INFORMATION TECHNOLOGY STRATEGIC ALIGNMENT MATURITY AND BUSINESS PERFORMANCE: A STUDY OF THE BANKING INDUSTRY IN KENYA

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DECLARATION

Declaration by the Student

This thesis is my original work and has not been presented for a degree in any other University or for any other award.

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Approval by the Supervisors

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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DEDICATION

I dedicate this thesis to the Lord God Almighty for His grace and mercy and to my family.

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ABSTRACT

This study sought to demonstrate the relationship between the IT Strategic Alignment Maturity and business performance. The Strategic Alignment Maturity Model (SAMM) was applied for assessing the alignment maturity. Business performance can be measured in terms of financial parameters including return on assets and net profit. The main business problem is that managers in the Kenyan banking industry do not have a model that would predict the relationship between business information technology alignment maturity and business performance. The specific objectives are to assess the maturity of each the six criteria namely, governance, communications, value, partnership, technology scope, and skills and the corresponding relationship each has with business performance. The data collection tools were interviews and questionnaires. The data analysis tool was Statistical Package for Social Scientists (SPSS v 24). The participants were the CIOs of all the nine Tier one banks. Tier one banks make approximately 70% of the Kenyan banking industry market size. The research adopted a mixed methodology that utilized both quantitative and qualitative data. The study concluded that alignment maturity level had a relationship with performance of the commercial banks. The findings indicated the average communication criteria maturity within the commercial banks was at 3.10 across all the commercial banks showing a moderate fit for the organization. The results also showed an average value of IT value criteria (mean = 3.09), governance criteria (mean = 3.20) and partnership criteria (mean = 3.19). The study further established that Scope/Architecture criteria and Skills criteria had an average mean of 3.19 and 3.03 respectively which was an indication of moderate fit within the commercial banks. The results of the financial metrics indicated a log of Total assets of 11.699 and an average return of assets (ROA) of 2.7%. The results implied that 36.8% of the changes in the business performance of Tier 1 commercial banks were determined by the strategic business-IT alignment maturity. The coefficient for strategic business-IT alignment maturity was 2.727, Sig = .033<.05 which was an indication that there is a positive significant effect. A change in Business–IT alignment maturity will lead to a 2.727 change in the business performance of the Tier one commercial banks in Kenya. The developed framework focused on how IT strategy, style, skills, staff, structure, and processes contribute to customer experience which leads to better profitability within banks. The findings indicate that the information system organization has a strong positive correlation with the customer experience (P= .861, Sig = .001<.05). The results also show that customer experience has a strong positive and significant effect on the profitability of the commercial banks (P= .739, Sig = .011<.05) testing at 95% confidence level. The zero-order correlation showed that controlling for the customer experience there was positive and significant association between Business-IT alignment and the profitability of commercial banks in Kenya (P= .691, Sig = .029<.05). The study recommends that commercial banks should improve the strategic maturity, invest in digital transformation, continuously review the value of IT investments, and ultimately achieve higher levels of the return on assets.

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LIST OF ABBREVIATIONS AND ACRONYMS

BITA	Business and IT Alignment
BITAM	Business and IT Alignment Model
CBK	Central Bank of Kenya
CEO	Chief Executive Officer
CIO	Chief Information Officer
CMMI	Capability Maturity Model Integration
COBIT	Control Objectives for Information and Related Technologies
EA	Enterprise Architecture
IDC	International Data Corporation
ISO	International Organization for Standardization
IT	Information Technology
ITIL	Information Technology Infrastructure Library
NIST	National Institute of Standards and Technology
PESTEL	Political, Economic, Social, Technological, Environmental and Legal factors
SAM	Strategic Alignment Model
SAMM	Strategic Alignment Maturity Model

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The alignment of business and IT is worthwhile. The alignment is a process. There are cycles toward maturity and must be taken incrementally and as a continuum. Managers can start with assessing the IT investment alignment state then prioritize and implement the IT initiatives. Alignment is impacted by the ambiguity, uncertainty, agility and volatility in the environment. The external forces impact the business environment. The business landscape is changing rapidly. The technology arena is also changing fast. It is like drawing a line in the sand.

To remain sustainable, enterprises must keep in step with the changes in the ecosystem otherwise the banks lose their edge and relevance. There are the additional changes in an organization's internal environment. This complexity and rapid change is the root cause of misalignment. The study will demonstrate the chasm between business and IT, dive into the root causes of misalignment and propose restructuring the entire organization to create effective strategic alignment. The study will demonstrate that the business IT disconnect is real and has a cause. Business does not have confidence in the IT because the IT organization does not deliver on business requirements. If IT fails to deliver and communicate value, it will become irrelevant to the business. To create better alignment with the business, IT must restructure itself to deliver business value, not tools and technologies (CioIndex, 2018).

In the past years, managers invested huge sums of money in IT. Managers loath the lack of alignment (Gbangou & Rusu, 2016). Alignment is about fusing the business and

IT teams towards a common objective. BITA concentrates unifying and mobilising all business unit teams towards unlocking the value of IT (Luftman & Brier, 1999).

BITA develops into a pattern in which business and IT teams work in sync. Alignment is a never-ending and continuous process (Baker & Niederman, 2014). It requires robust support from managers, warm relations, transformation, proper ranking of projects, confidence, and active communication. It requires an exhaustive appreciation and consideration of the business and IT arenas (D'Anjou, 2016). Many researchers have delved into the world of BITA due to the potential that the alignment can deliver to organizations. The managers would harvest and achieve increased profitability, improved market share, and innovative products and services. Managers would achieve higher levels of importance in the organization echelons and deliver better information availability (Sousa & Machado, 2014). Some managers do not focus and commit to attain alignment. Some managers do not strive to increase the drivers and to reduce the resistors of fusion. Once managers identify and appreciate the need for mature alignment, they can work towards achieving a good working relationship with other business managers and improve the integration (Malta & Sousa, 2016).

According to Luftman (2000); Henderson and Venkatraman (1990), fusion concentrates on the actions that managers do to attain unified goals across the IT and other business units and departments including operations, marketing, finance and HR (Luftman,2012). Managers derive success out of working in unison and as a team. Managers drive the process of alignment to maturity by adapting the business and IT strategies in a synchronized format. Harmony, fusion, linkage, integration, and convergence are synonyms of alignment. The process may be business process driven or IT process driven but the most important outcome is to achieve the alignment. The IT organization has the potential to aid digital transformation and remake the product,

service, and markets (Luftman, 2000). The successful organizations have predicted that IT strategy and good governance can essentially transform the business outcomes. This requires reinventing and reboot of the IT strategy and governance structures (Henderson & Venkatraman, 1993).

Hall and Liedtka (2007) observed that business process management and automation can drive efficiency and innovation. Managers can leverage robotic process automation (RPA) and other tools to streamline the business processes. The drive towards globalization and sustainability has raised the need for integrating business and IT. Aligning the whole business ensures synergy in all the business functions of an enterprise. Banks need to fuse IT and business to unlock the full potential of the organization (Luftman, 2004). IT governance has become commonplace for most organization who want to lead in BITA and organizational performance effectiveness. Managers leverage IT governance to attain BITA (Henderson & Venkatraman, 1993). ITGI (2016) observed that among the 749 organizations, 93% of the respondents reported that IT is more important than ever for the successful delivery of the strategy of their business. This figure showed a 6% increase from the 2005 survey which shows the importance of IT to meet the strategic objectives of the organization is being realized by professionals and the management. Weill and Ross (2004) observed that enterprises, which are advanced in implementing alignment strategies and utilizing it effectively obtain of 25% more profits than the ineffective organizations. Weill and Ross (2004) suggested that the key driver for this enhancement is for IT governance to define accountabilities for IT related business outcomes, which will help organizations to dovetail their business strategies with their IT investments.

A new study is needed due to the impact of new data and the disruptive technologies including social, mobility, predictive analytics, cloud, IoT, and AI (Chen, 2010).

Companies are using this explosion in data to empower new business models and implement new processes such as better compliance, increased agility, and customer centricity (Aversano, Grasso & Tortorella, 2012). The focus on emerging economies in Africa is timely and this is a great opportunity for business leaders to reap the benefits of growth and sustainability (de Vries, 2013). SAM focusses on the process for aligning the business and IT. SAM is related to enterprise governance and IT governance, maturity models and organizational performance. The leaders in alignment achieve business organizational goals. Managers can implement the corporate governance of IT frameworks like COBIT and ISO 27001 to improve the top and bottom lines (Vagadia & Springer-Verlag GmbH, 2016).

SAM shows managers how to avoid being blindsided by information technology. It provides a framework to match information systems with business strategy. The framework helps organizations to attain a competitive advantage and deliver compelling business outcomes in the marketplace (Luftman, 1996). SAM is a framework for assimilating information technology and business strategies (Henderson & Venkatraman, 1990). The business managers leverage SAM to drive value (Reese, 2010). SAM and BITA have been an issue for researchers of IT for years. Many researchers refer to BITA as a priority of business and IT managers. This is in connection with its attainment. All the adapted ways seem to have negative outcomes instead of positive ones. The objective is to achieve and maintain BITA sustainably. It is a good practice for managers to use both EA and BPM approach. By leveraging EA and BPM, managers attain the organizational performance improvement (Malta & Sousa, 2016).

Researchers and managers have discussed the importance of BITA to exploit the business value of IT. Managers need the skills and training on the many BITA models.

Some models and standards include COBIT, ITIL, CMMI, NIST and ISO. Managers can select the most appropriate model and framework for their enterprise (El-Mekawy, Rusu, & Perjons, 2015). Many organizations still struggle to achieve BITA. Researchers and managers need to explore other dimensions of BITA (Alaceva & Rusu, 2015). BITA has an association with enterprise outcomes (Charoensuk, Wongsurawat, & Khang, 2014). Business managers can adopt a goal-driven method for alignment (Aversano, Grasso, & Tortorella, 2013). Managers can use the IT governance frameworks to unlock the value of IT (Juiz, Gómez, & Barceló, 2012).

IT managers facilitate by the reskilling of the staff by training, cross-pollination, and job rotation to the business (Ohlsson, Han, Hultin, & Rosengren, 2016). Business managers can establish the right roles and skills to achieve BITA (Wagner & Meshtaf, 2016). The organizational state is trending towards skills in creative tasks and emotional intelligence (Molnar & De Smet, 2015). Business management need to reduce the barriers to effectiveness and efficiency (El-Mekawy, Rusu, Perjons, Sedvall, & Ekici, 2015). Management should leverage frameworks, standards, and best practices to enhance growth (Umoh & Sampaio, 2014). The BITA perspective has evolved over time due to new technologies especially in big data and analytics (Wagner, 2014). Business management can leverage the COBIT to achieve growth (Bartens, Schulte, & Voss, 2014). Management has applied governance practices to improve processes in the healthcare industry (Fattah & Arman, 2014). Some managers do not manage and plan projects properly to achieve alignment (Bachor & Chiasson, 2014). Researchers offered suggestions for the development of business capabilities and collective ability of enterprises with the usage of the COBIT. Topics include the importance of business capability in organizations, managing units of strategic business change, and the

creation of transformation maps related to technologies. Focus is given to supporting business strategy.

1.2 Strategic Alignment Implementation

To achieve value from the investments in information systems, confirm that that IS strategies and business strategies are aligned. This process is known as strategic alignment. For several years integration has been one of the top management priorities of most enterprises (Luftman, 2004). Enterprises need to achieve synergy in processes and a holistic approach to achieve positive business outcomes (Luftman & Kempaiah, 2007). The level of IT effectiveness is predicated on the culture, skills of employees and the vision of the leadership in the organization.

Managers consider the external and internal environment and ecosystem when developing strategy. The external ecosystem encompasses the shareholders, stakeholders, local communities, and the environment (Kaplan, 2005). Organizations should leverage plans and goals to achieve positive business outcomes. Managers need to pursue execution with more vigour as they do with formulation and planning (Myler, 2012).

The execution of strategy has the biggest benefit. The implementation delivers the desired outcomes. The managers can be pragmatic when working towards the fusion with the business (Barnat, 2007). Operationalization matches the strategy to the business units, the leaders, and managers (Barnat, 2007). Managers need to formulate and implement the strategy carefully to realise the value from the IT investments (Johnson & Scholes, 2008). Managers need to condense and cascade the big picture to the tactical and operational staff. The managers communicate the big picture and strategy effectively to the business units (Chen, 2010).

Boggis and Trafford (2014) observed that managers need to break strategy into manageable chunks and tackle those pieces sequentially. Managers internalize strategy by understanding the building blocks that make up the bigger picture. The building blocks of strategy are the independent plans by each business unit. Managers implement the independent plans daily. The daily effort leads to a substantial progress in implementing strategy (Charles & Gareth, 2007). Managers can adopt a project management approach to implement strategy. The scope, cost, schedule, and quality of the project is paramount. The capacities are needed in procurement, risk, human resources, communication, integration, and stakeholder management (Wheelen & Hunger, 2008).

1.2.1 Business Performance

Managers are considering the triple bottom line (TBL) when it comes to measuring performance. The factors of the TBL are profit, planet, and people. Probity or integrity is paramount for those organizations that need to be sustainable (Richard, Devinney, Yip, & Johnson, 2009). Performance is the result of productivity in delivering business outcomes and growth (Wheelen & Hunger, 2008). Performance is derived from the daily activities and processes guided by managers and agents. The organization managers produce goods and services by leveraging innovation, labour, capital, and land.

Richard, Devinney, Yip, and Johnson (2009) observed that managers measure performance by the impact it has on the shareholders, stakeholders, community, employees, and customers. Performance is characterized by the vision, culture, strategy, mission, and structure of the organization. Manager should be remunerated according to the sustainability, social responsibility and contribution to the local communities. Performance contracts motivate managers to deliver better results.

Business continuity management (BCM) practices prepare an organization for and prevent disaster. Managers can embed BCM in all the critical operations.

Atkinson et al. (2007) recommended that the board should hold management accountable for performance. The managers can select a few key success factors and metrics that can be applied to all the business units.

1.2.2 Strategic Alignment and Organizational Performance

BITA links IT objectives to the business objectives and strategy (Alaceva & Rusu, 2015). BITA drives sustainability, growth, and performance in organizations. Managers need the appropriate and correct level of alignment to unlock value (Coltman et al., 2015). Chan et al. (2007) observed positive business metrics in organizations that had mature level of alignment. Luftman and Brier (1999) concluded that managers who prioritize mature levels of alignment reap the benefits of higher profitability. Sabherwal and Chan (2007) called for more literature supporting the relationship between alignment and organizational performance. Managers looking out to lead and pioneer in business must invest for alignment (Hill, 2005).

Managers can pursue the first mover advantage for their organizations to remain relevant and sustainable (Porter, 2008). Managers can leverage quality practices using the plan, do, check and act model (Kim, Steven, & Wim, 2015). Managers can demystify the strategy formulation process (Cicchetti, 2003). Forward looking managers are driving performance by leveraging the disruptive technologies and innovation. Nadler and Tushman (2007) observed that a level of strategic alignment within a firm will foster improved organizational performance. Human resources and IT managers can provide employees with the right objectives and outcomes for the entities. The partnership of the chief operations officer and chief marketing officer can

lead to better performance. Youndt et al., (2006) observed that all department managers including human resources, marketing and manufacturing must work together for success. According to Mankin, Cohen and Bikson (2006), managers in all business units need to work in symbiotic pattern and in synergy.

1.2.3 Banking Industry in Kenya

Kenya has 39 commercial banks. There are other deposit taking microfinance institutions (DFI), and Savings and Credit Co-operatives (Sacco). The limits of this research will be on fully fledged commercial banks. The tier 1 banks in Kenya are ABSA, Standard Chartered, KCB, Equity Bank, Co-operative Bank, and CFC Stanbic Bank, DTB, I&M and NCBA. Tier one banks have a market share index of 74.68 % according to the annual reports (CBK, 2021).

Table 1: Bank Market Share

Peer Group	Combined Weighted Market Share (%)		No. of Institutions		Total Net Assets, (Ksh. B)		Total Deposits, (Ksh. B)		Capital and Reserves (Ksh. B)		Profit Before Tax (Ksh.B)	
	Dec-19	Dec-20	Dec-19	Dec-20	Dec-19	Dec-20	Dec-19	Dec-20	Dec-19	Dec-20	Dec-19	Dec-20
Large	74.68	74.55	9	9	3,607	4,033	2,710	3,061	538	599	143	97
Medium	17.10	17.21	9	9	805	910	623	732	130	141	18	17
Small	8.22	8.24	21	21	398	463	299	330	61	68	-2	-3
Total*	100	100	39	39	4,809	5,406	3,632	4,123	729	807	159	112

** Charterhouse Bank Limited and Chase Bank (K) Limited, which were in Liquidation and Imperial Bank Ltd, which were was in Receivership have been excluded.*

Source: CBK

The Bank Supervision and Banking Sector Reports (KBBR) are very useful lead and lag indicators for banks. From the above statistics, there is stiff competition among banks for profits, deposit, and loan accounts. Competition has gone a notch higher in the last few years and CEOs of the banks are betting on digital transformation and innovation to offer them a competitive advantage. That is where the strategic alignment enables the banks' performance.

1.3 Problem Statement

Managers decry the chasm between business and IT (Hall & Liedtka, 2007). The Economist Intelligence Unit noted that 66 percent of organizations undermine the IT organization when making investments for digital transformation. The managers leading the organizations with lower levels of alignment maturity report mediocre performance (Luftman & Kempaiah, 2007). Managers are frustrated when IT does not deliver a competitive advantage. The lack of strategic alignment has been a pain for the boards of directors (Gellweiler, 2017). Organizations do not reap any value from the IT investments (Thorp, 2009). While IT spending has increased in the last 10 years, managers struggle to determine and glean the value. This is the paradox of more spending and achieving low value (Haes & Van, 2009).

The lack of alignment between IT and business is a huge problem (El-Mekawy, Rusu, Perjons, Sedvall & Ekici, 2015). Some managers lack the frameworks for predicting the relationship between IT maturity and organizational performance (El-Mekawy, Rusu & Perjons, 2015). Ninety Percent of IT projects failed due to the lack of alignment and do not meet stakeholder requirements for schedule, cost, scope, and quality (Alaceva & Rusu, 2015). The lack of the alignment is a legacy problem (Luftman, Lyytinen, & Zvi, 2017). Alignment has been a priority for managers for many years (Malta & Sousa, 2016). Alignment has been a main priority for leaders (Gbangou & Rusu, 2016). According to the Standish Group, only 16% of software projects are completed with success, 53% have flaws and bugs in them and 31% are cancelled (Mihalescu, Gheorghe, & Boiangiu, 2017). Despite technological progress the quality of IT project effectiveness has not improved for a long time (Wachnik, 2017). Some members of the board of directors do not align the information technology governance to organizational performance (Turel, Liu, & Bart, 2017). The specific

problem is that the managers in the Kenyan banking industry lack a framework to predict the association between the BITA maturity level and the organizational performance.

1.4 General Objectives

To develop a framework that managers can use to predict the relationship between the BITA maturity level and the organizational performance for the banking industry in Kenya.

1.4.1 Specific Objectives

The Specific objectives guiding this study were:

i. To assess the business and IT alignment maturity level of the banking industry in Kenya.
ii. To determine the relationship between Communications, Value, Partnership, Governance, Architecture, and Skills criteria maturity and business performance of the banks in Kenya.
iii. To develop a framework that can enable the business management of the banking industry in Kenya to achieve the alignment maturity.
iv. To validate a framework that can enable the business management of the banking industry in Kenya to achieve the alignment maturity.

1.4.2 Research Hypothesis

H_{01}: There is no relationship between Communication criteria maturity and the business performance of the banking industry in Kenya.

H_{02}: There is no relationship between Value/Competency criteria maturity and the business performance of the banking industry in Kenya.

H_{03}: There is no relationship between Partnership criteria maturity and the business performance of the banking industry in Kenya.

H_{04}: There is no relationship between Governance criteria maturity and the business performance of the banking industry in Kenya.

H_{05}: There is no relationship between Scope/Architecture criteria maturity and the business performance of the banking industry in Kenya.

H_{06}: There is no relationship between Skills criteria maturity and the business performance of the banking industry in Kenya.

H_{07}: There is no relationship between the overall maturity level and the business performance of the banking industry in Kenya.

1.5 Justification of the Research

Luftman (2000) conducted research for over three years. Strategic alignment has been a problem for board of directors. BITA is a priority in Kenya in all the organizations and especially the banks due to the huge investments that are made in IT projects without the commensurate returns. There was a need for a solution to this problem. Managers require the accurate and timely information to make business critical decisions (Haes & Van, 2017). Alignment is a priority for forward-looking enterprises (Gbangou & Rusu, 2016). There was the need for a study on the strategic alignment in Kenya.

1.6 Significance of the research

To policymakers

Policy makers will use the findings within the government institution and the regulatory bodies in formulating policies for alignment.

To practitioners

To managers and practitioners in the banking industry the study was significant in driving the BITA. The study findings will also be of importance in highlighting the role played by the IT strategic alignment towards improving the organizational performance of banking institutions.

To scholars and academicians

The study was of importance to scholars by bridging the gap on the scanty literature available locally on the link between BITA and organizational performance.

1.7 Scope of the study

The scope was the nine Tier one banks in Kenya. While the BITA maturity model can be applied to all industries and organizations, there will be unique features within Tier one banks that are interesting to find out. Tier one banks comprise 70 % of the Kenya banking market share.

1.8 Limitations and Delimitations

Limitations are unpredictable events that may impact the validity of the study. Participants may not reflect the population or have the expert opinions as required. Not all the participants were available for face-to-face interviews which made it hard for the researcher to assist them in understanding technical components in the research instrument.

Delimitations alert readers on the scope. It includes what the research is not going to address. The participation is delimited to the CIOs with more than three years' experience in management.

1.9 Assumptions of the study

Assumptions are concepts that are accepted as truths without concrete proof. The participants in the study answered honestly. The participants have advanced familiarity with driving value from IT investments. The study assumed that the current conditions of alignment and factors at Tier one banks can be applied to other banks in Kenya and globally. The study assumed that the represented information is applicable at most times and locations.

1.10 Expected Outcome

The outcome was a framework that managers can use to predict the association between the maturity level and the organizational performance.

1.11 Business Performance

Organizational performance: This is the value that an enterprise provides to the stakeholders.

Strategic Alignment Model (SAM): Venkatraman, et al. developed SAM. SAM relates the business strategy to IT strategy and the business infrastructure to the IT infrastructure (Venkatraman, Henderson, & Oldach, 1993).

Strategic Alignment Maturity Model (SAMM): The model consists of 6 alignment criteria. Each criteria has multiple attributes and maturity levels (Luftman, 2003).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Scholars and practitioners pursue strategic alignment as the holy grail of organizational effectiveness and success. CEOs and CIOs are working in harmony to deliver digital transformation initiatives that enable growth, profitability, and sustainability. Strategic alignment is a priority for CEOs, CIOs, and other business executives (Chan & Reich, 2007). IT strategy has the potential to unlock the effectiveness and growth in organizations. The people, processes, and technology resources are the pillars in digital transformation (Abdi & Dominic, 2010).

Successful digital transformation is created by the symbiotic interaction by all business units in an organization (Henderson & Venkatraman, 1990). Managers who can demonstrate the value of IT reap huge rewards in growth and sustainability (Haes, Harrison, & Archer, 2009). Managers can harness and unlock value from investments in IT (Van & Haes, 2008). Managers leverage on the IT applications, infrastructure, and people to generate business value (Steven, 2015). The vision, strategy, mission, culture, structure, and IT infrastructure dovetail to meet the business goals (Van & Haes, 2008). Managers strive for harmony and fusion to meet enterprise objectives. The board of directors expect IT to enable revenue generation and reduce costs while managing risk (Campbell, 2005).

Table 2: Common Definitions of Alignment

Author	Definition
Henderson and Venkatraman [11]	The allocation of IT budgets such that business functions are supported in an optimal way.
Broadbent and Weill [12]	The degree of congruence of an organization's IT strategy and IT infrastructure with the organization's strategic business objectives and infrastructure.
Reich and Benbasat [13]	The degree to which the IT mission, objectives, and plans support and are supported by the business mission, objectives and plans.
Chan et al. [14]	The situation that occurs when IS functions are amalgamated with the most fundamental strategies and core competencies of the organization.
Maes et al. [15]	A continuous process, involving management and design sub processes, of consciously and coherently interrelating all components of the business/IT relationship to contribute to the organization's performance over the time.
Duffy [16]	The process of achieving competitive advantage through developing and sustaining a symbiotic real relation between business and IT.
Luftman [8]	A state where IT is applied in an appropriate and timely way, in harmony with business strategies, goals and the needs.
Senn [17]	Ensuring that every single action performed by IT individuals is focused on building and delivering shareholder/stakeholder value by supporting business operations and/or achieving business goals.

Source: (Santana Tapia et al., 2008)

The path to alignment

The process of BITA is long, arduous, and tedious. This is because the business and the IT ecosystems change continually. It is like drawing a line in the sand. There is no starting or ending point and it is a never-ending journey. The fast business changes are caused by the macro environment factors including the environment, politics, economics, regulations, social, cultural, and legal factors. The rapid technology changes are caused by the new and disruptive innovation including artificial intelligence, cloud, blockchain, analytics, big data, virtual reality, augmented reality, social, mobility and other emerging technologies (CioIndex, 2019a)

Step 1: Identify Business Drivers

The business drivers are usually profitability, market share and revenue generation. This may be achieved in a sustainable manner. Managers are responsible for

sustaining the environment and the communities they live in and be socially responsible.

Step 2: Create IT Vision

The IT vision should sync with the business vision. The business vison is the relevance and sustainability. The IT vision is an enterprise architecture that harnesses the capability in people, process, and infrastructure. The architecture ensures that all systems are integrated in a cohesive whole that leverages the enterprise service bus (ESB). The ESB delivers on the service-oriented architecture (SOA).

Step 3: Assess Current Alignment

Managers start by assessing the current state of the IT ecosystem. The ecosystem comprises the infrastructure, applications, network, and the people. Managers also assess the orientation along this scope.

Step 4: Identify Alignment Gaps

Managers can identify the source of the disconnect. The managers then close the gaps to aid the harmonizing and dovetailing the IT and business departments. This is usually a process and requires the diagnosis of the current state and the awareness of the future state. Managers from all the departments in the organization should communicate clearly for this to be achieved.

Step 5: Prioritize IT Initiatives

Managers may start with the initiatives that provide quick wins and the highest business impact. They may start with the initiatives that are simple provide the highest benefits and the biggest returns on investment. Managers may not embark on the entire list at once.

Step 6: Evaluate Implementation Options

Managers consider the scope, cost, schedule, and quality when evaluating options. Projects managers call this the triple constraints. The managers then create a list of options and alternative implementation strategies. Managers pay attention to pick the option with the least amount of risk and cost.

Step 7: Create Migration Plan

Managers will embark on a plan and learn from the mistakes in the implementation. The managers will go through the permutations of the plans and come to the best option. The managers will finally migrate to the most rational and cost-effective plan.

Step 8: Adjust IT Strategy

Managers are paid to make decisions about strategy. The strategy or plan is not cast in stone. Managers adjust the plan and fit it with the evolving needs of the business. The art and science of strategy are important. They both go a long way in fusing the IT and business (CioIndex, 2019a).

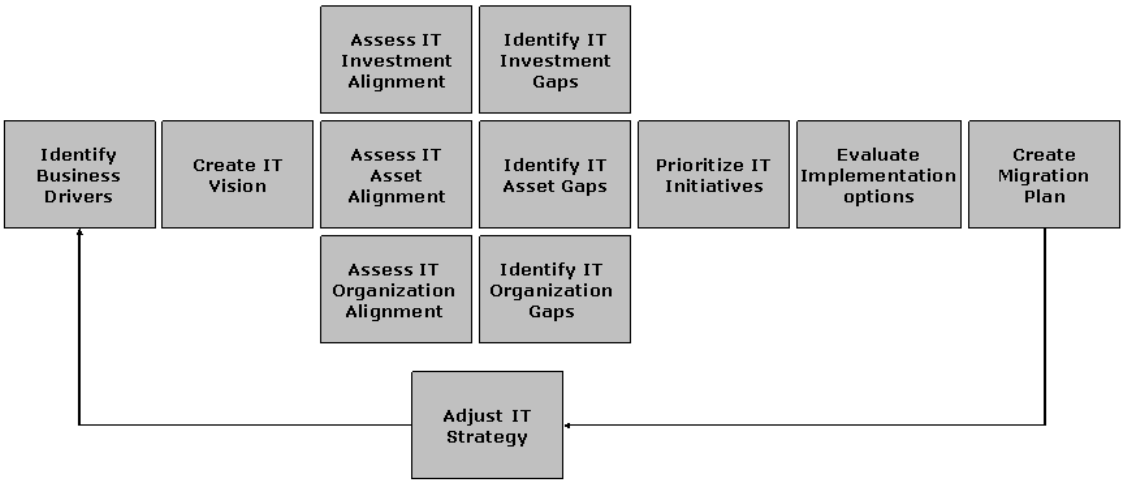

Figure 1: Effective Business IT Alignment Process

Source: (CioIndex, 2019a).

2.2 Business Strategy

The strategy are the choices that the management and the boards take to steer the business to growth and profitability. The choices can also be categorized as five positions (Mintzberg, 1987). It includes the short or long-term plans charted to achieve the desired goals (Porter & Locations, 2000).

BITA is focussed on aligning IT projects and initiatives with organizational objectives and the desired goals. It enables the enterprise to survive and thrive and be sustainable (Abdi & Dominic, 2010). It supports the mission, vision, structure, and the culture of the organization. The IT organization is aligned to the demands and supply cycles of the business. The IT organization is flexible enough to meet the pattern of business activity and ultimately this leads to business growth and profitability. The IT strategy delivers a competitive advantage to the organization by supporting all the functions in

marketing, sales, finance, operations, research and development, and services (Alaceva & Rusu, 2015).

With the onset of digital transformation, the IT organization delivers the disruptive technologies and enables new business models to drive growth and sustainability (Galliers, 2013). Digital transformation has changed organizations and industries by enabling the management to be data-driven in their decisions and to leverage big data analytics. The application of data lakes and data warehouses has increased tenfold in the past decade. Information flows are more democratized in the new century (Luftman, 2000).

2.2.1 Strategic Alignment Theories and Frameworks

There are several different models and theories that can be used to achieve strategic alignment, which refers to the process of aligning an organization's goals, strategies, and resources with its external environment to achieve a competitive advantage (Li, Liu, Belitski, Ghobadian, &O'Regan, 2016). Some common models and theories include SWOT analysis, Porter's Five Forces, Balanced Scorecard, McKinsey 7S Framework, Ansoff Matrix, PESTEL, VRIO: RBV, BCG matrix, and others listed below.

Balanced Scorecard

The Balanced Scorecard (BSC) is a performance measurement system that helps organizations align their strategic goals and objectives with their operational activities. The scorecard uses a combination of financial and non-financial measures to evaluate an organization's performance (Kaplan, 2009).

Strengths of the BSC

One of the strengths is that it helps organizations align their goals and objectives with their operational activities, which can lead to better overall performance. Another strength is that it allows organizations to evaluate their performance using a combination of financial and non-financial measures, which can provide a more holistic view of the organization. Another strength is that the tool can help organizations identify and prioritize key performance drivers and focus their efforts on improving those areas. The scorecard can help organizations communicate their strategy and goals to employees, which can increase buy-in and motivation (Chavan, 2009).

Weaknesses of the BSC

One of the weaknesses is that the tool can be time-consuming and resource-intensive to implement, especially for organizations that do not already have robust performance measurement systems in place. Another weakness is that it requires clear and specific goals and objectives, which can be challenging for some organizations to define. The scorecard can be difficult to determine which measures to include in the scorecard and how to weight them, which can lead to subjectivity and bias. Another weakness is that the tool can be challenging to keep the scorecard up to date and relevant, as the organization's goals and priorities may change over time (Stewart & Carpenter-Hubin, 2001).

McKinsey 7S Framework

The McKinsey 7S Framework is a model that helps organizations ensure that all parts of their organization are aligned and working together towards a common goal. The framework consists of seven elements: Strategy, Structure, Systems, Style, Staff, Skills, and Shared values (Singh, 2013).

Strengths of the McKinsey 7S Framework

One of the strengths is that it provides a comprehensive view of the organization, considering both hard elements (such as structure and systems) and soft elements (such as culture and leadership style). Another strength is that it helps organizations understand how different parts of the organization fit together and influence each other. The framework can be used to diagnose organizational problems and identify areas for improvement. Another strength is that it is relatively simple and easy to understand, making it accessible to a wide range of stakeholders (Baishya, 2015).

Weaknesses of the McKinsey 7S Framework

One of the weaknesses is that the tool can be time-consuming and resource-intensive to implement, especially for large organizations. Another weakness is that it is a theoretical model and may not always accurately reflect the complexity of real-world organizations. The framework does not provide specific recommendations for how to address identified problems or improve alignment. Another weakness is that it does not consider external factors such as the competitive environment or changes in the market, which can impact an organization's alignment (Chmielewska, Stokwiszewski, Markowska & Hermanowski, 2022).

Ansoff Matrix

The Ansoff Matrix is a tool that helps organizations understand the risks and potential rewards of different growth strategies. The matrix does this by plotting strategies along two dimensions: the market (existing and new) and the product (existing and new) (Loredana, 2016).

Strengths of the Ansoff Matrix

One of the strengths is that it provides a simple and easy-to-understand framework for thinking about growth strategies. The tool helps organizations consider the risks and potential rewards of different options, which can inform decision-making. Another strength is that it encourages organizations to think about both market and product development, rather than focusing on only one or the other. Another strength is that the tool can help organizations identify new opportunities for growth (Hussain, Khattak, Rizwan & Latif, 2013).

Weaknesses of the Ansoff Matrix

One of the weaknesses is that it is a theoretical model and may not always accurately reflect the complexity of real-world situations. Another weakness is that it does not consider external factors such as the competitive environment or changes in the market, which can impact an organization's growth prospects. Another weakness is that it does not provide specific recommendations for how to implement different growth strategies. The matrix does not consider resources and capabilities, which can be important factors in determining the feasibility of different growth strategies (Dawes, 2018).

Dynamic Capabilities Theory

The Dynamic Capabilities Theory posits that a firm's ability to adapt and change in response to its environment is crucial for its long-term success (Vorhies, Morgan & Autry, 2009). Foss (2003) observed that managers need to continually invest on learning and growth and not just on the products and services. Knowledge management is paramount for the success of the organization. Managers need to consider specialization to deliver on the promise they made to customers.

Strengths of the Dynamic Capabilities Theory

One of the strengths of the dynamic capabilities is that it leverages the previously existing concept of operational capabilities and refers to an organization's capacity to change these operations and develop its resources efficiently and responsively (Teece, 2014).

Another strength of applying the theory is that an organization's basic competencies can be used to create short-term competitive positions that can be developed into longer-term competitive advantage (Wheeler, 2002).

Another strength of the dynamic capabilities view is that it focuses more on the issue of competitive survival in response to rapidly changing contemporary business conditions (Teece, 2018).

Another strength of the theory is that it enables the development of strategies for managers to adapt to radical discontinuous change, while maintaining minimum capability standards to ensure competitive survival. The theory emphasizes the internal capabilities rather than only looking into the external business forces (Andreeva & Chayka, 2006).

Another strength of the theory is that the tool can enable the firm's ability to quickly orchestrate and reconfigure externally sourced competences, ranging from Google Android to crowdsourced, crowdfunded open innovations (Kuuluvainen, 2012). This can be achieved while leveraging internal resources such as platforms, know-how, user communities and digital, social, and mobile networks (Pisano, 2015).

Another strength of the dynamic capabilities theory is that it takes into account digital, information and network economics and the fall of the transaction costs incurred when using specialized services (Buzzao & Rizzi, 2021).

Weaknesses of the Dynamics Capability Theory

One of the weaknesses of the dynamic capability theory that it is vague and superfluous. The theory remains very helpful when addressing what to focus on in responding to the business changing environment, but fails to describe exactly how (Bleady, Ali & Ibrahim, 2018).

The capabilities of the theory are difficult to identify and/or operationalize, and in some cases, those very capabilities can lead to a core capability becoming core rigidity. The

use of the theory in its current state is difficult without being able to further specify, develop, and identify those capabilities (Nooteboom, 2009).

Resource-Based View Theory

The Resource-Based View (RBV) theory is a strategic management theory that posits that a firm's internal resources and capabilities are the primary drivers of its ability to create and sustain a competitive advantage (Barney, 1995). Managers can augment and cultivate the resources that help the organization to be sustainable (Ainuddin et al., 2007). Resourced-based views and dynamic capabilities of an organization offer a guide on how the organization can achieve several things, for instance, plan to beat the competition, improve on its internal strengths, and offer effective leadership. This study appreciates the role of strategy implementation, which is key to completing the strategy process. Accordingly, resource-based theory approach, helps the firm to differentiate through innovation, as rent seekers rather than profit maximization with emphasize on entrepreneurship and innovation.

Strengths of the Resource-Based View

The resource-based view of the organization emphasizes sustainable competitive advantage. One of the strengths of adopting the theory is that companies in possession of a resource, or mix of resources that are rare among competitors, are said to have a comparative advantage (Barney, 1996). This comparative advantage enables organizations to produce marketing offerings that are either perceived as having superior value or can be produced at lower costs. A comparative advantage in resources can lead to a competitive advantage in market position (Mathews, 2002).

Another strength of the resource-based view is that it enables managers to select the strategy or competitive position that best exploits the internal resources and capabilities relative to external opportunities. The resource-based view is much more flexible than Porter's prescriptive approach to strategy formulation (Brahma & Chakraborty, 2011).

Another strength of the resource-based view is that it the value-based views provide an additional way to create organizational management links between employees at a company, based on their core values and beliefs (Kraaijenbrink, Spender & Groen, 2010).

Another strength of the resource-based view is that the tool can be used to identify the fundamental values or beliefs. The analyis can be used in design management practices

that reflect and embody these values and use these to build core capabilities. The tool can be used to invent a strategy that is consistent with the values and uses the capabilities to compete in new and unusual ways (Armstrong & Shimizu, 2007).

Another strength of the theory is that it allows the managers to define organization resources as assets, capabilities, organizational processes, organization attributes, information, and knowledge that are controlled by a organization that enable the organization to develop and implement strategies that improve its efficiency and effectiveness (Wernerfelt, 1984).

Another strength of the theory is that it enables the development of capabilities. Capabilities are an embedded nontransferable organization-specific resource whose purpose is to improve the productivity of the other resources possessed by the organization (Lockett, Thompson & Morgenstern, 2009).

Another strength is to help managers identify the organization's potential key resources and evaluate whether these resources fulfill the valuable, rare, inimitable, and non-substitutable (VRIN) criteria. It also enables managers to develop, nurture and protect resources that pass these evaluations (Bridoux, 2004).

Weaknesses of the Resource-Based View

The RBV is superfluous and vague (Wernerfelt, 1984). This means it may not be practical and does not provide the process to achieve a competitive advantage. It is also good to note that different resource configurations can generate the same value for organizations and thus would not be competitive advantage (Foss & Eriksen, 1995).

Another weakness of RBV is that the role of product markets is underdeveloped in the argument. It is also key to observe that theory has limited prescriptive implications (Kraaijenbrink, Spender & Groen, 2010).

Another weakness of RBV is he failure to consider factors surrounding resources; that is, an assumption that they simply exist, rather than a critical investigation of how key capabilities are acquired, or developed (Lockett, Thompson & Morgenstern, 2009).

Another weakness of RBV is that it is difficult to find a resource which satisfies the VRIN criteria (Pettus, 2001). The other weakness is that an assumption that a organization can be profitable in a highly competitive market as long as the tool can

exploit advantageous resources does not always hold true. It ignores external factors concerning the industry (Mathews, 2002).

Value, Rarity, Imitability, and Organization (VRIO) Model

Valuable?	Rare?	Costly to imitate?	Exploited by the organization?	Competitive implication
No				Competitive disadvantage
Yes	No			Competitive parity
Yes	Yes	No		Temporary competitive advantage
Yes	Yes	Yes	No	Unexploited competitive advantage
Yes	Yes	Yes	Yes	Sustained competitive advantage

Figure 2

The VRIO framework is a strategic planning tool designed to help organizations uncover and protect the resources and capabilities that give them a long-term competitive advantage (Lopes, Farinha, Ferreira & Silveira, 2018). Sustainable competitive advantages are those that competitors cannot easily duplicate in the foreseeable future. They are also a crucial element of business success (Simão, 2010).

