadmap of ethio telecom and the practice is there. However, achieving and sustaining continuous BITA that maximizes return on investment, customer or stakeholder satisfaction, and competitive advantage by building mutual alignment is challenging in the ethio telecom due to lack of BITA continuity management framework. Moreover, in ethio telecom there is a business-IT alignment concept on the paper but, there are challenges when it comes to the practice. As a result, there is a need for constructing a BITA continuity management framework for achieving and sustaining continuous alignment. Accordingly, the researcher intended to construct the proposed framework based on the current status of BITA practice at ethio telecom and existing literature.

One of the challenges ethio telecom top management faces is achieving and sustaining continuous mutual alignment of strategic, processes and culture between the business and IS divisions. Therefore, there is a need to come up with a framework that guides a company on how to achieve and maintain business-IT alignment within a changing business environment and technology to allow the company to enhance company performance, increase stakeholder expectations and needs, and gain a competitive advantage over other companies in the telecom industry. The new ethio telecom 2021 – 2024 strategy is called **BRIDGE** [60] which stands for:

- **B**est customer experience
- **R**eputable Brand

- **I**nnovative Product/ Service and Technology Excellence
- **D**evelop People-Oriented Learning Organization
- **G**rowth in financial Capacity
- **E**xcellence in operation

To achieve this strategy the company has to establish and implement effective mutual business and IT alignment throughout the company change management.

4.3. Thematic Data Analysis

By following the steps of the thematic data analysis techniques [56], the researcher identifies, analyzes, and reports on the pattern of data collected from ethio telecom. As stated by Braun and Clerk [56], the first step of thematic analysis is familiarizing with the collected data from the respondents through reading and re-reading the notes taken from the interview and listening to the recorded data from the interview sessions. Accordingly, after becoming familiar with the collected data, the researcher generates an interview transcript from the discussion held with respondents as an output of the familiarizing steps. After analysis of the interview transcript, an attempt is made to extract the initial code for each transcribed data point and collect them under predefined constructs such as communication and collaboration, value analytics, IT governance, dynamic IT scope, and business and IT skill development. After all the relevant data had been coded, we grouped the initial code, which is relevant to the research questions, into related groups, using a table as a visual tool. Then we searched for and reviewed the candidate theme from the grouped code, also known as a sub theme. The working theme was named after we attempted to analysis group subthemes in accordance with the research questions. Finally, the researcher produced a theme interpretation report in accordance with the research questions and objectives. Here under detailed discussion of each step is given.

4.3.1. Transcribing the collected data and generating initial codes

According to the steps of thematic analysis, we tried to transcribe the collected data and generate an initial code. To this end, the data is transcribed and organized under the defined constructs based on their similarity. Then initial code is generate as presented below.

1. Communication and Collaboration

Communication and collaboration enable to assess the effectiveness of the exchange of ideas, knowledge, and information between IS and business divisions and the connection between IT and business for collaboration, relationship, and trust which foster achievement of continuous BITA throughout the company [7]. The researcher uses communication and collaboration attributes to assess the current status of BITA at ethio telecom. All respondents agreed that establishing effective and efficient communication and collaboration is critical for BITA's success.

Interview transcript 1

The following transcript and an initial code are generated from the discussion with respondents on issues of the extent to which there is mutual understanding between business and the IS divisions.

Most of the respondent noted that,

"There is a limited understanding of IT by middle and lower business managers."

Some IS division respondents accredit the reason for the misunderstanding to the business side's insufficient awareness of IT capabilities and infrastructure, and they say,

"business managers have limited awareness of IT capabilities and infrastructure, and they expect the information systems division to deliver any request they have in a timely manner without understanding the IS side challenge. When a project is delayed, they blame the IS division."

Respondents from business division, on the other hand, connects the problem with the IS division by saying,

"The IS division does not explain IT infrastructure and capabilities in business terms; instead, they do so in technical terms, which we found difficult to understand."

Further comments were made by IS division respondents about business division unwillingness to consult IS division as a cause of a lack of shared understanding, to which they responded,

"There is what is called 'crazy thinking' from the business division side. They just need the IS division to provide them with whatever the marketing unit brings to the table. It seems that they don't to want to understand the IT side. They were convinced that they knew everything. However, technology in the telecom business is changing at a rapid pace. It is difficult to fulfill any company objectives unless there is efficient communication and common understanding."

Based on Interview transcript 1, we reveal the existence of limited awareness, lack of mutual understanding, and lack of efficient ongoing communication. Accordingly, two initial code are identified; ***shared understanding*** *and* ***ongoing efficient communication.***

Interview transcript 2

The researcher develops the following transcript and initial code as a result of the discussion with the respondent about how dynamism in the business environment affects the continuous BITA practice at ethio telecom.

The majority of the IS division members who participated in the interview replied that,

"The main business side challenge that we face is the frequent change of business requirements, which causes a lot of problems in the on-time delivery and quality of products. The business division send us requirements to request a service, system, or product, and after the project is completed, with the huge amount of budget and human power, they change their previous requirements without consulting the IS division and expected to get product as per adjusted requirement."

Concerning the reason behind why business requirements frequently change, business division respondents commented that;

"There is a problem with business requirement change as a result of frequent changes in customer desires, changes in the telecom industry and technology, and a lack of requests for assistance from the IS division during business requirement document preparation. There was no user interaction in the past, but now ethio telecom has a customer experience unit that acts as an end user and is involved in requirement formulation and even testing. Moreover, there should be continuous interaction among business and IS division to overcome the effect of frequent change in business requirement."

Other respondents relate the frequent change in business requirements to the change in business and technology environments, noting that,

"Business requirements change for two reasons: first, customer or enterprise behavior changes dynamically. Second, business and technology dynamism are the main reason why business requirements change. As a result, it creates over customization of the solution and affects time to market."

Finally, the respondent suggests as a solution that

"Because we live in an uncertain business and technology environment where change can occur at any time, the company must adapt to change. Therefore, the business requirements need to be adjusted as per the change by consulting with the IS division on how to integrate with the previous requirement."

From analysis of interview transcript 2, we reveal the effect of business requirement change, the dynamism of customer needs and technology advancement, and the uncertainty of the business environment on communication and collaboration. Accordingly, ***change in the business environment***, ***the effect of business requirements*** and ***technological advancement*** are identified as an initial code.

Interview transcript 3

As shown below, the researcher created transcript data and initial code from the conversation on the extent to which knowledge sharing and organizational learning practice exist between the business and IS divisions. Almost all of the respondents agreed that

"There is lack of structured knowledge sharing practice in place to allow business and IT experts to share experience, issues, opportunities, and intellectual understanding."

Moreover, some respondents pointed out about knowledge sharing in ethio telecom in such a way that,

"Knowledge sharing in ethio telecom is on an ad-hoc basis. There is no formal knowledge-sharing platform to exchange knowledge among business and IS units."

As a solution to knowledge sharing, respondents suggested that

"There is no mechanism in place to encourage functional and corporate experts to share and apply their knowledge. Allowing employees to learn in the workplace can increase company performance by allowing them to share and use their experiences."

As stated in the transcript 3, issues such as a lack of shared knowledge, a lack of a structured knowledge sharing platform, learning challenges in the workplace, and a lack of shared experience and lack of intellectual understanding among the business and IS divisions. Accordingly, to summarize the issues into common meaning, we generate ***a formal knowledge sharing platform*** and ***learning in the workplace*** as the initial code.

Interview transcript 4

We generated the following interview transcript and initial code based on our discussion with the respondents about the function and efficacy of business and IT communication channels. The respondents noted their lack of liaison at ethio telecom, by replying that,

> *"We do not use liaisons, or if we do, we do so on an ad hoc, as-needed basis. Among staff, there is a lack of effective communication channels for exchanging business knowledge with information systems or information systems knowledge with business."*

On the contrary there are respondents who claim that there is liaison at the executive level, which does not help ethio telecom create relationships, as stated below

> *"ethio telecom frequently uses liaisons to bring IT knowledge to business and business knowledge to IT at the executive level, but they are largely used as a point of contact for dialogue, not to help create relationships."*

Respondents from IS division complains that there isn't enough flexible communication channel between IS and between divisions, noting that,

> *"We use email to communicate with business divisions such as marketing, sales, and customer service to answer requests on how to sell and how to provide effective and efficient service and products, which is more formal. However, this is a shortcoming due to its tight couple interaction that does not allow flexibility. "*

Since the transcript summarized from the interview emphasizes the lack of flexible and effective communication channels in ethio telecom, we extract ***a flexible communication channel*** as the initial code.

Interview transcript 5

Based on the discussion concerning the extent of trust and openness across businesses and IS divisions, the following interview transcript and initial codes have been created.
Most of the respondents from the IS division's complaint were towards sharing risk and reward. By saying so,

> *"The IS division takes most of the risk with limited rewards. No matter what, if there is a delay in a project and over budget, as a result, the IS division is always the one to take the full risk. The problem may be from the business side due to the requirement not being clearly stated."*

Other respondents from the business division, on the other hand, stated there is a split between risk and reward as per accomplishment,

> *"We split the risk and reward based on accomplishment, as well as the blame for mistakes or weight loss. For example, both the business and information systems divisions received thanksgiving on the Tele Birr mobile money service."*

As a solution respondent suggested that,

> *"As ethio telecom always in change environment and competitive market place, they should have to manage risk and complaint issues properly among business and IS divisions through maintaining successful business-IT alignment at corporate level."*

The above interview transcript 5, under communication and collaboration, reveals the existence of limited risk and reward sharing, the compliant issues, and splitting the risk and reward. On the basis of these issues, we generate two initial codes, such as ***risk and complaint management*** and ***shared risk and reward.***

Interview transcript 6

The following interview transcript and initial codes are generated from the responses to the practice of compromising IT with a business and business with IT at the corporate level.

