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THE RELATIONSHIP BETWEEN THE BUSINESS-IT ALIGNMENT MATURITY AND THE BUSINESS PERFORMANCE FOR THE BANKING INDUSTRY IN KENYA

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Abstract

Purpose: The study aimed at establishing the relationship between the business-IT alignment maturity and the business performance for the banking industry in Kenya.

Methods: The study involved analyzing qualitative data first and then the quantitative data. The study employed stratified sampling. The population was made up of 39 banks. The 6 Tier banks were the sample size of the study. The participants were the CEO, CFO and CIO of these banks. The study used correlation design (multiple regression).

Results: The results from the assessment of the six Tier-one banks show that some banks clearly do a better job of aligning their IT and business operations than others. The higher alignment maturity levels are linked with better business performance measures including the ROA and NPM.

Unique contribution to theory, practice and policy: Achieving significantly higher levels of IT-business alignment across a wider range of organizations is a long-term journey. The journey in each organization 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 organization. And in the quest for continuous improvement within a dynamic global environment, the journey may never end.

Keywords: *BITA, SAM, SAMM, COBIT, ITIL, CMMI, IT Governance, Maturity Model*

1.0 INTRODUCTION

The business and IT alignment (BITA) is a worthy goal to pursue. The organization might never reach alignment but can take steps to get ever closer. The business and IT alignment is a process. This process does not have a starting point, nor does it have an end. It is a series of "learn and do" cycles that incrementally get towards alignment. Managers should start by assessing the IT investment alignment state then prioritizing and implementing IT initiatives.

The goal of perfect alignment is continuous because of the dynamic nature of the business. Every organization operates in an ecosystem and is affected by the forces at play in it. There are the Political, Economic, Social, Technological, Environmental, and Legal (PESTEL) forces. The industry and competitors are all players in this ecosystem and are continuously evolving. The knowledge and tools such as information technology are also continuously changing. To remain competitive and maintain differentiation, every organization must adapt in response to the actions and activities of others in its ecosystem. Organizations that do not adapt lose their competitive edge over time and disappear. There are the additional changes in an organization's internal environment including structure, skills, finances, personnel, knowledge,core competency. This is a potent mix of forces that demand change in response. This continuous change is the cause of perpetual misalignment.

The researcher will demonstrate the chasm between business and IT, dive into the root causes of misalignment and proposes restructuring the entire organization to create effective business and IT alignment. The researcher 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).

1.1 Problem Statement

The lack of the Business-Information Technology (IT) alignment is a pervasive problem (Luftman, Lyytinen, & Zvi, 2017). Business-IT Alignment (BITA) has been an issue for researchers and managers of Information Technology (IT) for the last three or four decades (Malta & Sousa, 2016). BITA has been constantly ranked among the top-ten management issues for IT 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 and efforts of research centres, consulting companies and software producers, the effectiveness of IT project completion has not increased for over 20 years (Wachnik, 2017). Some board of directors do not align the information technology governance to organizational performance (Turel, Liu, & Bart, 2017). The general business problem is that business managers lack the strategies to achieve business-IT alignment. The specific business problem is that the business managers in the Kenyan Banking industry lack a model to predict the relationship between the BITA and the business performance.

1.2 Benefits of BITA and IT Governance

According to the IT Governance Institute (ITGI), IT governance encompasses:

- Aligning IT and the business objectives
- Measuring IT performance
- Establishing IT-related risk management strategies
- Optimizing business IT investment
- Using IT to deliver business value

IT governance springs from the simple and common desire to align IT departments more closely with an organization's most important business needs. Done right, the process unites IT and the business side in a partnership that helps companies leverage technologies not simply for their novelty but to capitalize on opportunities to save costs, improve business processes and edge out less innovative competitors (TechTarget, 2018a). IT governance is a management structure that establishes processes to ensure IT sustains and extends the organization's objectives. IT governance is a framework that focuses on value delivery and ensures that the IT-enabled investments are managed throughout their full economic lifecycle (TechTarget, 2018a).

While technologies like service-oriented architecture (SOA) and cloud computing are part of the larger efficiency puzzle, IT governance provides the scaffolding that brings everything together in a cohesive whole. Its role as a cost-saving tool is especially important during economic downtimes and when budgets are tight (TechTarget, 2018a). IT governance's emphasis on business value and oversight by senior executives are keys to avoiding investments in technology for technology's sake. The chief information officer would discuss a new customer relationship management application and the advantages of running it on a cloud platform with the business managers. The organizations need an accurate view of their IT environments and a formal process in place to ensure that ad hoc and misguided decisions about new investments are not standing in the way of business goals (TechTarget, 2018a).