VRIO is an acronym for a four-question framework focusing on value, rarity, imitability, and organization, the criteria used to evaluate an organization's resources and capabilities (Knott, 2015). Organizations can use a decision tree to help map the outcomes of the evaluation, depending on whether they deem a resource as having met the criteria (Simão & Diaz, 2013).

Few organizations take the time to delve into their core competencies to determine what makes them unique. Without the correct organization, even firms with valuable, rare and costly to imitate resources and capabilities can suffer competitive disadvantage (Barney & Hesterly, 2011).

Strengths of the VRIO

One of the strengths of the VRIO model is that it allows you to take advantage of previously unrecognized competitive advantages. The tool can help set the course for a

better future and allocate business resources optimally (Lopes, Oliveira & Silveira, 2020).

Another strength of the model is that the tool can produce insights that may help identify and evaluate potential opportunities and threats to determine which ones are more important (Cardeal & Antonio, 2012).

Weaknesses of the VRIO

One of the weaknesses of the VRIO model is that it does not consider the volatility and uncertainty of the business environment (Hernández & Garcia, 2018). The business environment is constantly changing, making it difficult to have a sustainable competitive advantage for the long term. A period of three to five years is more realistic (Chatzoglou, Chatzoudes, Sarigiannidis & Theriou, 2018).

Another weakness of the VRIO is that new and small businesses may find it more difficult to apply the VRIO framework simply because they have not yet fully developed their resources or capabilities to establish a sustained competitive advantage (Soltani, Zare & PARNIAN, 2015).

Another weakness of the VRIO is that it is solely an internal analysis tool. Organizations will need other frameworks like the SWOT or PESTEL analysis to fill in the gaps (Geraldes, Lopes Da Costa & Geraldes, 2019).

Porter Five Forces Analysis

The Porter's Five Forces Model is one of the best methods to conduct a competitive analysis in the industry. The main goal of the model analysis is to help business owners develop a robust business strategy by examining the forces in their wider business environment. These are the factors that determine the competitive pressure of an industry and an organization's potential to increase profitability (Porter, 2008). They are Buyer Power, Supplier Power, Substitute Products, New Entrants, and Competitive Rivalry. The sixth force is government policies. Governments impose certain regulatory, trade policies, and taxation that may affect how a business makes money (Madsen & Grønseth, 2022).

Strengths of the Five Forces Analysis

One of the strengths of the analysis is that it helps determine the competitive intensity and threats. With the Five Forces tool, Managers can pinpoint how each force affects

their business, whether a substitute product in the industry is a threat, and the buying power of consumers and buyer concentration (Tanrıverdi & Lezki,2021).

Another strength is that it is simple to apply. Applying the Five Forces tool to the business does not require much time or effort. A basic understanding of the model would suffice. Managers need to collect data (Mizik & Balogh, 2022). The more in-depth the data collection efforts are, the more accurate the model will be when it comes to identifying the industry's structure and the competition in the industry (Sakinah & Wibowo, 2021)

Weaknesses of the Five Forces Analysis

One of the weaknesses of the tools is that it may not be very relevant in modern business climate. Assessing industry attractiveness using the Five Forces Framework may not be very effective in today's market. The model was developed in the late 1970s. At that time, the market was more stable, the competition was not high, and there was a steady change in technology (Nengsih, Gayatri, Wagini & Indriasari, 2021).

Today's market requires companies to be more dynamic and resilient. This is largely due to the major advancement in technology that forces businesses to compete in a hypercompetitive environment. Today's market is unstable, meaning that the Five Forces tool may not be that effective for businesses in predicting market changes and their impact on industry profits (Göral, 2021).

Another weakness of the tool is that it does not account for the company's internal resources. The Five Forces Model neglects the resources a company brings to the industry. It would be wise to integrate the Five Forces tool with a resources-based analysis of the company (Kumar, Sandhu, Harper, Ting & Rihal, 2021).

Another weakness is that the model lacks the explanation of strategic alliances. Robust alliances can give businesses an unfair competitive advantage. The Five Forces Framework does not address how these alliances affect profitability (Svoboda, Ghazal, Afifi, Kalra, Alshurideh & Alzoubi, 2021).

PESTLE analysis

The PESTLE analysis is a framework for assessing the external factors that may affect an organization. The acronym PESTLE stands for Political, Economic, Social, Technological, Legal, and Environmental (Ho, 2014). The model can be used in a range

of different scenarios and can guide organizations in strategic decision making. The tool can also be referred to PESTEL analysis (Perera, 2017).

Strengths of PESTEL analysis

One of the strengths of PESTEL is that it is a simple framework. Simplicity makes it easy for employees to understand and apply without dealing with a steep learning curve (Zalengera, Blanchard, Eames, Juma, Chitawo, & Gondwe, 2014).

Another strength is that it facilitates an understanding of the wider business environment. The environment has shifted, and business needs to consider the pandemic, the impending economic recession and the wars in eastern Europe and the Middle East (Christodoulou & Cullinane, 2019).

Another strength is that it encourages the development of external and strategic thinking. The outside-in approach is one that resonates well with customers and the Generation Z and millennials (Achinas, Horjus, Achinas & Euverink, 2019).

Another strength is that the tool can enable an organisation to anticipate future business threats and take action to avoid or minimize their impact. Organizations can benefit from sound risk management strategies and the PESTEL analysis can help reduce or even avoid the risk (Sammut-Bonnici & Galea, 2014).

Another strength is that the tool can enable an organization to spot business opportunities and exploit them fully. Organizations exploit strengths by innovating and experimenting in concert with employees and customers. They co-create with their stakeholders (Srdjevic, Bajcetic & Srdjevic, 2012).

Weaknesses of PESTEL analysis

One of the weaknesses of the PESTEL analysis is that users oversimplify the amount of data used for decisions. Another weakness is that it is easy to use insufficient data (Thomas, Sandwell, Williamson & Harper, 2021). The risk of capturing too much data may lead to paralysis by analysis. The data used may be based on assumptions that later prove to be unfounded (Nandonde, 2019).

Another weakness of the PESTEL analysis is that the pace of change makes it increasingly difficult to anticipate developments that may affect an organisation in the future. In addition, to be effective, the process needs to be repeated on a regular basis (Mihailova, 2020).

SWOT Analysis

A SWOT analysis tool is one of the most effective business and decision-making tools (Leigh, 2009). The SWOT analysis can help the organization identify the internal and external factors affecting the business. The SWOT analysis helps an organization to build on strengths, minimize weakness, seize opportunities, and counteract threats (GURL, 2017).

Strengths of SWOT Analysis

One of the strengths of the analysis is that the results generated makes up part of the organization business planning and helps to better understand the business. Another strength is that the tool can help the organization to identify the areas of the business that need improving (Benzaghta, Elwalda, Mousa Erkan & Rahman, 2021). Some areas of the business are not effective or optimized and can benefits from a gap analysis. The tool can help the organization to decide if they can introduce a new product or service. The only way to thrive is to innovate by producing new services or products (Leigh, 2009).

Another strength is that the tool can help the organization to understand the market and competitors. The external environment present opportunities in terms of market expansion to counter competitor growth (Kangas, Pesonen, Kurttila & Kajanus, 2001). Another strength is that the tool can help the organization to predict changes the organization will need to deal with to ensure the business growth and sustainability. The business environment is volatile and full of uncertainty and an analysis can help predict the best route to take for survival and growth (Sarsby, 2016).

Another strength is that it a simple four box framework. The analysis facilitates an understanding of the strengths and weaknesses of the organization. The analysis encourages the development of strategic thinking. The analysis enables managers to focus on strengths and build opportunities (Dyson, 2004). The analysis can enable an organization to anticipate future business threats and take action to avoid or minimize their impact. The analysis enables an organization to spot business opportunities and exploit them fully. The analysis is flexible, adaptable, and reliable (Helms & Nixon, 2010).

Weaknesses of the SWOT Analysis

One of the weaknesses of the analysis is that it will not prioritize issues. The SWOT analysis needs to be reviewed to produce meaningful results. Another weakness is that it may not provide solutions or offer alternative analysis. The organization may look at the issues noted and work to generate solutions. The tool can generate too many ideas but will not help the organization choose which one is best. When this occurs, the organization may limit the scope of the analysis to only a few solutions (Teoli, Sanvictores & An, 2019).

Another weakness is that the tool can produce a lot of information, but it may not all be useful. The organization may review the data generated to determine what is relevant. Some SWOT analysis users oversimplify the amount of data used for decisions. Another weakness is that it is easy to use insufficient data. The risk of capturing too much data may lead to paralysis by analysis. The data used may be based on assumptions that later prove to be unfounded (Humphrey, 2005).

Another weakness is that access to quality internal data sources can be time consuming and politically difficult especially in more complex, traditional organizations. Another weakness is that it lacks detailed structure and key elements may get missed. The pace of change makes it increasingly difficult to anticipate developments that may affect an organization in the future. To be effective, the process needs to be repeated on a regular basis (Piercy & Giles, 1989).

BCG Matrix Analysis

The Boston Consulting Group matrix is a tool used in strategic business analysis to help a company understand its product or service offerings and allocate resources accordingly. The resulting four quadrants are called stars, cash cows, question marks, and dogs (Hambrick, MacMillan & Day, 1982). The matrix can also be referred to as the Growth-Share Matrix.

Strengths of the BCG-Matrix

One of the strengths is that the BCG-Matrix is applicable to large companies that seek volume and experience effects (Mohajan, 2017). The model is simple and easy to

understand. It provides a base for management to decide and prepare for future actions (Madsen, 2017).

Another strength is that if a company can use the experience curve to its advantage, it should be able to manufacture and sell new products at a price that is low enough to get early market share leadership (Ioana, Mirea & Balescu, 2009). Once it becomes a star, it is destined to be profitable (Nurfitriya, Koeswandi, Fauziyah, & Budiman, 2021).

Weaknesses of the BCG-Matrix

One of the weaknesses is that it neglects the effects of synergies between business units. A high market share is not the only success factor. Market growth is not the only indicator for attractiveness of a market (Tien, 2022).

Another weakness is that sometimes Dogs can earn even more cash as Cash Cows. There are some problems of getting data on the market share and market growth. In addition, there is no clear definition of what constitutes a market (Ha, Yu, & Hwang, 2021).

Another weakness is that a high market share does not necessarily lead to profitability all the time (Ye, 2022). The model uses only two dimensions of market share and growth rate. This may tempt management to emphasize a particular product, or to divest prematurely (Nogalski, Hiep, Dao & Minh, 2022).

Another weakness is that a business with a low market share can be profitable too. The model neglects small competitors that have fast growing market shares (Madsen & Grønseth, 2022).

Value Chain Analysis

The Value Chain Analysis categorizes the primary organization activities as Inbound, Outbound Logistics, Operations, Marketing &sales and service. The secondary activities are Infrastructure, Human Resource Management, Technology, and Procurement (Porter, 2001).

Figure 3 Source: (Porter, 2001).

The Strengths of Value Chain Analysis

One of the strengths is that the value chain is a very flexible strategy tool for looking at the business, the competitors, and the respective places in the industry's value system (Magry, Cahill, Rookes & Narula, 2022).

Another strength is that the value chain can be used to diagnose and create competitive advantages on both cost and differentiation (Jadhav & Mannar, 2021). Another strength is that is that it helps managers to understand the organization issues involved with the promise of making customer value commitments because it focuses attention on the activities needed to deliver the value proposition (Misra & Mention, 2021).

Another strength is that comparing the business model with the competitors using the value chain can gives managers a much deeper understanding of their strengths and weaknesses to be included in the SWOT analysis (Marcato & Baltar, 2021).

Another strength is that the value chain is well known and has been a mainstay of strategy teaching in business schools for the last 20 to 25 years (Wang, Jin, Yang, & Naqvi, 2021). Another strength is that the tool can be adapted for any type of business including manufacturing, retail, or service industries. The value chain has developed into the value system which lets managers get a better understanding of the much broader competitive arena (Salayo, Marte, Toledo, Gaitan & Agbayani, 2021).

The Weaknesses of the Value Chain Analysis

One of the weaknesses of the value chain analysis is that the strengths of flexibility mean that it must be adapted to a particular business situation and that can be a disadvantage since, to get the best from the value chain. It is not plug and play (Strakova, Simberova, Partlova, Vachal & Zich, 2021).

Another weakness is that the format of the value chain is heavily oriented to a manufacturing industry and may not be applicable for other sectors (Salahuddin, Salahuddin & Khamarudin, 2021). Another limitation is that scale and scope of a value chain analysis can be intimidating. The tool can take a lot of work to finish a full value

chain analysis for the company and for the main competitors to identify the differences and key drivers (Hergert & Morris, 1989).

Another weakness is there a few are experts in its use and application. Another weakness is that it is outdated and may make it difficult to relate to and understand to apply it in the Internet age (Kothandaraman & Wilson, 2001).
Another weakness is that it has been adopted by supply chain and operations experts and therefore its strategic impact for competitive advantage has been reduced (Porter & Millar, 1985). Another limitation is that business information systems are often not structured in a way to make it easy to get information for value chain analysis (Lee & Porter, 2013).

Porter's Generic Strategies

Porter's Generic Strategies are a set of frameworks that can be used to develop a competitive advantage within a particular market or industry. There are three main strategies that Porter identified including Cost Leadership, Differentiation, and Focus (Pretorius, 2008).

Cost leadership

This strategy involves becoming the lowest cost producer in the industry. The goal is to offer products or services at a lower price than competitors, while still maintaining acceptable levels of quality and customer satisfaction (Murray, 1988).

Strengths

One of the strengths is that it allows a company to offer competitive prices and potentially increase market share. The tool can lead to increased profitability due to the cost savings achieved through efficiency (Hendry, 1990)

Weaknesses

One of the weaknesses is that it may require significant investments in cost-cutting measures such as new technology or operational improvements. May result in lower margins due to the focus on cost reduction. Another weakness is that it may be difficult to sustain over the long term, as competitors may try to imitate the cost-cutting measures (Gurău, 2007).

Differentiation

This strategy involves offering unique products or services that are significantly different from those of competitors. The goal is to create a perception of value in the

minds of customers, which can justify a higher price for the product or service (Kim, Nam & Stimpert, 2004).

Strengths

One of the strengths is that it enables a company to differentiate itself from competitors and potentially command a premium price for its products or services. The tool can lead to increased customer loyalty and reduced-price sensitivity (Moon, Hur, Yin & Helm, 2014).

Weaknesses

One of the weaknesses is that it may require significant investments in research and development to create and maintain the unique products or services. The tool may be difficult to sustain over the long term, as competitors may try to imitate the differentiating features. The tool may be more challenging to implement in highly competitive industries where it is difficult to differentiate products or services (González-Benito & Suárez-González, 2010).

Focus

This strategy involves targeting a narrow market segment and offering products or services that meet the specific needs of that segment. The goal is to become the dominant player in the targeted segment by offering a tailored product or service that is difficult for competitors to replicate (Islami, Mustafa & Topuzovska Latkovikj, 2020).

Strengths

One of the strengths is that it allows a company to tailor its products or services to the needs of a specific market segment, potentially increasing customer satisfaction and loyalty. Can be easier to implement in niche markets where there is less competition (Hales & Mclarney, 2017).

Weaknesses

One of the weaknesses is that organizations may require significant resources to research and understand the needs of the targeted market segment. The tool may be difficult to sustain over the long term, as competitors may try to enter the targeted segment, or the needs of the segment may change. May limit the potential for growth, as the company is focused on a narrow market segment rather than the broader market (Tansey, Spillane & Meng, 2014).

The Business Model Canvas

The Business Model Canvas (BMC) is a strategic management tool that is used to visualize and plan the key elements of a business. The BMC a visual representation of a company's value proposition, operating model, customer segments, revenue streams, and costs. The six main areas that it covers are the Operating Model, Value Model, Service Model, Experience Model, Cost Model, and Revenue Model (Osterwalder, 2004a).

The Operating Model Canvas focuses on how an organization runs itself, such as processes, infrastructure, and people. It is the representation of how an organization delivers value to its customers and stakeholders (Campbell, Gutierrezn & Lancelott, 2017).

The Value Model focuses on the value proposition and how it is delivered to the customer, the Service Model focuses on how the customer interacts with the company, the Experience Model focuses on the customer's experience with the company, the Cost Model focuses on the costs associated with the business, and the Revenue Model focuses on the streams of revenue for the company (Joyce & Paquin, 2016).

The Business Model Canvas is typically used to outline the fundamental building blocks of a business, but it can also be used effectively for individual products as well (Carter & Carter, 2020).

Strengths of the BMC

One of the strengths is the focus. The BMC is designed to guide thinking through each of the key components or building blocks for devising a business model. In this respect, it allows the business to understand how each aspect relates to the others; how the functions, activities and processes interlink and interlock (Osterwalder, 2004b).

Another strength is the flexibility. The BMC is a flexible tool that can be used for different types of businesses, products, and services. It can be adapted to different industries, sectors, and contexts (Osterwalder, Parent & Pigneur, 2004).

Another strength is the visibility. The BMC provides a clear visual representation of the business model, making it easy to understand and communicate to others (Osterwalder, Parent & Pigneur, 2004).

Weaknesses of the BMC

One of the weaknesses is simplification. The BMC simplifies the complexities of a business model, which can lead to oversimplification and a lack of detail (Osterwalder, Pigneur, Oliveira & Ferreira, 2011).

Another weakness is the limited perspective. The BMC is limited in its ability to fully capture the complexity of a business model, as it only covers certain aspects of the business. Another limitation is the assumption it makes. The BMC assumes that the

business model is static, ignoring the potential for change or evolution over time (Osterwalder, Pigneur, & Tucci, 2005).

The Business Model Canvas is a useful tool for designing and visualizing a business model, however, it is important to be aware of its limitations and to use it in conjunction with other tools and methods to fully understand and develop a business model (Sparviero, 2019).

2.2.1.1 IT Strategic Alignment

Rivard et al. (2006) observed that BITA can give managers distinctive, non-imitable and unique capabilities that cannot be easily copied by other organization. IT strategic alignment refers to the process of aligning an organization's information technology (IT) goals, strategies, and resources with its overall business goals and objectives. This is important because the tool can have a significant impact on an organization's operations and competitiveness and aligning IT with the overall business strategy can help ensure that IT investments are aligned with the organization's goals and are being used effectively to support the business (Avison, Jones, Powell, & Wilson, 2004).

To achieve IT strategic alignment, organizations can consider the following steps:

Identify the organization's overall business goals and objectives Assess the organization's current IT capabilities and how they support the business Identify any gaps between the organization's current IT capabilities and its business needs Develop an IT strategy that aligns with the overall business strategy and addresses any identified gaps Allocate resources (including budget and personnel) to implement the IT strategy Monitor and review the IT strategy regularly to ensure that it is still aligned with the business and achieving desired results (Preston & Karahanna, 2009).

Effective IT strategic alignment requires strong communication and collaboration between the IT and business functions, as well as regular review and adjustment to ensure that the IT strategy remains aligned with the organization's changing business needs (Preston & Karahanna, 2009).

IT Strategic Alignment Models and Frameworks

There are several models and frameworks that can be used to achieve IT strategic alignment, which refers to the process of aligning an organization's information technology (IT) goals, strategies, and resources with its overall business goals and objectives (Burn, 1993). Some common models and frameworks include:

IT Governance Framework: This framework provides a set of principles and practices for aligning IT with the organization's overall business strategy and objectives. It includes guidelines for decision-making, risk management, and resource allocation (Symons, 2005).

IT Balanced Scorecard: This is a variant of the traditional Balanced Scorecard that is specifically designed for IT organizations. The tool helps IT organizations align their goals and objectives with the overall business strategy by using a combination of financial and non-financial measures to evaluate their performance (Kaplan, 2009).

McKinsey 7S Framework: This model helps organizations ensure that all parts of their organization (including IT) are aligned and working together towards a common goal. The 7S framework consists of seven elements: Strategy, Structure, Systems, Style, Staff, Skills, and Shared values (Singh, 2013).

IT Alignment Maturity Model (ITAMM): This model, developed by the Information Systems Audit and Control Association (ISACA), helps organizations assess and improve their level of IT-business alignment. It includes five levels of maturity, ranging from no alignment to integrated alignment (Khaiata & Zualkernan, 2009).

Capability Maturity Model (CMM): This model, developed by the Software Engineering Institute (SEI), helps organizations assess and improve their software development processes. It includes five levels of maturity, ranging from initial to optimizing. The tool can be used to help organizations align their IT capabilities with their business needs (Herbsleb, Zubrow, Goldenson, Hayes & Paulk, 1997)

IT strategic alignment maturity models

IT strategic alignment maturity models are frameworks used to evaluate an organization's level of alignment between its business strategy and its use of information technology. These models provide a way for organizations to assess their

current state of alignment, identify areas for improvement, and develop a roadmap for achieving greater alignment between their IT and business strategies (Nash, 2006).

There are several different maturity models that have been proposed to evaluate IT strategic alignment. Some examples include:

The Strategic Alignment Model (SAM). The Strategic alignment maturity model (SAMM). The Capability Maturity Model (CMM) developed by the Software Engineering Institute (SEI). The Information Technology Infrastructure Library (ITIL). The Information Technology Service Management (ITSM) framework. The COBIT framework developed by the Information Systems Audit and Control Association (ISACA) (Nash, 2006).

Each of these models provides a different perspective on IT strategic alignment, and organizations may choose to use one or more of these models to assess their current state of alignment and develop a plan for improvement (Nash, 2006).

IT Strategy

IT strategy is a holistic approach to planning, designing, and implementing technology solutions to support business goals and objectives. The main purpose of IT strategy is to ensure that the technology used by a company is aligned with its overall business strategy, to enable the organization to operate more efficiently and effectively. IT strategy should cover a wide range of areas, including hardware and software, data management, network infrastructure, security, skills, and governance (Hagel & Brown, 2001).

The IT strategy is not just a technical plan, it should also consider the organization's culture, people, and processes and align it with the overall business strategy. The IT strategy should be reviewed and updated on regular basis to keep it align with the current business needs and technological advancements (McAfee, 2006).

2.3 Business and IT Alignment

Hall and Liedtka (2007) observed that managers in well-structured organizations delivered on the shareholders' value and wealth. The shareholders expect managers to act as agents to deliver on the promise of augmented yields and value.

Managers leverage BITA to deliver on the organizations' s mission, vison, and objectives. The objectives are sustainable growth and profitability, (Chan & Reich, 2007). Managers can develop the quality of the relationships between the business units and departments to the extent where the enterprise becomes sustainable and successful (Corsaro & Snehota, 2011).

The rate of change has accelerated. There are rapid shifts in the macro environment. The shift in disruptive and innovative technologies happen at a rapid pace. This makes it hard for managers to align the business and IT strategies (Chan & Reich, 2007). There is no magic wand for alignment. Managers leverage all the resources, capabilities, and processes of the organization to achieve BITA (Luftman, 2012).

Managers need a tool and a model to help them assess the state of alignment. The tool and the model need to be comprehensive (Chan & Reich, 2007). Managers can resist the temptation to be too preoccupied by the technology infrastructure. The managers pay attention and consider the other criteria like people and processes (Silvius, 2007).

The business and IT managers can use a common language when describing alignment. Managers can resist the urge to get lost in the semantics (Haes, 2009). Managers usually find that achieving alignment like drawing a line in the sand. The tides keep moving (Silvius, 2007).

Why Business and IT Alignment Still Fails

With the push for digital transformation, managers commit to pursue the alignment. Here is a list of reason why alignment still fails:

The pace of change is tough on everyone. The CIO has to catch up with the pace of business and IT changes. Becoming a member of the IT board committee introduces new challenges. The CIO may now focus on value addition and sustainability. IT leaders need to communicate clearly with the business partners. The CIO may foster the skills for effective business communication. Digital transformation demands a new culture and structure. The CIO may extend an olive branch to the other business executives (CIO, 2019a).

The focus on digital transformation demands that managers consider changing the approach to partnerships, communication, governance, and skills to be successful. The six components of SAMM are communication, skills, value, architecture, partnership, and governance. Alignment is a continuous process, yet most enterprises are at level 3

of maturity. Managers can align continually (Silvius, 2007). Managers can improve all the six components of maturity to achieve effectiveness and efficiency. Managers commit to resist the urge to concentrate on one component only (Van Grembergen & De Haes, 2012).

Managers can leverage the transformational leadership style to attain alignment. The transformation leadership style allows manages to inspire and bring out the best in all the employees. The managers foster trust and camaraderie with the employees (Luftman, 2012). BITA is a great ideal for all organizations. Managers can achieve it by forging and fostering trust with internal and external partners. Organizations rise and fall depending on the leadership (Kim, Steven, & Wim, 2015).

Figure 4: Digital Talent Management Framework

Source: Gartner.com

According to Gartner (2021), the digital talent management framework enables leaders to align business and IT. The drivers are the digital business strategy and strategic workforce planning. The outputs are digital business performance and great customer experience. The moderating variables are leadership and culture.

Popular trends for Alignment

Alignment is focussed on leadership, influencing, and driving change. The six popular trends lean toward the digital transformation initiatives. The six less popular trends lean towards risk aversion, maintaining the status quo, and keeping the lights on.

The popular trends are developing high-performance people; embracing external views; building competence; non-traditional resources; delivering transformation; facilitating change.

The less popular trends are IT experts who are not influencers; Risk Aversion; An 'all purpose' mentality; Emotional intelligence; Being results-oriented; Managing the store (keeping lights on) (CIO, 2019b).

2.4 Strategic Alignment Maturity Levels

There are five levels of climbing the maturity on BITA. They are the initial, committed, established, managed, and optimized level. The optimized level is when there the business and IT planning processes are dovetailed (Van & Haes, 2008). The next figure shows the characteristics of maturity levels includes the attributes for the 6 criteria.

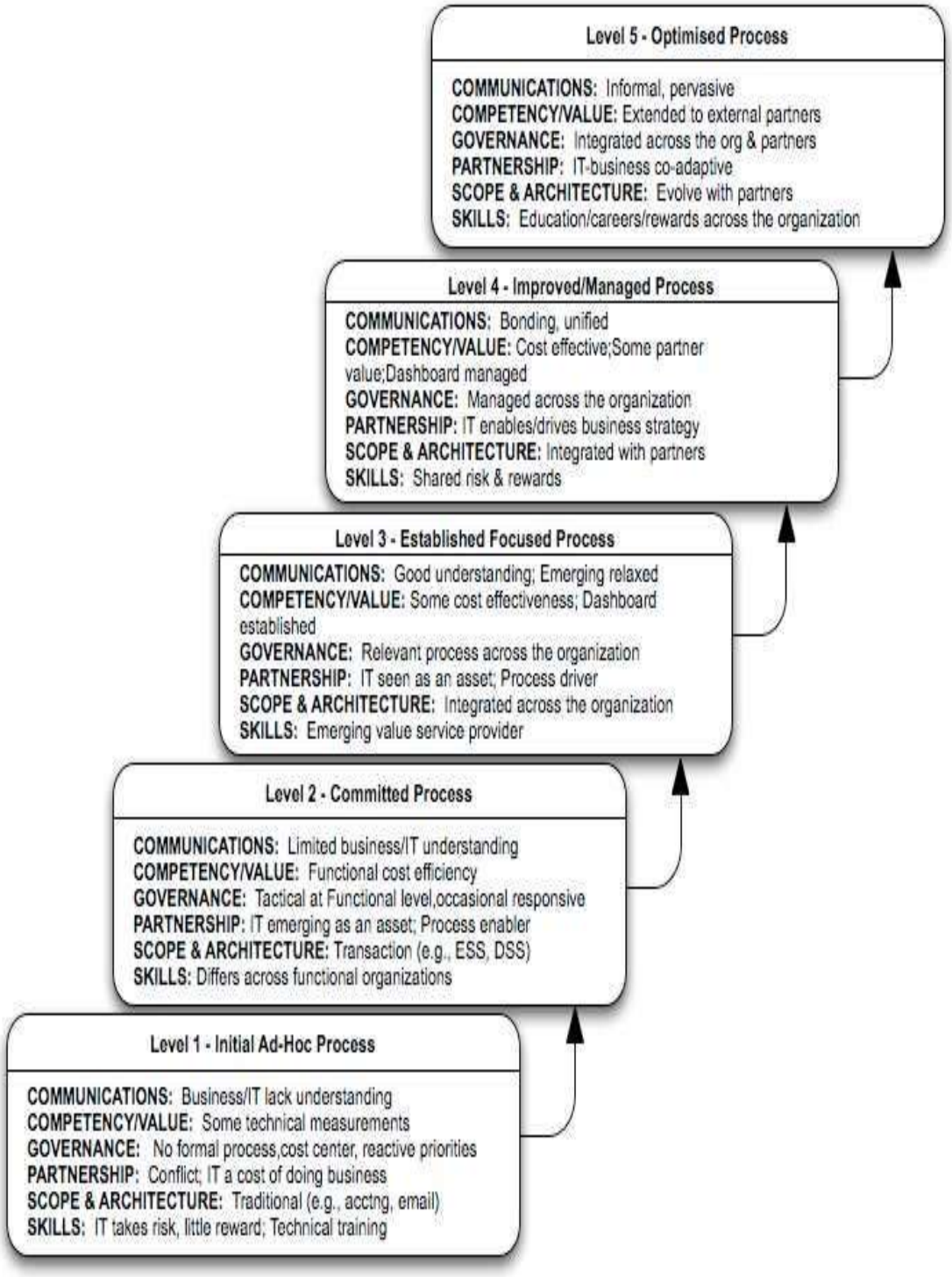

Figure 5: Maturity Summary

Source: (Luftman, 2012)

2.5 The Strategic Alignment Maturity Model (SAMM)

The study adopted the SAMM as the theoretical framework. The SAMM includes interrelated set of constructs, variables, hypothesis, or propositions that explain

phenomenon. The SAMM presents a systematic view and a lens for viewing phenomenon (Cohen, 2005).

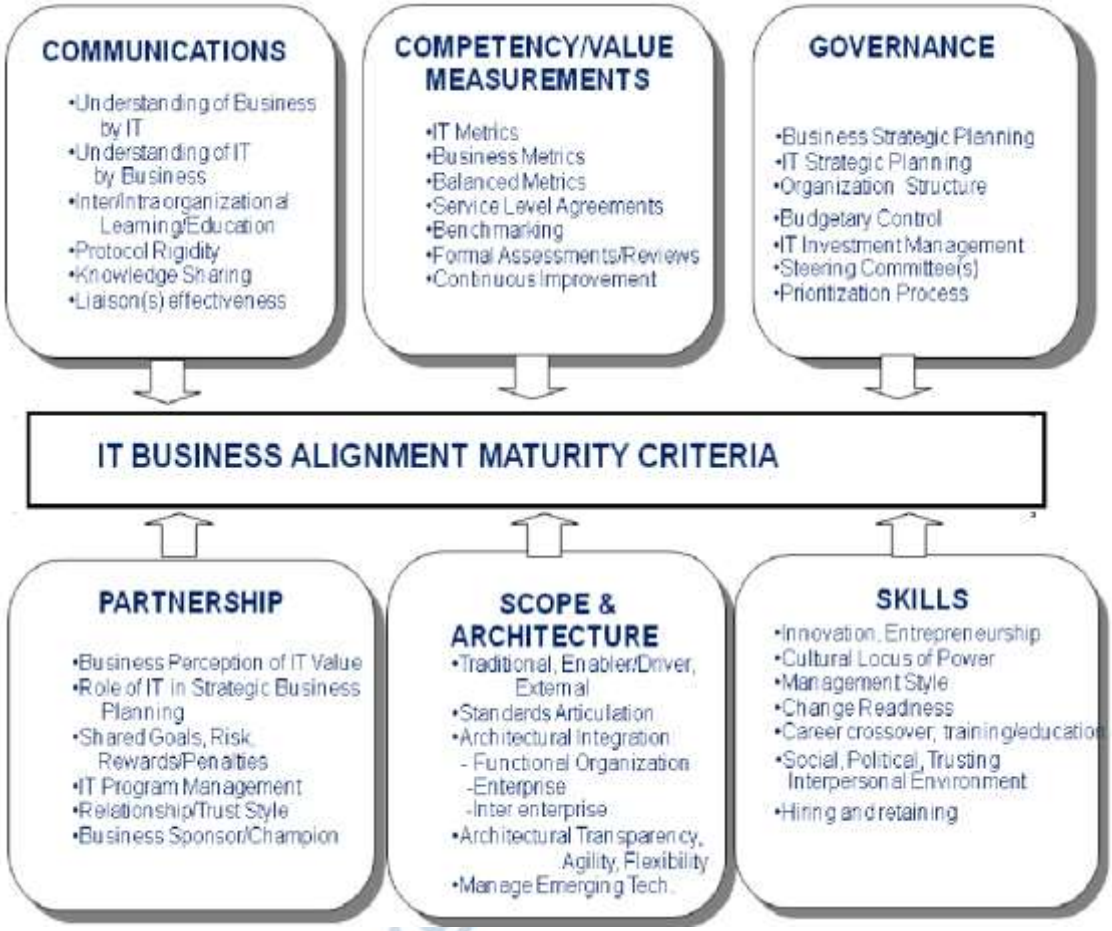

Figure 6: Strategic Alignment Maturity Model (SAMM)

Source: (Luftman, 2012).

Managers intend to address all the six components. Managers can leverage the project management body of knowledge (PMBOK) to deliver higher levels of maturity (Luftman, 2012).

2.6 Climbing the Strategic Alignment Pyramid

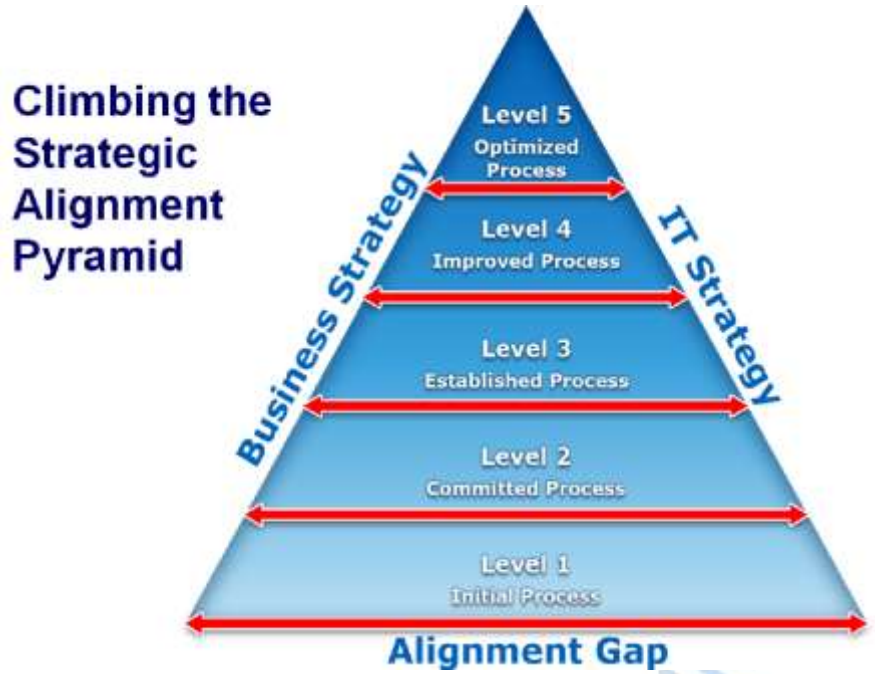

Figure 7: Climbing the Maturity Pyramid

Source: (Luftman, 2012).

Level 1: Initial Process

At this level, the board perceives the IT organization as a cost centre. The skills of the staff are purely technical. The is no career moves from IT to the business (Luftman, 2012).

Level 2: Committed Process

At this level, board perceives the IT department as a support centre. The IT budget is purely driven by IT. There is the lack of unity between the business units (Luftman, 2012).

Level 3: Established Process

Board perceives the IT department as an asset. The IT budget by both IT and business. IT staff have business skills and can cross over as business analysts. The IT department starts partnering with both internal and external parties (Luftman, 2012).

Level 4: Improved Process

At this level, board perceives the IT department as a valuable service provider. The IT manager establishes a service level management with the business. The IT departments

can be measured on user experience, uptime, and utilization. IT governance and board committees are established. The change management practices are effective. The business and technical skills are entrenched throughout the organization (Luftman, 2012).

Level 5: Optimized Process

At this level, board perceives the IT department as strategic and innovative. IT governance processes cement business and IT strategies. Managers create linkages and synergy with external partners. The IT organization entrenches business value metrics and IT metrics that extend to external partners. The managers implement the IT best practices and governance frameworks. The managers implement innovative disruptive technologies including, social, mobility, analytics, and cloud for sustainability (Luftman, 2012).

2.7 Strategic Alignment Model

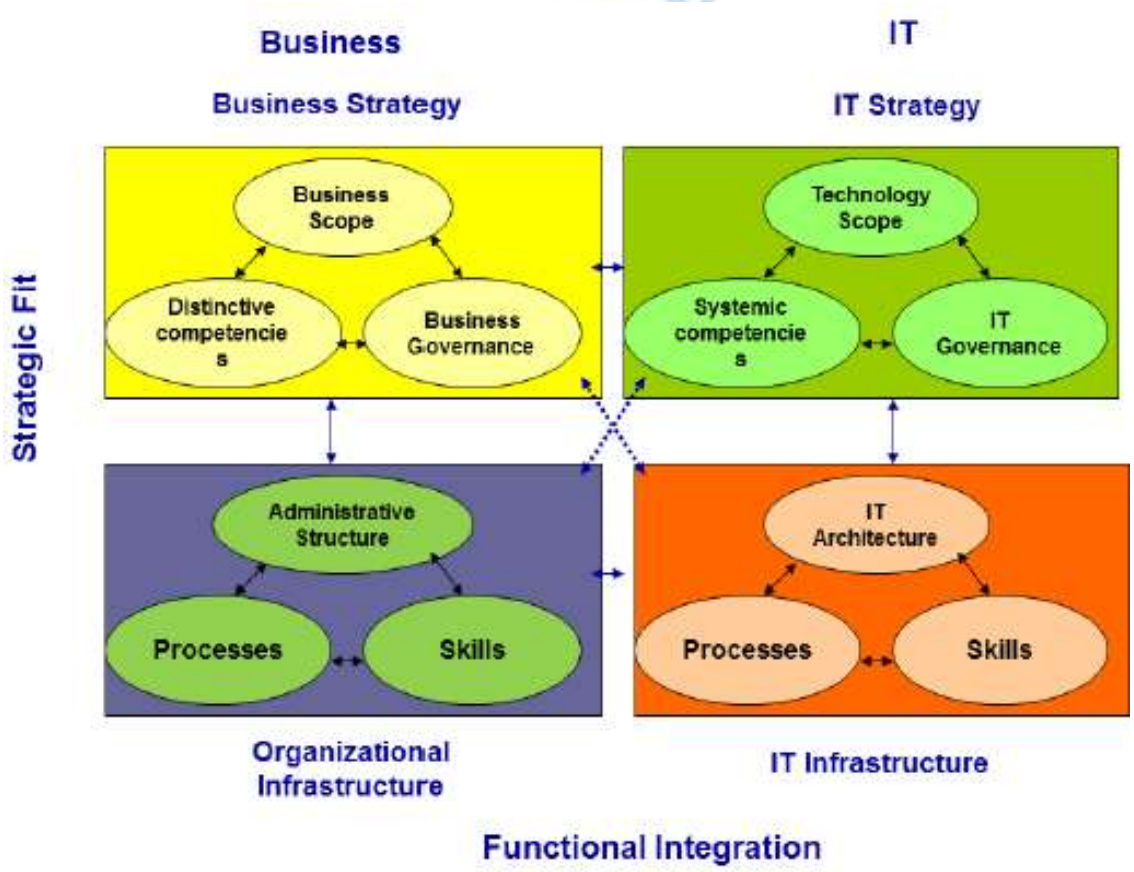

Figure 8: Strategic Alignment Model

Source: (Henderson, Venkatraman, & Oldach, 1993)

SAM relates the business to IT infrastructure. Business managers can use the model to attain alignment and improved business outcomes (Venkatraman, Henderson, & Oldach, 1993). An effective IT strategy may adapt to the market and the external macro environment. The macro environment impacts the revenue generations efforts and factors (Luftman, 2012). Functional integration drives the linkages between the organizational and IT infrastructure. The infrastructures may be fitting (Henderson & Venkatraman, 1990). The managers endeavor to align all the operations in the organization (Haes & Van, 2017). The managers scan the external marketplace to stay competitive. They may manage the external and internal domains (Van & DeHaes, 2008). IT strategy is made up of the people, process, and technology. Technology comprises of the hardware and software. The software can be in the form of ERP, customer relationship, enterprise content, supply chain management, call centres and the office productivity tool. The process comprises of the IT and business activities to complete a cycle. People make up the skills and competencies (Luftman, 2012).