The majority of respondents said,

> *"In the past, ethio telecom followed an IT-led approach, but now it follows a business-led approach. The businesses are in charge of appraising the telecom market or introducing new product ideas to the corporation, and the IS division is responsible for delivering the product or service, whether developed in-house or purchased from a vendor, especially for items that require customization solutions."*

Respondents from business division clearly supports the above comment, by saying,

> *"We understand IT because business drives IT, and we are the ones that do business research and offer new product ideas to the company. As a result, the IS division is in charge of delivering the product we seek due to business lead."*

Finally, respondents suggest that

> *"Because of business-lead, the business standards compromise the IT standards, which is the main challenge to sustaining strategic alignment. It is critical that in order to achieve ongoing business and IT alignment, both IS and business leaders must work together in harmony and there should be mutual lead in ethio telecom. "*

The above interview transcript 6, under communication and collaboration, shows the existence of a lack of mutual lead, the absence of ongoing business-IT alignment, and the lack of working

together in harmony. Accordingly, we generate ***mutual lead*** and ***work in harmony*** as the initial code.

Interview transcript 7

As per the discussion with the respondent on the extent of association and relationship between business and IS at ethio telecom, the following transcript and initial code have been generated.

Most of the respondents noted that,

> *"There is a sense of conflict and mistrust between the information systems and the business division."*

A respondent from the IS division related the problem with the business side by replying that

> *"To speak honestly, on the business side of our organization, there is a culture known as 'don't consult IS'. The business division says when you ask the IS section for advice, they always state the constraints and obstacles. Therefore, we can say there is a lack of working relationships with trust among the divisions."*

Further response suggests ongoing, effective communication and relationships solve the conflict and mistrust among divisions.

> *"Misunderstandings in the workplace between the business and IS divisions occur due to a lack of adequate communication channels, especially when interpreting business requirements. In today's fast-paced business world, it's evident that a change is required. However, effective and constant communication and relationships with business and IT divisions overcome the difficulty posed by dynamic business demand."*

From interview transcript 7 we identified the existence of conflict and mistrust, a lack of effective continuous communication and relationships, and misunderstandings in the workplace. Consequently, we generate ***relationships with trust*** as the initial code under the communication and collaboration construct to generalize the issues.

2. Values Analytics

The value analytics attribute is about the potential use of metrics or value measures to demonstrate the contribution of IS/IT to business and business to IS/IT in terms of both the business and IT understanding and acceptance [7].

Interview transcript 1

From the discussion with the respondent concerning the metrics procedure used to measure the contribution of IS/IT for the business and business to IS/IT, the following transcripts and initial codes generated.

The respondent agreed that.

> *"There is a lack of value measurement integration of business and IT in ethio telecom."*

Other business respondents confirmed this argument by referring to the lack of formal integrated value measurement between the business and IS division,

> *"Across functional levels, we formally use return on investment and activity-based costing. However, as far as I'm aware, there is no formal value measurement of integrated IS/IT and business to assess IS/IT contribution to the business and the business's contribution to IS/IT."*

On the other hand, one respondent says about the emerging of multidimensional measurement,

> *"A multidimensional approach has emerged, with proper weighting given to IT and business measures. Our external partners were also subject to the same measures, but some middle and lower-level managers were unaware of them."*

The interview transcript highlights issues of lack of integrated competency measurement and a lack of a link between business and IS value. Accordingly, we generated ***shared value analytics*** as the initial code.

Interview transcript 2

The following transcript and code generated during the discussion with the respondent on issues of benchmarking practice in ethio telecom.

Accordingly, the majority of respondent's response show that,

> *"previously there was occasional informal benchmarking, but to my knowledge, the practice is not there currently."*

Other respondents support lack of regular benchmarking and taking current telecom trend by explaining with example,

> *"For example, the previous selected directors attended the Mobile World Congress, which provided us with a wealth of best practices and current trends in the telecom and mobile industries, and we occasionally took action based on our findings. However, currently, benchmarking practice is not continuing Perhaps one of the reasons is COVID-19 and budget issues."*

Since, transcript 2 discusses about lack of regular benchmarking, using best practice of other telecom industry, and lack of continuous investigation of current telecom trend. We take ***regular benchmarking*** as initial code.

Interview transcript 3

From the discussion with respondent on the use of service level agreements between the business and IS divisions, the following transcript and initial codes generated.

The respondents mentioned that,

> *"While ethio telecom does not use Service Level Agreements across its business and information systems divisions, it does use them with external stakeholders like vendors and partners".*

Other respondents added the consequence of not using internal service level contract between business and IS division,

> *"Due to a lack of internal service level agreement between the information system and business division, their needs or requirements change at anytime during project on progress, and when there is a delay in time to market, missing feature and quality issue, they blame the IS division."*

The Interview transcript 3 above shows the lack of an internal service level agreement between the business and the IS division. Accordingly, we generate an **internal service level agreement** as an initial code.

3. IT Governance

This construct deals with how well the company connects its current business strategy/need to current IT priorities, technical planning, managing risk, and budgeting [7]. Moreover, it assesses how quickly the IT function reacts or responds to the changing company business needs.

Interview transcript 1

The following transcript and initial code are generated from the discussion with the respondent on the extent of the practice of preparing their business and IS division's strategic plan.

The interviewees agreed on lack of mutual strategic planning in ethio telecom,

> *"There is a lack of mutual strategic plan alignment at ethio telecom. The information systems division develops its strategic IT plan based on corporate strategy without consulting the business division, and the business division develops its strategic business plan without consulting IS. However, they do have formal communication during the half-year performance review and assessment. That is, after everything is finished, we give feedback and critique to each other, which is incorrect."*

Respondents from IS division comment on importance of mutual strategic planning, saying that,

> *"To be honest, if there is a problem, we sometimes ask the business for clarification regarding their request of infrastructure, service or product but not participated on strategic plan. There should be mutual continuous involvement during strategic planning in order to work in harmony towards achieving corporate objectives."*

The interview transcript 1 under IT governance shows that lack of mutual involvement in strategic planning, lack of consulting in strategic planning and absence of working in harmony. On the basis of issue raised we generate ***mutual strategic planning*** as the initial code.

Interview transcript 2

The following transcript and initial code were developed from discussions with respondents concerning the IT steering committee's practice, which included top management and middle management from both the business and information systems divisions, as well as expert participation.

Most of the respondents agree on the existence of an IT steering committee but lack business involvement.

> *"There are IT steering committees which is without business division management involvement."*

Concerning the composition of the members of the IT steering committee respondents replied that;

> *"It is made up of information systems top management and middle management with no representatives from business management."*

We generate the ***business-IT steering committee*** as the initial code due to the respondents revealing an absence of business involvement in the IT steering committee.

Interview transcript 3

From the respondent's answers concerning the issues of IT preparedness to respond to changes in business needs, we created the transcript and initial code below.

Concerning the responsiveness of IS for changes in the business environment, respondents pointed out that,

> *"Information technology functions are slow to respond to changes in the business environment."*

The respondent related lack of IT agility to the instability of the business environment and vendor dependency by noting that

> *" The IT function doesn't react as quickly as the business demands change. Thus, that is the main cause of the delay in product and service delivery."*

The respondent commented further that

> *"The ethio telecom IT functions are not as responsive to consumer and telecom market demands as they should be."*

The interview transcript 3 shows the existence of IT functions, but lack responsiveness as fast as possible to instability of business environment and the effect of vendor side dependency on time delivery. Therefore, on the basis of these issues, we generate ***IT agility*** and ***business agility*** as initial code.

4. Dynamic IT Scope

As described in the research model, dynamic IT scoping is the continuous process of provisioning flexible infrastructure, the integration of emerging technology, and delivery of a customized solution to business division and external customers [7].

Interview transcript 1

The following transcript and initial codes are produced from the conversation on the challenges of continuing IT infrastructure adaptability within a fast and dynamic change in the telecom market and business environment.

Respondents pointed out the absence of IT infrastructure flexibility with a change of business demand as follows,

> *"The absence of ongoing IT infrastructure flexibility with changes in the telecom industry and telecom technology is the reason that ethio telecom is lagging behind other telecom markets."*

The respondents also show the emerging practice of IT infrastructure by noting that.

> *"IT infrastructure is emerging as driven by business strategy requirements, and our IT infrastructure is not that flexible with the fast and dynamic changes to the telecom market and business needs due to budgeting constraints and company policy and regulation."*

The interview discussion with respondent reveals issues such as lack of ongoing IT infrastructure flexibility with a change in business demand and lack of operational integration as per change. Accordingly, we generate ***IT infrastructure flexibility*** and ***operational integration*** as initial code.

5. Business and IT Skill Development

Based on business and IT skill development, an attempt is made to assess the process of enhancing the capabilities of IT and business professionals to guarantee the successful alignment of business and IT.

Interview transcript 1

The following transcript generated based on the discussion on the concerns about job transfer opportunities between the business and IS divisions, as well as attracting and retaining top business and IT professionals. Accordingly, most of respondents from both IS and business divisions pointed out that,

> *"There are no career crossover opportunities among IT and business personnel, but there are some at the functional level. In addition, IT professional hiring is focused only on technical expertise."*

The respondent further indicates the gap in career crossover at the company, especially at the corporate level,

"Job transfers occasionally occur at the functional level but the same is not happen at the corporate level."