1.3 Impact of BITA and IT Governance in Organizations

The business-IT alignment (BITA) is critical for success and provides a competitive advantage. Information technologies should support the business strategy of a company and provide value to it. IT investments must include aspects of competitive gains in accordance with the strategic position of the company (Gellweiler, 2017). Business-IT alignment is a component of IT governance. IT governance is a component of the enterprise governance.

Consistent with the separation of oversight from management decisions, board-level ITG is responsible for monitoring managerial IT decisions and policies for controlling IT resources. The operational IT failures indicate inadequacies in board monitoring of controls over IT resources would result in a negative stock market reaction and, in turn, induce firms to improve their board-level ITG. Researchers observed a sample of 110 operational IT failures from U.S. public financial firms. The results demonstrated that subsequent to experiencing operational IT failures, firms make improvements to the IT competency level of their boards, and the improvements are proportional to the degree of negative market reaction. The improvements are only on the executive side of the board, namely: an increase in the IT experience of internal (executive)

directors and an increased turnover rate of CIOs serving on the board. The likelihood of CIO turnover is lower in IT-intensive firms where such turnover could be more disruptive. The is the critical connection between operational IT failures and board-level ITG monitoring (Benaroch & Chernobai, 2017).

1.4 Significance and Justification

Business-IT alignment (BITA) has been an issue for researchers and managers of Information and Systems Technology (IST) area for the last three or four decades. Many authors refer to BITA as a concern subject of IST managers, in achievement and maintenance. Enterprise Architecture (EA) construction, to BITA, especially when a Business Process Management (BPM) approach is used, a list of best practices should be obtained (Malta & Sousa, 2016). Managers ranked the Business-IT alignment (BITA) among the top-ten management issues for more than a decade. Many organizations value the advantages obtained when they can align their business and IT strategies. IT and business practitioners need to elaborate organizational skills training programs necessary for banks to improve their personnel's performance throughout their journey towards BITA (Gbangou & Rusu, 2016).

Managers can adopt the IT strategic alignment models to align IT goals with business goals through IT-based capability and IT support for core competence. 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 evaluate and improve the Information Technology (IT) governance in an organization, considering the business-IT alignment and risk management. The managers need to integrate management tools such as business processes management, risk management, strategic alignment and the balanced scorecard (Pérez Lorences & García Ávila, 2013).

1.5 The Impact of Business-IT Alignment to the Society and the Community

According to the World Economic Forum, the Information and communications technologies (ICT) have driven the fourth industrial revolution. As new technologies continue to be realized, it is important to recognize that ICT creates technostress. There is evidence that technostress activates a stress response, which often has long-term health implications (Atanasoff & Venable, 2017). According to the World Economic Forum, several states Gulf Cooperation Council states have continued their efforts to improve information communication technology (ICT) uptake and better integrate ICT into more robust innovation ecosystems to obtain higher returns and competitive advantage (“Towards sustainable”, 2015).

According to the World Economic Forum, the use of information and communication technologies enable knowledge management and increases the competitive advantage of the organizations in the neighbouring countries (Boljanović, Vukašinović, & Veinović, 2014). According to the World Economic Forum, the global competitiveness of a country is closely related to its degree of informatization. Keeping rapid development in information technology may help countries to gain rapid development in global competitiveness (“Research”, 2017).

According to the World Economic Forum future information technology (IT) skills that will be needed with the evolution of the digital business are in the social, mobile, analytics and cloud (SMAC) technologies for business innovation. There are delays in addressing cyber risk for the cloud, internet of things (IoT) and mobility. There is the need for innovative service delivery techniques leveraging IT (Evans, 2016).

According to the World Economic Forum, future information technology (IT) skills will be needed. The evolution of the digital business is in the social, mobile, analytics and cloud (SMAC) technologies for business innovation. There are delays in addressing cyber risk for the cloud, internet of things (IoT) and mobility (Evans, 2016).

There is a significant and positive relationship between Internet distance and the different globalization indexes: economic and financial globalization, political globalization, and social globalization. The Internet flows ahead of globalization. The Internet has an impact on the global industry and social change (Huang & Sun, 2016). An integrated ICT technology can enhance the competitiveness and creativity of the national economies and fuel the sustainable growth of the global economy. The information and communication technologies (ICTs) can play a role to support economic growth (Piman & Poldee, 2016).

The role of automation in sustainable development is critical. Information technology has permeated every facet of human endeavour, enhancing the provision of information for decision-making that reduces the cost of operation, promotes productivity and socioeconomic prosperity and cohesion. The information and communication technology for development (ICT4D) has emerged. There is the need to ensure environmentally friendly computing (Emmanuel, Sanjay, Rytis, Robertas, & Luis, 2017).