2.8 Summary of the 12 Components of Strategic Alignment Model (SAM)

Business Strategy

The owners, the board and shareholders expect the executive managers to multiply the share and stock value. The owners expect managers to expand market share, profitability, and revenue generation. The owners expect managers to implement plans for ensuring the sustainability of the business (Haes & Van, 2009).

Organization Infrastructure and Processes

The style, staff, skills, culture, structure, systems, and shared values make up the processes and infrastructure. The IT hardware and software make up the infrastructure. The procure to pay and the order to cash make up the processess (Van & Haes, 2009).

IT Strategy

The strategy is made of the resources including people, budget, and facilities. Managers commit to develop a plan on how the IT resources will be utilized to meet the business objectives (Haes, 2009).

IT Infrastructure and Processes

The IT hardware and software including the network, office systems, and data centre make up the infrastructure. This includes the operational systems like access control systems (Haes & Van, 2017).

2.9 Empirical Literature

Enterprise Architecture and business process management (BPM) can enable BITA and the business strategy. This includes business growth and profitability (Malta & Sousa, 2016). BITA is a management priority for organizations. BITA can deliver many benefits for organization and more work still needs to be completed by scholars and practitioners to unlock the untapped potential (Gbangou & Rusu, 2016). Further research can help managers to unlock the hidden opportunities that can be derived from BITA (Gbangou & Rusu, 2016). Managers understand the potential of organizations reaping the benefits of BITA and it is imperative to implement a model that will align updated IT methodologies to the business strategy (El-Mekawy, Rusu, & Perjons, 2015).

There are still many barriers that inhibit organizations from reaping the benefits of alignment and in such scenarios, the managers need to reduce these inhibitors and cultivate the enablers of alignment (Alaceva & Rusu, 2015). Alaceva and Rusu (2015) found that the low understanding of partner's situation; lack of communication; unclear stipulations; lack of teamwork shared obligation and backing inhibited BITA. Managers need to manage the flow of data and manage the perceptions of IT by the stakeholders. Better perceptions by business managers lead to better outcomes on alignment. Managers need to consider the legacy, structures and culture and change management when pursuing alignment (Molnar & De Smet, 2015).

The business and technology units are dependent on each other and complement each other. The business and IT managers need to develop the strategies in unison and in a collaborative manner (Mankin, Cohen, & Bikson, 2006). There is the desire for resonance across all the functions and business strategies. It also enables growth, profitability, and sustainability. BITA enables better information flows and decision making. BITA enables the increase in market share and product development (Hall & Liedtka, 2007). In order to entrench harmony, the business and IT managers can

develop the strategies at the same time and period because in the event of a lapse in the timelines when the two departments can experience a misalignment.

Cule, Schmidt, Lyytinen and Keil (2010) asserted that managers also need to augment the skills of their staff. The skills required are in analytics, project management, development, artificial intelligence (AI), cloud, cyber security, digital marketing and blockchain. The managers need to train the staff on all business-critical systems and not just on email and helpdesk. The staff should acquire skills in business planning, report writing, communication and presentation (Feurer, Chaharbaghai, Weber & Wargin, 2000). There is need to train the staff on emerging and disruptive technologies for them to keep up with the trends. The fourth industrial revolution is upon us and our staff need new skill sets to be effective. Managers need to evolve IT from helpdesk support to innovative and strategic functions. There is evidence that IT functions that deliver on the analytics and business intelligence initiatives are more effective and successful (Vitale et al., 2006).

Robinson (2005) found that organizations that implemented IT governance were effective in their business objectives. He found out that managers can transition IT to an asset by leveraging good governance practices. Willson and Pollard (2009) found that organizations with robust IT governance practices higher returns than organizations with non-existent steering and oversight practices. Organizations that are more successful at IT governance are also more successful in organizational performance. Presley (2006) found out that BITA improves organizational performance. Organizational performance can be measured in terms if the impact on people, planet (environment), profitability and probity (integrity). Venkatraman (1993) also observed that BITA can improve the organizational performance. Managers need a plan to overcome the challenges of addressing the velocity, volume, and the veracity of technological change. Managers can develop processes to support the execution of enterprise strategy.

Leung (2004) indicated the three types of business orientations: synergistic, agile and autonomous. Managers need to know their orientations. Once managers identify their business orientation, it is time to understand the six different IT governance styles. This activity assists the organization in implementing the right processes and practices. Raghupathi (2007) observed that boards and oversight bodies are prioritizing the reputation and brands on the organizations and not just the balance sheet and income

statement. The author stressed that governance should be expanded in a framework that is more encompassing of IT activities.

Bodilly (2005) examined the value that Information Technology (IT) provides to a business in the banking industry. The author indicated that end-users are apathetic towards service delivery because IT is inadequately integrated into management and reporting structures. Further, the author highlighted that operational management practices need to be improved with IT accountable and underachievers penalised, and that only then will IT departments and business units begin a new relationship of supplier and client. The view of the author could be correlated with the DS1 (Manage Service Levels to business) process within the COBIT framework, thereby highlighting the importance of this view.

Bruno-Britz (2008) noted that the value of technology is realized by involving IT managers in the planning process. The author noted the importance creating good partnerships between business and IT. The author indicated that managers need to continually refer to the vision of the enterprise. The business managers can attain BITA using the SAM. Managers maintain the value chain using inbound, outbound, operational, support and sales and marketing services to achieve maturity and relevance (Belalcàzar, Diaz, & Molinari, 2016).

BITA is critical for success and provides a competitive advantage. Managers leverage IT for business value. Managers can develop a business case and a charter for all IT projects and investments (Gellweiler, 2017). They, in the long run, need to adapt and evolve the IT applications to fit the requirements of the business. Business analysts collect the user requirements and adapt them to the automated systems (Sun, Liu, Jambari, & Michell, 2016). Managers can adopt the IT innovation to fuse and dovetail the IT and business. Managers train and reskill IT staff to entrench the right capability for delivery of services. Managers can apply the strategic alignment model (SAM) to drive business value from IT investments (Subriadi, Hadiwidjojo, Djumahir, Rahayu, & Sarno, 2013). Business managers need to entrench IT governance to aid BITA and risk management. The managers need to automate using AI and machine learning to streamline business processes (Pérez Lorences & García Ávila, 2013).

Industrial information systems and controls automation systems are being utilized in the manufacturing industries. Robotics and Internet of Things (IoT) technologies are

being applied in the product design and manufacturing (Goepp & Avila, 2015). Enterprise architecture has gained importance due to the way it enables enterprises to sync the strategic and tactical arms. Managers can achieve alignment by applying IT appropriately and in tandem with the changes in the enterprise (Edwin & Duarte, 2017).

Business and IT may work in tandem. Fusing IT and the business can be attained via SAM. Business managers can apply the model and the framework for aligning business and IT (Majstorović, 2016). Manager may prioritize and pursue the optimal organizational performance. SAM is well-known and widely used model. Managers can adapt this model to the improve organizational performance (Renaud, Walsh, & Kalika, 2016). The ICT has driven the fourth industrial revolution.

According to the World Economic Forum, several states Gulf Cooperation Council states have continued their efforts to improve information communication technology uptake and better integrate IT into more robust innovation ecosystems to obtain higher returns and competitive advantage ("Towards sustainable", 2015). The application of data analytics may increase the competitive advantage of organizations (Boljanović, Vukašinović, & Veinović, 2014). According to the World Economic Forum, the competitiveness index of a country is associated with the level of digital transformation. Pursuing digital transformation initiatives can improve the ranking ("Research", 2017).

According to the World Economic Forum, the IT skills required in the future are in creative and intuitive arts and sciences. The other skills are in analytics, cybersecurity, emotional intelligence, and leadership. Jobs in infrastructure and systems administration will disappear. The infrastructure is being migrated to the cloud (Evans, 2016). Even as the world rapidly embraces the benefits of globalization, managers need to upgrade their skills as well as company infrastructure to keep up with competition.

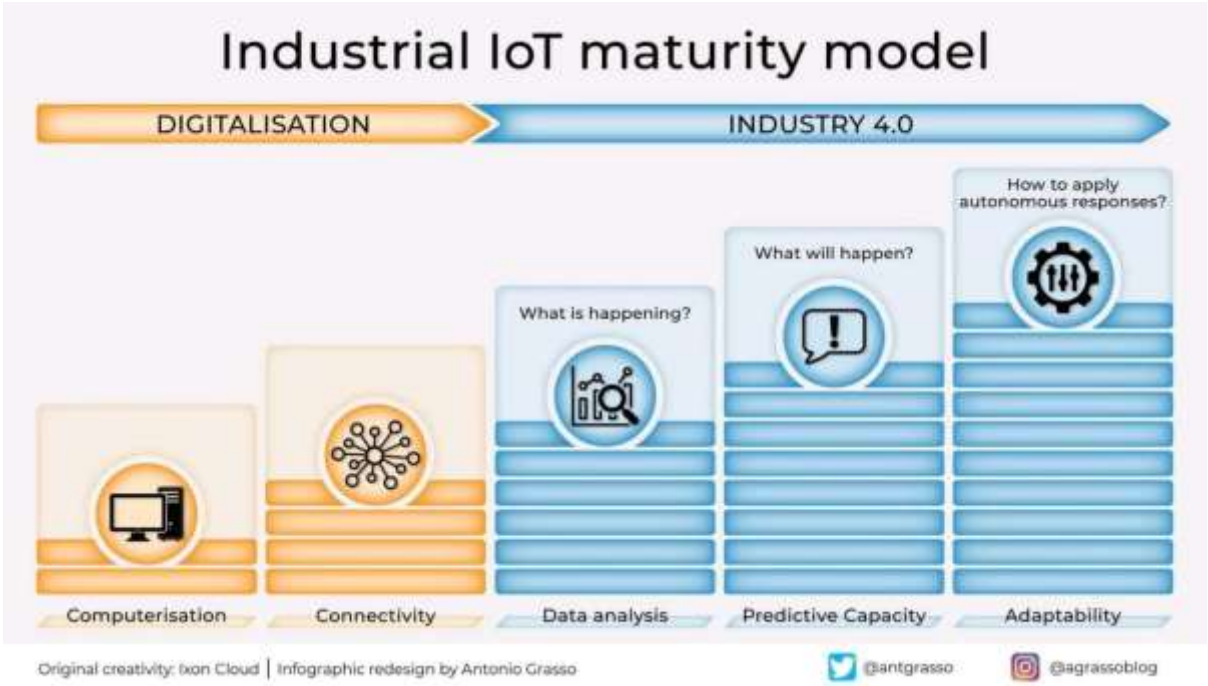

Figure 9: Industrial IoT Maturity Model

Source: (Grasso, 2022)

According to Ixon Cloud (2022), the Industrial IoT maturity model has five levels. The lowest level is Computerisation, followed by Connectivity, Data analysis, Predictive Capacity and at the highest level, Adaptability.

Munene (2009) investigated the challenges that Kenyan banks face in the implementation of IT in business and governance. In targeting commercial banks, the data drawn from respondents discovered that there were gaps in synchronizing IT into business practice for commercial banks in Kenya. The banking sector is fragile not only because of poor management and the depreciating economic conditions, but also due to its inability to effectively apply IT to enhance efficiency. According to Zhang and Chulko (2011), banks that possess high IT governance record 20 per cent more profits than those without, while maintaining similar strategic objectives.

Makau (2010) also points out that the absence of the appropriate IT infrastructure in Kenya's commercial banks has dire implications on their performance especially when it leads to a breach in client confidentiality. These banks may therefore not only be compliant but also have in place IT governance standards to reduce the wastage of resources and potential failure due to non-compliance with the requirement customer experience standards. It should be noted that CBK has spearheaded the migration towards IT governance, and the body stresses the need for adhering to models and

standards that are currently available in the market such as ISACA and COBIT. COBIT 5, for instance, presents the framework that enables banks and other enterprises to attain their goals and deliver value to their clients. As reiterated by Hill (2009), the stakeholders in this sector may strive to not only use revised frameworks but also ensure that their systems remain up to date.

The environment is critical for the sustainability of the ecosystem. Green computing can support and perpetuate the environment. Managers need to be corporate responsible citizens. (Emmanuel, Sanjay, Rytis, Robertas, & Luis, 2017). Managers can leverage algorithms to provide clean energy in data centers and reduce the pollution of the atmosphere. Managers can provide an assurance to eliminate the adverse effects on the ozone layer by data centers (Han, Que, Jia, & Zhang, 2017). Smart cities are pursuing green energy from solar and wind sources. Smart cities are pushing for the energy efficiency and green computing. Sensors will provide the big data and analytics to monitor and manage smart cities (Farhan, Kharel, Kaiwartya, Hammoudeh, & Adebisi, 2018).

Green Computing targets sustainability by leveraging on solar and wind power and reducing power consumption. Managers can reduce the energy consumption by integrating green energy sources like solar and wind to the grid (Juarez, Ejarque, & Badia, 2018). Managers need the energy-aware building management systems for data centers. Managers who are network aware can save about half of the total power consumption compared other managers (Marotta, Avallone, & Kassler, 2018).

CERN (European Organization for Nuclear Research) embarked on the energy efficiency project. The enabling environment at CERN can enable managers develop new energy generating and saving models (Niemi, Nurminen, Liukkonen, & Hameri, 2018). Managers can apply the energy-aware central processing unit (CPU) frequency scaling mechanisms. Managers can improve the server performance and power saving capabilities by designing energy aware systems (Karpowicz, Arabas, & Niewiadomska-Szynkiewicz, 2018).

IT Governance

IT Governance enables the realization of value from IT. It is the responsibility of the boards of directors to steer the IT ship to growth, sustainability, and improved shareholder value (Info-Tech, 2022a).

IT Human Capital

Talent is a critical resource to gain, manage and retain for business sustainability. A good workforce plan contributes to great talent and human capital management ((Info-Tech, 2022b).

2.10 The COBIT Model

ISACA developed the COBIT framework. The COBIT framework helps manager to implement the good practices in IT governance (ISACA, 2016a). ISACA develops the control objectives that enable managers to prioritize and manage the IT investments. COBIT enables enterprises to manage and control their IT performance in good way by which they can look at IT is providing value to their business at the end achieve their objectives and goals. Since COBIT is always being updated and revised to integrate it with other standards it is considered as an umbrella framework of IT governance. COBIT enable managers to rollout the processes for the governance and the management aspects of enterprise IT.

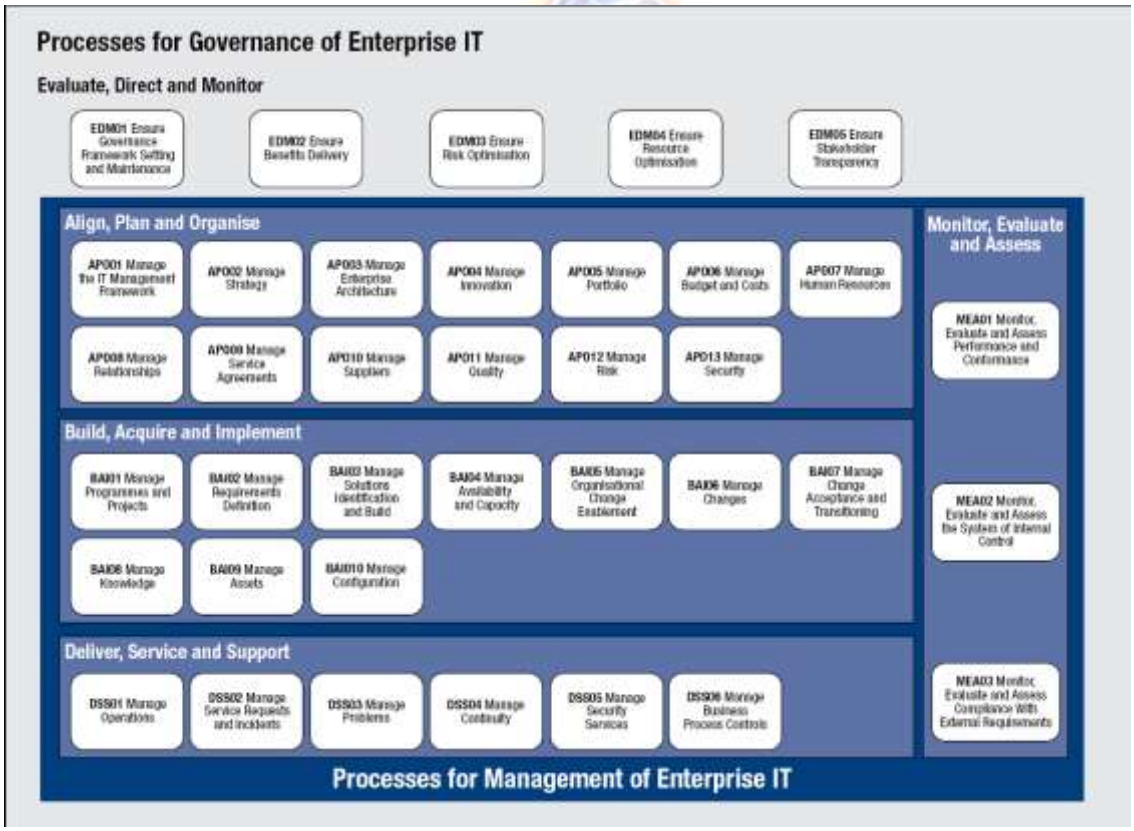

Figure 10: COBIT 5 Framework

Source: (ISACA, 2016a)

The COBIT framework consists of the governance and the management processes. ISACA developed the COBIT framework using the principles of the SAM (Bartens, Chunpir, Schulte, & Voß, 2017).

The five principles of COBIT enable managers to implement the governance of enterprise IT (GEIT). The principles are meeting stakeholder needs; whole enterprise; applying a framework; a holistic approach; separate governance and management.

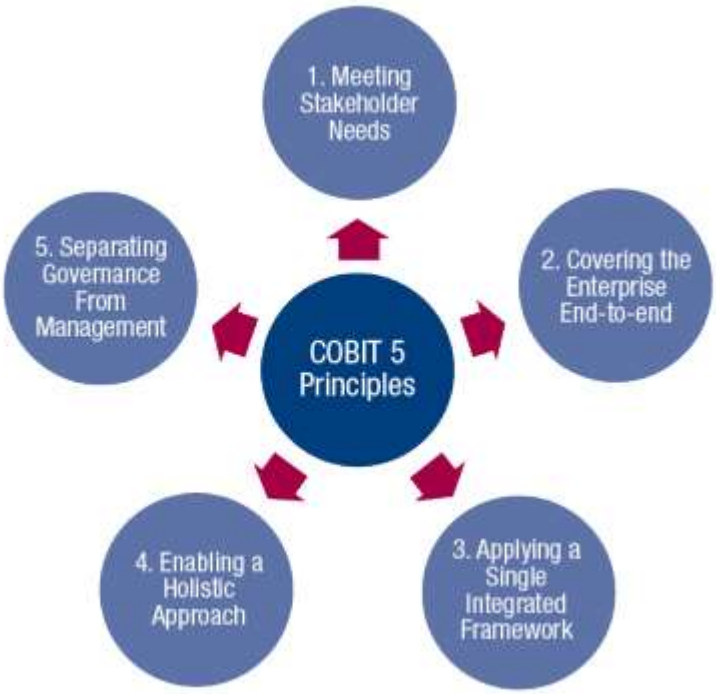

Figure 11: COBIT 5 Principles
Source: (ISACA, 2019a)

2.11 ITIL and IT Service Management (ITSM)

ITIL is a framework and best practice for IT services. ITSM is the practice of running IT operations as a business and ensure that IT objectives are aligned to business objectives (Eikebrokk & Iden, 2017). ITIL best practices are used to deliver quality IT services. Created and refined over years, ITIL represents the collective knowledge of thousands of IT managers. It is the basis for the ISO 20000 standard for IT service management and a foundation to the Microsoft Operations Framework (MOF) (Bartens, Chunpir, Schulte, & Voß, 2017).

ITSM aligns people, processes, and technology to deliver and support IT services that enable the business processes. It includes the incident, change, capacity, configuration,

service continuity, security, access, availability, problem, release, event management and the service desk function (Gregor, Hart, & Martin, 2007).

The ITIL framework is related to the Strategic Alignment Maturity framework in focus and principles (Ezziane & Al Shamisi, 2017).

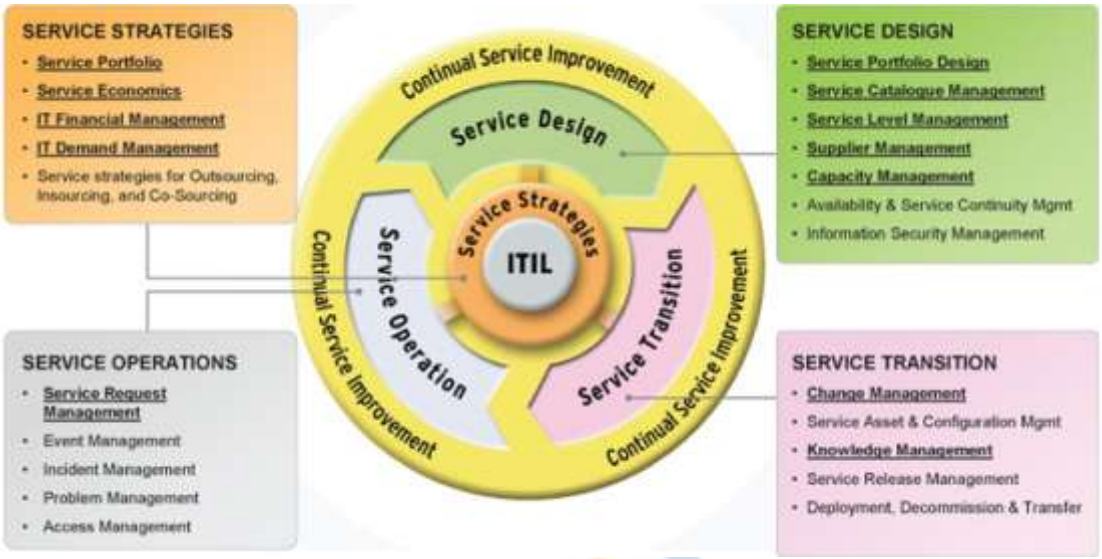

Figure 12: ITIL Service management lifecycle

Source: (Luftman, 2012)

The figure 6 shows the lifecycle of IT service management. Service Strategies include financial and demand management. Service Design include processes for delivering augmented services. Service Transition includes processes for change and configuration. Service Operation includes processes for managing incidents and problems. Continual improvement is how managers reinvent and reimagine the services. It is wise to start with strategy focused processes like demand management.

Managers can use SLAs to validate the value from the IT organization. The metrics include penalties for contact breach and exclusions. Managers utilize SLAs to deliver on the service, support, and ultimately good IT governance.

Figure 13: IT SLA

Source: (TechTarget, 2019).

2.12 Organizational performance

Organizational performance relates to the planet, profit, people, and probity pillars. The planet represents the environment. The environment may be damaged by deforestation that causes global warming. Business managers need to carry out the operations with priority on the effect on the environment. They can do this through corporate social responsibility programs and activities, Organizations should give back to the community.

The profit represents the financial performance. Financial performance can be measured in terms of profitability and other metrics and ratios. Most of the organizations on the NSE report performance quarterly. Business owners and shareholders expect a return on equity and maximization of share value price leading to increased market capitalization.

The people represent the human resources. Business managers can ensure that the workforce is healthy and happy. The managers can ensure that employees are trained

continually on the latest technologies and skills. The critical skills are leadership, emotional intelligence, cyber security, team building, artificial intelligence, blockchain, analytics, cloud, and big data. The managers consider succession planning strategies including a business continuity plan. The managers can implement a career development plan for all employees.

The probity represents ethics, governance, and integrity. The SOX Act was passed to restore shareholder confidence after Enron collapsed due to governance lapses. The CEO and CFO of Enron were fined and served jail time. The same should happen to boards and executive managers of companies that have misappropriated investor and shareholder funds. In Kenya we have the examples of Nakumatt, ARM cement, Uchumi, Mumias Sugar, Deacons, Kenya Power and Kenya Airways. Managers may be held accountable and to entrench corporate governance and transparency.

BITA when well implemented can lead to better organizational performance (Chan & Reich, 2007). The higher the fusion of business and IT the better the performance (De & Van, 2010). The synced business and IT strategies lead improvements in execution in terms of profit, people, planet, and probity (Khosrow-Pour, 2015). Managers achieve higher efficiencies with BITA (Corsaro & Snehota, 2011). The reporting structure is important. The CIO should report to the CEO for higher effectiveness (Luftman & Kempaiah, 2007).

The synced business and IT strategies lead to more satisfied shareholders (Corsaro & Snehota, 2011). Managers reap the benefits of the happy and engaged employees and customers when they achieve BITA (Velcu, 2010). Managers pay less costs for IT per employee when they achieve alignment (Ward & Peppard, 2016). Managers consider BITA a top priority when considering all the business objectives (Gartlan & Shanks, 2007). Luftman (2012) validated the contribution of BITA maturity to organizational performance. The author found this relationship to be valid across all industries, languages, and continents.

2.13 International Data Corporation MaturityScape

The International Data Corporation (IDC) researchers showed that digital transformation (DX) is a key priority for most organizations. Digital transformation is driving the business models including the relationships with customers, partners, and employees by exploiting digital technologies (Cloud, Social, Mobile, and Big Data

Analytics technologies). Enterprises are on the verge of employing these disruptive and innovative technologies to aid the growth and sustainability of the organization. They can see disruptive newcomers shaking up formerly staid, mature markets; like Amazon in retail, Uber in taxi services, Airbnb in hospitality, or Zoopla and Right move in real-estate sales. Retailers, banks, utility companies, and auto manufacturers are nervously looking over their shoulders at companies like the U.K.'s Atom Bank (an app-only approach to banking), Google, Facebook, and Apple. Forward-thinking CEOs know that they do not want to be disrupted. They want to exploit new technologies: The Internet of Things (IoT), robotics, 3D printing, hyper connectivity, cognitive systems, cloud-stored data, and real-time analytics/decision making. IDC forecasted that more managers would leverage the digital transformation and implement the latest technologies to drive profitability and growth (IDC, 2019).

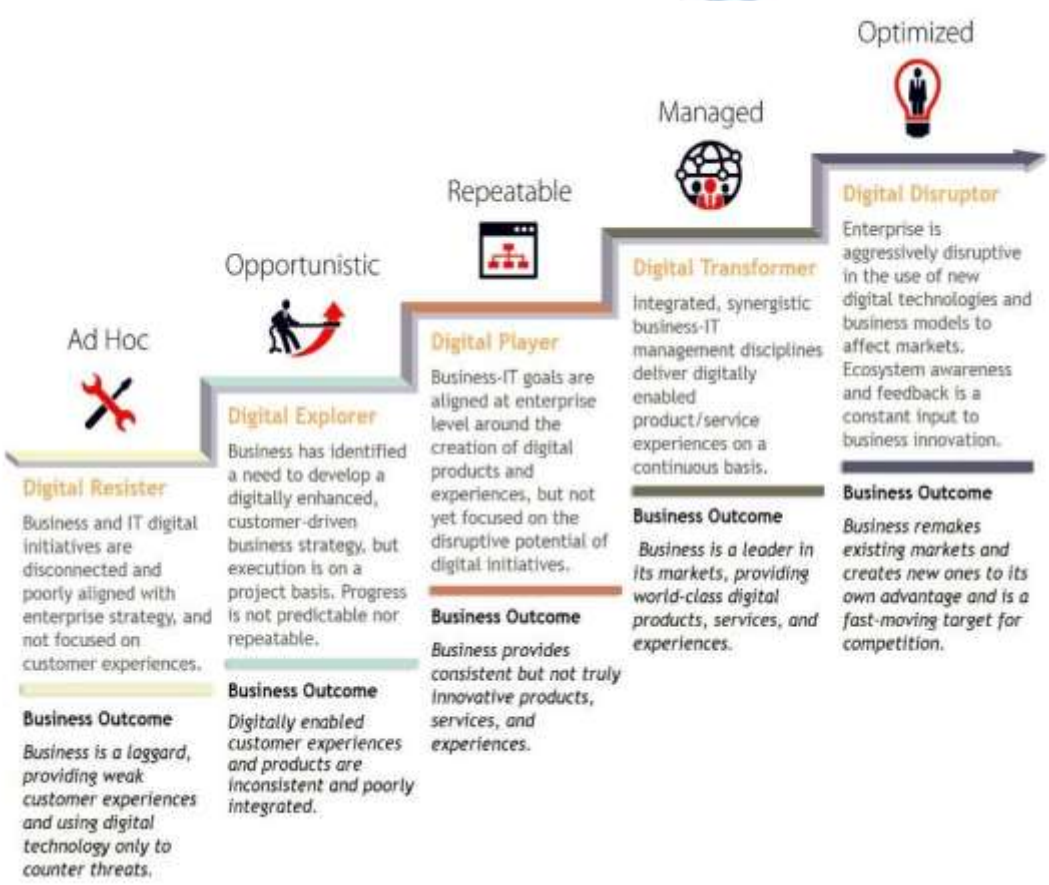

Figure 14: IDC'S Maturity Scape

Source: (IDC, 2019).

2.14. Cybersecurity Maturity Model

Managers need a cybersecurity maturity model. Cybersecurity has become a business imperative. Once managers digitize the information, The tool can fall into the hands of hackers. Managers can fix the security trouble by slowing down the automation. The time has come to control what managers digitize more purposefully. This means balancing innovation and security. Balancing the productivity and confidentiality. This means balancing the digital and analog capabilities (HBR, 2019).

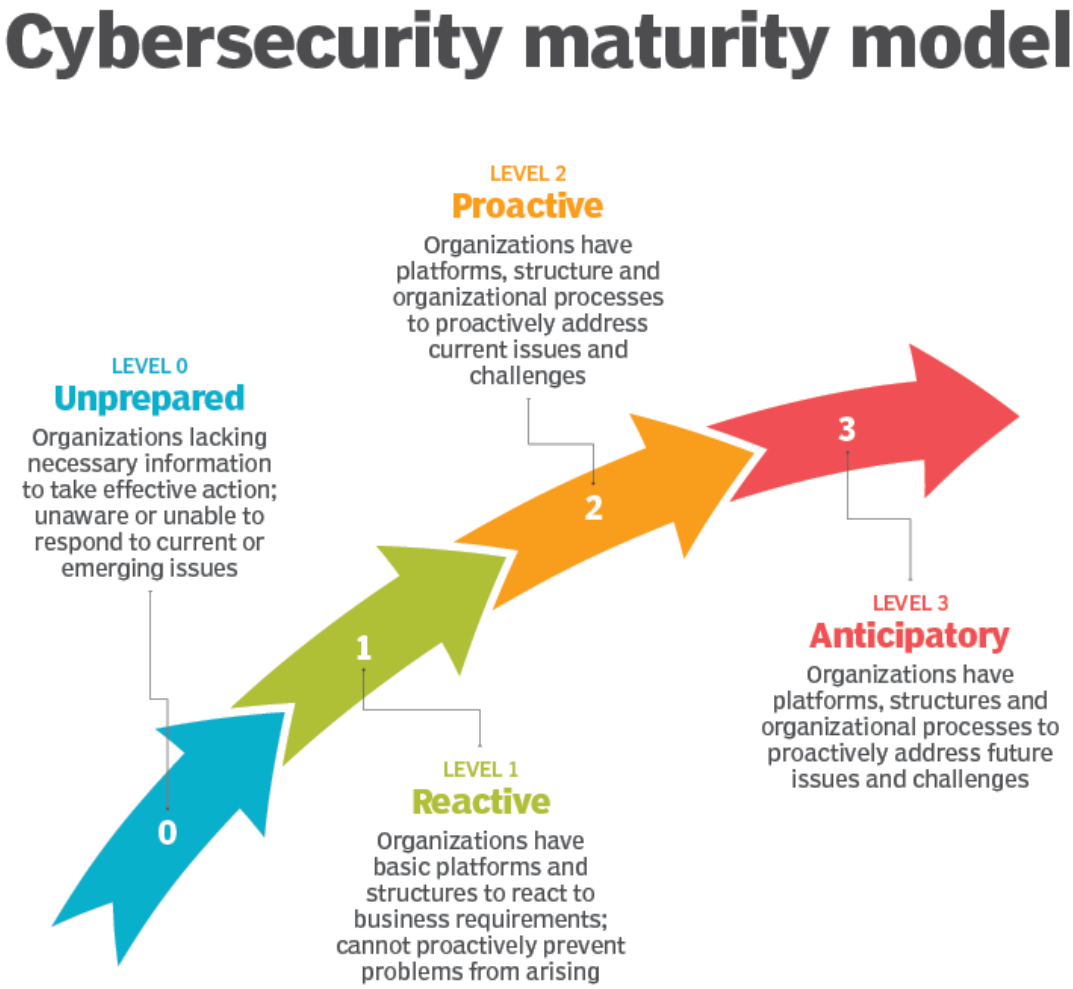

Figure 15: Cybersecurity Maturity Model

Source: (Techtarget, 2019).

The maturity model evaluates the security posture across several dimensions, including responses to interrogations:

- Organization. Is there an information security officer or the equivalent?
- Policy and processes. Is there a security policy?

- Technology. Are they fit for the enterprise's goals, vision and mission?

Level 0: Unprepared. Lacks capacity to respond to incidents.

Level 1: Reactive. Reacts to incidents as they occur.

Level 2: Proactive. Proactive in responding to incidents and are moving to a zero-trust model of security.

Level 3: Anticipatory. Reviewing the potential impact of disruptive technologies like AI, blockchain, virtual reality, cryptography in prophylactic mode.

Top 10 Security Officer (CISO) priorities

The top ten are: Align the cybersecurity function with organizational strategy; Compliance with regulations for privacy as the Data Protection Act (DPA); Cloud security; Staffing and skills; Emerging technologies including artificial intelligence; machine learning; automation and orchestration; Response and remediation. Expanding responsibilities to include security assessments of third parties; Focus on large attacks that put lives at risk; Dealing with data and strengthening the foundation.

Figure 16: The Roles of the CISO

Source: (TechTarget, 2019b)

2.15. Model for Information Security (BMIS).

This is an intentional model borne out of the assessment of the holistic security ecosystems that organizations need in the digital age. Due to the pandemic, most organizations have migrated the data to the cloud and enabled online forms of business transactions. Managers can apply and implement the systems thinking approach for better organizational performance (ISACA, 2019b).

BMIS provides aa common language for information security and business managers to talk about information protection. The model helps managers address the complexity of security while encouraging a balance between protection and the productivity.

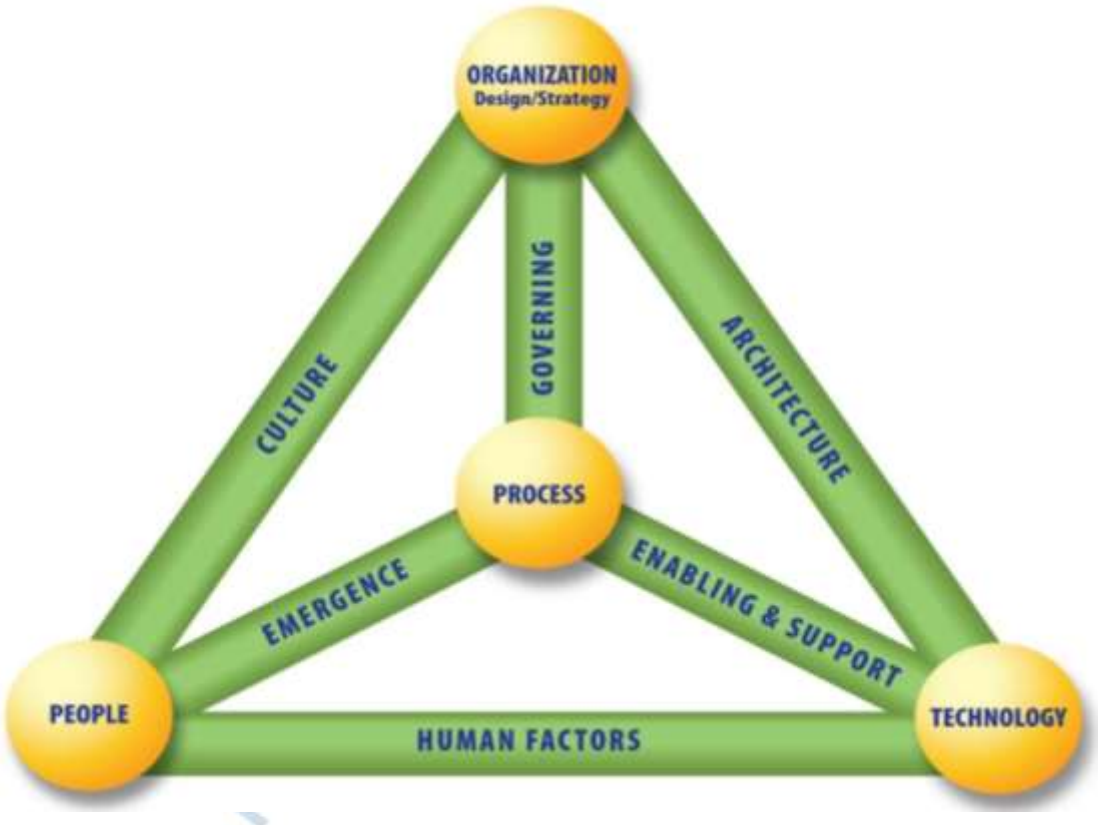

Figure 17: Business Model for Information Security

Source: (ISACA, 2019b).

The Cyber Kill Chain Model

Managers need a model to prevent ransomware and address advanced persistent threats that encrypt files. Recovering from a backup is more expensive than paying a ramson for encrypted files. The infected servers will encrypt the files. Managers need to manage the risk of ransomware so that backup files are not encrypted (TechTarget, 2019c).