Other respondents cited a lack of career crossover as a result of hiring IT professionals with no business skills,

"A job transfer never occurs between a business and an IT professional. Maybe to my knowledge, the IT professional is hired on a technical expertise basis."

The company's top-level management argues the emergence of hiring IT personnel with business skills as a solution,

"Formal programs for attracting and retaining the best IT employees with both technical and business skills are emerging. As a result, career crossover practice among the business and IS divisions needs to emerge".

From the interview transcript 1, under business and IT skill development, we identified issues with a lack of career crossover opportunities and IT professionals focusing on technical expertise with no business skills. As a result, we identified ***career crossover*** and ***business-technical skills*** as initial code.

Interview transcript 2

Following a discussion with the respondent on the practice of ethio telecom towards employee opportunities to learn about and support service outside the employee's functional units to bring mutual alignment, the following transcript and initial code generated.

Most of interviewees agreed that,

"No training is provided to assist employees in understanding the ethio telecom business side by IS and the IS side by business."

The company's directors claim there is a variety of training provided, but it is true that there is a lack of training to promote alignment between business and IT.

"Training is provided at various times, such as by suppliers when a new solution is released, by HRM at a functional level, and by the ethio telecom Excellence Academy in a variety of areas. All of the training that has been undertaken has aided in improving the capabilities of the business and IS professionals, but none has aided in promoting business-IT alignment or sharing domain expertise between the two divisions."

Since the interview transcript identifies the non-existence of cross business and IS training we generate ***training to promote alignment*** as the initial code.

4.3.2. Searched, reviewed and named theme

Following the steps of thematic analytic technique, the researcher attempted to search for and review sub themes by grouping initial codes based on their similarity and using a table as a visual tool to assign sub themes. Consequently, the sub theme was assigned to the group of initial codes sorted as per their similarity. Then, the main theme was assigned after sorting and analyzing each sub theme in relation to the research question and objectives as well as each other, which is presented in table 4. 2.

Initial code	Sub theme (searched and reviewed theme)	Main theme (named theme)
Shared understanding Ongoing efficient communication A flexible communication channel	Communication	Continuous assessment
Shared risk and reward Risk and complain management Relationship with trust Working in harmony	Collaboration	
Shared value analytics Regular benchmarking Internal service level agreement	Value analytics	
Business-IT steering committee IT agility Business agility	Governance	
IT infrastructure flexibility Operational integration	Dynamic IT	
Career crossover Business-technical skill Training to promote alignment	Cross over skill	
Formal knowledge sharing platform Learning in the workplace	Shared domain knowledge	Organizational culture
Technological advancement Change in the business environment Change business requirement	Source of change	Change management
Mutual strategic alignment Mutual lead	Keeping strategic alignment	Continuous business-IT alignment

Table 4. 2 Searched, reviewed and named theme

Hereunder, section 4.4. the way the theme converted from low level to high level was discussed as per the research question and objectives as well as current literature.

4.4. Interpretation of the result

The objective of this section is to discuss the results of the study in line with ethio telecom's current context and existing literature. As the final step of thematic analysis techniques suggested by Braun and Clerk [56], the researcher produced an interpretation of the emerged sub theme and main theme in line with the objective of the study and research questions.

Theme 1. Continuous assessment

Continuous BITA assessment focuses on early detection of change and misalignment signs as well as checking the effect of change in BITA components. Therefore, the assessment should have to focus on communication, collaboration, value analytics, governance, dynamic IT scoping, and crossover skills as presented below.

Communication

Communication is about the effectiveness of the exchange of ideas, knowledge, and information between business and IS divisions that enable stakeholders or partners to clearly understand their respective strategies, plans, company environment, risks, priorities, and how to achieve them properly [7]. As a result of the responses, the researcher concludes that establishing and maintaining effective communication between the business and IS division is critical to sustaining continuous BITA alignment. However, there are various communication challenges identified between business and the IS division, such as a lack of shared understanding, a lack of effective communication channels, and shared domain knowledge.

The researcher argues that a lack of clear mutual understanding between the IS division and the business division seriously affects the achievement of continuous BITA. Therefore, establishing continuous mutual understanding is crucial in order to maintain the fast and dynamic growth of the telecom industry market, the dynamism of customer behavior, and/or change in business needs. Furthermore, the lack of establishing an effective communication channel between the business and the IS division to effectively exchange manageable information maximizes the cost of production, time to market, and reduces the quality of the product or service brought to the market. Therefore, to sustain continuous alignment, the company has to continuously maintain effective communication between the business and the IS divisions. This allows the company to enhance organizational performance, compete in the world telecom industry and meet stakeholder expectations.

Collaboration

Collaboration is about enhancing the connection between business and IS divisions towards creating a positive working environment based on relationships built on trust and having shared risk and reward, which is critical in achieving successful business-IT alignment. From the respondent's answers, the researcher identified a lack of maintaining mutual relationships and trust and sharing risk and reward as the main challenges at ethio telecom towards having effective continuous collaboration among business and IS divisions. Hence, to achieve and sustain continuous alignment, implementing and monitoring effective collaboration and coordination among business and IS divisions is significant. On the other hand, building close relationships and

trust between business and the IS division is the main enabler to achieve and sustain continuous BITA in the company [7].

Value Analytics

From the respondent answers, the researcher found that there is a common understanding by business and IS division towards value analytics. However, there is a gap towards value analytics that affects the achievement of continuous business-IT alignment in the case organization, such as a lack of continuous benchmarking practice and internal service level agreement between the business and IS divisions. The researcher suggests that, in order to achieve and maintain BITA in the fast-paced and dynamic telecom industry, the company should adopt a continuous benchmarking practice and act on as per the findings.

Furthermore, respondents point out that ethio telecom cannot use service level agreement (SLA) between business and IS division but uses SLA with vendors only. The researcher argues that lack of internal service level agreements between business and IS divisions are the main factors that hinder continuous alignment. According to Luftman et al. [7], there should be SLAs that are defined between IS and business divisions that clearly show the risks, rewards, and penalties for surpassing or missing the defined objectives and key performance indicators. Therefore, using internal SLA between business and the IS divisions is critical for achieving mutual relationships of trust, in addition to shared risk and rewards.

Governance

Governance activities are critical because they help the business recognize the value of IT, define business vision and strategy and the role of IT in achieving them, create mutual understanding between business and IS divisions, and increase the ability of the IT function to respond quickly to business needs and make informed IT investment decisions [7]. However, from the respondent's response, the researcher identified three issues: a lack of quick response of IT functions to business and market demand, an absence of business division management representation in the IT steering committee, and a lack of strategic planning in harmony. This hinders the successful achievement of business-IT alignment consistency in ethio telecom. Therefore, to maintain effective governance practice, ethio telecom has to ensure the participation of business in IT strategic planning and the participation of IT in strategic business planning; IT function agility as a business demand; and establish an IT steering committee with business management participation.

Dynamic IT scope

The researcher found that there is a lack of continuous IT infrastructure flexibility with the continuous advancement of technology and change in a business environment. As pointed out by Adame [59], Ethiopia is characterized as one of the countries with the least developed telecommunications infrastructure. As a result, the company loses its competitive advantage over another emerging telecom industry. Hence, to maintain continuous alignment and compete in the current digital world, the company has to continuously upgrade its IT/telecommunication infrastructure and IT capabilities as per technology advancement. Otherwise, it will be difficult for

ethio telecom to accomplish its vision of becoming a world-class telecom industry and achieve the 2021–2024 ethio telecom BRIDGE strategy.

Skill development

From the respondent's answers, the researcher found that ethio telecom provides different training for both business and IS divisions at the functional and corporate level by HRM, vendors, and the telecom excellency academy on different topics. Moreover, in ethio telecom, there is a change readiness program in place at functional level. For example, in the IS division under the IT service strategy and program management unit, there is an IT service change management department, which is responsible for providing change readiness program training and necessary skills to implement change for IS division staff. However, there is cross business and IT skill development gaps as identified from respondent answers towards promoting BITA, such as a lack of career cross-over opportunities, continuous training that promotes BITA at the company level, and hiring professionals with both technical and business skills, which are inhibitors of continuous BITA at ethio telecom. As Adame [59] points out, ethio telecom must build local technical capacity in order to avoid vendor-driven techno-economic analysis by fostering an innovative entrepreneurial environment and promoting continuous business and IT skill development.

Theme 2. Continuous Alignment

From the respondent's answers, the researcher found that there is a lack of sustaining continuous BITA due to a lack of mutual business and IT lead practice in ethio telecom. The absence of sustainable alignment leads ethio telecom towards loss of competitive advantage, return from technology investment as well as wastage of budget and loss of competitive advantage due to over customization of solutions.

Most of the respondents pointed out that in ethio telecom there is a business lead practice that compromises IT standards and ability. The researcher argues that to manage and maintain BITA continuity, the company has to practice mutual continuous alignment between business strategy and IS strategy, business process, and IT infrastructure and IS process through planning, implementing, and monitoring continuous alignment to enhance organizational performance and gain competitive advantage as per the change.

Theme 3. Organizational Culture

The researcher identified that there is a gap in having formal or structured knowledge sharing and organizational learning to exchange business knowledge with IT and IT knowledge with the business, intellectual understanding and appreciation of the problems or opportunities, tasks, roles, priorities, experience, problems, and critical success factors which mainly affect BITA. Therefore, to sustain and achieve continuous BITA, building a strong organizational culture that promotes continuous shared knowledge and organizational learning between business and IS divisions, including partners, is critical.