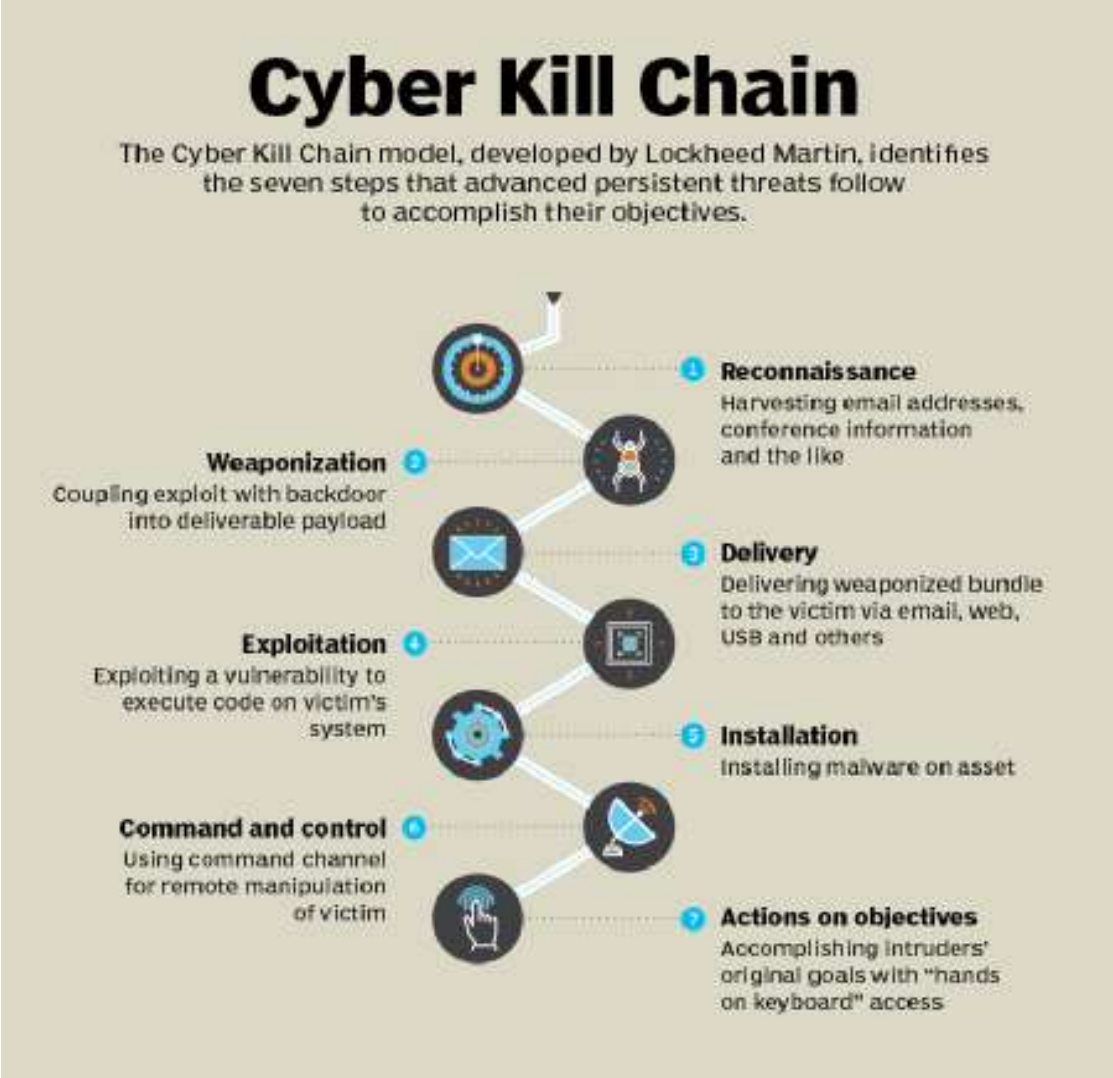

Figure 18: Cyber Kill Chain Model

Source: (TechTarget, 2019c).

2.16 Technology Acceptance Models (TAMs)

Technology Acceptance models help managers determine if the new applications and infrastructure are fit for purpose. Some forms of acceptance models encompass users and customers giving feedback about a potential change that affects their processes and experiences. A good example is migrating data and applications to the cloud. Some users hesitate due to the latency issues that may arise. Some other users resist the change due to the data sovereignty issues that may occur. It is always wise to involve users before any major changes are made to the systems (TechTarget, 2019a).

2.17. Business-Driven Development (BDD)

Managers can drive business development using IT. Managers drive the development using IT solutions that gratify business objectives. The managers start with the long-term goals and then morph the objectives into IT solution (CioIndex, 2019).

The Need for Business Drive Development (BDD)

Managers need to spend a higher percentage of the IT budget on innovation. Approximately 80 percent of a company's IT budget is spent keeping the lights on. Managers need to rip and replace legacy applications. Most cloud native applications are flexible and may help organizations to adapt the business model. Managers need to leverage business process and workflow management systems to meet the requirements of the business. Managers can use the RPA and AI bots to augment the business processes. Managers can use virtual assistants to automate the contact centre and other customer facing functions (CioIndex, 2019a).

2.18. Business Model

The business model is premised on the customer needs. The business model addresses the "why" while the products and services address the "how". Google's business model is founded on the Internet and search engine. Facebook's business model is based on the Internet and social networking. Amazon's business model is founded on cloud computing and the Internet. The three companies are very successful (CioIndex, 2019b).

The successful companies of the future will depend on a robust business model that ensures continuity and sustainability. The business model does not change when the products and services change. It remains solid like a lighthouse. The ultimate objective of the model is to serve the customers, employees, shareholders, and stakeholders. It has a long-term outlook. Products and services change frequently but the model remains intact.

Business Model Design

The elements of a business model may include sustainability, revenue, profitability, market share, market capitalizations, customers, stakeholders, and shareholders. The elements may touch on the supply chain including the inputs, outputs, operations, support functions, marketing, and sales. The supply chain takes into consideration the

raw materials and the distribution of the products to the customers. The supply chain managers can take care of the environment and the community where the customers reside. The managers can drive and implement the corporate social responsibility initiatives (CioIndex, 2019b).

Business Model Innovation

Managers can leverage the speed, data, volatility, and complexity during the digital era and the fourth industrial revolution. Business model innovation is about reimagining and reinventing the value given to the customers and consequently the sustainability of the organization. The model innovation can make the organization relevant and sustainable. The innovation can also deliver stability, super growth, and profits (CioIndex, 2019c).

The Relevance of Business Model Innovation (BMI)

Business Model Innovation is paramount in times of business volatility. BMI may provide unique, rare, and non-imitable products and services. During disruption, business rivals congregate, and sustained advantage is elusive. The innovations ward off competitors.

Managers can adopt eight sequential but iterative phases or steps that can spawn innovation. The steps are:

1. Ideation: Ideas are generated.
2. Concept design: First concept.
3. Virtual prototyping: Refining, defining prototypes and benchmarking with other parties.
4. Experimenting: The variables are tested in labs and field research is conducted via randomized controlled tests.
5. Detail design: A detailed examination is performed.
6. Piloting: Running a part of the model in a subdivision of the target market.
7. Launch: The model is implemented in the business units and the target market.
8. Adjustment: The business model is reviewed according to plans, potential, and the objectives of the organization. Based on this assessment, modifications and variations are made (Christensen, McDonald, Altman, & Palmer, 2016).

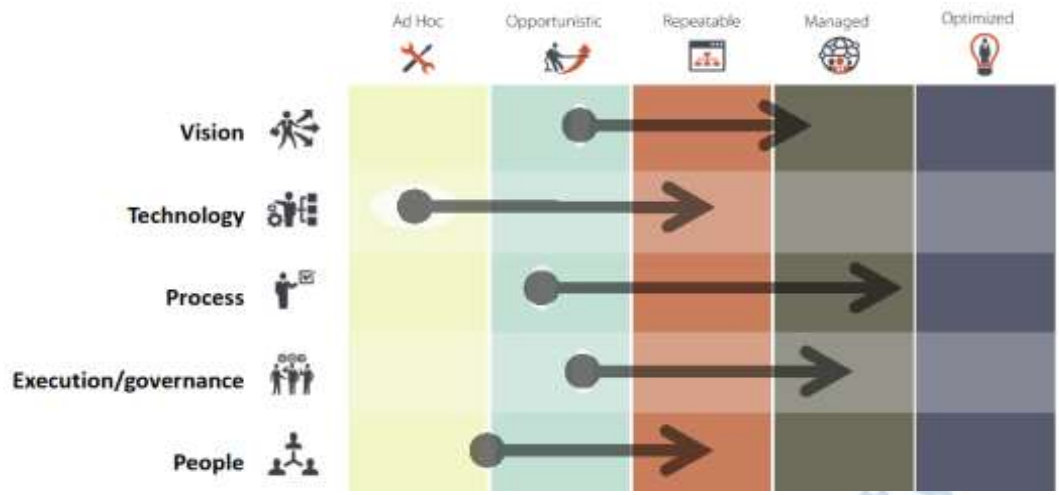

Figure 19: IDC's Maturity Scape

Source: (Itworldcanada, 2019).

IT managers can use the budget on innovation. IT managers can take charge as part of a long-term strategy to shift budgets to innovation. Digital transformation is about foundational change and changing social norms. IT should be looking to shift seven to fifteen per cent of spending to reinvest in innovation (Itworldcanada, 2019).

IT managers need to reskill the workforce. The traditional infrastructures jobs are disappearing to the cloud and IoT. IT infrastructure is increasingly giving way to the cloud. The days of server-certifications, Microsoft domain expertise, and IT-only certifications and training are long gone. IT managers will have to support applications, not equipment. IT staff may be flexible, adaptable, and inclusive. There will be a cross-pollination between development and IT operations. The IT operations teams becoming much more application and developer savvy, and development teams understanding the impacts of development choices on operations (Infoworld, 2019).

Managers commit to redefine customer engagement through intelligent chatbots and automation. Managers can improve the customer experience by leveraging automation. Managers can leverage augmented intelligence to streamline business processes.

Digital transformations and innovation are the critical drivers of economic growth. The top countries including USA, Singapore, Switzerland, Denmark, Germany, Israel, and Japan lead in innovations in digital transformation. Human capital, innovation, resilience, and agility are key drivers of growth. Technology can be leveraged for economic leapfrogging (WEF, 2019).

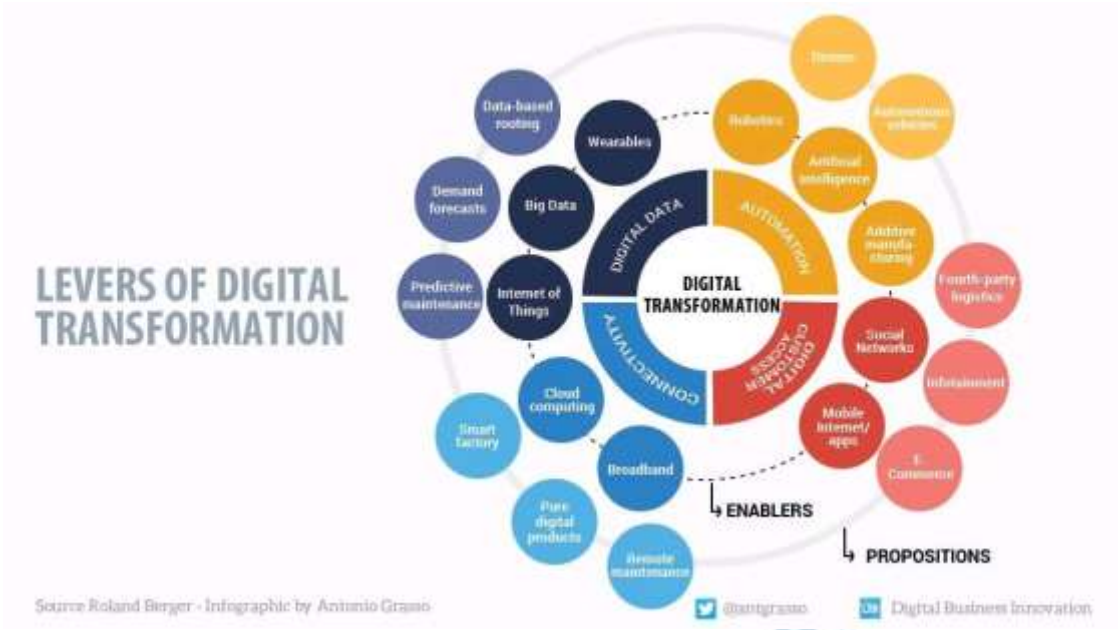

Figure 20: levers for digital transformation

Source: Berger (2022)

According to Berger (2022) the levers for digital transformation are the Digital data, Automation, Digital Customer Access, and Connectivity**.**

Figure 21: seven rules for Business Value of IT

Source: Gartner (2022)

Gartner (2022) listed the seven rules for Business Value of IT. These are:

1. Value is always determined by the business stakeholders.
2. Not all outcomes are equally valued.
3. Build two value narratives. One of change and one for run.
4. Measure IT's Impact on business stakeholder objectives and not on the IT effort expended.
5. Align IT costs to the business services that they enable.
6. Communicate IT value in the language of the business stakeholder.
7. Those funding IT may understand the value and impact of IT to business stakeholder objectives.

The above model resonates with other strategic alignment models in the sense of generating the IT strategy from the business strategy. The mandate of the IT organization is derived from the business strategy.

2.19 Review of the IT Strategic Maturity Models and Frameworks

The Strategic Alignment Maturity Model (SAMM)

Luftman (2000) developed a maturity assessment model based on the 12 elements of business and IT alignment (BITA). The components of this model form the building blocks for the strategic alignment maturity assessment model.

This model can be used in a study to assess where a company stands regarding maturity and once this maturity is understood, it can provide the organization with a roadmap that identifies opportunities for enhancing the harmonious relationship of business and IT (Luftman, 2000). The model consists of 6 alignment variables. Each area has multiple attributes. For each variable there are clearly defined maturity levels. All the criteria should be given attention to mature the alignment between business and IT.

Strategic Alignment Maturity Model Strengths

One of the strengths of the model is that it provides organizations with insights on how to achieve the business and IT harmony. It is very useful in defining improvement areas and it facilitates an open discussion with executives from business and IT (Luftman, Dorociak, Kempaiah, & Rigoni, 2008). The six maturity criteria cover the elements that attention should be given. The main contribution of SAM is that it combines descriptive and prescriptive aspects of alignment. This unique combination generates a roadmap that practitioners and consultants can follow to attain higher levels of IT effectiveness which can result in greater business performance.

Another strength is that the model allows support of business practices for efficiency and effectiveness. Luftman et al., (2008) noted that the model consists of 41 factors (business practices) aggregated in the six components of communications, value measurement, technology scope, partnership, governance, and skills. Participants rated their organization's behavior in each of these areas using a one to five Likert scale, where "1" denoted very ineffective and "5" denoted very effective or mature.

Another strength is that the model can help organizations improve the understanding of IT alignment and the impact on business performance. Byrd et al. (2006) noted that the model can be leveraged to help predict the relationship with business outcomes and performance. Marchand, Kettinger, and Rollins (2001) also observed that the model can be applied when seeking for a link to business performance. Luftman, Lyytinen, and Zvi (2017) made the same observation. The model can enhance the measurement of alignment maturity and its influence on company performance.

SAMM has the additional strength of supporting other strategic management tools like the balance score card. Hu and Huang (2005) utilized the SAMM together with the balance scorecard system to measure the effect of strategic tools on firm outcomes.

Another strength of SAMM is that it can be adopted and adapted by management to design the optimal reporting structure for the IT manager or CIO. Banker, Hu, Pavlou, and Luftman (2011) observed that the model can be applied to achieve optimal IT organization structure and CIO reporting line for better strategic positioning.

SAMM can be applied by future researchers when it comes to firming the definition of alignment. Alignment has many synonyms including fusion, fit, integration, and connection. This can lead to ambiguity. Bergeron, Raymond, and Rivard (2004) observed that the model can be applied to provide structure and meaning to the phenomenon of alignment. It provided ideal patterns of strategic alignment.

Another strength of the SAMM model is that it can be applied in developing countries. Most maturity models have been applied in the context of developed countries and industries. SAMM is versatile and pervasive. Li, Huang, Luftman, and Sha (2010) observed the application of the model from the perspective of a developing country.

Strategic Alignment Maturity Model Weaknesses

The SAMM focusses only on the strategic view of the organization and that is limiting. Benbya and McKelvey (2006) considered the limitation of the SAMM

strategic view and came up with a model which highlights the relevance of analyzing the relationship between Business and IT (Horizontal Alignment) but also the need to reconcile the views at different levels of analysis (Vertical Alignment). They redefined alignment as a continuous coevolutionary process that reconciles top-down 'rational designs' and bottom-up 'emergent processes' of consciously and coherently interrelating all components of Business/IS relationships at three levels of analysis (strategic, operational and individual) in order to contribute to an organization's performance over time.

The SAMM does not fully support the IT implementation tasks. Gutierrez et al. (2008) reviewed the attributes of SAMM and detected a shortcoming in terms of support for IT projects. They confirmed the need for expanding research to the tactical and operational level. They also noted that alignment needs to support the IT project implementation.

Another limitation is that SAMM lacks the attributes to support stakeholder engagement. The real issue is about synchronization, making sure everyone stays on the same page from day two onwards. There is the need to consider other types of lags namely the execution and results lag (Fonstad, 2005).

SAMM lacks support for entrenching governance during execution of projects. The execution, results and outcomes are driving alignment even more and need to be considered by new models (Fonstad & Robertson, 2006).

SAMM is pegged at the strategic level and is limited at the tactical levels. The execution of a strategy is almost always realized via the tactical and operational levels of an organization. This means, that alignment may be realized, not only horizontally, but also vertically (Hinssen, 2009).

SAMM lacks the attributes and criteria to support stakeholder governance and aid project management (Haes & Van, 2009). IT lacks support for vertical and horizontal alignment. Vertical alignment refers to the configuration of strategies, objectives, action plans, and decisions throughout the various levels of the organization. Horizontal alignment refers to coordination of efforts across the organization and is primarily relevant to the lower levels in the strategy hierarchy. While IT-business alignment at the strategic level has been extensively studied, there has been little study of how IT and business can

align at the tactical level. This concept of vertical and horizontal alignment is missing in SAMM (Fonstad & Robertson, 2006).

The SAMM lacks the tactical IT-business alignment that is necessary for making sure that IT projects are implemented on time and the implemented applications deliver the planned and desired business benefits. Alignment at the operational or tactical level is required for ensuring that planned applications are successfully implemented, maintained, and used, that applications and systems irrelevant to the business plan are not implemented, and that implemented IT delivers envisaged business benefits (Fonstad, 2006).

The SAMM lacks the focus on the business performance including the vertical alignment that is primarily driven by repeatedly communicating an integrated Business and IT strategy down into the organization and translating it at each organizational layer into the language, responsibilities, values, and challenges at that level. Horizontal alignment is primarily driven by cooperation between Business and IT on integrating the strategy, on developing and agreeing on performance measures and on sharing responsibilities (Fonstad, 2006)

SAMM lacks the focus on the volatility and uncertainty of the business environment. Business strategy keeps shifting due to the volatility and uncertainty in the business environment and SAMM does not adapt to this external changes (Chan & Reich, 2007). SAMM also lacks the focus to business fusion. The higher the fusion of business and IT the better the performance (Haes & Van, 2009).

Another limitation of the SAMM model is due to the focus on a structured strategy process. In an era where uncertainty and flexibility predominate and the articulation of the strategic formulation it is difficult to apply SAMM (Avison et al, 2004).

SAMM lacks metrics to achieve new goals for business process execution. New metrics need to be developed to capture the aspects of software changes that impact business processes. Methodologies and tools are needed for keeping a business process aligned with the supporting software systems (Aversano, Grasso, & Tortorella, 2013).

Due to SAMM lacking the above focus a new model may highlight the relevance of analyzing the relationship between business and IT (Horizontal Alignment) but also the need to reconcile the views at different levels of analysis (Vertical Alignment).

The SAMM lacks the continuous coevolutionary approach. Hinssen (2009) noted that alignment is a continuous coevolutionary process that reconciles top-down 'rational designs' and bottom-up 'emergent processes' of consciously and coherently interrelating all components of business/IT relationships at three levels of analysis (strategic, operational and individual) in order to contribute to an organization's performance over time.

SAMM lacks the capability to expand the research to the tactical and operational levels. Hinssen (2009) noted that there is the need for expanding research to the tactical and operational level. This is because the business-IT alignment and assessment approaches are mainly focused on the strategic level. Another weakness is there is a lack of connection between strategies and IT projects implementation. There is the need to focus on the fusion of IT and business especially the impact to the business performance

The SAMM leaves out the other external factor of alignment in terms of customer experience. CX helps business build aspiration and purpose. Companies then translate aspirations into expected business value by defining the specific changes in customer. behavior they expect to see (Weiss & Anderson, 2004).

Another limitation of |SAMM is lacking the guidance on how to measure the success of business process management (BPM) projects. BPM is a critical driver of business success. There is the need for a business process management maturity model with the appropriate attributes (Rosemann & De Bruin, 2005). The six core concepts and attributes need to be considered for BPM success (Rosemann & Brocke, 2015).

The SAMM lacks the attributes that may help propagate the game theory attributes in businesses. Game theory is increasingly being applied in the business context to help with defining and implementing defensive competitive

advantage strategies. There is the need to develop a model that considers the game theory constructs (Campbell, 2019).

The SAMM lack the attributes and criterions for assessing the strategic alignment competency. The strategic competency is a great trait for business success. A new model needs to be developed to achieve this alignment (Baker, Jones, Cao, & Song, 2011).

COBIT

COBIT Strengths

COBIT is an IT governance framework that aids businesses in developing, managing, and implementing their IT strategies. COBIT ensures the quality and reliability of information systems. One of the strengths of COBIT is risk management. COBIT is a time-tested framework comes that helps companies to reduce service and infrastructure risks. Rubino (2018) observed how COBIT can help overcome risk and vulnerabilities in information systems and in the whole organization. Aljabari (2018) observed how COBIT helped organizations entrench IT governance in the ICT sector.

Another strength of COBIT framework is that it assists organizations to comply with industry regulations. The increasing effect of technology on personal data throughout the world has influenced the role of regulation. The COBIT framework allows proper compliance and makes it much easier for the company to show that it fulfilled the requirements. Wilkin, Campbell, Moore, and Van Grembergen (2013) observed that COBIT can ensure compliance with regulations on the public sector service environment.

The additional strength of COBIT is size independence. With the help of its tools and techniques, COBIT principles improve efficiency and effectiveness. It is applicable in every industry and regardless of business size or growth trajectory. Wilkin, Campbell, Moore, and Van Grembergen, (2013) applied the COBIT framework in the public sector. Al Omari (2016) adopted and adapted the COBIT framework in the public sector for good governance and compliance practices.

Another strength of COBIT is that it can ensure efficiency and productivity. COBIT models and principles are internationally recognized. It helps in addressing stakeholders concerns, defining their roles, achieving strategic goals, and realizing business benefits, thus resulting in enhanced productivity and efficiency in the organization. Ajami and Al-Qirim (2013) observed how COBIT can ensure efficiency and effectiveness in an institution of higher learning and to entrench governance.

The additional strength of COBIT is that it can ensure Governance. The key benefit of COBIT is implementing an IT governance standard across the enterprise. It ensures that risks associated with IT are mitigated and effective controls are put in place to ensure that all processes are monitored. Rubino (2018) observed the application of COBIT in organizations to entrench sound governance. Andry (2016) noted that it can enable IT managers to roll out information systems effectively for improved business performance. Zhang, le Fever, and le Zhang (2013 observed that COBIT can be applied in a practical environment to achieve robust governance. COBIT enables the mutual adaptation between business process and IT management functions to support strategic and operational process and IT decision making (Rahimi, Møller, & Hvam, 2014).

COBIT Weaknesses

One of the weaknesses of the COBIT framework is that it is not easy to implement. Many organizations avoid implementing COBIT as it needs a lot of skills and knowledge to be used as a tool to offer IT governance support or assess IT department performance in an organization. Betz, C. T. (2011) observed that IT managers faced enormous challenges in implementing COBIT due to the lack of skills among the IT staff.

The other weakness of COBIT is the lack of experienced analysts to help with the implementation**.** The maturity model offers a generic analysis of any given situation, and it needs a seasoned analyst to conduct a credible maturity assessment of an IT organization. Zhang, le Fever, and le Zhang (2013) observed that acquiring a seasoned analyst to help implement COBIT is a herculean task as these analysts a rare and take time to train. Walters, L. E. M., Scott, R. E., & Mars, M. (2018) observed the lack of skills in COBIT in IT staff of the health services industry.

Another weakness of the COBIT framework is the lack of specifications for connections to data analytics and AI. The framework lacks specifications related to its connections between the benefits of the activity and how it is shown in the featured maturity model. It also lacks the support for data analytics and artificial intelligence (Razzaque, 2021).

ITIL

ITIL Strengths

ITIL is a service management model. A key strength of the model is that ITIL supports the Knowledge-Based View of the firm. This provides an understanding of why organizations can create knowledge when implementing the frameworks. IT Service Management frameworks can help in the knowledge integration process (Marrone, 2010). ITIL can support knowledge transfer in IT service organizations through information systems (Krigsman & Zahirovic, 2019).

Another strength of ITIL is that it can be leveraged for entrenching IT governance and business awareness diagnostic. IT can help IT managers align the IT governance and the corporate governance. It can be used to assess current state of IT capability and develop an improvement roadmap for future capability in relation to the business objectives (Özturan, Oral, Kasap & Bozkaya, 2008). The model can be used to assess the compliance with the Sarbanes Oxley act. Moeller (2008) noted that the model can used for implementing the Sarbanes-Oxley internal controls. Cater-Steel (2009) observed how ITIL can be used for enabling ICT governance, strategic alignment, and service management.

The ITIL model can be applied to aid in outsourcing strategies and enabling smart cities. Nehme, Persson and Lahiji (2009) observed how ITIL can be applied to influence IT outsourcing. Romanovská, (2021) observed how ITIL can be adapted for Smart City implementation. Smart cities allow the communities to enjoy augmented services and utilities.

Another strength is the support for IT service management system (ITSM). The ITIL model can be leveraged for implementing the IT service management system and design an ITSM model (Sebaaoui, Lamrini, Bouayad, & El Abbadi, (2019). Miller (2017) noted that the ITIL model can be used to determine the implementation priority of the ITSM framework based on a Process Sequencing Model. Marrone, Gacenga, Cater-Steel, and Kolbe (2014) observed how ITIL can be adopted by private and public institutions for enabling IT service management.

ITIL Weaknesses

One of the weaknesses of ITIL is that it cannot solve the people problems. It is a technology framework… managers still need to be great leaders if they are going to lead great teams even in an ITIL framework (Bailey, 2015). It is a technology framework and managers still need to be great leaders if they are going to lead teams to implement the framework (Shaw, 2020).

Another weakness is that ITIL is not scientific as it has not included the science management of Deming of Plan, Do, Check and Act. It does not give the statistical methodology to interpret the information given by the relevant dashboards (Betz, 2011).

The other weakness is that ITIL is heavy in theory that not sufficient information is given as to how to do it or how to apply it or even which process should be implemented as a priority (Miller, 2017). Managers need to know which process to start and end with (Shaw, 2020). ITIL does not help with the problem of knowledge hoarding especially because it is too theoretical. There are not many institutions that can offer the professional certifications to prove proficiency (Trusson, Hislop, & Doherty, (2017).

ISO 38500

ISO/IEC 38500:2015 provides guiding principles for members of governing bodies of organizations (which can comprise owners, directors, partners, executive managers, or similar) on the effective, efficient, and acceptable use of information technology (IT) within their organizations. It also provides guidance to those advising, informing, or assisting governing bodies.

ISO/IEC 38500:2015 applies to the governance of the organization's current and future use of IT including management processes and decisions related to the current and future use of IT. These processes can be controlled by IT specialists within the organization, external service providers, or business units within the organization.

ISO/IEC 38500:2015 defines the governance of IT as a subset or domain of organizational governance, or in the case of a corporation, corporate governance.

ISO/IEC 38500:2015 is applicable to all organizations, including public and private companies, government entities, and not-for-profit organizations. ISO/IEC 38500:2015 is applicable to organizations of all sizes from the smallest to the largest, regardless of the extent of their use of IT.

The purpose of ISO/IEC 38500:20015 is to promote effective, efficient, and acceptable use of IT in all organizations by: assuring stakeholders that they can have confidence in the organization's governance of IT, informing and guiding governing bodies in governing the use of IT in their organization, and establishing a vocabulary for the governance of IT.

ISO 38500 Strengths

One of the strengths of ISO 38500 is that it enables IT to better support the organization's strategy and goals (Mayer, Barafort, Picard, & Cortina, 2015). Juiz, Gómez, and Colomo-Palacios (2019) noted that the standard helped the board members improve accountability on IT governance implementations.

Another strength of the standard is that it facilitates informed decision-making that positively impacts business value (Calder, 2019). Heredia and Merchán (2019) observed that the standard ensured the maturity of the information security governance for institutions of higher education and enabled the harmonization of standards.

Another strength of the standard is that it facilitates efficient use of investments with trackable and measurable results (Visitsilp & Bhumpenpein, 2021). The standard provided guidelines for Information Technology investments based on the integrated ISO 38500 and COBIT 2019.

Another strength of the standard is that it helps convert strategic goals into IT projects. This helps to align the business strategic and IT objectives (PMP, 2015). Quezada-Sarmiento, et al. (2017) noted that the standard can be applied in governments for channeling strategic goals to relevant IT project.

Another strength of the standard is that it help defines roles and responsibilities, processes, policies, and criteria to foster accountability (ISO, 2015). ISO/IEC

(2015) detailed how the standard can be leveraged to help define role-based access controls profiles and user matrices for better accountability.

Another strength of the standard is that it assists in IT risk management and aids in achieving regulatory compliance (Anoruo, 2019). Juiz and Colomo-Palacios (2020) observed that it can aid in risk management during the software development process.

ISO 38500 Weaknesses

One of the weaknesses of the standard is that it introduces bureaucracy and complexity. It requires extensive documentation (Almaawi, Alsaggaf, & Fasihuddin, 2020). Serrano, A., Gómez, B., & Juiz, C. (2017, September) noted that complexity is introduced by the standard because project management cannot be separated from the governance of the IT standard.

Another weakness of the standard is that it can introduce stress and lethargy for the employees involved in the implantation and this can reduce productivity in the short term. Zaydi, M., & Nassereddine, B. (2018, October). Observed that it is prudent to integrate the information security functions to the ones of IT governance, risk and compliance to reduce the stress and complexity.

Another weakness is that it lacks the functionality for secure integration between privacy and security (Lee, Epiphaniou, Al-Khateeb, & Maple, 2018). This can introduce regulatory challenges. Mayer and De Smet (2017) observed the integration gaps in the standard during a systematic literature review and noted the need to integrate security and privacy in the age of personal data regulations.

CMMI

The Capability Maturity Model Integration (CMMI) helps organizations streamline process improvement, encouraging a productive, efficient culture that decreases risks in software, product, and service development (Team, 2002a).

The CMMI model breaks down organizational maturity into five levels. For businesses that embrace CMMI, the goal is to raise the organization up to Level 5, the "optimizing" maturity level. Once businesses reach this level, they are not done with the CMMI. Instead, they focus on maintenance and regular improvements (Team, 2002b).

CMMI's Maturity Levels are:

- **Maturity Level 0 – Incomplete:** At this stage work "may or may not get completed." Goals have not been established at this point and processes are only partly formed or do not meet the organizational needs.

- **Maturity Level 1 – Initial:** Processes are viewed as unpredictable and reactive. At this stage, "work gets completed but it's often delayed and over budget." This is the worst stage a business can find itself in. This is an unpredictable environment that increases risk and inefficiency.

- **Maturity Level 2 – Managed:** There's a level of project management achieved. Projects are "planned, performed, measured and controlled" at this level, but there are still a lot of issues to address.

- **Maturity Level 3 – Defined:** At this stage, organizations are more proactive than reactive. There's a set of "organization-wide standards" to "provide guidance across projects, programs and portfolios." Businesses understand their shortcomings, how to address them and what the goal is for improvement.

- **Maturity Level 4 – Quantitatively managed:** This stage is more measured and controlled. The organization is working off quantitative data to determine predictable processes that align with stakeholder needs. The business is ahead of risks, with more data-driven insight into process deficiencies.

- **Maturity Level 5 – Optimizing:** Here, an organization's processes are stable and flexible. At this final stage, an organization will be in constant state of improving and responding to changes or other opportunities. The organization is stable, which allows for more agility and innovation in a predictable environment (Team, 2006).

The capability levels are:

- **Capability Level 0 – Incomplete:** Inconsistent performance and an "incomplete approach to meeting the intent of the practice area."

- **Capability Level 1 – Initial:** The phase where organizations start to address performance issues in a specific practice area, but there is not a complete set of practices in place.

- **Capability Level 2 – Managed:** Progress is starting to show and there is a full set of practices in place that specifically address improvement in the practice area.

- **Capability Level 3 – Defined:** There's a focus on achieving project and organizational performance objectives and there are clear organizational standards in place for addressing projects in that practice area (Team, 2006).

CMMI Strengths

One of the strengths of the CMMI is that it has capability levels that are used to appraise an organization's performance and process improvement as it applies to an individual practice area outlined in the CMMI model (Ahern,

Clouse, & Turner, 2004). Chrissis, Konrad, and Shrum, (2011) observed that CMMI can be applied for integrated process improvements for development service and acquisitions.

Another strength of CMMI is that it can help bring structure to process and performance improvement. Each maturity and capability level builds on the last one (Dayan & Evans, 2006). Gibson, Goldenson, and Kost (2006) noted that CMMI can help improve process improvements in companies of sizes and all industries.

Another strength of the CMMI is that it is holistic and comprehensive. It includes product and service development, service establishment and product and service acquisition (Glazer, Dalton, Anderson, Konrad, & Shrum, 2008). Goldenson and Gibson (2003) observed the holistic nature of CMMI and how it helps organization with product and service developments.

Another strength of the CMMI is that it is also a behavioural model. CMMI can help create a structure for encouraging productive, efficient behaviour throughout the organization (Jakobsen & Johnson, 2008). Jakobsen and Sutherland (2009) observed that CMMI can help organization behavior evolve from good to great leading to improved productivity.

Another strength is that companies can use the CMMI to tackle the logistics of improving performance by developing measurable benchmarks (Kasse, 2008). Kulpa and Johnson (2003) noted that CMMI can be leveraged by organizations for improved performance measurements and benchmarks.

Another strength is that companies can use the CMMI certifications are offered directly through the CMMI Institute, which certifies individuals, appraisers, instructors, and practitioners (Kasse, 2008).

CMMI Weaknesses

One weakness of CMMI is that it is too process-oriented and not goal-oriented enough. That is insufficient to bring IT closer to the business in terms of enabling profitability (Marçal, Soares, de Freitas, & Belchior, 2007).

The other weakness of CMMI is that it does not allow for innovation appetite. Organizations vary in their innovation and tolerance for new tools depending on their industry, the culture, prior experience and the interest level of management (Mutafelija & Stromberg, 2003).

The other weakness of CMMI is the lack of the C-level involvement. The range of maturity could span a delegation immaturity, where the CEO establishes no or low expectations of the CIO (Silva, Soares, Peres, De Azevedo, Vasconcelos, Kamei & de Lemos Meira, 2015).

The other weakness of CMMI is that it lacks the strategic capability. Some firms would have great difficulty clarifying a long-term strategic direction for their business and a tough time sustaining attention for long-term technology projects (Staples, Niazi, Jeffery, Abrahams, Byatt & Murphy, 2007).

The other weakness of CMMI is that it does not enable the business department engagement. At the lowest level of maturity, firms would have junior business users participate in requirements definition and implementation of IT projects. They would wait until a project is done to announce that it did not meet their needs (Sutherland, Jakobsen, & Johnson, 2008).

The other weakness of CMMI is that it lacks the focus for change management skills. Immature firms would have little understanding of how to manage change in their organizations, whether the task is communicating, measuring, or completing initiatives that at one point seemed like a good idea (Yoo, et al., 2006). Turner and Jain (2002) observed the lack of focus on culture change in CMMI projects.

ISO 31000

The long-term success of an organization relies on many things, from continually assessing and updating their products and services to optimizing

their processes. They also need to account for the unexpected in managing risk. They can leverage the ISO 31000 for risk management (Baker, 2011).

In addition to addressing operational continuity, ISO 31000 provides a level of reassurance in terms of economic resilience, professional reputation, and environmental and safety outcomes. In a world of uncertainty, ISO 31000 is tailor-made for any organization seeking clear guidance on risk management (Baker, 2011).

Strengths of ISO 31000

One of the strengths of ISO 31000 is that it provides principles, a framework, and a process for managing risk. The tool can be used by any organization regardless of its size, activity, or sector (Choo & Goh, 2015).

Another strength is that using ISO 31000 can help organizations increase the likelihood of achieving objectives, improve the identification of opportunities and threats and effectively allocate and use resources for risk treatment (Curkovic, Scannell & Wagner, 2013).

Another strength of ISO 31000 is that it provides guidance for internal or external audit programmes. Organizations using the tool can compare their risk management practices with an internationally recognized benchmark, providing sound principles for effective management and corporate governance (Dali & Lajtha, 2012).

Another strength of ISO 31000 is proven effectiveness. Since ISO 31000 is an internationally recognized standard, it is used by countless organizations. This means that ISO 31000 has been thoroughly vetted and proved to be effective (de Oliveira, Marins, Rocha & Salomon, 2017).

Another strength of ISO 31000 is that the tool can help organizations to reduce legal exposure. By identifying key drivers, organizations may be able to reduce their legal exposure and decrease the risks posed by litigation (Ernawati & Nugroho, 2012).

Another strength of ISO 31000 is that the tool can assist organizations to address risks in a standardized method. When properly implemented, ISO 31000 can act as a template that will help organizations identify key drivers of risk. It establishes risk criteria and risk treatments in a standardized way (Frigo & Anderson, 2014).

Another strength of ISO 31000 is that it helps managers to create a culture of risk mitigation. By incorporating risk mitigation into nearly all business processes, employees will become used to the idea of identifying and potentially mitigating risks (Gjerdrum & Peter, 2011).

Another strength of ISO 31000 is that it helps to increase the organization's profitability. When an organization mitigates unnecessary risks, it also reduces the potential for financial damage stemming from events tied to that risk (Karanja, 2017).

Another strength of ISO 31000 is that it integrates to the others standards that already implemented. ISO 31000 is just one of many ISO standards. The various standards are designed to work together, which means that organizations may be able to incorporate the work that they have already done into their ISO 31000 strategy (Knight, 2010).

Another strength of ISO 31000 is that in can drive an organization to be more pre-emptive. A good ISO 31000 implementation can help an organization shift from being reactive to taking a more proactive approach at risk mitigation (Lalonde & Boiral, 2012).

The tool may help the organization to acquire funding more easily. Banks and investors tend to be risk averse. If an investor is convinced that an organization is serious about identifying and mitigating risks, they may be more likely to approve an investment (Proenca, Estevens, Jieira & Borbinha, 2017).

Another strength of ISO 31000 is that the tool can also help with managing the risks emanating from environmental pollution including oil spills (Neves, Pinardi, Martins, Janeiro, Samaras, Zodiatis & De Dominicis, 2015).

Environmental risks are becoming commonplace and can undermine the sustainability development goals (Parviainen, Goerlandt, Helle, Haapasaari & Kuikka, 2021).

Another strength of ISO 31000 can be leveraged for developing an IT risk management based on ISO 31000 and OWASP Framework for secure web applications at the information gathering stage (Wiradarma & Sasmita, 2019). This makes the web applications more secure in terms of confidentiality, integrity, and availability.

Another strength of ISO 31000 is that the tool can used to develop a risk management framework for the construction and all other sectors (Sousa, De Almeida & Dias, 2012). The standard is industry agnostic. The tool can also be applied in micro, small,and medium enterprises.

Weaknesses of ISO 31000

One weakness of ISO 31000 is that adherence requires a continuous effort. If an organization fails to incorporate ISO 31000 concepts into business processes, the risk mitigation plan that it creates will quickly become outdated and will likely be ignored by employees (Lalonde & Boiral, 2012).

Another weakness of ISO 31000 is the that in can introduce the potential for a false sense of security. Even with an effective risk mitigation plan in place, organizations may remember that there will always be unidentified risks (Sanjaya, Sasmita & Arsa, 2020). Organizations also fail to manage supply chain risks once they depend too much on ISO 31000 (Scannell, Curkovic & Wagner, 2013).

Another weakness of ISO 31000 is that organizations can become risk averse. Risk aversion can make it difficult for an organization to capitalize on new opportunities and undermines innovation (Tranchard, 2018). Organizations need to pursue new opportunities for products and services.

Business Model for Information Security (BMIS)

The Elements of the model are Organization Design and Strategy, People, Process, and Technology (Knapp, Morris, Marshall & Byrd, 2009). The Dynamic Interconnections are Culture, Architecture, Governing, Emergence, Enabling and Support, Human Factors (Anderson, 2001).

BMIS can be viewed as a three-dimensional Model best visualized as a pyramid (Layton, 2016). All aspects of the Model interact with each other. If any one part of the Model is changed, not addressed, or managed inappropriately, it will distort the balance of the Model (Anderson & Moore, 2006).

Strengths of BMIS

One strength of the model and that differentiates it from many other models is the importance it places on organizational culture (Nazareth & Choi, 2015). Creating an intentional security culture is a primary objective for the model, as applied to information security. The intentional information security culture focuses on the enterprise's governance needs. This type of culture has several important characteristics: Alignment of information security and business objectives; A risk-based approach; Balance among organization, people, process, and technology; Allowance for the convergence of security strategies (Anderson & Moore, 2007).