Theme 4. Change management

From the respondents' answers, the researcher identified that there is change management in ethio telecom at functional and corporate level. However, there is a lack of adjusting business IT strategic alignment per the identified change from internal and external sources, which makes it

challenging to maintain and manage business-IT continuity within a changing business and technology environment. The researcher suggests that the alignment needs to be adjusted as per change management and continuous assessment results.

4.4.1. ethio telecom Business-IT alignment challenge

In this study an attempt is made to identify challenges in maintaining continuous BITA in ethio telecom as presented here under.

Lack of business - IT strategic agility: As a business strategy and processes change, there is a need for an immediate update and revision of the IT strategy, processes, and infrastructure. From the respondent's answers, the researcher identified that there is a lack of business-IT strategic agility at ethio telecom. Having strategic agility in place allows us to create mutual alignment between business and IS divisions. As a result, it saves ethio telecom money and time by avoiding over-customization of solutions, which keeps the company out of the telecom market competition.

To give early attention to misalignment signs: the researcher found that there is a lack of continuous BITA assessment practice to detect misalignment signs. To get early attention to misalignment, ethio telecom must have continuously assessed BITA and quickly acted on the basis of that assessment; otherwise, if there is a misalignment, the company is in danger of losing its competitive advantage. Therefore, early detection of problems saves a lot of time, resources, and energy, and allows a company to sustain continuous BITA that enhances organizational performance, meets stakeholder expectations, and gains a competitive advantage.

Lack of continuous training that promotes BITA: from the data collected the researcher found that the lack of providing continuous training to promote BITA is the challenge to sustaining BITA at ethio telecom. The researcher argues that as the IT industry is changing more frequently, the business side needs to understand the change challenges and opportunities by providing continuous or regular training that supports the successful achievement of continuous alignment and building effective communication platforms that promote successful mutual strategic alignment

The dynamism of business requirements: it is the challenge ethio telecom faces towards achieving and sustaining continuous business and IT alignment in such frequent change of business needs and customer requirements. Therefore, to overcome this challenge, the company has to quickly and continuously adjust itself to the dynamic environment and ensure user involvement. As pointed out by respondents, most of them already encountered challenges emanated from user perspectives such as:

- The initial user requirement is incomplete
- User requirement request challenges the solution
- The difficulty of user involvement after submitting their business requirement

As suggested by the respondents, "*the business domain has to establish effective and continuous communication with IS during business requirement document preparation to overcome the business need change. Moreover, to reduce the confusion, the IT service design unit needs to communicate continuously with the marketing unit during the design of specification documents before being transferred to the business rollout department.*"

Lack of executive leadership support: as noted by Luftman et al. [25], a lack of executive leadership support is the main inhibitor of business-IT strategic alignment. Hence, the commitment or support of executives is crucial towards promoting successful BITA continuity at the functional and corporate levels.

Vendor dependency: this is the main challenge ethio telecom faces towards on-time delivery of products and services to the market and sustaining BITA since most of the customized solutions are being supported from the vendor side. Accordingly, the researcher found the following main challenges the company faces from the vendor side,

- There is offsite remote support but, they are not expert as expected.
- There is a communication gap between ethio telecom and the offsite support. Since, most of them do not speak English very well.
- Lack of presenting sufficient support document based on the SLA

Lack of shared domain Knowledge: from the respondent's answer, the researcher found that the limitation of building a strong organizational culture at the corporate level is the main challenge to maintain and manage BITA continuity. There is a lack of knowledge sharing and organizational learning among the business and IS divisions, including stakeholders. Therefore, to promote continuous alignment, the company has to build a strong organizational culture that supports and facilitates knowledge sharing and organizational learning among staff.

4.5. Design requirement

The design requirements at the highest level show the features to be included in the proposed framework to solve the identified problem. Hence, the researcher has formulated the following high-level requirements, which are critical to maintain and manage business-IT alignment continuity at ethio telecom within the changing business and information technology environment. The design requirements identified are:

- Mutual alignment of business strategy and IS strategy; mutual integration of business processes and IT infrastructure and IS processes;
- Planning, implementing, and monitoring achieving continuous alignment of business and IS on the basis of updated or modified corporate strategy as per early detected internal and external change as well as result of misalignment sign.
- Building a strong organizational culture
- Continuous BITA assessment in terms of communication, collaboration, value analytics, IT governance, and skill development.
- Maintaining BITA continuity requires executive leadership commitment and support.

Therefore, in order to overcome the challenges of maintaining and managing BITA continuity at ethio telecom, the above-identified design requirement is crucial. Accordingly, ensuring continuous mutual alignment between business strategy and IS strategy, business process and IT infrastructure, and IS process through continuous alignment planning, implementation, and monitoring on the basis of change management and continuous BITA assessment feedback. Detecting early change and misalignment signs is critical to maintaining BITA at ethio telecom and allowing the company to maintain business-IT strategic agility. Moreover, building a strong organizational culture that facilitates shared domain knowledge within a changing environment is

the main enabler of BITA and corporate success. However, from the respondents' answers, the researcher identified that there is a lack of shared knowledge at the corporate level, which affects all alignment components due to the fact that organizational culture is the basis for corporate success.

4.6. Objective of the solution

A framework is an artifact developed and designed to embed a solution for a particular organizational or society problem [53]. As noted by Luftman et al. [7], many BITA frameworks were developed by the various researchers (Henderson et al [2], Chan et al [61], and Fonstad and Robertson [62]) and the various alignment models consider BITA as a static process rather than a continuous and dynamic process. Such framework does not guide how organization improves and maintain continuous alignment [7]. Moreover, none of this framework provides a practical framework that treats BITA as a continuous process within a change environment, particularly in the fast and dynamic telecom industry [5].

Coltman et al. [5] pointed out that different models of strategic alignment and its component have been proposed and extended over time as a way to provide managers with the ways to achieve alignment. However, research also indicates that an organization can fall into a rigidity trap where tight or inflexible links between business and IS can impede an organization's ability to respond quickly to environmental change. As Kawtar et al. [63] further noted, alignment must be confronted with the dynamic evolutions of organizations and changes that affect different levels of the organization to have a sustainable and agile alignment.

Therefore, as alignment is a dynamic process we need to have a framework that allows the organization ability to practice and manage a continuous mutual business and IT alignment within the current dynamic business and IT environment [7]. Continuous alignment is about keeping up with the competition by ensuring sustainable mutual business and IT alignment in a dynamic environment. Looking to continuous alignment process, adaptation and change are crucial issues that deserve particular attention [11]. Having this in mind, the proposed framework considers BITA as a dynamic and continuous process that needs to be maintained and managed to simply achieve and sustain BITA within a changing environment. The BITA continuity management framework gives the organization the ability to easily maintain and manage continuous alignment among components of alignment such as business strategy, IS strategy, business process, IT infrastructure, and IS process. It also allows for the early detection of misalignment signs or the effects of change, in order to take appropriate action.

Furthermore, the objective of the proposed framework is to give ethio telecom the ability to be flexible enough to adapt to the fast and dynamic change of the telecom industry and allow them to be agile enough to quickly respond to the unexpected and rapid change in order to gain competitive advantage and becoming world class telecom company.

In the next chapter, the designed proposed framework and result of demonstration and evaluation of BITA continuity management framework are presented with the discussion research finding and contribution in composition with to previous studies.

CHAPTER FIVE

DESIGN, DEMONSTRATION AND EVALUATION OF THE PROPOSED FRAMEWORK

5.1. Overview

The objective of the study is to design the BITA continuity management framework for ethio telecom. As per the design science research process model proposed by Peffers et al. [52], after the design and development of the artifact, the next steps are demonstration and evaluation. Accordingly, this chapter present the design of the proposed framework and provides the demonstration method followed to show how the proposed framework works. Moreover, the evaluation method used to validate the acceptance of the latest version of the framework after iteration one, as well as a discussion of the results is presented.

5.2. The proposed framework

The proposed framework is designed as per the design requirement identified from ethio telecom context. It is designed by adopting Henderson et al [2] strategic alignment model and Luftman et al [7] business-IT alignment assessment model. As shown in the proposed framework (see figure 5.1) the following core activities are included to be executed to achieve and sustain continuous BITA at ethio telecom.

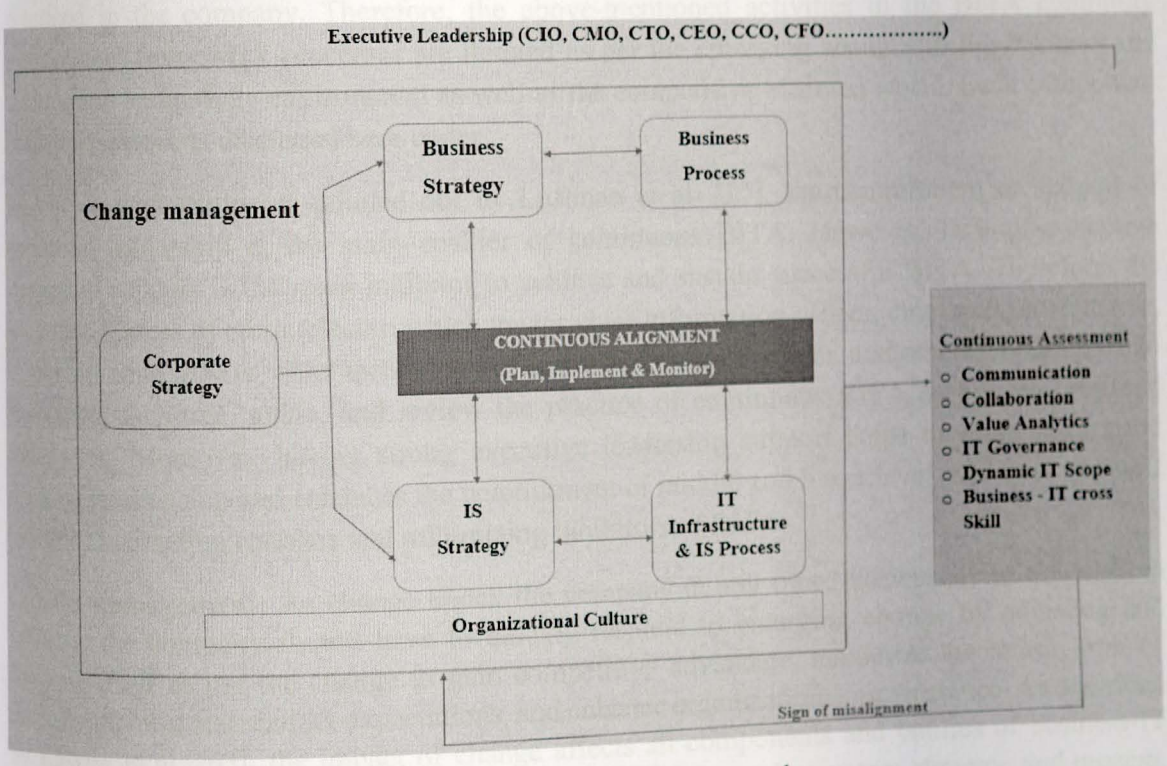

Figure 5. 1 the proposed framework.

In such a dynamic business environment as the one we are living in; the company must first begin by managing internal and external change and detecting misalignment at the corporate level

through continuous assessment and change management. Secondly, corporate strategies are modified or formulated as per the change and misalignment, and the business and IS divisions accordingly prepare their strategies based on the updated corporate strategy. Thirdly, to maintain and manage BITA continuity, the company plans, implements, and monitors to achieve continuous alignment among alignment components such as business strategy, IS strategy, business process, IT infrastructure, and IS process as per the updated strategy.

Fourthly, due to the new emergent change affecting the individual or organizational culture of the company, there is a need to build a strong organizational culture to support and facilitate successful alignment and corporate success. Accordingly, as shown in figure 5.1 the company has to identify the effect of the change on alignment and detect misalignment signs. To this end, the company is expected to conduct continuous BITA assessment, focusing on six items such as communication, collaboration, value analytics, IT governance, dynamic IT scoping, and business-IT cross-skills. Thus, the misalignment sign and detected change are sent as feedback to the change management box. As a result, the organizational culture and continuous alignment need to be adjusted on a regular basis in response to feedback and emergent change in order to maintain alignment continuity. The commitment of executive leadership, such as the chief executive officer, chief information officer, chief customer service officer, chief market officer, chief technology officer, and chief financial officer, serves as the umbrella for all of the above processes to be properly practiced in the company. Therefore, the above-mentioned activities in the BITA continuity management framework processes are iterated as per the emerging changes in the business and information technology environment as well as the competitive business world. Each component of the framework is discussed here under.

Executive leadership: as pointed out by Luftman et al. [25], the commitment or support of executive leadership is the main enabler of continuous BITA. However, lack of executive leadership support is the main inhibitor to achieve and sustain successful BITA. Therefore, the executive leaders of ethio telecom which means chief information officer, chief executive officer, chief marketing officer, chief technology officer, chief finance officer, and others, should have to encourage, facilitate, guide, and review the practice of continuous BITA as per the proposed framework. Moreover, having strong executive leadership support helps to establish a good working relationship and enhances the commitment of middle and lower level managers and staff towards maximizing enablers and minimizing inhibitors of BITA.

Change management: As change knock the company at any time, particularly in the telecom industry, the company should have to quickly respond to emerging change by adjusting and adapting itself as per the change to gain competitive advantage, maximize the return from IT investment, meet stakeholder expectations, and enhance organizational performance. As described by Kawtar et al. [63], the impact of change affects all components and entities of business-IT alignment, such as business strategy, business process, information system strategy, and process. When the business environment changes, the IS strategy, infrastructure, and processes change as well. When the technology environment changes, the business strategy and business processes

change as well. Hence, change management must be an integral part of the overall corporate strategy as the impact of change affects the harmonic alignment between business and information systems. Therefore, by detecting the internal and external sources of change and taking continuous BITA assessments on a regular basis, the company has to adjust its alignment components such as corporate strategy, business strategy, IS strategy, business process, IT infrastructure, and IS process. In addition, whenever change emerges in the company, it passes through human beings, and affects employees. Therefore, there is a need to continuously ensure the establishment of strong organizational culture that supports the emerging change. As a result, the company maintain and manage BITA continuity successfully and enable corporate success.

Mutual strategic alignment: The mutual alignment helps the business and IS divisions work in harmony towards a common objective and allows the company to manage risk and complaint issues effectively. Therefore, when they prepare and update their strategy as per the change and corporate strategy, it is critical to ensure that mutual strategic alignment between business and IS strategy is in place by involving the IS division in the business strategic formulation and update and the business division in the IS strategic formulation and update. Otherwise, a lack of mutual alignment results in misalignment, which has an impact on ethio telecom performance and competitive advantage.

Mutual infrastructure and process integration: When ethio telecom updates its strategy as a result of changes in the telecom market and technology, it primarily affects the IT infrastructure, employee activities, roles, and responsibilities. Therefore, it is critical to ensure IT infrastructure and IS processes are continuously aligned with the business process to enable the IT function quickly and in time to respond to business needs and organizational change.

Continuous alignment: to gain competitive advantage in today's dynamic and fast telecom industry the company has to plan, implement and monitor continuous alignment among the four components such as business strategy, IS strategy, business process, and IT infrastructure and IS process. This enables ethio telecom to enhance its organizational performance, meet stakeholder expectations and gain a competitive advantage. The following are three steps needs to be performed iteratively to maintain continuous alignment.

- **Plan:** the step where the company plan achievement of continuous BITA based on the corporate strategy, change management, and continuous assessment report and further modification required as per the change.
- **Implement** the step where the continuous alignment plan has to be practiced at the company level by ensuring sustainable mutual alignment among the component to be aligned.
- **Monitor:** at this step the company is expected to examine whether the continuous alignment is achieved and maintained according to the plan or not.

Continuous assessment: as shown in figure 5.1 it is one of the core activities proposed to be executed too early to detect misalignment signs and manage BITA continuity. The company should regularly assess the BITA practice by focusing on the following items.

- **Communication:** the effectiveness of continuous exchange of ideas, information, and knowledge should be established among business and IS division by creating and maintaining effective communication platform between senior management, middle management, and specialized level of staff.
- **Collaboration:** to achieve and sustain continuous alignment the company should have to ensure business and IS divisions are working collaboratively to quickly respond to the telecom market and consumer demand.
- **Value analytics:** this refers to the demonstration of IT value to the business in terms that the business understands. To do so effectively, IS and business divisions in the organization need to collaborate and create value analytics (shared and consistent measures of performance) that help to track the performance of the company in general and functionality of the division in particular.
- **Governance:** it is a formal process around IT decisions and the level of discipline that IT and business managers use in setting IT priorities and allocating IT resources. Moreover, Governance also deals with how well the company connects its business strategy to current IT priorities, technical planning, managing risk, and budgeting. Therefore, the company is expected to represent senior level business management in IT steering committee, maintain business-IT strategic agility, and determine IT project prioritization process mutually between IS and business management [7]. Moreover, IT investment decision should be based on creating competitive advantage, meet stakeholder expectation and increase return on investment.
- **Dynamic IT scope:** refers to the continuous process of provisioning a flexible infrastructure, its evaluation, and the application of emerging technologies and delivery of customized solutions to business units and external customers or partners. It is needed because as companies change their business scope their infrastructure needs to be re-scoped. Therefore, the company should have to generate shared activities that create a flexible IT infrastructure, evaluate and apply emerging technologies, and foster IT-related activities that drive direct business process change or deliver customized solutions/ services [7].
- **Skill development**: business and IT skill development are necessary to continuously strengthen IS and business personnel's competencies and guarantee the achievement of BITA alignment. Without the appropriate investing and balancing of skills and competencies (sourced internally or externally) across the business and IS division, it is difficult for the company to achieve the desired levels of communications, collaboration, and value analytics.

Organizational culture: It refers to the interaction, communication, practices and collaboration that occur between the business unit and IS unit, in collaboration with partner to create effective shared domain knowledge and organizational learning. To maintain and manage BITA continuity effectively the company has to build and maintain a strong organizational culture at the functional and corporate levels as per the change.

5.3. Demonstration

The goal of demonstration, according to Peffers et al. [52], is to show how to address an issue using the results of design science research output, which is an artifact. A demonstration is to show how the artifact can be used to solve one or more instances of the problems, to show that the artifact works. It is followed by a more formal evaluation [64]. As a result, before evaluating the proposed framework, the researcher clearly demonstrated how the business-IT alignment continuity management framework works for the chosen participant from the ethio telecom business and IS division management.

Method for demonstration can be experimentation, simulation, case study, use case, proof or other appropriate activity [52]. The proposed framework was demonstrated to 17 selected participants from the ethio telecom business and IS division management, chosen based on their depth of knowledge and availability, using an illustrative case study with examples. The case study method helps the researcher to closely examine the solution to the research problem. Moreover, illustrative case study with example helps to demonstrate artifact effectively for participant by providing a clear and deeper understanding of how the proposed framework works and can be used to solve the research problem, which is maintaining and managing continuous business-IT strategic alignment at ethio telecom in a changing business and technology environment.