Another strength of the model is that it takes a business-oriented approach to managing information security (Sundt, 2006). Its holistic and dynamic approach to information security within the context of business demonstrates to the enterprise that information security can be both predictive and proactive (Behnia, Abd Rashid & Chaudhry, 2012).

Another strength of the model is that the tool can be used regardless of the size of the enterprise or the information security framework the enterprise currently has in place (Tabor, 2007). It is company size and sector agnostic. The tool can integrate to other models (Bojanc & Jerman-Blažič, 2013).

Another strength of the model is that it is independent of any technology or technological changes over time (Vorster & Labuschagne, 2005). It is future proof and flexible to changes in the business environment. The tool can be applied regardless of the volatility and uncertainty that comes from the external market forces (Brotby & Hinson, 2013).

Another strength of the model is that it is applicable across industries, geographies, and regulatory and legal systems (Zhang, Wuwong, Li & Zhang, 2010). Some models are only suitable for developed countries and their regulatory environment, but BMIS is a universal standard (Cherdantseva & Hilton, 2013).

Another strength of the model is that it includes not only traditional information security but also privacy, linkages to risk, physical security, and compliance. Personal data regulations are increasingly commonplace in both developed and developing countries and the model can assist managers to comply (Diesch, Pfaff & Krcmar, 2020).

Another strength of the model is that it supports the systems thinking. Systems thinking is a discipline for seeing the structures that underlie complex situations. The BMIS model assists managers to apply the systemic approach to solving problems. This breaks complex problems into manageable chunks (Dutta & Roy, 2008).

Another strength of the model is that the tool can help managers to solve problems by seeing inter- relationships rather than linear cause-effect chains. Most problems cannot be solved lineally but by unravelling sequences of complex patterns (Dutta & Roy, 2008).

Another strength of the model is that the tool can plot the reality in circles whereas other models plot reality in straight lines. Most problems in information security are complex and cannot be explained in linear narrative (Eloff & Eloff, 2005). This thinking helps teams and individuals see beyond events and into the forces that shape change (Han, Kim & Kim, 2017).

Weaknesses of BMIS

One weakness of BMIS is that it duplicates what ISO 27001 can help organizations accomplish. ISO can help organizations harness the people, process, and technology elements of information security just like BMIS. BMIS also may hamper managers from pursuing entrepreneurship and innovation (Guo & Yuan, 2012).

Another weakness of BMIS is the lack of update on the elements and the interconnections by ISACA. The last update was in 2012. Lack of update of the model may undermine the fusion and integration with the dynamic business environment. The alck of fusion with the business strategy may make the model less effective in assisting organizations to protect the information and the data assets (Hall, Sarkani & Mazzuchi, 2011).

NIST Cybersecurity Framework

Figure 22. Source: (NIST,2022)

The NIST Cybersecurity Framework (NIST CSF) provides guidance on how to manage and reduce IT infrastructure security risk (Mesker, Engineer & Chevron, 2014). The CSF is made up of standards, guidelines and practices that can be used to prevent, detect, and respond to cyberattacks (Almuhammadi & Alsaleh, 2017).

The National Institute of Standards and Technology (NIST) created the CSF for private sector organizations in the United States to create a roadmap for critical infrastructure cybersecurity (Shen, 2014).

The CSF framework can be broken down into three parts: the core, implementation, and profile. The framework core, as described by NIST, is the set of cybersecurity activities and desired outcomes common across any critical infrastructure sector (Scofield, 2016).

Strengths of the NIST CSF

One of the strengths of the CSF is that the tool can help identify which refers to developing an understanding of how to manage cybersecurity risks to systems, assets, data, or other sources (Krumay, Bernroider & Walser, 2018).

Another strength of the CSF is that the tool can be used to protect the assets, which refers to the safeguards put in place that ensure critical infrastructure services are delivered and are available when needed (Kwon, Ashley, Castleberry, Mckenzie & Gourisetti, 2020).

Another strength of the CSF is that the tool can be used to detect events and identify how and when an event occurred on the network (Gordon, Loeb & Zhou, 2020). The detection is one on the functions of the security incident and event management tools (SIEM).

Another strength of the CSF is that the tool can be used to respond and define what actions are taken when a cybersecurity event is detected. The appropriate response can contain the problem (Webb & Hume, 2018).

Another strength of the CSF is that the tool can be used to recover critical functions of the core business. It focuses on resilience, as well as outlines restore capabilities of impaired services (Teodoro, Gonçalves & Serrão, 2015). The goal of these functions is to provide a strategic view of the cybersecurity risks in an organization (Shackelford, Proia, Martell, & Craig, 2015).

Another strength of the framework is that it allows organizations to fit into tiers depicting the level of maturity in the implementation of security functions

(Calder, 2018). The tiers provide context around an organization's cybersecurity risks, as well as any processes put in place to manage risks. The tiers describe how much an organization's cybersecurity risk management practices follow the characteristics defined in the framework (Sulistyowati, Handayani & Suryanto, 2020). A Tier 1 organization is one that's ranked as partial, described as having limited awareness. The tier system moves up to Tier 4, which refers to an organization that is seen as adaptive, meaning the tool can best react to cybersecurity threats (Roy, 2020).

Another strength of the framework is that the tool can be used to describe the current state of an organization's security program, as well as compare that current state to the desired state. This process can be used to reveal any gaps, which can be later addressed. The goal of a profile is to aid organizations in establishing a roadmap for reducing cybersecurity risk (Ibrahim, Valli, McAteer & Chaudhry, 2018).

One of the strengths of the NIST's CSF is that it is designed to help an organization that needs to protect infrastructure it deems critical and to determine current levels of implemented cybersecurity measures by creating a profile and tier (Cockcroft, 2020).

Another strength of the framework is that the tool can be used identify new potential cybersecurity standards and policies; to communicate new requirements; and to create a new cybersecurity program and requirements (Mylrea, Gourisetti & Nicholls, 2017).

Weaknesses of the NIST CSF

One of the weaknesses of the CSF is that the tool can be static in nature. The business environment is constantly changing, and the framework does not adapt in tune with the shifting landscape (White & Sjelin, 2022).

Another weakness of the CSF is that does consider emerging external factors. There are many factors outside the control of an organization that can

undermine the security posture. These external factors include the recession, the epidemic, and the geopolitics in the world (Dedeke, A. (2017).

Another weakness of the CSF is that it does consider not consider culture. Culture are the behaviors depicted in the organization including the decision-making process and the climate in which the employees thrive. It is the personality of the organization (Hiller & Russell, 2017).

Another weakness of the CSF is that it does not plan for unpredictable situations. We are in a volatile and uncertain world and may not be able to plan for future situations. The CSF lack the capability to predict the future using tools like AI and machine learning (Simonova, 2020).

IDC MaturityScape Framework

Digital Transformation (DX) is a specialized type of business transformation where IT plays a dominant role. In the digital age, new business opportunities arise, and enterprises transform their strategy, structure, culture, and processes using the potential and power of digital (Al-Sai & Abdullah, 2019).

The IDC MaturityScape benchmark framework is a strategic management tool that is like a balanced scorecard. The framework goes far beyond being a scorecard. It enables organizations to obtain clarity about what maturity level an organization has in terms of the five defined Digital steps, what maturity level they wish to attain, and how they intend to achieve this (Chege, Nyamboga & Wanyembi, 2018). The digital use cases also help to develop a clear picture of the processes to be optimized and the technologies that should be used. A customized plan to transform the organization into a digital company can be defined as a result (Jerónimo, 2018).

The five levels are: Ad Hoc depicting a Digital Resister; Opportunistic depicting a Digital Explorer; Repeatable depicting a Digital Player; Manager depicting a Digital Transformer and Optimized depicting a Digital Disruptor (Clarke & Brooks, 2015).

Each level builds on the capabilities of the one before it. What might be considered optimized this year will change in the future as technologies and their use become more sophisticated and transformative (Vesset, et al., 2013).

To view the opportunities and challenges more clearly as IT moves through the various stages of DX maturity, organizations need to understand the following five critical dimensions (Vesset, et al., 2015).

Strengths of the IDC Framework

One of the strengths the IDC framework is the support of the Leadership DX: This set of disciplines enables businesses to develop the vision for digital transformation of products, services, and experiences that are optimized to deliver value to partners, customers, and employees (Vesset & Xiong, 2015).

Another strength of the framework is the support for Omni-Experience DX: This dimension describes an omnipresent and multidimensional ecosystem approach to continually amplify experience excellence for products and/or services (Insights, 2016).

Another strength of the framework is the support for the WorkSource DX: This dimension covers the evolution of the way that businesses will achieve business objectives by effective sourcing, deployment, and integration of internal employees and external resources (Brien & Vesset, 2014).

Another strength of the framework is the support for the Operating Model DX: This dimension describes the ability to make business operations more responsive and effective by leveraging digitally connected products/services, assets, people, and trading partners. Operating Model DX defines how work gets accomplished in terms of digital transformation (Kolding, Méndez-Villamil & van Vonno, 2017).

Another strength of the framework is the support for the Information DX: This dimension encompasses the focused approach to extracting and developing the value and utility of information relative to customers, markets, transactions (Clarke, 2017).

Another strength of the framework is that the DX MaturityScape Benchmark enables organizations to determine how DX will affect the way the organization does business (Brusakova, 2022).

Another strength of the framework is that the DX MaturityScape Benchmark enables organizations to determine the role of DX in supporting business change. Shifts in the business environment and dynamics call for a reliable tool that can guide managers on the how to apply DX for success (OGAWA, 2020).

Another strength of the framework is that the DX MaturityScape Benchmark enables organizations to determine where they are on a maturity scale for DX competencies in terms of what the business needs and comparing themselves with the competitors (Schwer, Hitz, Wyss, Wirz & Minonne, 2018).

Another strength of the framework is that the DX MaturityScape Benchmark enables organizations to determine the path to improve and achieve the level of maturity that the business needs (Menukhin, Mandungu, Shahgholian & Mehandjiev, 2019).

Weaknesses of the IDC Framework

One weakness of the framework is that it is too specialized on IT function. It leaves out the information security and cybersecurity function out of the benchmark and the scorecard. Cybersecurity is very critical for the success of modern enterprises and any framework that leaves it out is not comprehensive (Schneider & Imai, 2017).

Another weakness of the model is that it concentrates the novel topic of digital transformation and leaves out the effects and impact of traditional IT technologies. Disruptive technologies like Social, Mobile, Analytics and Cloud are the focuses of the IDC framework. Legacy technologies including ERP, CRM and HCM are not catered for well in the IDC framework (Schwer, Hitz, Wyss, Wirz & Minonne, 2018).

DevOps 2.0

DevOps 2.0 toolkit allows the integration of the IT Development and Operations practices through the entire organization, beyond development and IT ops. DevOps 2.0 aims to break down silos and foster communication and cooperation between all groups involved in the conception, production, and maintenance of software (Farcic, 2016a). A DevOps 2.0 process includes development and operations, quality assurance and security, HR and legal, and through the whole organization (Farcic, 2017).

DevOPs seeks to increase collaboration between developers and IT operations. That is the key to removing information silos and achieving continuous delivery (Di Nitto, Casale & Petcu, 2016).

Organization can adopt the DevOps approach to Agile software development. This allows the organization to build quality software faster through developer and IT ops collaboration (Spinoso, et al., 2015).

The integration starts with developers and IT ops and extends to the whole organization including HR and Marketing. DevOps integrates all parts of the organization into the software delivery process (Hsu, 2018).

DevOps first expanded as a concept with BizDevOps, in which DevOps teams brought business management into their continuous integration process. With real-time analytics and API tools, executives can monitor and engage with software as it moves from idea to working code (Eramo, et al., 2021).

DevSecOps likewise expanded the idea of DevOps by bringing the security team into the collaborative synergy. DevOps 2.0 encompasses a digital transformation in a broader and more holistic sense (Battina, 2016). DevOps 2.0 means encouraging continuous communication and collaboration among all divisions in an organization to help speed software delivery and increase software quality (Bang, Chung, Choh & Dupuis, 2013).

Strengths of DevOps 2.0

One strength of the DevOps 2.0 is that it brings all teams onboard and creates a culture of continuous partnership. DevOps requires quality control engineers and IT security teams to be part of the continuous delivery process (Farcic,

2018a). In DevOps 2.0, a team monitors IT infrastructure even after it has launched an application. HR and legal departments are expected to actively support engineers working in a continuous software development lifecycle (Farcic, 2016b).

Another strength of the DevOps 2.0 is that it encourages various organizational units to embrace the same DevOps tools for uniformity and common language. The alerting and monitoring tools that IT ops uses to maintain infrastructure might also be used by developers, so they are aware of application problems faster (KK, 2020).

Another strength of the DevOps 2.0 is that the DevOps teams are on the same page. Organizations can make software that's more flexible than its waterfall counterparts using the model. With containers and feature flags, DevOps teams have the tools to launch, update and monitor applications as different features are functional ready instead of in one timely and expensive monolithic operation (Liang, 2021).

Another strength of the DevOps 2.0 is that it enables faster deployments and more responsive teams. All businesses want a stable environment, but they also want to be able to rapidly deploy changes (Buytaert, 2011). Deployments that keep the UX tight. When developers and operations staff cooperate, everyone can make informed decisions Better-informed staff, more customer engagement (Farcic, 2018b). A high-performing operations team will have mastered communication with end users.

Weaknesses of DevOps 2.0

In DevOps, though, there's always an initial strain on developers, who not only have to code and be fluent in different languages and tools but be involved in all aspects of production. DevOps will stress IT ops as well, who may now be familiar with code. Burnout is a real threat in DevOps environments (Borg, 2022).

DevOps 2.0 requires a significant culture shift to work. Instead of bridging just one silo, organizations adopting DevOps 2.0 may bridge all silos. That requires long-term executive buy-in and leadership in what will be a lengthy transformation (Sokolowski, Weisenburger & Salvaneschi, 2022).

Industry 4.0

Industry 4.0, which refers to the fourth industrial revolution, is the cyber-physical transformation of manufacturing. The name is inspired by Germany's Industry 4.0, a government initiative to promote connected manufacturing and a digital convergence between industry, businesses, and other processes (Diño & Ong, 2019).

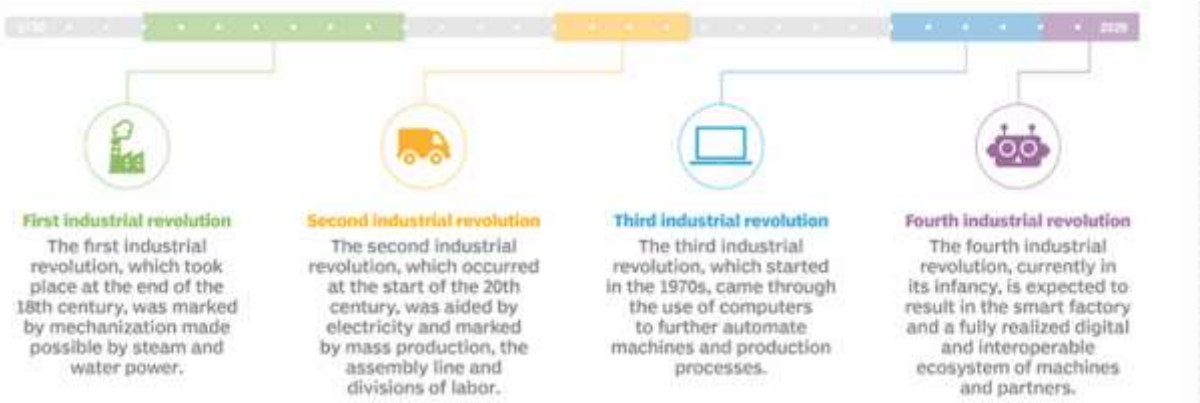

Figure 23

Technologies driving Industry 4.0

Industry 4.0 is driven by the convergence of technologies, including the following: IIoT and the widespread use of sensors; big data and analytics; artificial intelligence and machine learning; LPWANs for machine-to-machine and IoT networks; IT/OT convergence; touch and voice interfaces and augmented reality systems; advanced robotics; and additive manufacturing (Oke & Fernandes, 2020).

The new and developing technologies created for humans to communicate with machines, for machines to communicate with each other and to achieve more complicated goals, and for data to inform and optimize all the processes related to the manufacturing sector will interconnect manufacturing processes from design through the end of the product lifecycle (Chaka, 2020).

Strengths of 4IR

One strength is that Industry 4.0 concepts can enable OEMs to see how customers really used a product versus how it was expected it to be used. Another strength of 4IR is that sensor data can help an organization to monitor the manufacturing process in real time. This data can then be compared against a digital twin, a simulation that runs at perfect efficiency and to determine where the process could be improved (Mhlanga & Moloi, 2020).

Another strength of 4IR is that some organizations have applied Industry 4.0 concepts to their employee training process. These training programs use augmented reality to teach employees how to operate machinery and how to avoid unsafe practices before the employee is ever allowed on the factory floor. Some organizations even extend augmented reality-based training to other areas such as fire suppression and first aid (Yusuf, Walters & Sailin, 2020).

Another strength of Industry 4.0 is that its principles can help organizations avoid an outage on the factory floor. Prior to the adoption of Industry 4.0, industrial machinery was serviced based on manufacturer recommendations. Industry 4.0 has enabled machinery to be equipped with sensors that monitor the machinery's health on an ongoing basis. This enables organizations to anticipate problems before they occur and proactively take corrective action. In some cases, the machinery can even automatically place an order for replacement parts. All this together can help an organization avoid a costly outage that disrupts the manufacturing process (Kamaruzaman, Hamid, Mutalib & Rasul, 2019).

One more strength of applying Industry 4.0 concepts is that since the digital technology used on the factory floor is tied to back-end corporate data systems, it allows big data analytics to be performed on the data that is associated with the manufacturing process. Such analytics can help the organization spot trends and gain insights that might ultimately help it become more profitable (Mpofu & Nicolaides, 2019).

Weaknesses of 4IR

One weakness for organizations wishing to implement Industry 4.0 were cost and interoperability. The machines and sensors used on the factory floor often relied on differing protocols, making communications between connected devices difficult (Oosthuizen, 2017).

Another weakness related to Industry 4.0 is cybersecurity. In the past, the systems used on the factory floor tended to be proprietary in nature, and it was rare for such systems to be connected to one another or to back-end IT systems. The vendors who created such systems rarely took a security-first approach to their development efforts (Hoosain, Paul & Ramakrishna, 2020).

Another weakness is that the connectivity between devices and IT resources can expose these devices to the same cyber threats that have long plagued traditional IT devices. A compromised IT system can provide an attacker with a path through which to attack the resources used on the factory floor (Malik, Budhwar & Srikanth, 2020).

IT4IT

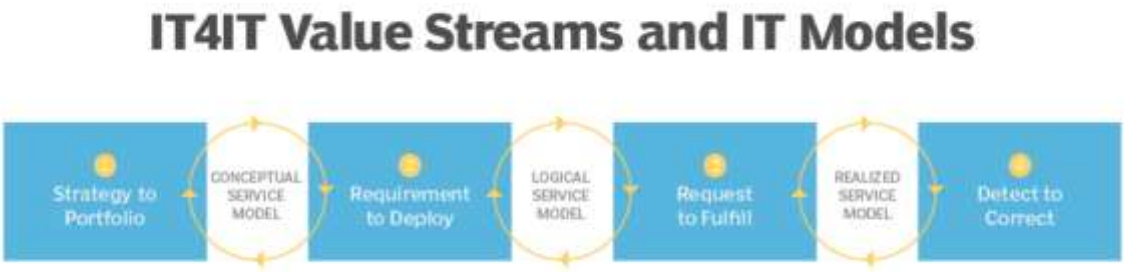

Figure 24

IT4IT is a reference architecture for information technology (IT) management. IT organizations and tool vendors use IT4IT as a framework to improve and guide IT capabilities by focusing on value chains. Created by The Open Group, IT4IT uses a value chain approach to construct a model of functions that IT organizations follow to create a product or service. The IT4IT standard is organized around multiple value streams that outline where value is added in each stage of the IT process (Tambo & Filtenborg, 2019).

IT4IT Strengths

One of the strengths of implementing the IT4IT framework is that provides the structure needed for organizations to organize their IT management and supports digital enterprises (Hartmann, A., & Auth, G. (2021).

Another strength of the IT4IT model is that the tool can help reduce cost in IT management and enables IT management to work across the whole value chain; This results in cost reduction and efficiencies (Akershoek, 2016).

Another strength of IT4IT is that the tool can help reduce the risk of errors. The error reduction can result in other benefits instead of reducing rework and improving the quality of the processes (Josey, 2015a).

Another strength of IT4IT is that it integrates well with other frameworks, such as ITIL, COBIT and ISO 27001. The mapping to other standards enables the organizations to reap the benefits of leveraging on other best practices and standards for a higher performing IT organization (Josey, A. (2016).

Another strength of IT4IT is that the tool can lead to faster deployment of software. Delivering the IT software projects on time, budget and meeting the requirements of the business users is a critical success factor (Josey, 2017).

Another strength of IT4IT is that it that the The Open Group offers two types of certifications. There is the popular The Open Group Architecture Framework (TOGAF) and knowledge-based certifications, such as IT4IT. The attainment relevant skills is one of the criteria for a mature IT organization that is aligned to the business goals and objectives (Josey, 2015b).

IT4IT Weaknesses

One of the weaknesses of the IT4IT framework is that it requires multiple catalogues for consumers to navigate and request available services. This can degrade the customer experience (Hartmann & Auth, 2020).

Another weakness of the IT4IT framework is that it has no service subscription, usage, and chargeback traceability. It also requires the creation of fulfillment incidents, projects or manpower, which will cause delays, when there are too many customer service requests. It provides a service

consumption experience, which exposes IT capabilities and resources, as opposed to valued services (Betz & Jahn, 2016).

Zero Trust Maturity Model (ZTMM)

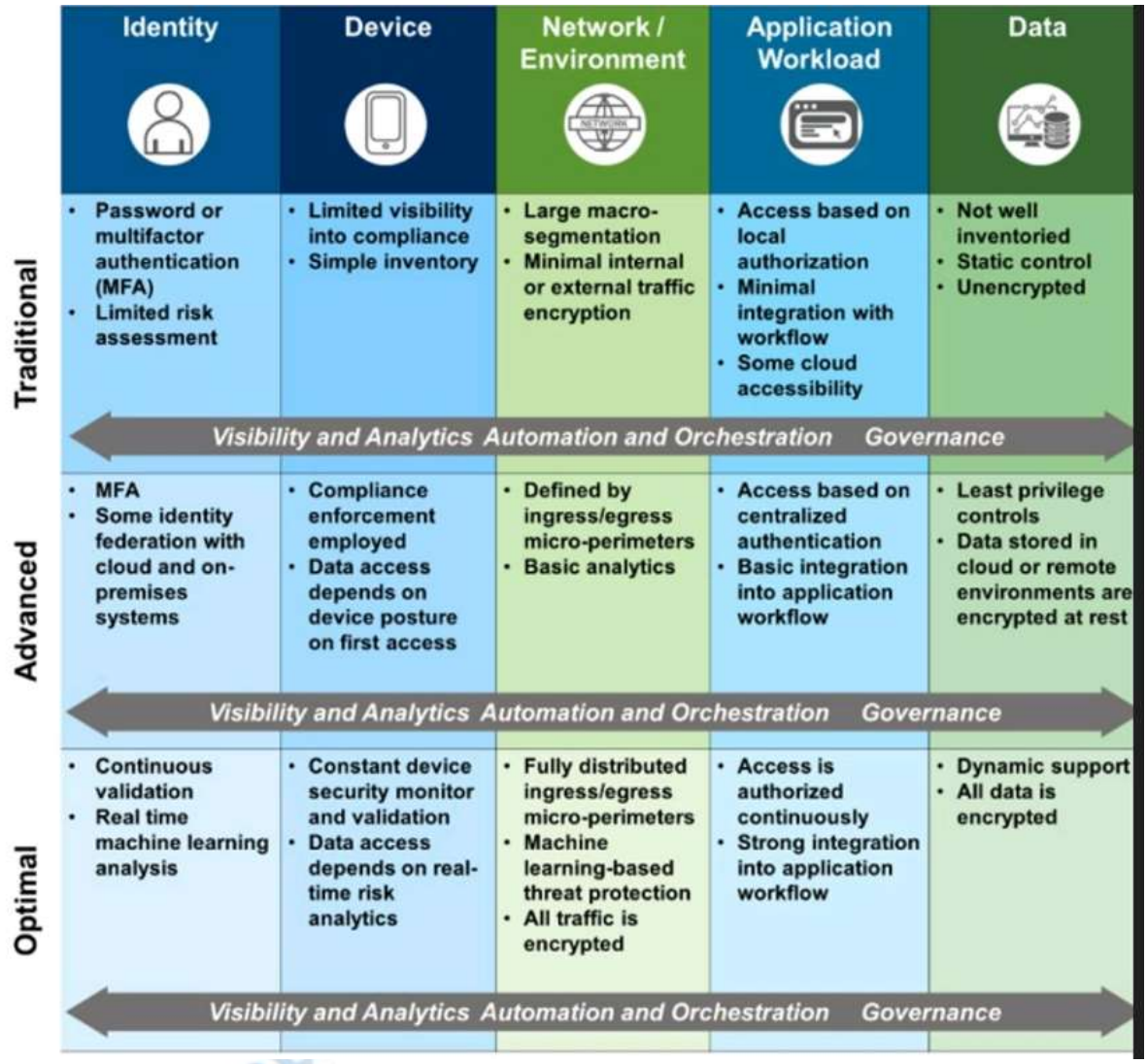

Figure 25

The zero-trust security model is a cybersecurity approach that denies access to an enterprise's digital resources by default and grants authenticated users and devices tailored, siloed access to only the applications, data, services, and systems they need to do their jobs (Modderkolk, 2018).

Enterprises relied on a castle-and-moat cybersecurity model, in which anyone outside the corporate network perimeter is suspect and anyone inside gets the benefit of the doubt. The assumption that internal users are inherently trustworthy, known as *implicit trust*, has resulted in many costly data breaches,

with attackers able to move laterally throughout the network if they make it past the perimeter (Badhwar, 2021).

Instead of focusing on user and device locations relative to the perimeter, inside or outside the private network, the zero-trust model grants users' access to information based on their identities and roles, regardless of whether they are at the office, at home or elsewhere. In zero trust, authorization and authentication happen continuously throughout the network, rather than just once at the perimeter (Badhwar, 2021).

Strengths of the ZTMM

One of the strengths of the ZTMM is that it offers protection of sensitive data and support for compliance auditing. There are many regulations that mandate the protection of personal data and ZTMM helps in the compliance (Jansen & Tokerud, 2022).

Another strength of the ZTMM is that it lowers breach risk and detection time and provides visibility into network traffic and provides better control in cloud environments. It provides analytics in real-time (Ali, Hijjawi, Campbell, Gregory & Li, 2022).

Another strength of the ZTMM is that it includes microsegmentation, which is aa fundamental principle of cybersecurity. Microsegmentation enables IT to wall off network resources in discrete zones, containing potential threats and preventing them from spreading laterally throughout the enterprise. With zero-trust microsegmentation, organizations can apply granular, role-based access policies to secure sensitive systems and data, preventing an access free-for-all and limiting potential damage (Kindervag, 2010).

Weaknesses of ZTMM

One weakness of the ZTMMM is that the piecemeal adoption can leave security gaps. Because implicit trust is so ingrained in the traditional IT

environment, it is virtually impossible to transition to a zero-trust framework overnight. Implementation is almost always piecemeal, which can result in growing pains and security gaps (Mathijssen, Overeem & Jansen, 2020).

Another weakness is that the tool can cause friction with legacy tech. Zero-trust tools may not always play nicely with legacy technology, creating technical headaches and potentially requiring major architectural, hardware and software overhauls (Sullivan, Rivard, Shin & Rosen, 2016).

Another weakness is that since zero trust is not a single product or technology, but instead an overarching strategy encompassing the entire IT environment, there's no simple path to full adoption (Motloung & Quak, 2022).

Another weakness is that it is only as good as its access control. A zero-trust strategy hinges on identity and access control, requiring near-constant administrative updates to user identities, roles, and permissions to be effective (Masinde & Graffi, 2020).

Another weakness is that the tool can hurt productivity. Zero trust's goal is to restrict user access as much as possible without unduly hindering the business. But overzealous policies can block users from resources they need, hampering productivity (Smits & Van Hillegersberg, 2015).

NIST Risk Management Framework (RMF)

Figure 26

The Risk Management Framework is a template and guideline used by companies to identify, eliminate, and minimize risks. It was originally developed by the National Institute of Standards and Technology (Maclean, 2017).

The RMF can be easily adopted by organizations operating in the private sector. Businesses cannot exist without exposing themselves to risks such as IT problems, litigation and loss of capital. While it is impossible to eliminate all risks involved in running a business, they can be minimized (Jackson, Russell & Cowles, 2017).

RMF strengths

The first strength is that the RMF helps in implementing the Risk Management Framework is to identify the risks that the organization faces (Ross, 2010). These might include strategic, legal, operational and privacy risks. The risks that an organization faces tend to change over time, so risk assessments will need to be performed on a periodic basis. This is the identification component (McCarthy & Harnett, 2014).

The second strength is that the RMF helps in the measurement and assessment component and to create a risk profile for each risk that has been identified. This is the measurement component (Ross, R. (2007).

The third strength is that the RMF helps in risk mitigation. Risk mitigation involves examining the risks that have been identified and determining which risks can and should be eliminated, as opposed to the risks that are deemed to be acceptable. Part of this process involves coming up with mitigation strategies, such as cyber insurance. This is the risk mitigation component (Kohnke, ASigler & Shoemaker, 2016).

The fourth strength is that the RMF helps in risk reporting and monitoring. This essentially means regularly re-examining the risks to make sure that the risk mitigation strategies the organization has adopted are having the desired

effect. This is the monitoring component (Barrett, Hendrycks, Newman & Nonnecke, 2022).

The fifth strength is that the RMF helps in risk governance. Risk governance is the process of making sure that the risk mitigation techniques that have been adopted are put into place and that the employees adhere to those policies. An RMF can help an organization to reduce its risks, thereby minimizing legal exposure and helping to maximize profitability. This is the governance component (Hulitt & Vaughn, 2010).

RMF Weaknesses

One weakness is that the RMF advocates for a traditional risk management approach. The various risk functions may work together to manage risks effectively in today's dynamic business environment. Another weakness is that the RMF makes an organization risk averse and units to work in silos. A siloed approach does not manage some types of risks well (Force, 2018).

Another weakness is the silo-based approach of the model. Operating in silos also means there's a lack of understanding of the potential upstream and downstream effects of risk. A cybersecurity breach is not just a security problem because it could also include compliance, financial, operational, legal, and reputational risks. (Ross, 2018).

ISO 20000

The ISO standard specifies requirements for an organization to establish, implement, maintain and continually improve a service management system (SMS). The requirements specified in the standard include the planning, design, transition, delivery, and improvement of services to meet the service requirements and deliver value (Disterer, 2009).

Strengths of ISO 20000

One of the strengths of the standard is that the tool can help a customer seeking services and requiring assurance regarding the quality of those services. The

customer will be assured that the services delivered by the provider meet certain requirements and baselines (Disterer, 2012).

Another strength of the standard is that the tool can guide a customer requiring a consistent approach to the service lifecycle by all its service providers, including those in a supply chain. The standard offers competitive differentiation by demonstrating reliability and high quality of service (Cots & Casadesús, 2015).

Another strength of the standard is that the tool can give access to key markets and business expansion as many organizations and customers in the public sector mandate that their IT service providers demonstrate compliance with ISO 20000 (Cots, Casadesús & Marimon, 2016).

Another strength of the standard is that the tool can enforce a measurable level of effectiveness and a culture of continual improvement by enabling service providers to monitor, measure and review their service management processes and services (Cots & Casadesús, 2013).

Another strength of the standard is that the tool can drive down the costs of conformance to many laws and standards, including the PCI DSS (Payment Card Industry Data Security Standard), the Sarbanes-Oxley Act and the Data Protection Act. The tool helps leverage ITIL practices to optimize resources and processes (Ahmad, Rabbany & Ali, 2019).

Weaknesses of ISO 20000

One of the weaknesses of ISO certification is that it is an expensive and involving project. Some small businesses may lack the means and budget to become ISO certified (Park & Kim, 2012).

Another weakness is that in some companies, ISO certification becomes the goal instead of a means to an effective and efficient organization. The focus should be on achieving business goals through ISO certification (Pardo, Pino & Garcia, 2016).

Another weakness is that management fails to understand the complexity of ISO 20000 standard and cannot implement it successfully. The attainment of

relevant skills and training on the standard is a critical success factor (Aurachman, Utama & Habibie, 2021).

Microsoft Operations Framework (MOF)

Microsoft Operations Framework (MOF) is a model that guides IT professionals through the processes of creating, implementing, and managing efficient and cost-effective services (Pultorak, 2005). MOF is an alternative framework to the Information Technology Infrastructure Library (ITIL). Like ITIL, MOF includes guidelines for the entire lifecycle of an IT service, from concept to retirement or replacement (Pultorak & Henry, 2008).

Strengths of MOF

One of the strengths of the framework is that the plan phase ensures alignment with business and IT objectives, policy compliance, financial management and reliability (Henry, Leenards & Pultorak, 2008).

Another strength of the framework is that the deliver phase enables envisioning, planning, building, stabilizing, and deploying the service (Simmons, 2008).

Another strength of the framework is that the deliver The operate phase keeps operations, service monitoring and control service, customer service and problem management in line with service level agreement (SLA) goals (Meyler, Fuller & Amaris, 2006).

Another strength of the framework is that the manage layer helps IT professionals manage governance, risk, and compliance (GRC); change and configuration; and team service (Scannell, 2003).

Another strength of the framework is that the alignment with ITIL allows IT managers to avoid retraining staff members on the essentials of MOF if they are familiar with ITIL (Simmons, 2008).

Weaknesses of MOF

One of the weaknesses of the framework is that the adoption time, buy in from users, and framework longevity seems to be a cause of concern (Shapiro & Spence, 1997).

Another weakness of the framework is that there are no updates from Microsoft on this framework. This was just another duplication of ITIL (Pultorak, 2002).

Federated IT Service Management (FITSM)

FitSM is a lightweight standard aimed at supporting the implementation of IT service management (ITSM). The development of FitSM (Federated IT Service Management) is based on the same time-tested principles that are in other service management frameworks and standards, such as ITIL and ISO 20000 (Radecki, Szymocha, Szepieniec, & Różańska, 2014).

Strengths of FITSM

One of the strengths that sets it apart from other frameworks is that FitSM aims to focus on the essentials and provide a clear, pragmatic, lightweight and achievable standard that allows for effective IT service management (ITSM) (Mora, Marx-Gomez, Wang & Diaz, 2021).

In addition to requirements for a service management system (SMS), FitSM includes guidance that organizations can adapt to their specific needs, as well as implementation advice and a maturity assessment scheme (Feversani, De Castro, Marcos, Piattini & Martín-Peña, 2022).

FitSM is free to use. The FitSM standard and related material is published by the FitSM working group and licensed under a Creative Commons International License. This makes FITSM widely accessible like open-source software and is affordable to small and medium enterprises (Jean-Laurent, 2015).

FitSM is based on the same key ideas that underpin ITIL. The FitSM terminology is closely aligned with the ITIL. The FitSM is a more reduced and lightweight set of processes that can be considered a valid first step

towards implementing the full set of processes recommended by other frameworks such as ITIL (Hilmer, 2019).

FitSM was designed to be compatible with ISO 20000 and is based on the same key ideas and principles. As a lightweight standard, FitSM is more compact and puts an emphasis on keeping things simple (Mishev, Filiposka, Prnjat & Liabotis, 2018).

For organizations looking to get certified against ISO 20000, FitSM is a good starting point, as it defines minimum requirements for a sound platform of good service management practices. This approach can be expanded if and as required to meet the full set of ISO 20000 requirements (Chunpir & Ismailzadeh, 2019).

FitSM provides documents with requirements and supporting guidance and YaSM provides a ready-to-use process model in popular formats (EGI & Papadopoulou, 2018). Both FitSM and YaSM aim to provide clear and pragmatic advice and have their roots in the traditional service management frameworks such as ITIL, there is a good match between FitSM and YaSM (Barbot, et al., 2021).

The FitSM process model includes a complete set of templates for service management processes and documents. With these templates, organizations that need to design their service management processes save time and effort, as they adapt existing content and do not have to start from nothing (Demeester, Van Daele, Wauters & Hrasnica, 2022).

Weaknesses of FITSM

One of the weaknesses of FitSM is that it is not published by an established standardization organization such as ISO. This means it lacks the capability to scale beyond its original locale and communities (Sipos, La Rocca, Scardaci & Solagna, 2019).

VeriSM

VeriSM is a service management approach from the organizational level, looking at the end-to-end view rather than focusing on a single department.

The acronym VeriSM stands for Value-driven, Evolving, Responsive, Integrated, Service Management (Cooper, 2018).

Strengths of VeriSM

One of the strengths is that VeriSM recognizes that service management is no longer just for IT, since the delivery of services to customers tends to involve many parts of the organization, such as finance, marketing, manufacturing, sales, legal, and logistics (Brissaud, Sakao, Riel & Erkoyuncu, 2022).

VeriSM discusses the impact of digital transformation on service providers and services. New business models and advanced technologies mean increased competitive challenges for service providers, but also opportunities to gain a competitive edge. Technology is often at the heart of these new business models and permeates every part of the organization, which leads to the recognition that service management may be an organizational capability, not an IT capability (Agutter, 2018).

VeriSM highlights what is necessary for organizations in terms of competencies and teams, touching on topics such as generic competencies, emotional intelligence, ethics, team building and learning paths. VeriSM helps managers to discuss common service provider challenges, such as relation management, communication, and organizational change management (Agutter, van Hove, Steinberg & England, 2017).

VeriSM, governance is a system by which organizations are directed and controlled. Organizations are advised to establish a governance framework that includes, among others, principles, policies, processes, plans and metrics. VeriSM principles are typically drawn up for several areas such as security, risk, quality, etc., and then communicated to all staff who are involved in the development and operation of products and services. Once the organizational principles are set, policies, processes, plans and metrics should be defined to translate the principles into detailed guidance (Mora, Marx-Gomez, Wang & Diaz, 2021).

According to VeriSM, governance is a system by which organizations are directed and controlled. Verism helps organizations to establish a governance

framework that includes, among others, principles, policies, processes, plans and metrics (Kopcha, Neumann, Ottenbreit-Leftwich & Pitman, 2020).

VeriSM principles are typically drawn up for several areas such as security, risk, quality, and then communicated to all staff who are involved in the development and operation of products and services. VeriSM ensures that once the organizational principles are set, policies, processes, plans and metrics should be defined to translate the principles into detailed guidance (Grönroos, 1997).

VeriSM starts with the consumer, who provides the requirements for the services to be delivered. Consumers are at the end of the VeriSM model, where they receive services and provide feedback. VeriSM describes the relationship with the customer as a critical aspect and provides some recommendations for the gathering of service requirements (Kerzner & Saladis, 2011).

VeriSM introduces the management mesh by providing the flexibility to manage and use various frameworks, standards, methodologies, management principles, and philosophies. The management mesh can be adapted as necessary for a particular product or service; it includes the resources, environment, tools, processes, technologies, and management practices used in the organization. Building the mesh essentially means selecting the right resources, processes, technologies, management practices etc., in line with the requirements of the organization and the services offered (Cravens, Piercy & Baldauf, 2009).

VeriSM defines four high-level stages for services: Define, Produce, Provide and Respond. For each stage, VeriSM describes its purpose, the aspects to be considered, the typical high-level activities as well as the key inputs and outputs. To bring the stage concept to life, organizations are advised to apply their unique management mesh and define tailor-made processes for each stage, as required (Wu, Fan, Yang & He, 2021).

VeriSM presents a selection of progressive management practices and emerging technologies that often have their roots in other areas such as manufacturing and software development and are increasingly applied in the field of service management. VeriSM encourages organizations to explore various practices, and

to adopt whatever methods help them serve their customers better (Feversani, De Castro, Marcos, Piattini & Martín-Peña, 2022).

Weaknesses of VeriSM

One of the weaknesses is that since VeriSM is not an official standard, there are no certifications for businesses and other organizations. Service providers that wish to demonstrate excellence and good governance in service management may choose to get certified against ISO 20000 (Mora, Marx Gomez, Reyes-Delgado & Adelakun, 2022).

Service Integration and Management (SIAM)

SIAM is a management methodology that can be applied in an environment that includes services sourced from several service providers. The acronym SIAM stands for Service Integration and Management (Holland, 2015).

Strengths of SIAM

One of the strengths of SIAM is that it is an adaptation and evolution of ITIL. Many processes in a SIAM ecosystem are familiar processes like incident management and business relationship management, and the SIAM approach should be combined with the ITIL service lifecycle approach. SIAM provides guidance for enhancing and adapting these practices and processes for multi-sourced service delivery models. Philosophies like Lean, Agile and DevOps have been gaining traction, helping organizations to build more efficient SIAM models (Armes, Engelhart, McKenzie & Wiggers, 2015).

At the highest level, SIAM is presented as an ecosystem consisting of three layers: The customer organization, the service integrator, and the service provider(s). The service integrator layer is SIAM's unique concept to ensure appropriate governance across all service providers (Virri, 2017).

The SIAM roadmap is a high-level plan for the implementation of SIAM as part of an organization's operating model. The roadmap consists of four stages: Discovery & strategy, Plan & build, Implement, Run & improve (Virtanen, 2015).

The SIAM roadmap includes activities for running and improving the organization's service model, so it's not the description of a one-time initiative but of an ongoing effort to adopt and maintain the SIAM ecosystem. The SIAM roadmap is like the service lifecycle concept known from other service management practices (Goldberg, Satzger & Kieninger, 2015).

There are various options for setting up the service integrator layer. SIAM describes four common structures. Externally sourced where an external party takes the role of the service integrator. Internally sourced where a service integration capability is provided with the organization's internal resources. Hybrid where the organization collaborates with an external party to provide the service integration capability. Lead supplier where the role of service integrator is taken by an external party that is also an external service provider (Clifford, 2016).

Organizations that wish to adopt the SIAM approach face specific cultural challenges, and SIAM includes guidance for three cultural aspects that should be considered: Cultural change, Collaboration and cooperation, Cross-service provider organization (Auth & Nägele, 2018).

Weaknesses of SIAM

One of the weaknesses of SIAM is that it is not a process, and it does not define a set of processes that organizations should introduce. SIAM acknowledges that processes are a key element of the SIAM models adopted by individual organizations, and advises that organizations use other processes, which are often familiar ones from other service management practices like ITIL and ISO 20000 (Lehtonen, 2017).

Another weakness of SIAM is that it is not an international standard. It is not developed or supported by an international body like the ISO. This means that SIAM cannot scale widely like ISO 20000 or ITIL and can only be applied in local regions and communities (Goldberg & Satzger, 2015

Yet another Service Management Model (YaSM)

The Yet another Service Management Model describes a straightforward set of processes that enables organizations to learn by example and bridge the gap between theory and practice (Kempter & Kempter, 2010).

Strengths of YaSM

One of the strengths of the YaSM service management model is streamlined and has perfectly clear structure that makes it easy to understand the purpose of each process. For each process, YaSM provides a detailed template, describing the activities to be performed, the required inputs and the resulting outputs, as well as the responsibilities (Hilmer, 2019).

The main product in the YaSM product family is the YaSM Process Map. For each process and sub-process, the service management process model defines in the form of a diagram the activities to be performed, the required inputs and the resulting outputs. It also contains a full set of detailed document templates for the documents and records produced by the YaSM processes (Paradice, 2009).

The YaSM Process Map is currently available for two platforms, Microsoft Visio, and ARIS and in BPMN XML format. All diagrams and documents are completely editable, which makes the process model the ideal starting point for developing a set of processes tailored to the needs of specific organizations (Reiter & Miklosik, 2020).

The YaSM and ISO 20000 Bridge relates the YaSM processes to the ISO 20000 requirements and specifically addresses the needs of organizations that wish to achieve certification against ISO 20000. It is the perfect companion as organizations get ready for the ISO 20000 audit. YASM provides a streamlined process model that is easier to understand, has a perfectly clear and pragmatic structure, and is supported by a full set of ready-to-use templates. YASM is a model that can be used for business service management and enterprise service management (Miklošík, 2020).

Weaknesses of YaSM

One of the weaknesses of YaSM is that it is not an international standard. It is not developed or supported by an international body like ISO. This means

that SIAM cannot scale widely like ISO 20000 or ITIL and can only be applied in local regions and communities (GBR, 2016).

Universal Service Management Body of Knowledge (USMBOK)

USMBOK includes a set of generally accepted terms, methods, concepts, and best practices for service management. USMBOK introduces outside-in or customer centric thinking to the traditional ITSM thinking while sharing many of its underlying principles with other service management frameworks and standards such as ITIL and ISO/IEC 20000 (Clayton, 2008a).

Strengths of USMBOK

One of the strengths of the USMBOK is that it includes a description of the service lifecycle, representing significant service stages from identification of an opportunity to provide service retirement. For each lifecycle stage, it describes several elements Primary inputs, Primary outputs, Major influences from the customer perspective, Major influences from the service provider perspective and Major activities performed during the stage (Walsh & O'Brien, 2017).

The USMBOK knowledge domain areas relate to several processes including Service Customer management, Service Fulfillment Management, Service Quality Management, Service Delivery Management, Service Operations Management, Service Infrastructure Management, and Service Value Management (Delener, 2012).

The USMBOK organizes, distils, and provides a ready reference to a core body of knowledge for service management universally applicable to any service provider organization. The Guide provides a singular, coherent, and consistent approach to the development of a service management system, and a description of the vital roles required to successfully establish and staff a service organization (Sansbury, Brewster, Lawes & Griffiths, 2016).

The USMBOK codifies and connects the numerous elements of a service management system and service organization into an operational service model and enables the leveraging and exploitation of many disparate information sources, standards, and industry frameworks (Fielt, Bohmann, Korthaus, Conger & Gable, 2013).

Weaknesses of USMBOK

One of the weaknesses of USMBOK is that it is not an international standard like ISO 20000. ISO 20000 is the only internationally accepted standard for ITSM. This means USMBOK cannot scale internationally (Ordóñez de Pablos, 2013).

2.20.1 Research Gaps

Kenya is only starting to realize the benefits of IT and digital transformation. Kenya and Africa have been lagging the rest on the world in digital transformation and Internet penetration. The topic on alignment resonates well in Europe, the United States, Asia, and other developed nations. However, this is the opportune time for Kenya and Africa to rise and embark in efforts to attain IT strategic alignment and roll out digital transformation initiatives to remain competitive.

There is also the need to go beyond alignment in the research. There is need for enterprises to move beyond alignment to system thinking (Jensen-Waud & J. Gøtze,, 2012). Some IT leaders lack the business communication skills (Jensen-Waud & J. Gøtze, 2013). Managers do not understand or are not well trained to merge the business and IT. Aligning an immature IT department to the right business goals will not get the organization effective and successful. This is called the alignment trap (Shpilberg et al., 2007). The time lapses between business and IT budgeting processes lead to failed alignment efforts. The pace of change is high. Due to the delays, once an IT plan is enacted, the technology is already obsolete (Chan & Reich, 2007).

The IT strategic alignment maturity literature has not taken the disruptive innovation and third platform technologies into consideration. The third platform technologies can enable business that are not already aligned to leapfrog the aligned ones. Internet of Things (IoT) technology will support the sensor generated big data processing for smart cities (Farhan, Kharel, Kaiwartya, Hammoudeh, & Adebisi, 2018). According to the World Economic Forum future information technology (IT) skills that will be needed are AI. Analytics, big data and cybersecurity. The current skills even for aligned organizations may not be adequate. There are delays in addressing cyber risk for cloud, internet of things (IoT) and mobility (Evans, 2016).

There is evidence that technostress activates a stress response, which often has long-term health implications even in aligned organizations (Atanasoff & Venable, 2017). There is the need to ensure environmentally friendly computing that is not catered for in aligned organizations (Emmanuel, Sanjay, Rytis, Robertas, & Luis, 2017).

The SAMM leaves out the criteria on customer experience which is critical for success of organizations. The SAMM lacks the focus on the business performance which is an outcome that all alignment efforts should work towards (Fonstad, 2006).

L'Écuyer and Raymond (2020) noted there was a gap in the literature failing to consider the HR function of industrial SMEs through the strategic alignment of e-HRM.

Jorfi, Jorfi, Yaccob and Shah (2011) noted that previous researchers failed to study the relationships among strategic management, strategic behaviors, emotional intelligence, IT-business strategic alignment, motivation, and communication effectiveness.

Avison, Jones, Powell, and Wilson (2004) observed that previous researchers had not applied and validated the strategic alignment model.

Yayla and Hu (2012) observed that previous researchers had not studied the impact of IT-business strategic alignment on firm performance in a developing country setting using the moderating roles of environmental uncertainty and strategic orientation.

Table 3: Research Gaps

Authors	Strategic Alignment Literature inclination	Research Gaps
Henderson and Venkatraman (1999).	The allocation of IT budgets for optimal business support. Leveraging information technology for transforming organizations.	The lack of focus on business outcomes including customer experience and business performance.
Broadbent and Weill (1997).	How business and IT managers can create IT infrastructures. Strategic congruence.	The lack of focus on business outcomes including customer experience and business performance.
Reich and Benbasat (2000).	Factors that influence the social dimension of alignment between business and information	The lack of focus on business outcomes including customer experience and business

	technology objectives.	performance.
Chan, Sabherwal, and Thatcher (2006).	Antecedents and outcomes of strategic IS alignment: an empirical investigation.	The lack of focus on business outcomes including customer experience and business performance.
Maes (1999).	A generic framework for information management. A continuous process to contribute to the organization's objectives.	The lack of focus on business outcomes including customer experience and business performance. The lack of insights into the impact of disruptive innovation and technologies.
Duffy (2004).	Moving upward together: Creating strategic alignment to sustain systemic school improvement	The lack of insights into the impact of disruptive innovation and technologies. The lack of focus on business performance.
Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010).	IT Governance: An alignment maturity perspective. Five levels of maturity. Six criteria of maturity namely Skills, Value, Architecture, Partnership, Governance and Communication.	The lack of insights into the impact of disruptive innovation and technologies. The lack of focus on business performance.
Senn (2003).	The Influence of Wireless Networks on Information Technology Strategy.	The lack of insights into the impact of disruptive innovation and technologies. The lack of

	Building shareholder value.	focus on business performance.

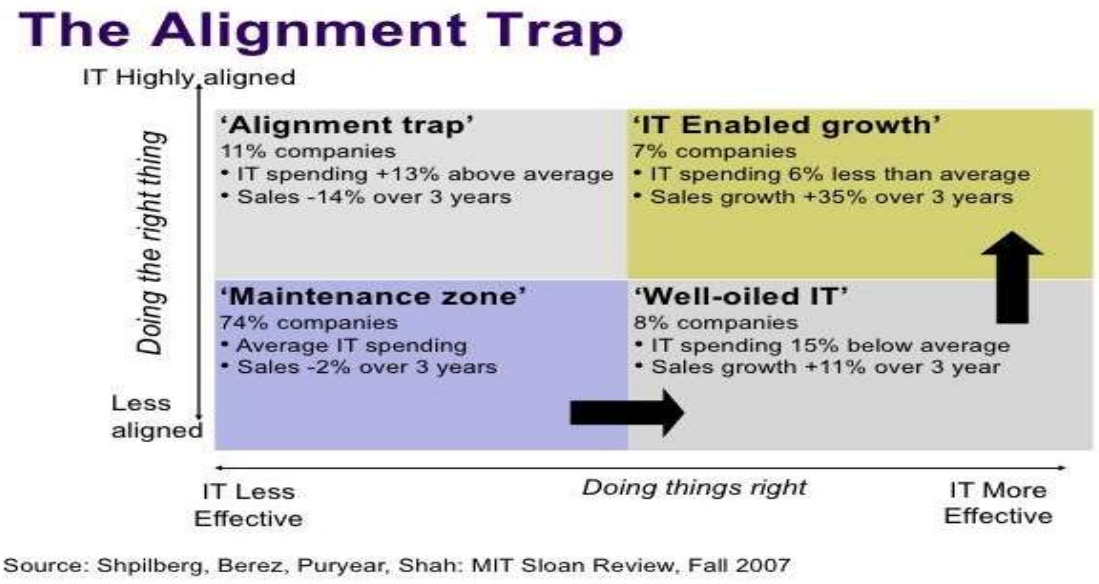

Figure 27: Alignment Trap

Source: (Shpilberg et al., 2007)

2.20.2 Critique of Alignment

Due to the rate of the changes, the strategy is not always clear. The goal posts keep shifting. Alignment is not possible at that rate (Chan & Reich, 2007). The business strategy is hazy and blurred. The IT management needs an existing strategy. Fluidity, versatility, and agility are new normal in terms of businesses environment and managers are adaptable and flexible (Chen, 2010).

Alignment is not always beneficial. Managers need to pursue fusion and systems thinking and not just alignment. Managers need convergence of the whole ecosystem and not just the synchronization of two parties comprised of the IT and business departments (Shpilberg et al., 2007).

The constant and innovative growth of technology makes it hard to align IT with the strategic business objectives. The rate of change of the disruptive and innovation technologies is faster than the rate of change of the organizational processes. This causes a gap in the business processes and functions. It is like drawing a line in the

sand. Managers can focus on a few technologies that derive the maximum business value (Belalcàzar, Diaz, & Molinari, 2016). The CEO–CIO partnership and collaboration are critical for alignment (Benlian & Haffke, 2016).

There are some companies in which IT was aligned but not effective. Their spend on IT investments was higher than other non-aligned and more effective companies. These enterprises were in the "alignment trap" (Bain, 2018).

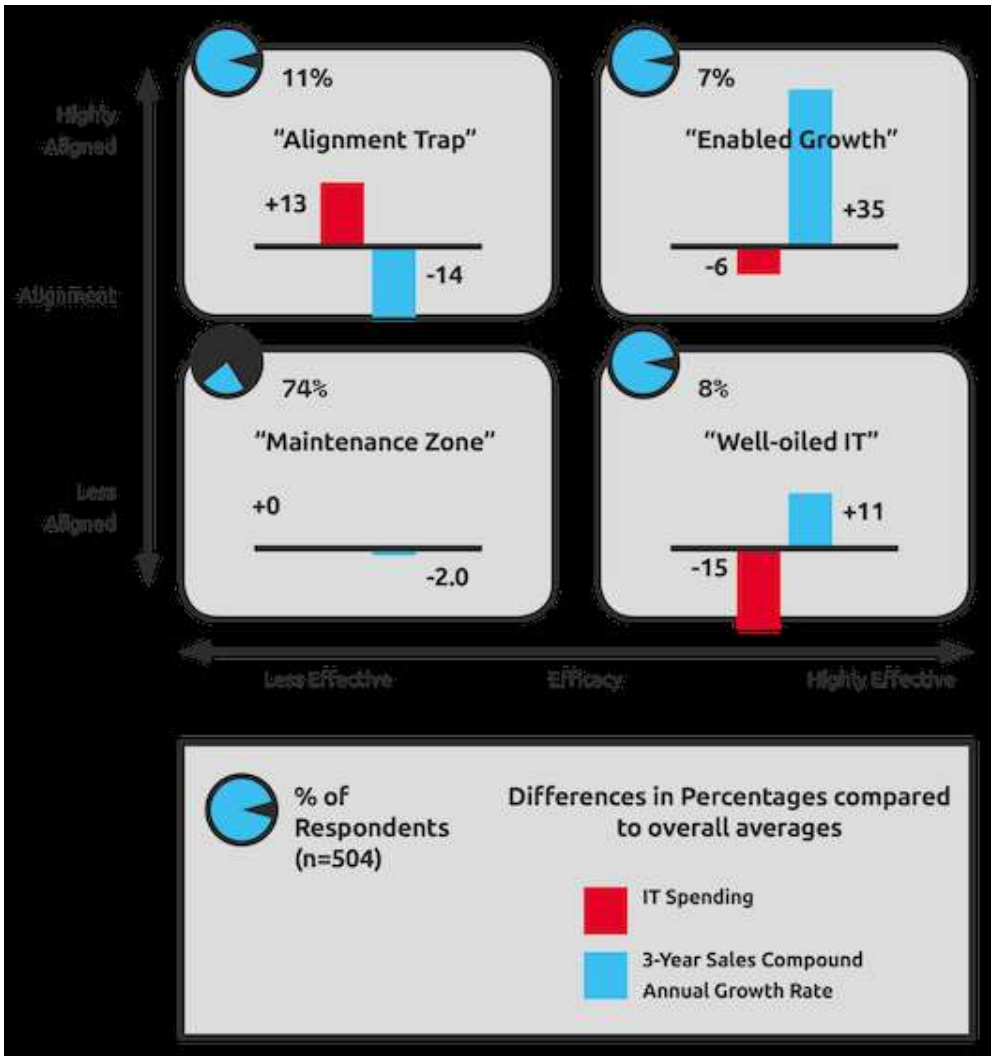

Figure 28: Alignment Trap

Source: (Bain & Company, 2019).

2.21.1 Dependent Variables

The dependent variable represents the organizational performance ratio. The organizational performance measures from the balanced scorecard assess financial or non-financial performance. The financial performance used for this study is the Return on Assets. The study found out that organizational performance depends on the maturity level of the IT strategic alignment. The variable is the Return on Assets (ROA).

2.21.2 Independent variables

The independent variables measure the levels of maturity. These variables are six namely, Communication, Value, IT Governance, Partnership, Architecture and Skills maturity levels.

How competency/value measurement maturity, governance maturity, partnership maturity, communications maturity, scope/architecture maturity, partnership maturity and skills maturity were identified as contributors of business performance

The classic process of construct validity involves defining the construct, developing a measure, collecting data, and evaluating the measure's relationships with other measures and external criteria. The researchers consider other forms of validity, such as content validity, criterion validity, and concurrent validity, to establish the construct validity of a measure. After reviewing the literature, the relationship between various aspects of organizational maturity and business performance was confirmed. Some of the aspects of maturity that have been identified as potential predictors of business performance include competency/value measurement maturity, governance maturity, partnership maturity, communications maturity, scope & architecture maturity, and skills maturity (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

These aspects of maturity are part of the Strategic Alignment Maturity Model (SAMM) Criteria, which is a model that helps organizations assess their alignment between business and IT strategies (Adaba, Rusu & El-Mekawy, 2010). The SAMM is the theoretical framework for this study. Specifically, the six business-IT alignment criteria of the SAM model include communications maturity, governance maturity, partnership maturity, scope and architecture maturity, skills maturity, and competency/value measurements maturity. The literature suggests that they are important for achieving alignment between business and IT strategies (Henderson & Venkatraman, 1999).

Competency/value measurement maturity involves measuring the contribution of IT to the achievement of business goals. Governance maturity, which is the extent to which the power to make decisions on IT is defined and shared among management, is focused on helping organizations reduce risk and improve compliance effectiveness by implementing a framework for compliance and risk management. Partnership maturity is about developing partnerships with various stakeholders, while communications maturity involves using clear and effective communication channels. Scope and architecture maturity, on the other hand, focuses on standardizing and simplifying IT systems, and skills maturity involves minimizing the changes that come with the deployment of new IT systems (Broadbent & Weill, 1997).

These maturity measures were identified as contributors of business performance. By improving competency/value measurement maturity, governance maturity, partnership maturity, communications maturity, scope & architecture maturity, and skills maturity, organizations can enhance their IT systems and align them with business goals to achieve better business performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Importance of communication maturity between IT and Business

Effective communication is essential for improving the relationship between IT and business, as well as any other groups or individuals. there is a relationship between communication maturity and business performance. Effective communication can lead to a substantive and enduring impact on an organization's workforce, and mature communication practices can lead to optimized performance management processes and better business performance. Organizational communication can affect workers' performance, which directly affects an organization's output and performance (Henderson & Venkatraman, 1999).

Importance of IT value maturity from IT investments

Driving value from IT investments is crucial for businesses to realize the objectives and goals of their investment decisions. The IT value maturity can drive value from IT investments to optimize their potential impact on business functions and enhance the business's overall performance. The appropriate IT investments brings value can help improve a firm's business performance and that the positive effect of the interaction between IT and RD investments on firm performance increases with the extent of environmental turbulence in the firm's industry (Broadbent & Weill, 1997).

Importance of IT governance maturity in organizations

Effective IT governance is crucial for organizations to optimize risk and manage resources to support the organization's mission, goals, and objectives. IT governance is a formal framework that ensures IT investments align with business needs. IT governance plays a crucial role in ensuring that IT investments are aligned with business objectives, contributing to improved business performance. By establishing accountability, measuring performance, and identifying underlying issues, IT governance can help organizations achieve their business goals and drive value through their IT investments (Reich & Benbasat, 2000).

Importance of partnership maturity between IT and the business

Effective partnership between IT and the business is crucial for success in organizations. Partnership involves increased collaboration and communication between the IT department and business partners. The success of IT partnerships requires a clear foundation for the business relationship and a focus on accountability and success metrics. The other important KPIs include measures of cost savings, productivity gains, customer satisfaction, and service levels (Chan, Sabherwal, & Thatcher, 2006).

Importance of IT architecture maturity (EA)

Enterprise architecture is a formal, comprehensive approach to aligning an organization's IT infrastructure and operations with its business objectives, strategies, and goals. Effective enterprise architecture can bring several benefits, including improved productivity, agility, timeliness of products and services, revenue growth, and cost reduction. The relationship between IT architecture and business performance is significant. Properly designed and implemented IT architecture, integrated with a well-designed business architecture, can help improve organizational performance and contribute to increased competitiveness, innovation, and overall success (Maes, 1999).

Importance of relevant IT skills maturity

Having relevant IT skills is essential for a successful career as the demand for technology professionals continues to grow. The most important IT skills for success include areas such as cloud computing, cybersecurity, AI, data analytics, and software development. An increase in employee skills and proficiency and the use of a maturity model and maturity assessments can lead to better business performance. As an organization progresses through the levels of organizational maturity, it can also enhance its overall maturity and ultimately improve its business performance (Duffy, 2004).

2.21.3 Moderating variables

The moderating variable is the organization reporting structure. The organizational reporting structure is critical for ensuring that employees stay organized, work productively, and coordinate to achieve the overall mission of the business. The structure provides clarity to employees regarding who they should approach for help, key decisions, and to whom they should report. A good organizational reporting structure is essential for organizations to execute their mission, goals, and business strategy. The structure can lead to increased employee engagement, clearer levels of responsibility and authority, employee specialization, and camaraderie amongst employees at the same level.

2.21.4 Conceptual Framework

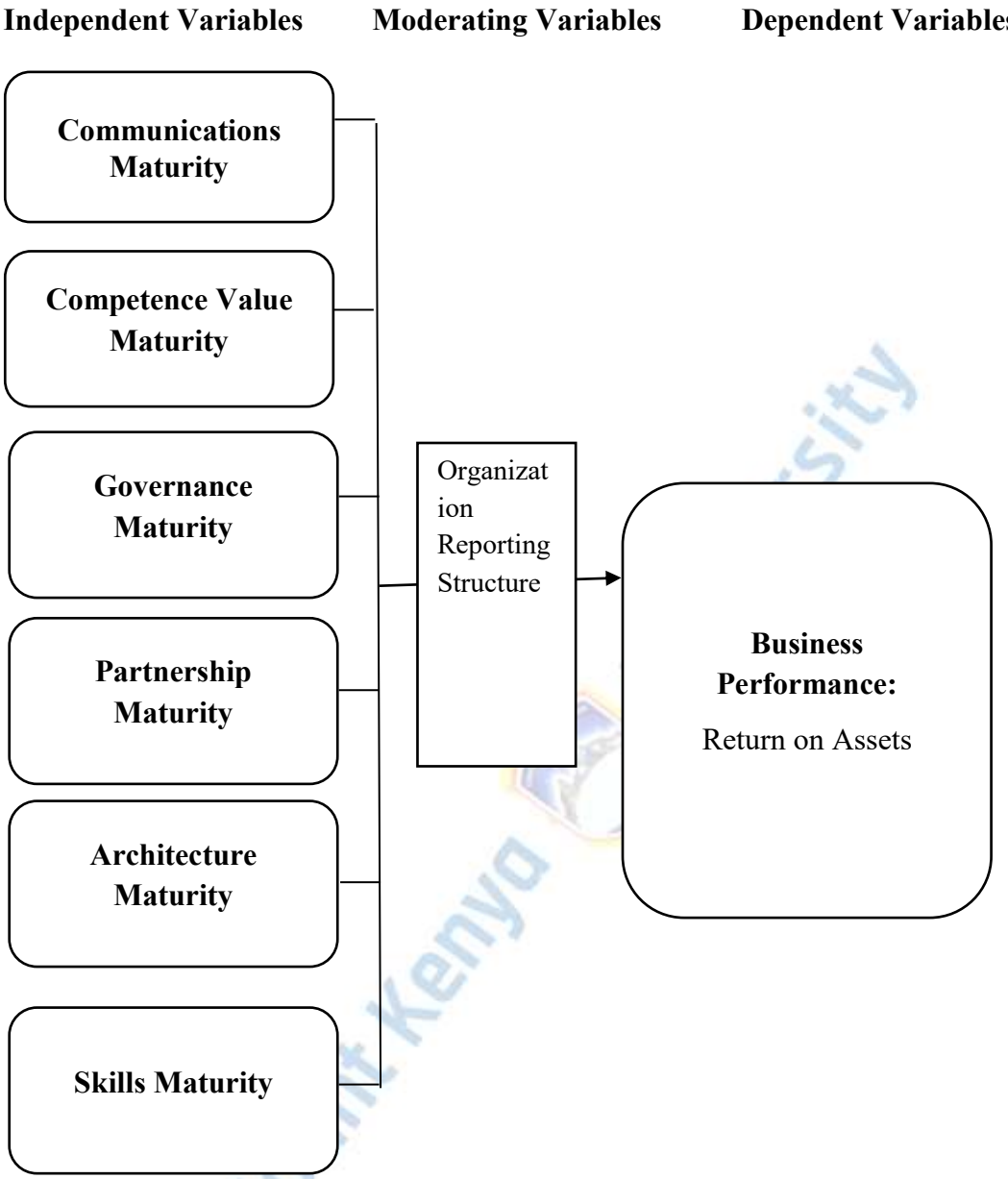

Figure 29: Conceptual Framework

Source: (Study, 2022).

The conceptual framework shows the relationship between the independent and dependent variables. The moderating variables are also highlighted. The dependent variable is the Return on Assets. The independent variables are the value, skills, architecture or scope, communications, governance, and partnerships maturity.

2.22 Summary

The Strategic Alignment Maturity Model (SAMM) proposes six criteria that can be used to measure alignment maturity. These six criteria are communication, competency, governance, partnership, scope, and value. By evaluating an organization's performance against these six criteria, SAMM can help measure the IT strategic alignment maturity. SAMM provides sample attributes for each of the six criteria that are relevant to the measurement. SAMM's six criteria can help organizations plan and implement practices to ensure their strategies support their objectives, and in turn, achieve long-term company goals. By using SAMM, organizations can evaluate their level of strategic alignment maturity and identify areas for improvement, which can lead to improved business performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Each of these six criteria plays a significant role in influencing organizational performance performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Communication: Communication is a key factor in any organization, and it plays a crucial role in aligning IT and business objectives. Effective communication between the IT and business teams ensures that both parties understand the organization's goals and objectives, which in turn leads to better performance performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Competency/skills: Competency refers to the skills and knowledge of the employees working in an organization. A high level of competency in both IT and business teams helps to ensure that the organization can achieve its objectives effectively and efficiently performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Governance: Governance refers to the processes, policies, and procedures that an organization uses to manage its operations. Effective governance helps to ensure that IT and business objectives are aligned and that the organization can achieve its goals and objectives performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Partnership: Partnership refers to the relationship between the IT and business teams. A strong partnership between these two teams helps to ensure that they are working together effectively and efficiently, which can lead to better performance performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Scope/value: Scope refers to the breadth of an organization's IT and business operations. A clear understanding of the scope of the organization's operations helps to ensure that IT and business objectives are aligned and that the organization can achieve its goals and objectives performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Architecture: Architecture refers to the organization's IT infrastructure and how it supports the organization's goals and objectives. A well-designed and well-maintained IT architecture can help to ensure that the organization is able to achieve its goals and objectives effectively and efficiently performance (Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010).

Overall, the six criteria proposed by SAMM are interconnected and are essential for organizations to achieve alignment maturity between IT and business. Achieving a high level of alignment maturity can help to improve organizational performance by ensuring that IT and business objectives are aligned and that the organization is able to achieve its goals and objectives effectively and efficiently (Chan, Sabherwal, & Thatcher, 2006).

IT governance frameworks are essential for organizations to implement, manage, and report on IT governance. COBIT is the most popular framework. The Information Technology Infrastructure Library (ITIL) is another framework that emphasizes IT service management and provides a structured approach to IT service management that focuses on aligning IT services with business needs (Duffy, 2004).. Frameworks are also used to define and prioritize tasks required to manage enterprise security and prepare for compliance and other IT audits. The frameworks include the Payment Card Industry Data Security Standard (PCI DSS), International Organization for Standardization (ISO) 27001 and 27002 standards. The NIST Cybersecurity Framework helps organizations identify, assess, and manage cybersecurity risks. The NIST CSF provides a common language for cybersecurity and can help align cybersecurity efforts with business objectives (Maes, 1999).

COBIT is designed to help align business objectives with IT goals, processes, and practices. ITIL emphasizes a robust service management culture. These frameworks and models complementary to strategic alignment maturity models as they provide a structured approach to aligning IT services with business needs. IT governance

frameworks like COBIT and ITIL are complementary to strategic alignment maturity models and help organizations achieve their business objectives.

The basic strategic planning models can be useful for establishing an organization's vision, mission, business objectives, and values. A model can help outline the specific steps needed to reach goals, monitor progress, and address issues as they arise (Senn, 2003).

The relationship between the organizational reporting structure and business performance can be complex and multi-faceted. While the reporting structure itself may not necessarily determine business performance, it can play a role in shaping the company's culture, communication flow, decision-making processes, and overall efficiency. Different organizational reporting structures are available, such as flat, product, line-and-staff, and network organization structures, among others. Each reporting structure can have its own advantages and disadvantages, and organizations should choose a structure that complements their growth stage and cycle. Companies can carefully evaluate and design their reporting structures to ensure that they align with the company's goals, culture, and operations, which in turn can impact business performance (Reich & Benbasat, 2000).

A direct reporting line to the CEO can be the optimal reporting structure for strategic technology leaders like CIOs, which may indicate a potential positive relationship between the IT reporting structure and business performance. Implementing a cyber security dashboard can help fortify businesses from potential breaches or attacks, which could positively impact business performance (Broadbent & Weill, 1997).

Customer experience is the perception customers have of their interactions with a business. It is hugely important for any business as it directly impacts its performance. Delivering a great customer experience can increase customer loyalty and reduce the friction of customer complaints and returns. This can result in more repeat business and positive reviews for the company. Businesses that prioritize delivering great customer experiences tend to have better performance and stronger customer loyalty. An effective IT organization can augment and enable a great customer experience (Henderson & Venkatraman, 1999).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Researchers chose the method that can address the research question. Each research has its characteristics and distinctiveness (Yin, 2002). The research method can be qualitative, quantitative, or mixed. Quantitative method researchers can employ the correlation experimental, non-experimental, and quasi experiment designs. In this case, the research method incorporated the qualitative and quantitative methods. The study employed the quantitative correlation design. Quantitative method uses descriptive and inferential statistics to describe the population and project the sample results to the population (Orcher, 2016).

3.2 Research Design

Mugenda (2008) observed that research design can be defined as the process in which an investigator goes through from the initialization to the completion of a research study. This study employed the quantitative correlational design. Correlational research is a method of investigating the relationship between two or more variables. It involves observing these variables without controlling or manipulating them. The aim of correlational research is to identify variables that have some sort of relationship and to understand the extent to which a change in one variable creates a change in the other. Correlational research is used to establish a statistical relationship between two variables and the strength of this relationship is measured by correlation coefficient, which varies between -1 and 1. A positive correlation coefficient indicates that two variables increase or decrease together, while a negative correlation coefficient indicates that as one variable increases, the other decreases. Some advantages of a

correlational research study are that neither variable goes through a manipulative process, which is a distinctive feature of this method. The correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength and/or direction of the relationship between two (or more) variables, it can be either positive or negative. However, there are also some limitations to this research design. The inability to draw causal inferences from correlational research, as it is not possible to determine if one variable cause another, only that they are related. The correlation does not imply causation. Just because two variables are correlated does not mean that one causes the other. The choice of design is informed by the research questions. It is good practice to integrate two methods within a single study (Creswell, 1994). Selecting the method is paramount in the planning and conducting of the study (Saunders, Lewis & Thornhill, 2009).

3.3 Research Steps

The study employed the mixed method for the research.

- Analyse qualitative data first
- Then quantitative data
- Consider CBK banks Tiers.
- Employed multistage sampling
- The 9 Tier banks are the in the sample
- The CIOs as the participants
- Utilize the Correlation Design (Multiple Regression)

The design can be quantitative correlation or qualitative case study. In this case the study applied both the quantitative correlation and the qualitative case study design. The case study design allows a study to concentrate on single subject and come up with themes and codes. Yin (2002) observed that researchers who employ the case study

design complete the study in short time compared to the other qualitative designs. The case study design allows one to focus on one company or industry (Kothari, 2004).

3.4 Target Population

The population refers to the whole list of people or organizations involved in a research study. The population comprised the 39 banks in Kenya as per the Central Bank of Kenya supervision report during the study.

3.5 Sampling Technique and Sample Size

According to the Central Bank of Kenya supervision report of 2020, the 39 banks are categorized into 3 clusters. The clusters are Large, Medium, and Small. The Large cluster has 9 banks. The Medium cluster has 9 banks. The Small cluster has 21 banks. The researcher used the cluster sampling method. This is a method where the population is divided into clusters and a sample of clusters is selected. Then all members of the selected clusters or cluster are included in the sample. The cluster sample banks were the nine banks in the Large cluster or Tier one. The Large cluster banks make up approximately 70 % of the Kenyan banking industry market size. This means the results are representative of all the banks in Kenya. The Large cluster banks include ABSA Group, Equity, Kenya Commercial Bank, Co-operative Bank, Standard Chartered, CFC Stanbic, DTB, NCBA, and I&M.

3.6 Data collection methods

The researcher used primary and secondary data. The researcher has more control of the primary data than the secondary data obtained from public sources. Semi-structured questionnaires were administered to the respondents for data collection. The primary sources of data were gathered via questionnaires and interviews with respondents. The

BITA maturity level was determined using a validated questionnaire instrument based on the SAMM framework. Information from secondary sources was gathered from investment analysts and the central bank reports.

3.6.1 Quantitative Method

The quantitative method traces the association of independent variable on the dependent variable numerically (Bryman, 2015). The study used the quantitative questionnaire (Mugenda, 2008).

3.6.2 Qualitative Method

Qualitative method is employed where the data can be represented in terms of themes and codes. The data is in narrative form and numbers may not be applicable (Bryman & Bell, 2015). Researchers get data or stories about the subject by exploring feelings, behaviours, and discernments. The study used a survey. The interviewer guided the discussions by using member checking and transcript review. Researchers can start with transcript review and follow up with member checking to reach saturation (Bryman, 2015).

3.7 Data Collection Methods

The researcher used primary and secondary data. The researcher has more control of the primary data than the secondary data obtained from public sources.

3.8 Research Tools

The study utilized various tools namely scales, indexes, survey quetionnaires, interviews, and informal observations (Saunders, 2011).

3.9 Quality Standards for Research Tool

The study conducted the quality assurance of the research instruments. These included pilot study, reliability, and validity tests. These tests ensured that the participants respond to the instruments with clarity and conciseness.

3.9.1. Pilot Study

For the pilot, the study targeted 10% of the target respondents who were not involved in the final research. Cooper, Schindler, and Sun (2003) recommended that a sample of between 10% to 50% is adequate and significant for a pilot test of a research instrument. The pilot test enabled the study to prepare for the final research work. The study selected co-operative bank for the pilot study in 2019.

3.9.1.1 Reliability

Dependability is related to reliability. The study left the transferability of the findings to the reader and future researchers to determine (Sullivan, 2011). The study conducted a reliability analysis to test how reliable the research instrument will be; for this the study utilized the Cronbach Alpha test. Cronbach's Alpha = (Number of items / (Number of items - 1)) * (1 - (Sum of variances of all items / Variance of total score))

The constructs have a different number of items each. The constructs are communication, architecture, skills, partnership, value, and governance. The number of items for each construct is 5, 5, 5, 5, 5, and 5, respectively. The overall score consists of all items from each construct. Cronbach's alpha is a measure of internal consistency for a questionnaire or survey. A score of 0.7 or higher is generally accepted as indicating good internal consistency, while a score below 0.6 is often considered to indicate poor consistency. The Cronbach's Alpha for the given data is 0.803, indicating good internal consistency of the items (Cronbach, 1951).

3.9.1.2 Validity of Research Instruments

Transferability, Credibility and Confirmability are related to Validity. To measure the validity the study utilized both face and content validity (Cooper, Schindler, & Sun, 2003). For content validity the study pursued the judgement of experts in the field. The study undertook face validity that involved going through the research instrument and ensuring that all the questions are in line with the research variables. There is no single, definitive test of construct validity, nor is it typically established in a single study. The SEM method of confirmatory analysis is a valuable tool for evaluating construct validity.

3.10 Data Analysis Tools

For qualitative data, the study used the appropriate methodological triangulation. The key themes were coded with literature and the conceptual framework. For quantitative data, the study used the SPSS v24 tool for running the regression analysis.

3.10 The Data Analysis Process

The study found out how the participants felt about the questionnaire. The study utilized both descriptive and inferential statistics. The study undertook diagnostics tests to ensure accuracy and fitness of the research data. The study obtained the average maturity for each of the six criteria.

The study collected ROA and PAT data for the nine Tier 1 banks from the Central Bank of Kenya (CBK) reports. Data for year 2019 was used. The study used the above data to derive the correlation co-efficient for the maturity and the corresponding financial results.

The study used the following linear regression equation.

Dependent variable (Y) = Constant + Slope multiplied by the independent variable (X) + Error €

Y = Dependent Variable (ROA or PAT)

X is the independent variable:

$\mathbf{X_1}$ is communication criteria

$\mathbf{X_2}$ 1is competency/value criteria

$\mathbf{X_3}$ is governance criteria

$\mathbf{X_4}$ is partnership criteria

$\mathbf{X_5}$ is scope/architecture criteria

$\mathbf{X_6}$ is skills criteria

$\boldsymbol{\alpha}$ = the constant or alpha

$\boldsymbol{\epsilon}$ = error term

The regression results should be as close to +1 to be considered as positive association.

Steps in Linear Regression

1. Affirm the hypothesis.
2. Affirm the null hypothesis
3. Gather the data.
4. Run the regression equation
5. Examine tests of statistically significant and measures of association
6. Relate statistical findings to the hypothesis. Accept or reject the null hypothesis.
7. Reject, accept or revise the original hypothesis. Make suggestions for research design and management aspects of the problem.

3.11 Ethical Considerations

The researcher sought the clearance of the university and NACOSTI. The researcher sought consent and maintained the participants data confidentiality. The study utilized the data for the sole academic purpose. The information collected during the study was not utilized for any other purpose other than for the research on BITA maturity and the relationship to organizational performance. The names of participants remained confidential. The study pursued the participants' informed consent including the

provision of withdrawal during the process. The study only included the participants that have attained the legal age of an adult.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The chapter is presented in line with the study objectives. The analyzed research data was presented in three main sections, the summary of the descriptive results, hypotheses testing using t-tests and summary regression analysis to establish how Business-Information Technology Strategic Alignment Maturity relates to Organizational performance.

Pilot Study Findings

Co-operative bank was selected for the pilot study as it is representative of the IT department structure as compared to the other Tier one banks.