Accordingly, the researcher presented the proposed framework using an illustrative case study (adopted from kuwatri et al. [63]) with example to experts before they evaluate the framework against the evaluation criteria. As a result, output from the demonstration helps the researcher improve the framework and give recommendations for future work. Here is an illustrative case study with an example followed by a demonstration of the business-IT continuity management framework for ethio telecom.

An illustrative example of the proposed framework:

Hereunder we present first one of the telecom industry's scenarios and then how the proposed framework helps the company to manage BITA continuity as per the emerging change.

A new telecom product has appeared on the market, which was discovered through market research and technology driven analysis. This new telecom product necessitates a customized product that fits the needs of the customer. The company's executive board management, which is the one responsible for decisions towards launching new products in ethio telecom, has agreed to design a new organizational objective by adjusting their current corporate strategy in order to successfully deploy the new telecom product and acquire a competitive advantage.

The business and IS divisions must then mutually adjust their strategic plans in order to meet company objectives based on the revised corporate strategy, which includes new organizational objectives. In addition, the newly introduced change had an impact on the roles, actions, and actors of the business and information systems process, commonly known as the business and information systems division. As a result, the IT infrastructure must be adjusted, configured, or upgraded as per the IS strategy and business process to meet the needs of the new emergent telecom product.

Furthermore, when the change emerges in the company, it affects the individual or organizational culture because human beings are in the middle of all this change. Therefore, the company should have to build a culture that easily accepts and adjusts itself and their colleagues to the change due to the fact that the change affects employees' culture or knowledge sharing ability. If they build a strong organizational culture that is adaptable, they will meet customer needs and expectations, achieve their objectives, and gain competitive advantage in a rapidly growing telecom market and technology. Therefore, the purpose of establishing and maintaining a strong organizational culture is to foster and maintain a mindset among company personnel at the functional and corporate level that believes knowledge sharing is a power-gaining rather than a power-losing process.

To enable and guide the process of sustaining continuous alignment across all components, as well as the process of establishing a strong organizational culture from top to bottom in accordance with the emerging change, executive leadership commitment is required. Since then, it is easier for the executive to lead if there is a culture that values technological innovation, thinks creatively, is open-minded, and has shared domain knowledge. Therefore, if the company aligns itself with emerging change by maintaining and managing business IT alignment continuity via change management, it is easy to attract and retain new customers, change the IT service design process in line with business demand, and provide customers with products that meet their needs and give them a competitive advantage.

Accordingly, the company continues to assess the business-IT alignment by focusing on the six items such as communication, collaboration, value analytics, dynamic IT scope, IT governance, and cross-business-IT skill development as per the business-IT alignment continuity management framework. This will help the company detect misalignment signs and change early. The assessment report will be sent to the change management box as feedback. Based on that feedback, the company will again plan for continuous alignment, implement the plan, and monitor the progress. Furthermore, they need to adjust and build the culture as per the change to maintain strategic alignment. Therefore, the process will be iterated to maintain and manage continuous alignment as per the early detected change and misalignment signs.

Modification after demonstration

After the demonstration of the BITA framework to the participants from ethio telecom business and IS division through a case study, the researcher collected comments. The respondent mentions that the presented framework for demonstration is appropriate to solve the current ethio telecom problem towards maintaining and managing continuous business-IT strategic, process, social, and cultural alignment at the functional and corporate levels. However, organizational culture, which is separated out of the change management box, needs to be an integral part of the box due to the fact that organizational culture is the main enabler of successful continuous business-IT alignment. As per the valuable suggestion of the respondents, the researcher updates the framework and presents the refined framework for evaluation as shown in figure 5.1.

5.4. Evaluation

Evaluation is an activity to observe and measure how well the artifact supports a solution to the problem by comparing the objectives of the solution to the observed results from the artifact in the demonstration [52]. The main goal of evaluation is to determine to what extent an artifact is effective for solving the problem for which it has been proposed and to iterate back to design if it is appropriate. According to Prat et al. [64], there are a variety of information system artifact evaluation methodologies, including observational or participative, experiment, simulation, case study, logical and mathematical proof, and question-based evaluation. However, the processes used vary depending on the artifact and research problem [52].

In this study, we use question-based evaluation techniques. This is attempted through survey questions and semi-structured interviews of experts. The researcher uses quality model ISO/IEC 9126 [65] and Part et al. [64] taxonomy of evaluation methods for information systems artifacts to select evaluation criteria. Accordingly, the researcher evaluated the proposed framework against the following evaluation criteria to validate its acceptance by ethio telecom experts.

- Efficiency (optimal utilization of resources),
- Usability (ease of use, understandability, utility),
- Applicability (fitness and simplicity),
- Content (clarity, completeness, continuity), and
- Context coverage (flexibility).

The expert interview is an effective tool for gathering in-depth participant opinions and perceptions about the use and value of an artifact. And also, survey questions are highly efficient for gathering and expressing the perceptions of participants about an artifact, but do not allow for deep insight into the views of individual respondents. Therefore, using both surveys and expert interviews allows us to effectively evaluate the proposed framework [66]. The proposed framework was evaluated by 17 participants, those involved in the semi-structured interview session and in the demonstration. The overall evaluation result for the proposed framework is presented in table 5.1.

Evaluation criteria	**Strongly Agree (1)**	**Agree (2)**	**Neutral (3)**	**Disagree (4)**	**Strongly disagree (5)**
The proposed framework would optimally utilize resources.	13	2	1	1	-
Efficiency result	Agree = 88.23 %		Disagree = 11.77%		
The proposed framework is easy to use.	8	7	1	1	-
The proposed framework goal is understandable.	10	7	-	-	-
The proposed framework will add value to the company.	9	6	1	-	-
Usability result	Agree = 94.11 %		Disagree = 5.89 %		
The proposed framework fits with the organizational needs.	6	10	1	-	-

The proposed framework is simple to implement.	9	6	1	1	-
Applicability result	Agree = 94.11%		Disagree = 5.89%		
The proposed framework content is clear.	10	7	-	-	-
The proposed framework content is complete.	9	8	-	-	-
The content of the proposed framework has continuity.	10	6	1	-	-
Content result	Agree = 98.04%		Disagree = 1.96%		
The context coverage of the proposed framework is flexible enough to change environments.	8	8	1 468.6	-	-
Context coverage result	Agree = 94.11 %		Disagree = 5.89 %		
Overall result	**Total agree result = 93.72%**		**Total disagree result = 6.28%**		

Table 5. 1 summary of evaluation result

The overall evaluation result shows that the BITA continuity management framework was accepted by 93.72 percent. This shows that the BITA continuity management framework is effective and efficient to address the current identified gap in maintaining and managing BITA continuity at ethio telecom.

Regarding the proposed framework the respondent agreed that,

> *"The proposed framework helps ethio telecom towards optimal utilization of resources through reducing the cost of over budgeting and delays of projects, as well as reducing over customization of solutions due to the effect of frequent business requirement changes and misunderstandings between business and IS divisions, which lead to ethio telecom's being out of competition in the telecom industry. As a result, it increases customer satisfaction, retains and attracts new customers, and maximizes return on investment. Moreover, proper execution of the BITA continuity management framework allows the company to detect change early through market analysis and telecom technology advancement assessment, which helps the company gain competitive and maximize return on investment."*

The respondents further commented that,

> *"The business-IT alignment continuity management framework designed for ethio telecom will addresses the current business-IT alignment challenges the company faces nowadays within the emerging fast and rapid change in the telecom market and technology due to all the core activities included in the framework being critical, easy to understand and apply, fit with the company's needs, the contents are complete, clear and complete, and it is flexible enough as per the change. The proposed framework will add value to ethio telecom by allowing the company to retain and attract new customers through maintaining stakeholder expectations and customer satisfaction; increasing time to market and product*

quality; and by introducing newly emerged telecom products and services to the market on time. Yes, of course it will help the company to gain a competitive advantage and maximize return on investment as well as enhance product or service quality and time to market delivery due to both business and IS divisions' working towards common goals and objectives."

As suggested by Peffers et al. [52], after evaluation, the researcher decides whether to iterate back to the design to try to improve the framework or to continue on communication and leave further improvement to future research, based on the feedback that comes from demonstration and evaluation. Therefore, since the results from the demonstration and evaluation showed the proposed framework was effective to maintain and manage BITA continuity and was accepted by an expert from ethio telecom business and IS division management, as well as there was no more comment from the respondents on the latest framework, the researcher decided to communicate the framework as a final product of the study.

5.5. Discussion of results

The Business-IT alignment continuity management framework is the contribution of this research. Business-IT alignment continuity management adds value to the existing knowledge through considering the continuous adjustment of strategic, operational and cultural alignment between business and information system as per adjustment of corporate strategy in appropriate response to the frequent changes in a business and information technology environment as well as early detected misalignment result. Because the emerging change from organizational environment has an impact on the mutual alignment of strategic, process, and cultural aspects between business and IT. Unless this change is managed properly through maintaining and managing alignment continuity at the functional and corporate level, it leads to misalignment. On the other hand, the misalignment hinders corporate success, customer satisfaction, and competitive advantage. Therefore, using the proposed framework solves the abovementioned problem effectively.

The business-IT alignment continuity management framework was designed by following the design science research process model proposed by Peffers et al. [52]. The research entry point is a problem-centered approach. The researcher follows a qualitative research approach to clearly explore and assess the BITA practice of ethio telecom to identify the problem and design requirements. Thus, the identified design requirements are used as input to design the business-IT alignment continuity management framework, which helps ethio telecom to solve the current alignment problem. The designed framework was demonstrated through an illustrative case study method to show how the framework works to solve the problem, which has not been addressed by previous studies. After modifying the framework as per the demonstration feedback, the researcher evaluates the framework to validate its acceptance by experts from ethio telecom business and IS division management. Thus, there is no previous research conducted on the telecom industry in relation to this approach.

Thus, the business-IT alignment continuity management framework guides the telecom industry in general, and ethio telecom in particular, on the path to maintaining and managing BITA continuity through change management. Moreover, the proposed framework gives the company

the ability to be flexible and agile enough to respond to the unexpected and rapid changes in the telecom environment. However, none of the various alignment models developed by various researchers consider alignment in this regard. Maintaining and managing alignment continuity within a fast-changing business and technology environment is critical for enabling corporate success and gaining a competitive advantage.

There are various unique features in designing the BITA continuity management framework that are not included and addressed in the previous studies. The following are the unique features of the proposed framework:

- The study considers business-IT alignment as a continuous process that requires continuous adjustment of mutual alignment among business and information Systems strategy, process, and culture in line with modified or updated corporate strategy via change management and detected misalignment sign.
- Executive leadership support serves as the BITA framework's umbrella because it is the primary enabler of BITA continuity and corporate success.
- It includes organizational culture alignment with change management due to the fact that the company should have to adapt and build a strong organizational culture in response to emerging change.
- It gives the company the ability to detect early signs of change and misalignment through continuous BITA assessment.
- Plan, implement, and monitor continuous alignment based on misalignment results and change management in order to maintain and manage alignment continuity at functional and corporate level.

Most of the research on BITA and the proposed framework by various scholars is mainly focused on neglect how the company achieve and sustain continuous BITA by maintain mutual alignment among corporate strategy and business and IS strategy process and culture. Moreover, there is a shortage of research on maintaining and managing BITA in the IT-enabled industry generally and the telecom industry in particular. The previous work conducted by local and foreign researcher could not consider the way to maintain and manage BITA continuity from a strategic, process, and cultural perspective in line with corporate strategy via change management and early detection of misalignment sign. Hence, the proposed framework adds value to the telecom industry through providing guides on how to manage and maintain BITA continuity by keeping continuous alignment among: corporate strategy, business strategy, IS strategy, business process, IS process and IT infrastructure. It also gives the telecom industry the ability to be adaptable and flexible enough via change management at functional and corporate levels. As a result, it allows companies to enhance their quality decision-making ability, organizational performance, meet stakeholder expectations, and satisfy customer needs. Moreover, the contribution of this study also serves as the starting point or input for future research in a related domain.

The next chapter provides conclusion of the study, recommendation and future research direction.

CHAPTER SIX
CONCLUSION, RECOMMENDATION AND THE WAY FORWARD

6.1. Overview

This chapter presents the overall conclusion of the study in line with the research question and objectives of the study; and provides recommendations for practice as well as possible future research direction.

6.2. Conclusion

In today's changing business environment, technological advancement, uncertain customer behavior, and competitive business world, maintaining and managing business-information technology alignment (BITA) continuity is a crucial enabler of corporate success. However, maintaining and managing BITA continuity remains the main challenge for ethio telecom. As the country's sole telecom product and service provider, ethio telecom should strive for and maintain continuous business-IT alignment in order to improve organizational performance, meet stakeholder expectations, and gain a competitive advantage. As a result, the company contributes to society's economic growth and to other industries' sustainability. As a result, assessing and understanding ethio telecom's current BITA practices and challenges, as well as proposing a framework that guides a company on how to achieve and sustain BITA within a changing business and technological environment, is critical.

The study was conducted to design business-information technology alignment continuity management for ethio telecom on the basis of the current ethio telecom context and prior literature. To design the proposed framework through the design science research (DSR) method, the study has been guided by Peffers et al.'s six-step DSR process model, such as problem identification, defining objectives of the solution, designing and developing artifacts, demonstration, evaluation, and communication. The researcher has used DSR because it helps to design better artifacts that solve the current organizational problem and add utility. Furthermore, to collect the data that helps to assess and understand the current practice and challenges of BITA at ethio telecom and analyze the collected data through thematic analysis, the study followed a qualitative research approach.

An extensive literature review on BITA was conducted to identify approaches, models, and frameworks that can be used as a reference and guide as well as to identify the research gap. As literature shows, there are various frameworks that have been proposed and extended overtime as a way to provide managers with a way to achieve alignment and most of alignment model consider BITA as a static process rather than a continuous and dynamic process. However, such a framework does not guide how organizations maintain and manage continuous BITA alignment, as none of them treats alignment as a continuous process within a changing environment, particularly in the fast and dynamic telecom industry. Moreover, the literature indicates that an organization can fall into a rigidity trap where tight or inflexible links between business and IS can impede an organization's ability to respond quickly to environmental change.

In order to understand the current practice of business-IT alignment at ethio telecom with its challenges primary data was collected using instrument such as interviews and observation. Also, the secondary data was collected through the document analysis method. Interview questions were adopted from the SAM model on the basis of the conceptual framework, which consists of five variables such as communication and collaboration, value analytics, IT governance, dynamic IT scope, and business-IT skill development. The respondents from Ethio Telecom's business and IS divisions management were chosen through a purposive sampling method. The thematic analysis techniques were followed to analyze the collected data and come up with an interpretation of the result or the key theme.

In ethio telecom, business-IT alignment is the first pillar in the IT strategic roadmap. However, achieving and maintaining continuous BITA in a changing business and technology environment is a difficult management challenge for ethio telecom business and information systems divisions. Because there is a lack of mutual leadership and shared understanding, limited shared knowledge, limited executive leadership support, and lack of early detection of misalignment signs, as well as a lack of a framework that guides ethio telecom on how to maintain and manage business-IT alignment continuity within the fast and rapid change in the telecom market and technology, there is a need to come up with a BITA continuity management framework for ethio telecom in order to maintain ongoing BITA throughout the functional and corporate level

Accordingly, the researcher designed a business-IT alignment continuity management framework for ethio telecom on the basis of the design requirements and prior literature. The proposed framework contains five core activities that are interlinked together to be executed by the company to meet the objectives of a solution such as executive leadership support, change management, continuous alignment (plan, implement and monitor), continuous BITA assessment, and building organizational culture as per the change and misalignment signs detected. The proposed framework guides ethio telecom on how to maintain and manage BITA continuity within a changing business and technology environment. Moreover, the proposed framework gives ethio telecom the ability to be flexible enough to adapt to the fast and dynamic change of the telecom industry as well as allow them to be agile enough to quickly respond to unexpected and rapid change in order to enhance corporate success and become a world-class telecom company.

In order to evaluate the extent of acceptance of the proposed BITA continuity management framework by ethio telecom question-based evaluation technique was followed using survey questioners and expert interviews with selected business and IS divisions management. The proposed framework is evaluated against the five-evaluation criteria such as efficiency (optimal resource utilization), usability (ease of use, understandability, utility), applicability (fitness and simplicity), content (clarity, completeness, continuity), and context coverage (flexibility). The overall evaluation result of the framework shows that 93.72% of the business-IT alignment continuity management framework was accepted by ethio telecom. However, respondents comment that because the proposed framework is currently not in practice by ethio telecom it is difficult to be sure of its applicability and efficiency. That is why 6.28% of the total was not accepted. The study was planned to collect interviews and demonstrate the proposed framework through focus group discussion in order to reach various respondents at a time, such as vendors,

supervisors, and other staff. However, it's not possible due to the unavailability of the participants at the same time because of their busy schedule at work. Therefore, the study conducted face-to-face interviews only with the individual from business and IS division management.

6.3. Recommendation

Achieving and maintaining ongoing business-IT alignment (BITA) is challenging for any organization, especially for ethio telecom due to a lack of a framework that guides the company on how to maintain and manage alignment continuity within the fast and dynamic telecom market and technology advancement. However, with proper planning and execution of the proposed framework properly, the company can overcome the challenges of achieving and maintaining BITA continuity. The core activities presented in the proposed framework should have to be executed in order to manage BITA continuity at the functional and corporate levels as per the proposed framework.

- Executive leadership support is critical to ensure the continuous business-IT alignment is in place as per the proposed framework as well as to increase the commitment of employees and management towards promoting mutual alignment throughout the company as well as towards building a strong organizational culture that supports the emerging change and believes in knowledge sharing as knowledge gaining.
- The company has to conduct regular market research, technology driven and SWOT analysis as well as continuous alignment assessment to detect internal and external change and misalignment signs in the telecom industry, especially in ethio telecom. As per the emerging change, the company should have to plan, implement and monitor continuous alignment.
- Updating all the alignment components as per the continuous alignment assessment feedback helps the company to early detect misalignment signs and identify changes.
- Building a strong organizational culture is the basis for ensuring successful continuous business-IT alignment and corporate success.

6.4. The Way forward

This research provided a BITA continuity management framework that provides good insight on how to maintain and manage business-IT alignment continuity in a fast-changing business and information technology environment, which has not been addressed in previous research. The company should have to properly plan and execute the framework by focusing on the activities included in the proposed framework. Moreover, executive leadership commitment and building a strong organizational culture that supports change is the basis for ensuring successful mutual alignment among the components of BITA, such as corporate strategy, business and IS strategy, IT infrastructure, and business and IS processes. As shown in the demonstration, the proposed framework is straightforward. Therefore, the study can be used as a starting point for future research that needs to be pursued in similar areas.