There are three primary types of IT organizations based on basic attributes of how IT serves the business.

Utility Provider - primary purpose is to provide common infrastructure and information management services.

Process Optimizer – has two primary purposes; provide common infrastructure and information management, as well as help optimize business processes and enable business-unit-specific objectives.

Revenue Enabler – has three primary purposes; common information management services, business process optimization, as well as enable customer-facing products and services.

Co-operative Bank profile

The Co-operative bank of Kenya has a process optimizer archetype.

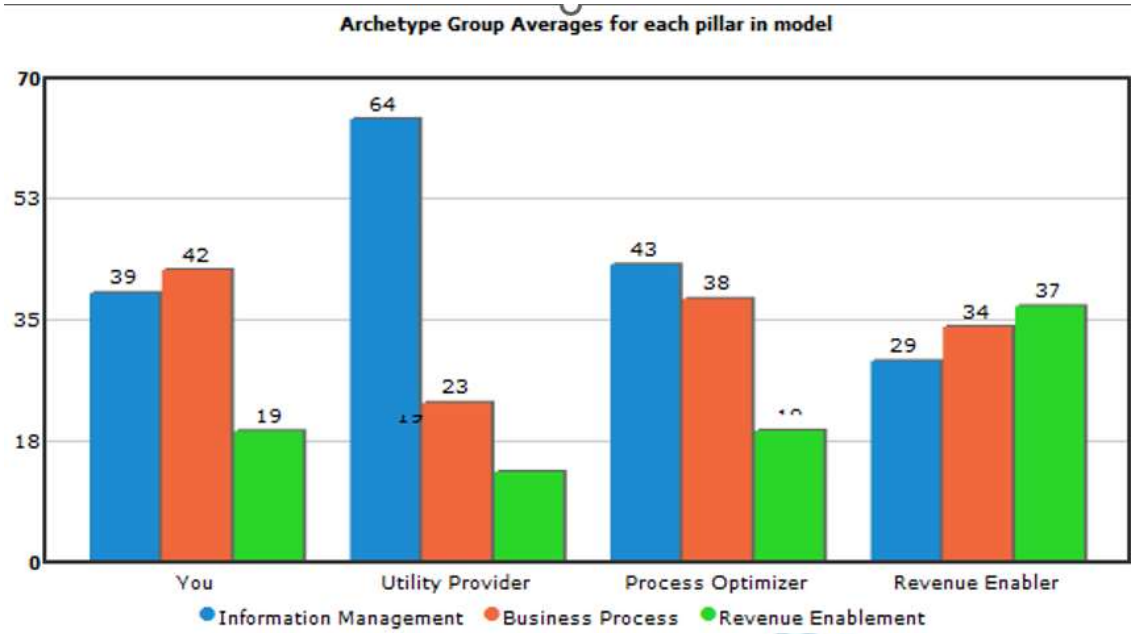

Figure 30. Pilot Study for Co-operative bank

The Process Optimizer archetype group has the following attributes:

- Primary purpose—The primary purpose of IT is to provide a common infrastructure and information management, as well as enable business-unit-specific objectives.

- CIO—The CIO most likely reports to the COO or a business unit executive, and primary roles of the CIO are operations manager and business manager. IT executives collaborate with business unit executives to help set business goals.

- Competitive position—The IT organization improves the company's competitive position by using IT to achieve cost reduction and efficiency gains, and by optimizing business functions.

- Funding source—Budgets are funded primarily by business unit and secondarily by enterprise planning.

- Investment justification—A Process Optimizer justifies IT investments primarily by cost reduction potential, and secondarily by business unit requirements and revenue gains from existing products.
- IT success—A Process Optimizer measures IT success primarily by business unit executive satisfaction and secondarily by meeting operating performance SLAs.

Alignment challenges for Process Optimizers include:

- It is balancing standardization and centralization (that is, the Utility Provider focus) with meeting unique business requirements.
- Establishing IT-to-business touch points at the manager and executive levels, building IT awareness of key business success factors, and getting IT to think and speak in business terms instead of technical terms.
- Key performance drivers predict improved alignment (from greatest to least impact):
- Actively identifies opportunities to use emerging technology to meet objectives.
- Develops and enforces enterprise infrastructure standards.
- Justifies IT investments primarily by business process optimization that enables competitive advantage.
- Understands business needs, and this understanding is pervasive at the IT executive and manager levels.

The process optimizer level is equivalent to level 3 of the Strategic Alignment Maturity Model (SAMM). The characteristic of level3 of the SAMM shows that the IT organization is able to communicate its policies and procedures to the business terms

just like in the process optimizer archetype. The research showed that Coop bank was at level 3 of the maturity model.

Main Study Findings

Overall SAM Scores

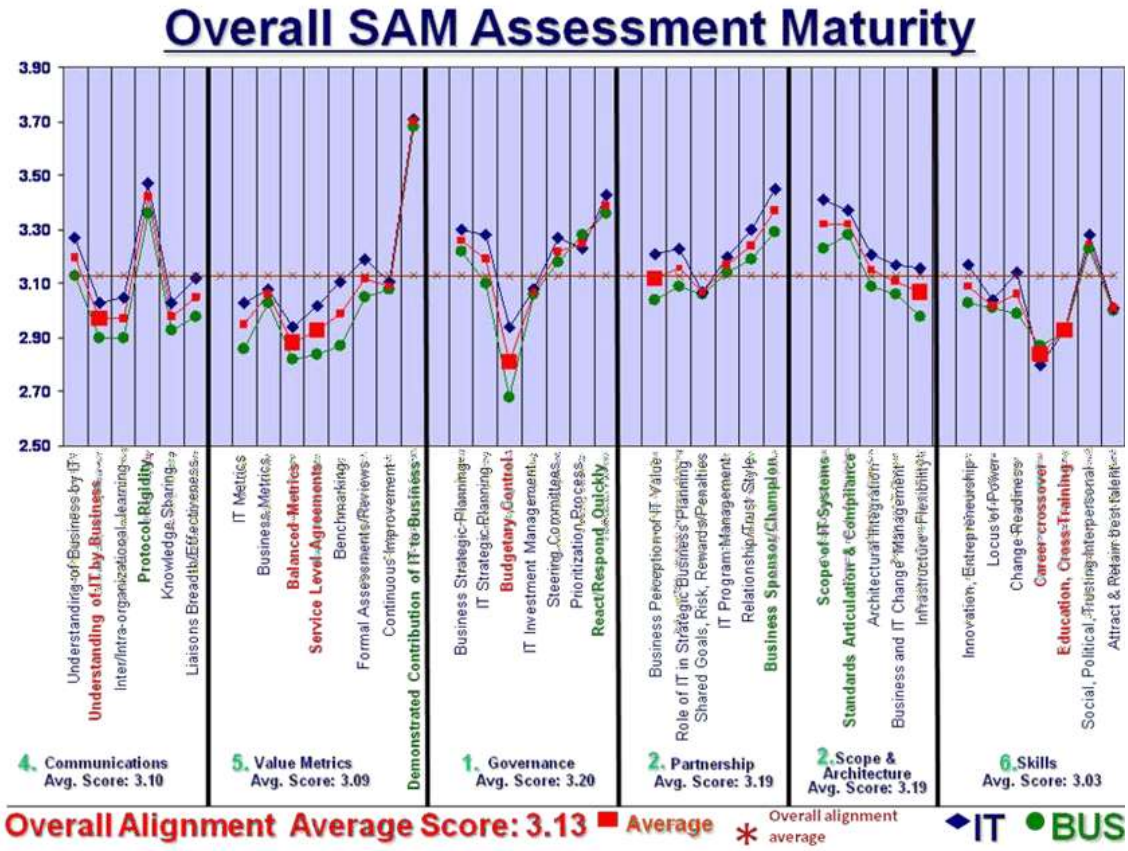

Figure 31. Overall SAM scores

The Central Bank of Kenya (CBK) reported that Kenya has 39 commercial banks. There are other deposit taking microfinance institutions (DFI), and Savings and Credit Co-operatives (Sacco). The limits of this research will be on fully fledged commercial banks. The study considered; Equity Bank, KCB Bank, ABSA Bank, Co-Op Bank, I&M Bank, Standard Chartered, CFC Stanbic, DTB Bank and NCBA Bank. Tier 1 banks control almost 70% of the Kenyan banking sector market share as of 2020.

KCB attained a profit after tax of 25.2bn which was a 4.9% increase from the year 2017 with balance sheets assets expanding to 898.6bn which translated to a 25.8% increase. The bank attained return on equity of 20.7% in 2019 as compared to a ROA of 3.1%.

Equity bank recorded an improved profit after tax to 22.6bn which translated to a 13.8% increase from the year 2018. Further, the bank achieved a growth in the operating income by 12.6% to 75.8bn in the year 2019. The bank attained an average return on assets of 3.6% in the year 2019. The banks balance sheet expanded to 636.7bn in the year 2019.

Co-operative bank attained an expansion of the total assets to 457bn which was a 10.5% improvement from the year 2018. The bank also recorded a profit after tax growth of 12.4% to record a 14.3bn PAT. The bank recorded a ROA of 3.3% which was an improvement from 3.2% recorded in the year ending 2018. The customer deposits within the bank stood at 332.8bn within the year 2019.

NCBA bank recorded a profit after tax of 9.8bn which was an improvement on 8.9bn attained in the year 2018. The institution also recorded an increase in total assets to 494.8bn which was a 9.1% increase from preceding year. In the year ending 2019 the bank had a ROA of 1.7% and ROE of 11.8%.

Standard Chartered Bank of Kenya had an asset base of 302.1 billion in 2019 with profit after tax increasing to 8.2billion in the same period. The bank held customer deposits of 228.4 billion in the year 2019 and achieved a ROA of 2.8%.

Diamond Trust Bank (DTB) had a growth in profit after tax of 2.7% to 7.3 billion with total operating expenses declining by 8/7% to 13.2billion in the year 2019. The bank

had a total asset increase of 2.3% from 377.7bn to 386.2bn. The bank attained a ROA of 1.9% in the year 2019 as compared to a ROE of 13.9%.

Absa Bank Kenya recorded a profit after tax of 9.0bn in the year 2019 with operating income rising by 6.5% to 33.8 billion. The total assets with the bank increased by 15.1% to Kshs 374.0 bn, from Kshs 324.8 bn in FY'2018. The bank also recorded operating expenses rose by 2.1% to Kshs 21.5 bn from Kshs 21.1 bn, with ROA of 2.1% within the year 2019 from 2.7% in 2018.

CFC Stanbic Bank recorded an improvement in the profit after tax by 1.6% to 6.4 billion owing to decrease in the effective tax rate to 17.2%. The bank recorded an expansion in their assets holding to 303.6bn from 290.6 billion recorded in the year 2018. In terms of financial performance, the bank recorded a ROA of 2.1% in 2019 and ROE of 13.6%.

I&M holdings had a profit after tax of 10.8bn which was an improvement from 8.5bn in the year 2018. The bank also achieved a decline in the banks operating expenses by 17.8% to Kshs 10.1 bn from Kshs 12.3 bn in FY'2018. The assets for the firm grew by 9.3% to Kshs 315.4 bn, from Kshs 288.5 bn in FY'2018. Within the year 2019, the bank recorded a ROA of 3.4% in 2019 as compared to 3% in the year 2018 (Cytonn, 2020).

4.2 Summary of Descriptive Analysis

The study applied descriptive analysis in evaluating how strategic alignment maturity impacts Tier 1 banks' financial results in Kenya. The study considered; Equity bank, KCB bank, ABSA bank, Co-Op bank, I&M bank, Standard Chartered, CFC Stanbic, DTB bank and NCBA Bank. The research applied descriptive tests such as mean, sum, mode, standard deviation, skewness, and kurtosis in the examination.

Table 4: Summary of Descriptive Results

	Communication criteria	Value of IT/Competency criteria	Governance criteria	Partnership criteria	Scope/architecture criteria	Skills criteria	Total Assets	ROA
N Valid	9	9	9	9	9	9	9	9
Mean	3.1000	3.0911	3.2000	3.1922	3.1922	3.0311	11.6989	2.7000
Mode	3.00	3.00	3.00	3.00	3.00	3.00	11.48[a]	2.10[a]
Std. Deviation	.00000	.33333	.44096	.44096	.44096	.33333	.17822	.74162
Std. Error of Skewness	.717	.717	.717	.717	.717	.717	.717	.717
Std. Error of Kurtosis	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400
Minimum	3.00	3.00	3.00	3.00	3.00	3.00	11.48	1.70
Maximum	3.00	4.00	4.00	4.00	4.00	4.00	11.95	3.70
Sum	27.00	28.00	29.00	29.00	29.00	28.00	105.29	24.30
Skewness		3.000	1.620	1.620	1.620	3.000	.328	-.151
Kurtosis		9.000	.735	.735	.735	9.000	-1.124	-1.933

a. Multiple modes exist. The smallest value is shown

Source: Research Data

The findings suggested that the average level of communication criteria maturity among the commercial banks was 3.10, which indicated a modest level of organizational compatibility across all of the commercial banks. Additionally, the findings demonstrated an average value for the IT/competency criterion (3.09), governance criteria (3.20), and partnership criteria (3.19). This was an indicator that most of the main commercial banks had maturity levels that were successful to a modest degree across all three criteria. In addition, the research discovered that the scope/architecture criterion and the skills criteria each had an average mean score of 3.19 and 3.03 respectively, which indicated a match that was reasonable among the commercial banks. According to the findings of the analysis of the financial indicators, the log of total assets was 11.699, and the average return on assets (ROA) was 2.7 percent.

In addition to this, the study looked at the skewness and kurtosis of the research observations, which played an important role in determining whether the variables followed a normal distribution. According to Field's (2009) interpretation, the acceptable range for kurtosis should be somewhere between -2 and 2, while the acceptable range for skewness should be somewhere between -2 and 0. According to the findings of the research, there was an excessive amount of kurtosis on the variable competence criterion and the Skills criteria. This was shown by the fact that the kurtosis value was 9.00, and the skewness values were 3.00, both of which showed normal distribution excesses.

4.3 Inferential Analysis

The inferential statistics were adopted in determining the efficacy of the relationship and significance between the study variables. The research applied t-tests in the examination and the findings are presented in line with the hypotheses of the research.

4.3.1 Hypotheses Testing

Table 5: Research Data

	Co-op bank Roa	Equity roa	KCB roa	Stanbic roa	DTB roa	Stanchart roa	Absa roa	I&M roa	NCBA roa
Skills maturity	(3.0,2.9)	(3.3,3.3)	(3.1,3.0)	(3.0, 2.2)	(2.7 1.9)	(3.1,3.0)	(3.0, 2.4)	(3.3,3.5)	(3.0, 1.9)
communication maturity	(3.1,2.9)	(3.4,3.3)	(3.2,3.0)	(3.1, 2.2)	(2.8 1.9)	(3.2,3.0)	(3.1, 2.4)	(3.4,3.5)	(3.1, 1.9)
architecture maturity	(3.0,2.9)	(3.3,3.3)	(3.1,3.0)	(3.0, 2.2)	(2.7 1.9)	(3.1,3.0)	(3.0, 2.4)	(3.3,3.5)	(3.0, 1.9)
Value maturity	(2.9,2.9)	(3.2,3.3)	(3.0,3.0)	(2.9, 2.2)	(2.6 1.9)	(3.0,3.0)	(2.9, 2.4)	(3.2,3.5)	(2.9, 1.9)
Governance maturity	(3.0,2.9)	(3.3,3.3)	(3.1,3.0)	(3.0, 2.2)	(2.7 1.9)	(3.1,3.0)	(3.0, 2.4)	(3.3,3.5)	(3.0, 1.9)
Partnership maturity	(3.1,2.9)	(3.4,3.3)	(3.2,3.0)	(3.1, 2.2)	(2.8 1.9)	(3.2,3.0)	(3.1, 2.4)	(3.4,3.5)	(3.1, 1.9)

overall maturity	(3.0,2.9)	(3.3,3.3)	(3.1,3.0)	(2.9, 2.2)	(2.7, 1.9)	(3.1,3.0)	(3.0, 2.4)	(3.3,3.5)	(2.9, 1.9)

Research Data. Source: Study

The study adopted correlational analysis to determine the relationship between independent and dependent variables. The results findings are presented in line with the research hypotheses.

Communications Criteria and Return on Assets

The first hypothesis was that there is no relationship between communications maturity criteria and business performance.

Communications maturity and ROA

Using the provided data, we calculated the correlation coefficient between maturity and ROA for the 9 banks by entering the formula "=CORREL(A1:A9,B1:B9)" into an empty cell, assuming that column A contains the maturity values and column B contains the ROA values. The resulting correlation coefficient was approximately 0.693, indicating a positive correlation between communications maturity and ROA.

Alaceva and Rusu (2015) in their study established that poor communication and cooperation within the organization affected commitment levels and was a barrier to achieving alignment in the firm. Hall and Liedtka (2007) in their study noted that IT has been the foundation for improving flow of information and internal business communication which was vital to expanding decision making and meeting market demands within the firm.

Value/Competency Criteria and Return on Assets

The second hypothesis was that there is no relationship between Value maturity criteria and business performance.

Value maturity and ROA

To perform a correlation analysis to derive the relationship between maturity and return on assets (ROA) for 9 banks given the provided data, we used the Pearson correlation coefficient (r). The Pearson correlation coefficient measures the strength and direction of the linear relationship between two variables, with values ranging from -1 to +1. A value of -1 indicates a perfect negative correlation, 0 indicates no correlation, and +1 indicates a perfect positive correlation.

Value maturity and ROA are both quantitative variables. We calculated the correlation coefficient using the formula:

$$r = (n\Sigma XY - \Sigma X\Sigma Y) / \text{sqrt}((n\Sigma X^2 - (\Sigma X)^2)(n\Sigma Y^2 - (\Sigma Y)^2))$$

where n is the sample size, X and Y are the variables of interest, Σ represents the sum of the values, and sqrt is the square root function.

Using the provided data, we calculated the correlation coefficient between maturity and ROA for the 9 banks. After performing the calculations, the correlation coefficient between maturity and ROA is r = 0.589. Since the value of r is positive and greater than 0.5, we concluded that there is a moderate positive linear relationship between value maturity and ROA for the 9 banks. The alternative hypothesis was accepted showing that value competency criteria maturity relates banks' business performance.

Governance Criteria and Return on Assets

The third hypothesis was that there is no relationship between governance maturity criteria and the business performance.

Governance maturity and ROA

Return on assets (ROA) is a measure of a company's profitability and efficiency, indicating the amount of money earned per dollar of assets. Maturity refers to the level of alignment between IT and business strategies regarding the governance of IT.

To calculate the Pearson correlation coefficient, we need to use the formula:

$r = (n\Sigma XY - \Sigma X\Sigma Y) / \text{sqrt}[(n\Sigma X^2 - (\Sigma X)^2)(n\Sigma Y^2 - (\Sigma Y)^2)]$

where

- r is the Pearson correlation coefficient
- n is the number of data points
- X and Y are the two variables (in this case, maturity and ROA)
- ΣXY is the sum of the products of X and Y
- ΣX and ΣY are the sums of X and Y, respectively
- ΣX^2 and ΣY^2 are the sums of the squares of X and Y, respectively.

The results of the calculations show that the Pearson correlation coefficient is 0.925, which indicates a strong positive linear relationship between governance maturity and ROA for the given banks. This suggests that banks with higher IT governance maturity tend to have higher ROAs. There is indeed significant evidence affirming the alternative hypothesis that governance maturity criteria has a relationship with business performance. The results agree with previous literature by Robinson (2005) who

indicated that with effective governance within the firm, businesses can enhance their utilization of IT which can lead to more successful business ventures. Willson and Pollard (2009) in their research also established that organizations with better governance practices were able to achieve better return on assets.

Partnership Criteria and Return on Assets

The fourth hypothesis was that that there is no relationship between partnership maturity criteria and the business performance Kenya's banking industry. To calculate the correlation coefficient between partnership maturity and ROA, we used the formula:

$$r = (n\Sigma xy - \Sigma x\Sigma y) / \sqrt{[(n\Sigma x^2 - (\Sigma x)^2)(n\Sigma y^2 - (\Sigma y)^2)]}$$

where n is the number of observations, Σxy is the sum of the product of x and y values, Σx is the sum of x values, Σy is the sum of y values, Σx^2 is the sum of squared x values, and Σy^2 is the sum of squared y values.

Using the given data, we calculated the correlation coefficient between maturity and ROA for the 9 banks. r = 0.469. This shows a positive relationship between maturity and ROA. The alternative hypothesis was accepted indicating that partnership maturity criteria has a positive relationship with business performance. Bodilly (2005) noted that improving the relationship between the business, clients and suppliers can be integral to driving accountability and service delivery. Bruno-Britz (2008) study also showed that creating good partnerships between the business and IT environment is key to enhancing the competitiveness of commercial banks.

Scope/Architecture Criteria and Return on Assets

The fifth hypothesis was that there is no relationship between the scope/architecture maturity criteria and business performance in Kenya's banking industry. To derive the

relationship between maturity and return on assets (ROA) for the 9 banks, we can perform a correlation analysis using the Pearson correlation coefficient (r). The Pearson correlation coefficient measures the strength and direction of a linear relationship between two variables.

Using the data provided, organized the information into two arrays: one for maturity and one for ROA. We used the CORREL() function in Excel to calculate the correlation coefficient.

The data can be organized into the following arrays:

Architecture maturity: (3.0, 3.3, 3.1, 3.0, 2.7, 3.1, 3.0, 3.3, 3.0)

ROA: (2.9, 3.3, 3.0, 2.2, 1.9, 3.0, 2.4, 3.5, 1.9)

The Pearson correlation coefficient between maturity and ROA for the 9 banks is 0.278, which suggests a weak positive relationship between the two variables. The null hypothesis was rejected showing that architecture maturity criteria has a positive relationship with business performance. Bruno-Britz (2008) in their study also suggested that improving investment in systems-wide architecture within banks will be essential to improving the competitive edge of the banks and expanding leadership in technology.

Skills Criteria and Return on Assets

The sixth hypothesis was that there is no relationship between the skills maturity criteria and the business performance of Kenya's banking industry.

The formula for correlation coefficient, r, is shown below:

$$r = (n\Sigma xy - \Sigma x\Sigma y) / \sqrt{[(n\Sigma x^2 - (\Sigma x)^2) * (n\Sigma y^2 - (\Sigma y)^2)]}$$

where n refers to the number of data pairs, Σ refers to sum, x and y refer to maturity and roa, respectively, and xy refers to the product of the deviation of x and y from their respective means. This formula can be calculated using technology such as Excel or statistical analysis programs like R.

The data provided consists of two variables, maturity, and ROA for 9 banks. We calculated the correlation coefficient, r, for these two variables using the formula mentioned above. The data can be tabulated as follows:

Skills maturity: (3.0, 3.3, 3.1, 3.0, 2.7, 3.1, 3.0, 3.3, 3.0)

ROA: (2.9, 3.3, 3.0, 2.2, 1.9, 3.0, 2.4, 3.5, 1.9)

Using this data, calculated the correlation coefficient, r, between maturity and roa as follows:

r = ((939.94) - (28.826.1)) / √[(949.01 - 28.8^2)(9*7.89 - 26.1^2)] = 0.803

Therefore, the correlation coefficient between maturity and roa is 0.803, indicating a strong positive linear relationship between the two variables. We accepted the alternative hypothesis. Correlation does not imply causation, and other factors may also influence the relationship between maturity and roa. Additionally, correlation measures only the strength and direction of a linear relationship and does not capture nonlinear relationships between variables. Gbangou and Rusu (2016) contended that ability of commercial banks to expand the organization skills of their employees is essential to improving business performance.

Overall maturity and ROA

The seventh hypothesis was that there is no relationship between the overall maturity criteria and the business performance of Kenya's banking industry.

We calculated the Pearson correlation coefficient between the two variables. The CORREL function to calculate the correlation coefficient between the two variables:

=CORREL(A1:A9,B1:B9)

where A1:A9 is the range of maturity values and B1:B9 is the range of ROA values. This formula returns a correlation coefficient of 0.312, which indicates a positive but weak relationship between the overall maturity and ROA.

4.3.2 Regression Summary

The study applied ordinary least square regression to estimate the magnitude of the relationship between the study variables. The main objective was determining the extent of the relationship between maturity level and business performance within Kenya's banking industry.

Table 6: Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.607[a]	.368	.278	.63019	1.712

a. Predictors: (Constant), Strategic Alignment in the bank
b. Dependent Variable: Return on Assets
Source: Research Data

Autocorrelation is the problem that exists if the disturbance terms are not equal to zero, that is cov (ui,uj) = 0. The presence of autocorrelation could lead to incorrect standard errors (Field, 2009). As a rule of thumb, the Durbin-Watson statistics should lie between 1.5 – 2.5; thus, from the above results the D-W score was 1.712 showing that there was no serial correlation issues within the regression model.

The study was able to yield a regression coefficient (R^2 = .368). The results implied that 36.8% of the changes in the business performance of Tier 1 commercial banks

were determined by the strategic alignment aspects. The maturity level was measured as a composite of communication, competency, governance, partnership, scope and skills criteria. This indicated that 63.2% of changes in business performance was determined by factors not considered in the linear regression analysis.

The ANOVA analysis was employed to examine the statistical significance of the relationship between the study variables within Kenya's banking industry.

Table 7: ANOVA Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.620	1	1.620	4.079	.033[b]
	Residual	2.780	7	.397		
	Total	4.400	8			

a. Dependent Variable: Return on Assets
b. Predictors: (Constant), Strategic Alignment in the bank
Source: Research Data

The research yielded ANOVA results (F-calculated = 4.079>F-critical 2.61. Further, the study showed Significance (Sig) value of 0.033 ($p < 0.05$), proof that the model utilized has the statistical ability to significantly predict the outcome variable. Thus, it was concluded that Business–IT alignment maturity level and business performance related affect each other.

Table 8: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-5.782	4.205		-1.375	.212
	Strategic Alignment in the bank	2.727	1.225	.607	2.226	.033

a. Dependent Variable: Return on Assets
Source: Research Data

The 2.727 coefficient and Sig = .033<.05 was obtained indicating that Business–IT alignment maturity level significantly impacts business performance within Kenya's

banking industry. Thus, a change in alignment maturity will lead to a 2.727 change in the business performance of Kenya's Tier I commercial banks. Similarly, Alaceva and Rusu (2015) also reported that Alignment improves overall performance outcomes within organizations.

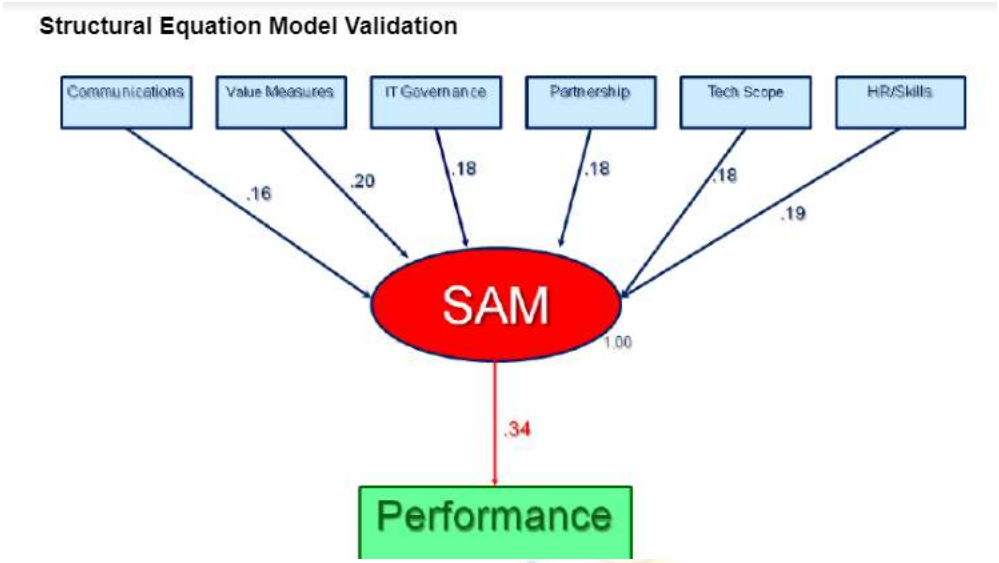

Figure 32. Structural Equation Model Validation

The six SAM components have approximately equal contribution to form the overall SAM score and they are strongly correlated to each other. The regression weight (.34) for the prediction of the relationship of SAM and business performance is significant. This proves the contribution of strategic alignment maturity to the bank's business performance. This relationship supports the contention that all the six criterial are important to achieve alignment.

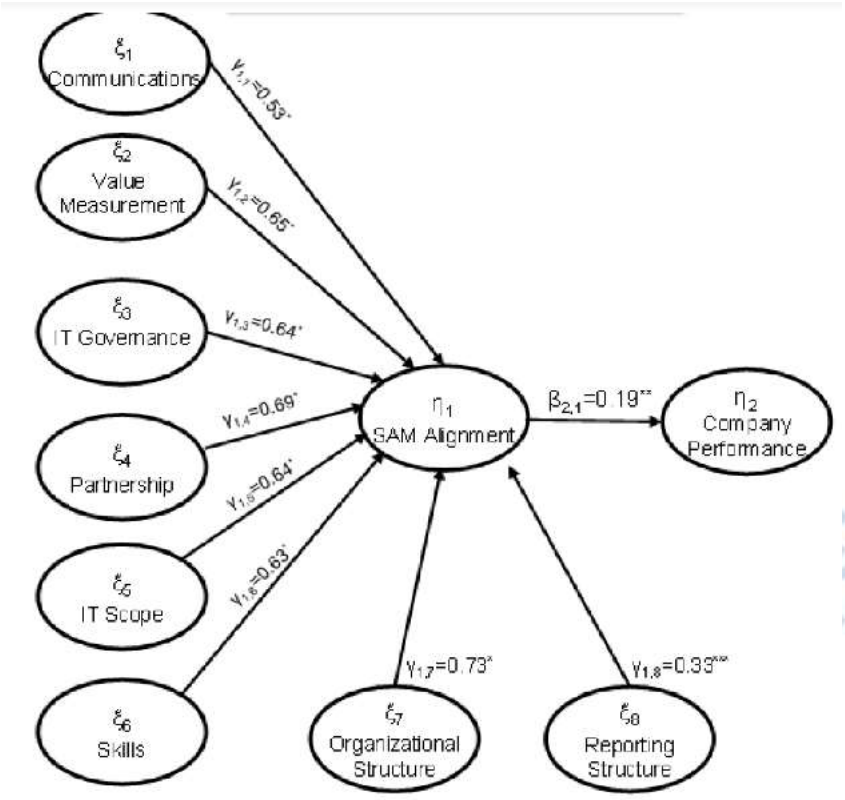

Figure 33. SEM with Organization and Reporting Structure

The study linked high alignment maturity levels with better business performance measures in terms of ROA.

Achieving significantly higher levels of IT-business alignment across a wider range of organisations is a long-term journey. The journey in each organisation begins with a complete assessment of how business views IT, and how IT views business. The journey continues with how business and IT executives work together to close the gaps and improve the performance of the organisation. In pursuing continuous improvement within a dynamic global environment, the journey may never end.

4.4 Customer Experience Framework for Alignment Maturity

4.4.1 Developed Framework

The way technology is changing right now means that businesses need to know about the different digital components that can help them get ahead of the competition (Isal, Pikarti, Hidayanto, & Putra, 2016). A big part of this is that organizations need to be

flexible enough to deal with changes in the environment and adapt to how quickly things change in the digital world. This requires organizations to dedicated staff, the right systems, and processes to guide the change, a good structure and tools, technical skills and abilities, a supportive leadership, and good planning (Higgins, 2005). If a company does not follow these practices, it will fail to achieve its business and IT harmony, which can lead to bad customer experience and, in the end, low profits (Wu, Straub, & Liang, 2015).

Based on the above interpretations, this study designed a framework for the top banks in Kenya to use to make them more profitable. The framework is shown below.

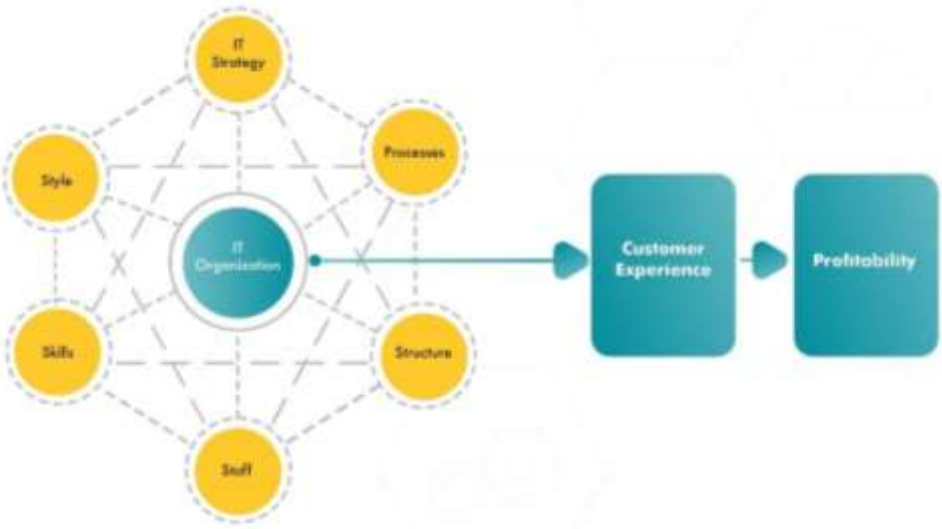

Figure 34: Developed Framework for Alignment Maturity
Source: Researcher

The IT strategy part is about the organization's plans, strategies, and guiding principles for integrating technology into the way the business works. The systems and processes are focused on making sure that the firm has the right infrastructure to use the technologies that are available. To help organizations put their strategies into action, they need to put a lot of money into digital transformation. Structure is about making things official, giving roles and responsibilities, deciding who has authority, and setting

up chains of command within the company. The staff component looks at the team's talent, technical skills, and other skills that are needed to put IT strategies into place in the company. The style part is about how good the leadership is and how well they know how to run the business and get people to work together within the business (Gerow, Grover, Thatcher, & Roth, 2014; Higgins, 2005).

4.4.2 Framework Validation Results

The proposed framework was validated by Chief Information Officers drawn from the 9 largest Kenyan commercial banks. The aim of the validation was to establish if the selected components while controlling for customer experience can lead to better profitability within the commercial banks in Kenya.

4.4.3 Descriptive Results

The various components proposed in the framework were tested among the participants using a 5-point Likert scale examining their fit within their organization. The results are presented in summary (means and standard deviation). The frequency results of the validation are presented in Appendix IV of this report.

Table 9: Validation Results

	N Statistic	Sum Statistic	Mean Statistic	Std. Deviation Statistic
IT Strategy	9	29.00	3.2222	.44096
Style/Leadership	9	28.00	3.1111	.33333
Process/Systems	9	29.00	3.2222	.44096
Structure	9	30.00	3.3333	.50000
Staff	9	28.00	3.1111	.33333
Skills	9	29.00	3.2222	.44096
Customer experience	9	30.00	3.3333	.50000
Natural Log Profit	9	211.03	23.4478	.52640
Valid N (listwise)	9			

Source: Research Data

The above results indicated the commercial banks were moderately effective in developing their IT strategies as indicated by the mean = 3.22 with a deviation of .441 denoting minimal variation in the responses. The findings also pointed out to moderate fit of the organization structure as indicated by mean = 3.333 and deviation = 5.00 which implied moderate variation in responses. The study also established there was organization was moderately effective in building and retaining adequate skills as shown by mean = 3.222. The analysis also pointed to moderate fit of the organization leadership and staff as shown by a mean value of 3.111 with minimal deviation in the test scores as predicted by the deviation of .333. The results finally showed that customer experience within the commercial banks was moderately effective as indicated by the mean 3.333. From the results its' evident that all the banks which adopted the framework can utilize the framework as means of enhancing their profitability.

4.4.4 Partial Correlation Analysis

The study further analyzed the interaction between the framework components in predicting the profitability of the commercial banks while controlling for the moderating variable customer experience. Zero-order partial correlation analysis was

adopted as the more suitable approach to establishing the interaction between the variables.

Table 10: Zero-Order Correlation Results

Control Variables			Profitability
-none-[a]	Profitability	Correlation	1.000
		Significance (1-tailed)	.
		df	0
	Alignment	Correlation	.861
		Significance (1-tailed)	.001
		df	7
	Customer Experience	Correlation	.739
		Significance (1-tailed)	.011
		df	7
Customer Experience	Profitability	Correlation	1.000
		Significance (1-tailed)	.
		df	0
	Alignment	Correlation	.691
		Significance (1-tailed)	.029
		df	6

a. Cells contain zero-order (Pearson) correlations.
Source: Research Data

The findings indicate that information system organization (IT strategy, skill, style, staff, structure, system) all significantly improve commercial bank's profitability (P= .861, Sig = .001<.05). The results also show that customer experience significantly improve commercial banks' profitability (P= .739, Sig = .011<.05) testing at 95% confidence level.

The zero-order correlations showed that controlling for the customer experience, Alignment is strongly associated with a bank's profitability in Kenya (P= .691, Sig = .029<.05).

4.4.5 Sustainability and Profitability

Digital maturity within financial institutions has been associated with a wide range of benefits that are non-financial in nature. Some of these benefits include improved

product quality and customer satisfaction. These have been associated with business growth and improved financial performance. Other benefits such as impact on environmental conservation and improving workforce diversity and inclusion are some of the emerging social responsibility benefits stakeholders expect from companies in the modern business environment.

To realize these benefits, banks do more than implement new technologies into their operations. Successful digital transformation is the result of a coordinated effort to integrate technology- related assets and capabilities as pivots for in organizational operations. It is paramount that these pivots correspond with the proposed framework that include Process, IT strategy, Structure, Style, Skills, Staff, the IT organization, and Customer experience. Banks with high levels of digital maturity are often industry leaders in terms of revenue generation/profit margins and growth in terms of market share.

4.4.6 Previous Research on SAM and Business Performance

Previous SAM investigations include the banking industry (Dorociak, 2007), small industry (Rigoni, 2006), pharmaceutical industry (Nash, 2005), government (Sledgianowski, 2004), international chemical manufacturers (Sledgianowski & Luftman, 2005) and IT services (Kempaiah, 2008).

Nash (2005), employing the results of 145 business and IT executives from 9 pharmaceutical companies, demonstrated a positive correlation between strategic alignment maturity and higher levels of firm-level sales, higher levels of firm-level productivity and profitability (Total Factor Productivity, Net Profit Margin, Return on Equity, and Enterprise Value/Sales). Nash's study provided empirical evidence for the use of the strategic alignment maturity model as an appropriate tool for assessing the maturity of IT-business alignment in the pharmaceutical industry.

Dorociak (2007), employing the results from 27 banking industry companies, found that the alignment between banking industry's IT and business strategies positively affected business performance. The banking industry displayed a significant positive correlation between performance and alignment supporting his conclusion that performance and maturity generally increases together.

Sledgianowski and Luftman (2005) study of a large chemical manufacturing company demonstrated that identifying and implementing the best practices of IT and business alignment, organizational efficiency was increased by streamlining and simplifying business processes worldwide. By determining the maturity of the organization's practices, strategic choices, and alignment relationship, they were able to determine specific opportunities for improvement. SAM provided management with a tool to assess their maturity and then to improve it by implementing specific best practices.

Kempaiah (2008) study employing the results of 90 executives from 14 Indian IT service companies demonstrated a positive correlation between strategic alignment maturity and organizational performance measurements such as ROI, ROA, and NPM. This research was extended to include 5 U.S. service banks and the correlation of SAM to firm performance was again demonstrated (.826).

Regardless of culture, geographic location, or industry, higher firm performance has repeatedly been demonstrated to accompany higher alignment maturity. This is further validated by the strong correlation (.55) between SAM and Return on Assets (ROA) and Return on Investment (ROI) performance for the 138 organizations in the SAM repository where this data was available.

Each of the studies substantiated that higher SAM maturity corresponded to increased organizational performance. That increased organizational performance raises the businesses' bottom line. To IT and business executives this means that the firm should be actively pursuing activities with the goal of increasing alignment. The cost benefit of SAM alignment seems highly favorable. The results of our Structural Equation Modeling further demonstrate the contribution of SAM.