Future research needs to consider other telecom company and industries to apply the business-IT alignment continuity management framework in order to further evaluate the acceptance of the proposed framework.

Future research needs to assess the readiness or maturity of ethio telecom towards applying the proposed framework effectively. Moreover, investigating the value added by applying the BITA continuity management framework which helps to understand the impact of the framework on the organization's performance.

Future research needs to consider mapping business-IT alignment continuity management framework with various information technology governance frameworks as well as Customer relationship management models.

Future research also needs to consider the involvement of all staff in the data collection through quantitative survey questioners to get insight and a deep understanding of the cultural and social aspects of alignment in the organization among staff, not only the management.

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Appendix A: Support Request Letter

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የኢንፎርሜሽን ሳይንስ ት/ቤት

Addis Ababa University
College of Natural Science
School of Information Science

Date: November 24, 2021
Ref No. SIS/13/2021/14

To: Ethio Telecom
Addis Ababa

Subject:- Support for student Habtamu Abune

Dear Sir /Madam,

Student Habtamu Abune (ID.No GSR/7909/13) is a graduate student at the School of Information Science, Addis Ababa University. He is currently conducting a M.Sc. Thesis research under the title "Developing Business Information Technology Alignment Continuity Management Framework for Ethio telecom."

I would like to thank you in advance for all the assistance that you would provide to the student.

With Regards,

Tibebe Beshah (PhD)
Head, School of Information Science

✉: 1176 Email: information_cci_cns@aau.edu.et ☎: +251-(11)-122-91-91

Appendix B: Interview Outline

ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE SCHOOL OF INFORMATION SCIENCE

Dear Sir/Madam

First of all, I would like to extend my gratitude for volunteering to participate in this academic study. I am confident that you will provide an honest response.

I am Habtamu Abune, a graduate student at Addis Ababa University School of Information Science in the department of Information Systems. I am undertaking research on " designing business-IT alignment continuity management framework for ethio telecom", which is conducted for partial fulfillment of the requirement for a master's degree in information systems. The objective of this study is to design a Business-IT Alignment Continuity Management framework for ethio telecom.

Therefore, this interview question is prepared to collect primary data to understand and assess the current business-IT alignment practice and challenges at ethio telecom. The respondents were selected from ethio telecom business and information systems divisions on the basis of their knowledge of alignment and management position in the company.

Please be rest assured that the information you provide here only used for academic purposes and confidential. Any conclusion to be made presented in aggregate and summary format without completely indicating the respondents' names.

I would like to thank you in advance for your kind cooperation in this academic study. If you have any desired questions or comments, please feel free to communicate with me at the below address.

Thanks
Habtamu Abune
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Alt E-mail: habtamuabune@gmail.com
Mobile: +251941271773/
Alt mobile: +251922689033

Appendix C: Interview Question

Part I: Communications and Collaboration between IS and business division

1. To what extent does the information systems division of ethio telecom understand the organization's business environment (e.g., its customers, competitors, processes, partners/alliances)?
2. To what extent does the business division of ethio telecom understand the IS environment (e.g., its current and potential capabilities, systems, services, processes)?
3. What methods (e.g. intranets, bulletin boards, education, meetings, email, peer meetings, training, or other) ethio telecom have in place to promote organizational learning and education (e.g. experience, problems, objectives, critical success factors)?
4. How does knowledge sharing (intellectual understanding and appreciation of the problem/opportunities, tasks, roles, objectives, priorities, goals, direction, etc.) occur between ethio telecom technical and business divisions (e.g. structured/unstructured, formal/informal)?
5. Does ethio telecom have a channel of effective communication to transfer IS division knowledge to business and business division knowledge to IS? If so, how?
6. What is the role of the IS division in organizational strategic planning or corporate level strategic planning?
7. How do you describe collaboration between ethio telecom business and IS divisions towards risk and reward sharing?
8. How do you describe partnership or collaboration between ethio telecom business and IS divisions towards risk and reward sharing?
9. From your experience what communication and collaboration gap or challenges you observe in implementing business IT alignment?

Part II: Measurement of the competency and value of IT

1. Would you please tell me the metrics and processes ethio telecom IS division uses to measure its contribution to the business and vice versa (e.g. technical, cost efficiency, return on investment, activity-based costing, etc.)?
2. How does ethio telecom measure and assess and review business needs, IT flexibility, and IT capabilities with business change?
3. Does ethio telecom use integrated IT and business metrics to measure IT's contribution to the business? If so, mention them.
4. Does ethio telecom use service level agreements (SLAs) such as technically oriented (response time, length of system/computer downtime, etc.), relationship oriented (user/customer satisfaction, IT commitment to business, etc.) among vendor, business, and IS divisions?
5. How often does ethio telecom perform benchmarking practices and act based on the findings?
6. To what extent ethio telecom perform assessment and review on IT investment?

Part III: IT governance

1. Do ethio telecom business and IS divisions prepare formal strategic planning? If yes on what basis and does one division participate during another strategic planning?

2. How does ethio telecom IT budgeting function budgeted?
3. On what basis does ethio telecom IS divisions make IT investment decisions?
4. How and on what basis ethio telecom IT project prioritization process made?
5. Does ethio telecom have a formal or informal IT steering committee with senior level IT and business management participation? If so, how often and on what basis does the committee meet and select?
6. How do you rate the IT function's ability to react and respond quickly to the organization's changing business needs?

Part IV: Dynamic IT Scope and Architecture

1. What is the scope of the information systems division in ethio telecom (e.g. traditional office support, transaction-oriented, business process enabler, business process driver, business strategy enabler/driver)?
2. How do you describe partnership or collaboration between ethio telecom business and IS divisions towards risk and reward sharing?
3. Would you please explain the articulation and compliance of IS division standards by business?
4. How is the scope of ethio telecom IT infrastructure and architecture integrated?
5. How do you describe the scope of IT infrastructure flexibility for business and technology change?
6. Where does the CIO report and how is the organizational structure of the IS division organized?

Part V: Business and IT skill development

1. To what extent does ethio telecom foster an innovative entrepreneurial environment at the functional level or corporate level?
2. Do ethio telecom offer opportunities for employees to learn about and support areas outside of their functional unit through programs such as cross-training and job rotation?
3. Does ethio telecom give career crossover opportunities among IT/technical and business personnel?
4. Does ethio telecom develop and implement change management plans and change readiness programs at the functional unit and corporate levels?
5. How would you describe the interpersonal interaction that exists at the functional and corporate levels of ethio telecom?
6. What are the criteria ethio telecom follows or has in place to attract and retain the best business and technical professionals?

Appendix D: Evaluation Outline

ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE SCHOOL OF INFORMATION SCIENCE

Dear Sir/Madam

I am a graduate student at Addis Ababa University School of Information Science in the department of Information Systems. I am undertaking research on " designing business-IT alignment continuity management framework for ethio telecom", which is conducted for partial fulfillment of the requirement for a master of science degree in information systems.

I am confident that you will provide an honest response towards the evaluation of the proposed framework on the basis of the demonstration I presented to you using an illustrative case study with example by taking the real-telecom industry scenario as an example to show you how the proposed framework works.

The objectives of the survey questionaries' are to evaluate the proposed framework with respect to evaluation criteria such as efficiency (optimal resource utilization), usability (ease of use, understandability, utility), applicability (fitness and simplicity), content (clarity, completeness, continuity), and context coverage (adaptability).

This research is believed to produce results that can guide ethio telecom on the ability to maintain and manage BITA continuity.

Thank you for your commitment to offering honest feedback on the proposed framework.

Thank you again.

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Appendix E: Close and Open-Ended Evaluation Question

Part I. Evaluation Question

Efficiency

1. The proposed framework would optimally utilize resources.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

Usability

2. The proposed framework is easy to use.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

3. The proposed framework's goal is understandable.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

4. The proposed framework will add value to the company.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

Applicability

5. The proposed framework fits with the organizational needs.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

6. The proposed framework is simple to implement.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

Content

7. The proposed framework content is clear.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

8. The proposed framework content is complete.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

9. The content of the proposed framework has continuity.

   □ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

Context coverage

10. The context coverage of the proposed framework is flexible enough to change environments.

□ Strongly agree □ Agree □ Neutral □ Disagree □ Strongly disagree

PART II. interview question

1. How do you evaluate the proposed framework's efficiency in terms of optimal utilization of resources?
2. How do you evaluate the proposed framework's usability in terms of ease of use, understandability, and utility?
3. How do you evaluate the proposed framework's applicability in terms of fit to organization needs and context and simplicity?
4. How do you evaluate the proposed framework's content in terms of clarity, completeness, and continuity?
5. How would you evaluate the proposed framework's flexibility and adaptability in terms of context coverage?

Appendix F: Keyword and database used for searching literature

Search keywords	Strategic Alignment
	Business – IT alignment
	IT – Business alignment
	IT strategy
	Business strategy
	Continuous Business-IT alignment
	BITA Model
	BITA Framework
	Strategic alignment agility
Database	Science Direct
	ProQuest
	Research4life
	Springer
	IEEE
	Research Gate
	JStore
	ACM Digital Library
Search index	Google Scholar
	Scopus
	DOAJ

Appendix G: Document analysis and observation checklists

Document analysis checklist

Types of document and the responsible bodies.

- Organizational structure description
- Strategy 2021 – 2021
- Strategic roadmap
- Business requirement preparation templet
- Functional requirement specification
- Higher and Lower Level Design
- Service design package
- Six month and yearly report

Observation checklist

- During the interview, the respondents' emotions and feelings were observed.
- Working environment and communication platform of ethio telecom business and IS divisions managements.