Kefi and Kalika (2005) SEM alignment research consists of a model adapted from Henderson and Venkatraman (1993) strategic alignment model and supports conclusions that organizational performance benefits from IT alignment in the presence of four conditions. Those conditions include IT strategy receiving top management support, the business perceiving that IT increases competitive advantage, the presence of a cooperative relationships between the business and its strategic partners that use IT tools and linkages and having IT supporting intra and inter firm processes. Chan et al's (2006) SEM investigation supplements Chan's (1992) alignment model. Both models are derived from the Strategic Alignment Model. Chan et al's SEM model determined

relationships between shared domain knowledge, planning sophistication, prior IT success, organizational size, and environmental uncertainty. Chan et al determined that the company's business sector should be considered while linking antecedents (like size) to alignment, and consequently alignment to performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The researcher presents the summary of findings, conclusions, and recommendations in this chapter.

5.2 Summary of the Findings

Strategic alignment refers to the degree to which an organization's people and resources are focused on achieving common strategic goals. Organizations that are well-aligned can generate better results, while those that are not aligned may struggle with decision-making and conflicts. Business-IT alignment refers to the application of IT in a way that is appropriate and timely, and in harmony with business strategies, goals, and needs. This has been a concern for business and IT executives since the 1970s and it involves how IT is aligned with the business. Strategic alignment maturity refers to the degree to which an organization's people and resources are focused on the strategy. The opposite of alignment is misalignment, which can lead to poor performance. Evidence for the degree of strategic thinking can be found in the organization's strategic planning documents. Strategic alignment is essential for organizations to achieve common strategic goals and generate better results. Business-IT alignment is crucial for organizations to apply IT in a way that is appropriate and timely, and in harmony with business strategies, goals, and needs. Strategic alignment maturity is an important factor in determining the degree to which an organization's people and resources are focused on the strategy and can be used as a measure of an organization's performance. Organizations should regularly review and assess their level of strategic alignment and adjust as necessary to ensure alignment with strategic goals. Organizations should

establish a clear process for aligning IT with business strategies, goals, and needs to ensure effective use of IT resources. Organizations should regularly assess their strategic alignment maturity and use this information to make adjustments and improvements to their strategy and performance.

The Communication criteria had a maturity level of 3.10. The communication maturity criteria assess the organization's ability to effectively communicate and collaborate across IT and business functions. Examples of communication maturity include the use of common language, effective communication channels, and regular communication between IT and business teams.

The Governance criteria had a maturity level of 3.2. IT governance helps organizations align their IT activities with their overall business objectives. It enables organizations to track risks, meet legal and regulatory obligations, and assure stakeholders that IT services are being managed effectively.

The Scope/Architecture criteria had a maturity level of 3.19. IT architecture can provide benefits such as better alignment of IT systems with business processes and needs, improved efficiency and adaptability, and cost reduction and complexity reduction.

The Value/Competency criteria had a maturity level of 3.09. Competency/Value criteria is used to evaluate the organization's ability to measure the value and competency of IT investments in relation to the organization's overall business objectives.

The Partnership criteria had a maturity level of 3.19. Partnership maturity assesses the level of collaboration and cooperation between IT and business units in the organization. Partnership maturity can be evaluated in each level by assessing the

collaboration and cooperation that exist between IT and business units in the organization. At level 1, Initial/Ad Hoc Process, there may be little or no partnership maturity, while at level 5, Integrated Process, there may be a high level of partnership maturity as IT and business strategies are fully integrated.

The Skills criteria had a maturity level of 3.03. The Skills Maturity criteria would evaluate the alignment of skills and competencies of the IT and business teams, and how well those skills and competencies support the organization's overall strategy and goals.

The overall maturity level was 3.13. The maturity level is typically measured on a scale of 1 to 5, with level 1 being the lowest maturity level and level 5 being the highest maturity level. The five possible alignment maturity levels are defined as follows:

Level 1: Initial or Ad Hoc Process: Business and ICT are not aligned or harmonized.

Level 2: Committed Process: The organization has committed to becoming aligned.

Level 3: Managed Process: The organization has implemented formal IT governance processes and is managing IT-business alignment.

Level 4: Measured Process: The organization is measuring the performance of IT-business alignment and using the results to improve alignment.

Level 5: Optimized Process: The organization has fully optimized IT-business alignment and is achieving strategic goals.

The maturity level of an organization is determined by the management practices and strategic IT decisions within an organization. The model denotes the organizations IT-business alignment maturity, with Level 1 indicating the lowest maturity and Level 5

indicating exemplar maturity. Business-IT alignment refers to applying Information Technology (IT) in an appropriate and timely way, in harmony with business strategies, goals, and needs.

5.3 Conclusions and Discussion

There is a positive relationship between the strategic alignment maturity and the business performance in the Kenyan banking industry. The results indicated that 36.8% of changes in the business performance can be attributed to the maturity level in the communication, competency, governance, partnership, scope and skills criteria. Adaba, Rusu, and El-Mekawy (2010) also observed the same finding.

The relationship between strategic alignment maturity and return on investment is a well-established one, with the research showing that there is a strong correlation between the two. Strategic alignment maturity, also known as the Strategic Alignment Maturity (SAM) model, refers to the degree to which an organization's people and resources are focused on its strategy. The SAM model includes six dimensions: communications, competency/value measurement, governance, performance measurement, planning, and budgeting. The research found that organizations with a higher level of strategic alignment maturity are more likely to generate better results, as their people and teams are working towards achieving common strategic goals. Henderson and Venkatraman (1999) also confirmed the same in their study.

In terms of return on investment, organizations with a higher level of strategic alignment maturity are also more likely to achieve a higher return on investment. This is because they can make more effective decisions, prioritize their efforts, and avoid conflicts. Broadbent and Weill (1997) also confirmed the same in their study.

Organizations that have a higher level of strategic alignment maturity are more likely to achieve better business performance and a higher return on investment. Duffy (2004) observed the same. Organizations should continuously monitor, review, and update their strategic alignment maturity levels in today's environment of disruption and constant change. Reich and Benbasat (2000) also confirmed the same in their study.

According to the SAM model involves five conceptual levels of strategic alignment maturity: Initial/Ad Hoc Process, Committed Process, Managed Process, Integrated Process, and Optimized Process. Each level represents a different degree of alignment between business and IT, with the highest level, Optimized Process, representing the most mature level of alignment. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) confirmed the same in their study.

The research shows that organizations with a high level of strategic alignment often perform better than those with a low level of alignment. Eighty percent of the differences in organizational performance can be explained by the level of strategic alignment. Strategic alignment allows organizations to leverage value, which could result in a higher ROA. Strategic alignment maturity can have a significant impact on organizational performance, and thus may be reflected in ROA. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) confirmed the same in their study.

Strategic alignment is essential for success in high performance organizations and can lead to outstanding results in terms of profitability. Senn (2003) concluded the same. When the four elements of strategic alignment (business purpose, goals, actions, and employee education) are in sync, it increases the likelihood for outstanding performance and profitability. Strategic alignment is a wise business strategy that helps improve an organizations efficiency, effectiveness, and profitability. Reich and Benbasat (2000) confirmed the same findings in their study.

The relationship between strategic alignment and profitability is complex and may depend on various factors such as the industry, the size of the organization, and the level of environmental uncertainty. The study results are based on the banking industry and may not apply to all organizations. Chan, Sabherwal, and Thatcher (2006) concluded the same in their study.

This is study provided the statistical substantiation of the relationship between SAM and business performance (covariance of .55). This showed a statistical significance, giving empirical support to a previously established theoretical background. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) concluded the same in their study.

Valid SAM assessments may be conducted using a reduced question sets. The benefits of question reduction should prove beneficial to scholars and practitioners. Among those benefits are faster analyses, less prone to error, and easier explanation of variable interactions. Of value was the SEM path determination that depicts mutual support for SAM components. That support is significant because it explains the reason that the SAM provides such a reliable performance determinant. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) concluded the same in their study.

Practitioners may, with increased assurance, decide the most opportune correction points for SAM determined weaknesses. This enhances the application of SAM as a prescriptive tool. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) concluded the same in their study.

To scholars this study adds more evidence concerning SAMs impact on business performance. To IT and business practitioners and consultants this SAM validation delivers empirical evidence for using the SAM model as an instrument to better

leverage IT. Luftman, Ben-Zvi, Dwivedi, and Rigoni (2010) concluded the same in their study.

The relationship between strategic alignment maturity and business performance in the banking industry is an area of ongoing research. Strategic alignment initiatives typically are intangible, soft, and difficult to measure; the business value of strategic alignment can and should be measured by the same financial standard as any hard asset. Strategic alignment is an intangible and difficult to measure, but it can be measured by financial standard. Maes (1999) concluded the same.

5.4 Recommendations

The study recommends that commercial banks should develop internal policies geared towards improvement in understanding of information technology within the banking personnel. This will lead to better awareness of emerging technologies and awareness of emerging business processes that can stimulate better performance within the banks. The study recommends that the management should expand the command-and-control mechanisms in place which will improve information sharing which can be vital to better decision making in the banks. Banks should conduct regular meetings and bonding activities among the personnel which can expand communication processes which could be vital to bank performance. The research also recommends that banks should put in place programs to expand the technical competency of the staff which can improve efficiency and cost-effectiveness which could drive bank performance.

Through improvement in the skills of the personnel at all functional level's banks can be able to foster service delivery and development of products and services that are customer focused. This will be key to improving enterprise-wide success through better attainment across all business units. The study recommends that the top management

teams within the banks should develop strategic plans that are focused on the various functional levels within the banks. This will help expand inter-organizational collaboration and improve tactical implementation of strategic plans which would be central to better firm performance. The commercial banks should increase the number of collaborations and strategic alliances with service providers which can help stimulate better value for the banks.

The research also recommends that the management team within commercial banks can enhance the continuous improvement through setting of new standards, enhancing product and service innovation which can enhance the commercial banks value. Banks should put in place practical solutions to expand IT inclusion in the daily business processes which will help improve banks execution of business-IT strategies. The research also recommends that commercial banks should invest in emerging technologies and apply new technological management tools which can reduce business risks and expand functional organizational effectiveness. The study also recommends that commercial banks should regularly review the value attained from IT investments to ensure the new enterprise and governance frameworks put in place are supportive of better performance within the commercial banks. Lastly, with advancements in Internet of Things and other disruptive technologies such as blockchain there is need for commercial banks to expand the internal competencies and capabilities to leverage on these new solutions which can be vital to strengthened bank performance.

Banks can leverage digital transformation in several ways: Banks can combine the strengths of multiple channels such as branches and digital platforms to improve customer engagement. Banks rethink the branch experience in an increasingly digital world. Banks may not scale without the brick-and-mortar element and suggest that

banks take a similar approach and consider the need for physical branches. The digital strategy initiatives by banks can result in elimination of paperwork, less time spent servicing clients, conducting transactions and settlements, and increased productivity. The study suggests that banks should focus on their customer needs and tailor their services accordingly.

Overall, it is suggested that banks should consider utilizing a combination of digital and physical channels, focus on customer needs and tailor their services accordingly, and implement digital strategies to increase efficiency and productivity.

5.5 Suggestions for Further Research

The research was only focused on the large commercial banks, hence further empirical studies can be conducted focusing on other banking institutions in the country. A study can be conducted on alignment in other financial sector banks such as Saccos and Insurance companies. It may be good to incorporate non-financial metrics of performance within the banking industry to expand available empirical literature.

Another suggestion for further research in strategic alignment and business performance could be to examine the effectiveness of different strategic-performance-management systems in different industries or organizations. Strategic-performance-management systems can take many forms and can be used to track major strategic initiatives that have the greatest impact on an organization's financial and strategic goals. A study could be conducted to compare the effectiveness of different types of strategic-performance-management systems in different industries or organizations and identify best practices for implementing these systems.

Another suggestion for further research could be to investigate the relationship between different levels of strategic alignment and business performance. Achieving strategic alignment is an important step in achieving an organization's long-term goals and objectives. A study could be conducted to examine the relationship between different levels of strategic alignment and business performance metrics such as profitability, sales growth, and employee productivity.

Lastly, A research can also be conducted to investigate the impact of environmental uncertainty and strategic orientation on the relationship between IT-Business strategic alignment and firm performance. As stated in strategic alignment is the arrangement of internal and external elements of an organization to best support the achievement of its long-term goals and purpose. This study could provide valuable insights into how organizations can adapt and align their strategies to effectively navigate uncertain environments and improve their performance.

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APPENDICES

Appendix I: Consent Form

My name is Stanley Mwangi Chege, a PhD student at the School of Computing and Informatics of the Mount Kenya University, Thika, Kenya. I invite you to participate in a research study on "Determining the relationship between the IT strategic alignment maturity and the business performance of the banking industry in Kenya".

Purpose

The purpose of the study is to gauge your views on how IT strategic alignment maturity can relate to organizational performance.

Risks and Benefits of the Study

There are no risks. The results of the study lead to improved profitability, market share, sustainability, and growth.

Privacy

We shall main the data subject's privacy.

Contact and Questions

The contact person is the MKU IERC

(The Chairman. MKU IERC, P.O Box 342-01000).

You may also contact me on Stanley.mwangichege@gmail.com.

Statement of Consent

I understand and agree that to the terms described.

Date of Consent:_____

Participant's Signature:_____

Appendix II: Interview Schedule

1. What is the maturity level for the Communication criteria in the bank?
2. What is the maturity level for the Value of IT/Competency criteria for the bank?
3. What is the maturity level for the Governance criteria for the bank?
4. What is the maturity level for the Partnership criteria for the bank?
5. What is the maturity level for the Scope/architecture criteria for the bank?
6. What is the maturity level for the Skills criteria for the bank?
7. What is the overall maturity for the IT business alignment in the bank?
8. What are the main challenges you are facing in achieving business and IT alignment in the bank?
9. What was the profit for the current financial year?
10. What were the totals assets held by the bank during the current financial year?
11. What return on assets (ROA) for the bank in the current financial year?

Appendix III: Secondary Banking Data Collected

Ranking by Franchise Value

I&M Holdings emerged top in the franchise ranking due to high efficiency levels as evidenced by a low Cost to Income ratio which came in at 42.4% vs an industry average of 57.0%

Rank	Bank	LDR	CIR	ROACE	NIM	PEG ratio	PTBV	Deposits / Branch	Gross NPL Ratio	NPL Coverage	Tangible Common Ratio	Non Interest Income/ Revenue	Camel Rating	Total
1	I&M Holdings	5	1	3	6	3	4	4	7	4	1	6	6	50
2	KCB Group	4	4	2	3	2	5	8	5	3	7	7	2	52
3	Coop Bank	3	5	4	2	5	6	6	6	7	2	5	3	54
4	Equity Bank	6	7	1	1	1	8	10	3	9	4	4	4	58
5	Stanbic Bank	1	3	7	8	8	7	1	4	5	8	2	7	61
6	Absa Bank	2	9	6	4	9	9	5	1	2	10	9	1	67
7	DTBK	7	2	8	7	4	2	7	2	10	6	10	5	70
8	SCBK	10	6	5	5	10	10	2	9	1	5	8	9	80
9	NCBA Group	9	8	9	10	7	3	3	8	6	9	1	8	81
10	HF Group	8	10	10	9	6	1	9	10	8	3	3	10	87

Valuation Summary of Listed Banks

Diamond Trust Bank presents the highest upside with an expected total return of 113.2%

(all values in Kshs)

Bank	Current Price	Target Price	Upside/(Downside)	Dividend Yield	Total Potential Return
DTBK	85.5	179.7	110.1%	3.0%	113.2%
Equity Bank	32.8	55.3	68.6%	7.6%	76.3%
KCB Group	34.5	55.8	61.7%	10.1%	71.9%
Coop Bank	12.5	18.2	46.1%	8.0%	54.3%
I&M Holdings	51.0	73.6	44.2%	5.0%	49.2%
NCBA Group Plc	28.0	39.4	40.9%	6.3%	47.2%
Absa Bank	9.9	12.6	27.6%	11.2%	38.7%
SCBK	182.3	223.6	22.7%	11.0%	33.6%
Stanbic Holdings	93.8	109.8	17.2%	7.5%	24.7%
HF Group	4.2	4.3	2.5%	0.0%	2.5%

Cytonn Banking Report - Comprehensive Ranking

KCB emerged top of the ranking in terms of comprehensive ranking

(all values in Kshs unless stated otherwise)

Bank	Franchise Value Score	Intrinsic Value Score	Weighted Score	FY'2019 Rank
KCB Group Plc	52	3	22.6	1
I&M Holdings	50	5	23.0	2
Co-operative Bank of Kenya Ltd	54	4	24.0	3
Equity Group Holdings Ltd	58	2	24.4	4
DTBK	70	1	28.6	5
Stanbic Bank/Holdings	61	9	29.8	6
ABSA	67	7	31.0	7
NCBA Group Plc	81	6	36.0	8
SCBK	80	8	36.8	9
HF Group Plc	87	10	40.8	10

Financial Statements Extracts

Equity Group's PAT is expected to grow at a 5-year CAGR of 11.3%

Income Statement	2018	2019	2020e	2021e
Net Interest Income	41.4	45.0	49.1	53.9
Non Funded Income	25.9	30.8	32.9	36.3
Total Operating Income	67.3	75.8	82.0	90.1
Loan Loss Provision	(3.7)	(5.3)	(6.2)	(6.6)
Other Operating Expenses	(35.1)	(39.0)	(41.1)	(46.1)
Total Operating Expenses	**(38.8)**	**(44.3)**	**(47.4)**	**(52.7)**
Profit Before Tax	28.5	31.5	34.6	37.4
% PAT Change YoY	4.8%	13.8%	7.4%	8.0%
EPS	5.3	6.0	6.4	6.9
DPS	2.0	2.5	2.5	2.5
Cost to Income	57.7%	58.5%	57.8%	58.5%
NIM	8.5%	8.5%	8.3%	8.3%
ROaE	21.2%	22.0%	17.7%	15.3%
ROaA	3.6%	3.6%	3.4%	3.3%
Balance Sheet	**2018**	**2019**	**2020e**	**2021e**
Net Loans and Advances	297.2	366.4	366.5	410.4
Government Securities	130.4	138.6	162.9	174.1
Other Assets	145.7	168.7	218.5	240.3
Total Assets	**573.4**	**673.7**	**747.9**	**824.9**
Customer Deposits	422.8	482.8	502.0	562.2
Other Liabilities	55.7	79.2	82.0	82.1
Total Liabilities	**478.4**	**561.9**	**584.0**	**644.3**
Shareholders Equity	**94.1**	**110.7**	**162.8**	**179.5**
Number of Shares	**3.8**	**3.8**	**3.8**	**3.8**
Book value Per share	24.9	29.3	43.1	47.6
% Change in BPS YoY	1.0%	17.7%	47.0%	10.3%

Financial Statements Extracts

KCB Group's PAT is expected to grow at a 5-year CAGR of 10.0%

Income Statement	2018	2019	2020F	2021F
Net Interest Income	48.8	56.1	64.1	70.4
Non Funded Income	23.0	28.2	27.2	28.2
Total Operating Income	**71.8**	**84.3**	**91.4**	**98.7**
Loan Loss Provision	2.9	8.9	11.1	10.6
Other Operating Expenses	35.0	38.5	44.1	46.7
Total Operating Expenses	**37.9**	**47.4**	**55.2**	**57.3**
Profit Before Tax	33.9	36.9	36.2	41.4
% PAT Change YoY	21.8%	4.9%	0.7%	14.4%
EPS	7.9	7.8	7.9	9.0
DPS	3.0	3.5	3.5	4.0
Cost to Income	52.8%	56.2%	60.4%	58.0%
NIM	8.2%	8.2%	8.3%	8.5%
ROE	21.9%	20.7%	18.5%	19.1%
ROA	3.5%	3.1%	2.8%	3.0%
Balance Sheet	**2018**	**2019F**	**2020F**	**2021F**
Net Loans and Advances	455.9	535.4	571.6	607.3
Government Securities	120.1	169.2	178.2	186.9
Other Assets	138.4	194.0	176.8	184.8
Total Assets	**714.3**	**898.6**	**926.5**	**978.9**
Customer Deposits	537.5	686.6	700.0	735.0
Other Liabilities	63.2	82.2	82.7	84.0
Total Liabilities	**600.7**	**768.8**	**782.7**	**819.0**
Shareholders Equity	**113.7**	**129.7**	**143.8**	**160.0**
Number of Shares	**3.0**	**3.2**	**3.2**	**3.2**
Book value Per share	37.6	40.4	44.8	49.8
% Change in BPS YoY	7.3%	7.5%	10.9%	11.2%

Financial Statements Extracts

Co-operative Bank's PAT is expected to grow at a 5-year CAGR of 7.4%

Income Statement	2018	2019	2020F	2021F
Net Interest Income	30.8	31.3	30.1	31.7
Non Funded Income	12.9	17.2	15.7	19.1
Total Operating Income	**43.7**	**48.5**	**45.8**	**50.8**
Loan Loss Provision	(1.8)	(2.5)	(2.5)	(2.7)
Other Operating Expenses	(23.9)	(25.3)	(24.5)	(26.5)
Total Operating Expenses	**(25.7)**	**(27.8)**	**(27.0)**	**(29.2)**
Profit Before Tax	18.20	20.7	18.9	21.7
% PAT Change YoY	**11.6%**	**12.4%**	**-7.7%**	**15.0%**
EPS	1.9	2.4	2.3	2.6
DPS	1.0	1.0	1.0	1.0
Cost to Income	58.8%	57.4%	58.9%	57.4%
ROE	18.3%	19.2%	14.1%	13.4%
ROA	3.2%	3.3%	2.7%	2.9%
Balance Sheet				
Net Loans and Advances	245.4	266.7	290.3	306.5
Government Securities	80.3	117.8	93.3	98.6
Other Assets	87.7	72.5	122.7	131.8
Total Assets	413.4	457.0	506.3	536.8
Customer Deposits	306.1	332.8	352.8	374.0
Other Liabilities	36.1	43.3	43.4	43.4
Total Liabilities	342.2	376.2	396.2	417.4
Shareholders Equity	69.9	79.3	108.6	117.9
Number of Shares	6.9	5.9	5.9	5.9
Book value Per share	10.2	13.5	18.5	20.1
% Change in BPS YoY	**-14.2%**	**32.9%**	**36.9%**	**8.6%**

Financial Statements Extracts

DTBK's PAT is expected to grow at a 5-year CAGR of 7.5%

Income Statement	2017	2018f	2019f	2020f	2021f
Net Interest Income	19.7	20.0	18.7	20.0	21.0
Non Funded Income	5.3	5.4	5.8	5.7	4.5
Total Operating Income	**25.0**	**25.5**	**24.5**	**25.7**	**25.6**
Loan Loss Provision	4.3	3.0	1.3	4.3	2.0
Other Operating Expenses	10.6	11.5	11.9	11.2	11.9
Total Operating Expenses	**14.9**	**14.5**	**13.2**	**15.5**	**13.9**
Profit Before Tax	10.1	11.0	11.3	10.2	11.5
% PAT Change YoY	-10.3%	2.3%	2.7%	-1.7%	9.7%
EPS	24.8	23.9	24.3	23.9	26.3
DPS	2.6	2.6	2.7	3.0	3.0
Cost to Income	59.6%	56.9%	54.0%	60.3%	54.6%
NIM	6.5%	6.2%	5.6%	6.0%	6.3%
ROE	14.4%	13.9%	12.9%	10.6%	9.9%
ROA	2.0%	1.9%	1.9%	1.8%	1.9%
Balance Sheet	**2017**	**2018f**	**2019f**	**2020f**	**2021f**
Net Loans and Advances	196.0	193.1	199.1	197.8	206.7
Government Securities	112.5	115.0	130.3	114.7	118.1
Other Assets	54.7	69.6	56.8	88.4	92.4
Total Assets	**363.3**	**377.7**	**386.2**	**400.9**	**417.1**
Customer Deposits	266.2	282.9	280.2	286.6	295.2
Other Liabilities	43.4	35.9	41.5	32.7	33.8
Total Liabilities	**309.7**	**318.8**	**321.7**	**319.3**	**329.1**
Shareholders Equity	48.4	53.7	58.9	75.9	82.4
Number of Shares	0.3	0.3	0.3	0.3	0.3
Book value Per share	173.0	191.9	210.5	271.3	294.6
% Change in BPS YoY	17.9%	10.9%	9.7%	28.9%	8.6%

Financial Statements Extracts

Absa Bank's PAT is expected to grow at a 5-year CAGR of 9.9%

Income Statement	2018	2019	2020f	2021f
Net Interest Income	22.0	23.2	27.5	28.9
Non Funded Income	9.7	10.6	10.7	11.6
Total Operating Income	**31.7**	**33.8**	**38.2**	**40.4**
Loan Loss Provision	(3.9)	(4.2)	(4.9)	(5.6)
Other Operating Expenses	(17.2)	(17.3)	(20.1)	(21.0)
Total Operating Expenses	**(21.1)**	**(21.5)**	**(25.0)**	**(26.6)**
Profit Before Tax	10.6	10.8	13.2	13.8
% PAT Change YoY	7.1%	0.5%	23.8%	4.8%
EPS	1.4	1.4	1.7	1.8
DPS	1.1	1.1	1.1	1.1
Cost to Income	66.4%	63.6%	65.5%	65.8%
NIM	8.6%	7.7%	8.6%	9.0%
ROaE	16.8%	16.7%	17.3%	15.2%
ROaA	2.7%	2.1%	2.4%	2.4%
Balance Sheet	**2018**	**2019**	**2020f**	**2021f**
Net Loans and Advances	177.4	194.9	195.1	212.4
Government Securities	92.9	123.0	119.0	100.0
Other Assets	54.5	56.1	78.4	96.2
Total Assets	**324.8**	**374.0**	**392.5**	**408.5**
Customer Deposits	207.4	237.7	238.0	249.9
Other Liabilities	73.2	91.1	92.9	93.3
Total Liabilities	**280.6**	**328.8**	**330.9**	**343.2**
Shareholders Equity	**44.2**	**45.2**	**61.6**	**65.3**
Number of shares	**5.4**	**5.4**	**5.4**	**5.4**
Book value Per share	8.1	8.3	11.3	12.0
% Change in BPS YoY	0.2%	2.2%	36.4%	6.0%

Financial Statements Extracts

Stanbic Holdings' PAT is expected to grow at a 5-year CAGR of 14.4%

Income Statement	2018	2019	2020e	2021f
Net Interest Income	12.1	13.3	14.2	15.9
Non Funded Income	10.0	11.4	9.5	12.2
Total Operating Income	**22.1**	**24.8**	**23.6**	**28.1**
Loan Loss Provision	(1.7)	(2.6)	(2.8)	(3.0)
Other Operating Expenses	(9.3)	(11.3)	(11.8)	(14.3)
Total Operating Expenses	**(11.1)**	**(13.9)**	**(14.7)**	**(17.4)**
Profit Before Tax after Exceptional Item	8.9	7.7	9.0	10.7
% PAT Change YoY	45.7%	1.6%	5.7%	11.1%
EPS	15.9	16.1	17.1	19.0
DPS	5.8	7.1	6.8	6.3
Cost to Income	42.3%	45.6%	50.0%	51.0%
NIM	5.0%	5.2%	5.1%	5.4%
ROaE	14.3%	13.6%	12.7%	12.6%
ROaA	2.3%	2.1%	2.1%	2.2%
Balance Sheet	**2018**	**2019**	**2020e**	**2021f**
Net Loans and Advances	175.0	191.2	192.1	214.3
Other Assets	115.6	112.4	131.9	143.2
Total Assets	**290.6**	**303.6**	**324.0**	**357.5**
Customer Deposits	219.5	224.7	237.2	265.7
Borrowings	7.1	9.1	9.1	9.1
Other Liabilities	19.4	20.8	20.8	20.8
Total Liabilities	**245.9**	**254.6**	**267.1**	**295.6**
Shareholders Equity	44.6	49.0	56.9	61.9
No of Ordinary Shares	0.4	0.4	0.4	0.4
Book value Per share	112.9	124.0	144.0	156.6
% Change in BVPS	3.9%	9.9%	16.1%	8.8%

Financial Statements Extracts

NCBA Group's PAT is expected to grow at a 5-year CAGR of 15.0%

Income Statement	2018	2019	2020F	2021F
Net Interest Income	20.3	13.3	17.6	22.2
Non Funded Income	16.1	20.3	18.2	18.7
Total Operating Income	**36.4**	**33.7**	**35.8**	**40.9**
Loan Loss Provision	(6.0)	(6.3)	(7.5)	(7.9)
Other Operating Expenses	(18.1)	(14.1)	(16.0)	(18.8)
Total Operating Expenses	**(24.1)**	**(20.4)**	**(23.5)**	**(26.7)**
Profit Before Tax	12.3	11.3	12.3	14.2
% PAT Change YoY	9.3%	-12.4%	9.7%	15.8%
EPS	12.7	11.1	5.7	6.7
DPS	0.0	0.3	0.3	0.3
Cost to Income	66.3%	60.5%	65.7%	65.2%
ROE	13.7%	11.8%	11.9%	12.2%
ROA	2.0%	1.7%	1.7%	1.9%
Balance Sheet				
Net Loans and Advances	239.6	249.4	252.7	273.0
Government Securities	129.7	145.0	134.1	144.9
Other Assets	84.3	100.5	131.3	139.2
Total Assets	453.6	494.8	518.2	557.0
Customer Deposits	341.0	378.2	388.8	419.9
Other Liabilities	46.2	49.3	51.3	51.7
Total Liabilities	387.2	427.6	440.1	471.6
Shareholders Equity	66.0	67.0	77.8	85.1
Number of Shares	0.7	0.7	1.5	1.5
Book value Per share	93.8	95.2	51.9	56.8
% Change in BPS YoY	2.5%	1.5%	-45.4%	9.4%

Financial Statements Extracts

I&M Holdings' PAT is expected to grow at a 5-year CAGR of 10.8%

Income Statement	2018	2019	2020F	2021F
Net Interest Income	15.6	15.5	17.8	23.5
Non- Funded Income	7.6	8.3	7.9	10.3
Total Operating Income	**23.2**	**23.8**	**25.8**	**33.8**
Loan Loss Provision	(3.8)	(0.6)	(1.9)	(3.2)
Other Operating Expenses	(8.5)	(9.5)	(10.1)	(12.5)
Total Operating Expenses	**(12.3)**	**(10.1)**	**(12.0)**	**(15.7)**
Profit Before Tax and Share from Associate	11.5	14.6	14.7	19.0
% PAT Change YoY	17.1%	26.6%	(4.6%)	29.4%
EPS	20.6	13.0	12.4	16.1
DPS	3.9	2.6	2.6	2.6
Cost to Income	53.0%	42.4%	46.6%	46.5%
NIM	6.7%	5.9%	6.3%	7.6%
ROaE	17.2%	19.5%	13.6%	15.6%
ROaA	3.0%	3.4%	3.0%	3.5%
Balance Sheet	**2018**	**2019**	**2020F**	**2021F**
Government securities	52.2	53.9	58.1	64.0
Net Loans and Advances	166.7	175.3	188.0	217.7
Other Assets	69.6	86.0	108.1	114.7
Total Assets	**288.5**	**315.3**	**354.3**	**396.4**
Customer Deposits	213.1	229.7	247.4	272.2
Other Liabilities	24.5	24.7	24.1	30.3
Total Liabilities	**237.6**	**254.4**	**271.5**	**302.5**
Shareholders Equity	47.9	57.7	79.6	90.8
Number of Shares	0.4	0.8	0.8	0.8
Book Value Per Share	115.8	69.8	96.3	109.8
% BVPS Change YoY	8.0%	-39.7%	37.9%	14.1%

Financial Statements Extracts

SCBK's PAT is expected to grow at a 5-year CAGR of 7.9%

Income Statement	2018	2019	2020e	2021f
Net Interest Income	19.4	19.5	19.5	22.4
Non Funded Income	9.2	9.2	8.9	9.7
Total Operating Income	**28.6**	**28.7**	**28.4**	**32.1**
Loan Loss Provision	(1.9)	(0.6)	(1.0)	(2.6)
Other Operating Expenses	(14.9)	(16.0)	(15.6)	(15.8)
Total Operating Expenses	**(16.8)**	**(16.5)**	**(16.6)**	**(18.4)**
Profit Before Tax	11.8	12.2	11.9	13.7
% PAT Change YoY	17.1%	1.7%	0.8%	15.4%
EPS	23.6	24.0	24.2	27.9
DPS	19.0	20.0	20.0	21.0
Cost to Income	58.6%	57.6%	58.3%	57.3%
NIM	7.5%	7.4%	7.4%	8.4%
ROaE	17.5%	17.5%	15.1%	15.1%
ROaA	2.8%	2.8%	2.7%	3.0%
Balance Sheet	**2018**	**2019**	**2020e**	**2021f**
Net Loans and Advances	118.7	128.7	117.4	130.2
Government Securities	98.7	99.6	104.1	104.7
Other assets	68.0	73.8	88.6	88.9
Total Assets	**285.4**	**302.1**	**310.1**	**323.8**
Customer Deposits	224.3	228.4	221.5	232.6
Other Liabilities	14.5	25.9	26.1	26.4
Total Liabilities	**238.8**	**254.4**	**247.6**	**259.0**
Shareholders Equity	**46.6**	**47.8**	**62.4**	**64.8**
Number of shares	**0.3**	**0.3**	**0.3**	**0.3**
Book value Per share	135.8	139.0	181.8	188.7
% Change in BPS YoY	2.1%	2.4%	30.7%	3.8%

Appendix IV: Authorization Letter from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **833168**

Date of Issue: **25/November/2020**

RESEARCH LICENSE

This is to Certify that Mr., Stanley Mwangi Chege of Mount Kenya University, has been licensed to conduct research in Nairobi on the topic: DETERMINING THE RELATIONSHIP BETWEEN BUSINESS AND INFORMATION TECHNOLOGY STRATEGIC ALIGNMENT MATURITY AND BUSINESS PERFORMANCE: A STUDY OF THE BANKING INDUSTRY IN KENYA for the period ending : 25/November/2021.

License No: **NACOSTI/P/20/7565**

833168

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

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Appendix V: Letter of Introduction

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

PHD/25899/2013

3rd November, 2020

The Director, Research Coordination Division
National Commission for Science, Technology & Innovation
Utalii House, 8th & 9th Floor
P.O Box 30623- 00100
NAIROBI

Dear Sir/Madam,

RE: STANLEY MWANGI CHEGE - REGISTRATION NO. PHD/2015/24691

The purpose of this letter is to introduce the above named student who is pursuing **Doctor of Philosophy in Information Technology** in the Department of **Enterprise Computing** in the School of **Computing & Informatics.**

The title of his research is ***"Determining the Relationship between Business and Information Technology Strategic Alignment Maturity and Business Performance: A study of the Banking Industry in Kenya ."***

He has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data for his research between **November and April, 2021.**

Any assistance accorded to him will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342-01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Kinyenga, Ph.D.
Director, Graduate Studies
Enc.

Appendix VI: Ethical Clearance Certificate

Mount Kenya University

REF: **MKU/ERC/1645**
TO: **STANLEY MWANGI CHEGE**

Date: 26 October 2020

REG: **PhD-25899/2013**

Dear Sir/Madam,

RE: DETERMINING THE RELATIONSHIP BETWEEN BUSINESS AND INFORMATION TECHNOLOGY STRATEGIC ALIGNMENT MATURITY AND BUSINESS PERFORMANCE: A STUDY OF THE BANKING INDUSTRY IN KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **718.** The approval period is **22/10/2020 – 21/10/2021.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

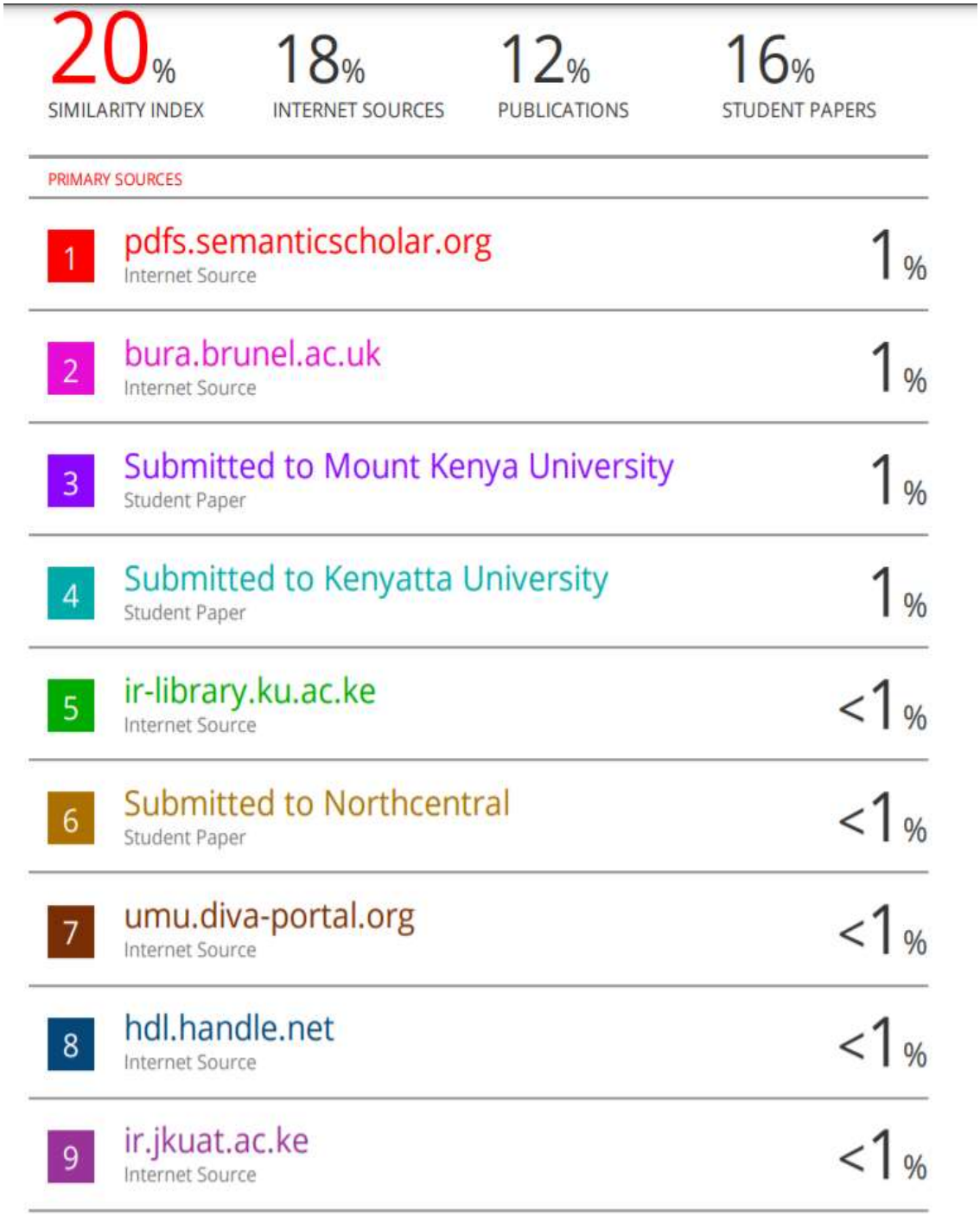
Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box ... -0100, Thika

Prof. Francis W. Muregi
Chairman, Mount Kenya University IERC

Appendix VII: Originality Report



20%	18%	12%	16%
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3	Submitted to Mount Kenya University Student Paper	1%
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5	ir-library.ku.ac.ke Internet Source	<1%
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8	hdl.handle.net Internet Source	<1%
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Appendix VIII: Cronbach Alpha

Case Processing Summary

		N	%
Cases	Valid	9	100.0
	Excluded[a]	0	0
	Total	9	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N ofItems
.803	6

Item statistics

	Mean	Std deviation	N
Communicationmaturity	3.3	0.029	35
Governancematurity	3.0	0.029	30
Partnershipmaturity	3.2	0.029	30
Valuematurity	2.5	0.029	35
Architecturematurity	3.2	0.029	30
Skillsmaturity	2.7	0.029	35
			195