The energy consumption of cloud data centres is dramatically increasing, which has created a lot of problems with greenhouse gas emissions and service costs. A resource-utilization-aware energy efficient server consolidation algorithm (RUAEE) that can be used to improve resource utilization while reducing the number of virtual machine live migrations is useful. The RUAEE can reduce the energy consumption and service-level agreement (SLA) violation in cloud data centre (Han, Que, Jia, & Zhang, 2017).

The energy efficiency in sensor-enabled wireless network domain has witnessed significant attention from both academia and industries. It is an enabling technological advancement towards green computing in the Internet of things (IoT) eventually supporting sensor generated big data processing for smart cities (Farhan, Kharel, Kaiwartya, Hammoudeh, & Adebisi, 2018).

Green Computing is a recent trend in computing which tries to reduce the energy consumption and carbon footprint produced by computers on distributed platforms such as clusters, grids, and clouds. One of the methods for reducing energy consumption is providing scheduling policies to allocate tasks on specific resources that impact the processing times and energy consumption (Juarez, Ejarque, & Badia, 2018).

Cloud computing and virtualization are enabling technologies for designing energy-aware resource management mechanisms in virtualized data centres. Managers who are network aware

can save about 50% of the network related power consumption compared to a network unaware consolidation (Marotta, Avallone, & Kassler, 2018).

Researchers undertook the green big data project to improve the energy efficiency of CERN (European Organization for Nuclear Research) computing. The open and innovative environment at CERN is an excellent playground for different energy efficiency ideas which can later find use in mainstream computing (Niemi, Nurminen, Liukkonen, & Hameri, 2018).

Researchers applied the energy-aware central processing unit (CPU) frequency scaling mechanisms in the design of customized energy-aware controllers that dynamically adjust CPU frequency to the application-specific workload patterns. The customized controllers may outperform standard general-purpose governors of the Linux kernel both in terms of reachable server performance and power saving capabilities (Karpowicz, Arabas, & Niewiadomska-Szynkiewicz, 2018).

2.0 THE THEORETICAL AND EMPIRICAL MODELS FOR BUSINESS-IT ALIGNMENT

2.1 Capability Maturity Model

Capability Maturity Model Integration (CMMI): CCMI was developed by the Software Engineering Institute (SEI). The CMM is a methodology used to develop and refine an organization's software development process. CMMI is a performance improvement-focused software quality assurance (SQA) model. CMMI works by ranking maturity levels of areas within an organization, and it identifies optimizations that can be used for improvement. Rank levels range from being disorganized to being fully optimal (TechTarget, 2018d).

CMM's Five Maturity Levels of Software Processes:

At the *initial level*, processes are disorganized, even chaotic. Success is likely to depend on individual efforts and is not considered to be repeatable, because processes would not be sufficiently defined and documented to allow them to be replicated.

At the *repeatable level*, basic project management techniques are established, and successes could be repeated, because the requisite processes would have been made established, defined, and documented.

At the *defined level*, an organization has developed its own standard software process through greater attention to documentation, standardization, and integration.

At the *managed level*, an organization monitors and controls its own processes through data collection and analysis.

At the *optimizing level*, processes are constantly being improved through monitoring feedback from current processes and introducing innovative processes to better serve the organization's needs.

2.2 IT Capability Maturity Framework (IT-CMF)

The Chief Information Officers (CIOs) in some of the world's best-run companies believe the BITA solution starts with the IT Capability Maturity Framework (IT-CMF) produced by the Intel-inspired Innovation Value Institute (IVI).

The IT-CMF model is the brainchild of Martin Curley. It is based on Curley's 2004 book, *Managing IT for Business Value*. Exposure to real-world experience and updated academic research has refined the model.

IVI believes IT-CMF is now a practical tool to assess or benchmark a firm's IT capability, to provide a framework through which to distinguish the best use of the IT budget in terms of return on investment, and a blueprint to allocate and monitor the IT assets at the CIO's disposal.

The model consists of four macro processes:

- Managing IT as a business
- Managing the IT budget
- Managing the IT capability
- Managing IT for business value.

Together they comprise 32 sub-processes, plus one on sustainable IT.

Where possible the model incorporates existing techniques and maturity models, such as ITIL, CMMI, and CoBIT, to provide a complete and integrated way to assess and manage the way IT adds value to the business (ComputerWeekly, 2018).

2.3 Strategic Alignment Maturity Model (SAMM)

Strategic Alignment Maturity Model (SAMM): Luftman developed a maturity assessment model, based on the 12 elements of Business and IT Alignment. This model can be used in a survey to see where a company stands regarding maturity. 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. The model consists of six alignment areas. The six are Governance, Communications, Value, Partnership, Technology Scope, and Skills. Each area has multiple attributes. For each area, there are clearly defined maturity levels (Luftman, 2003).

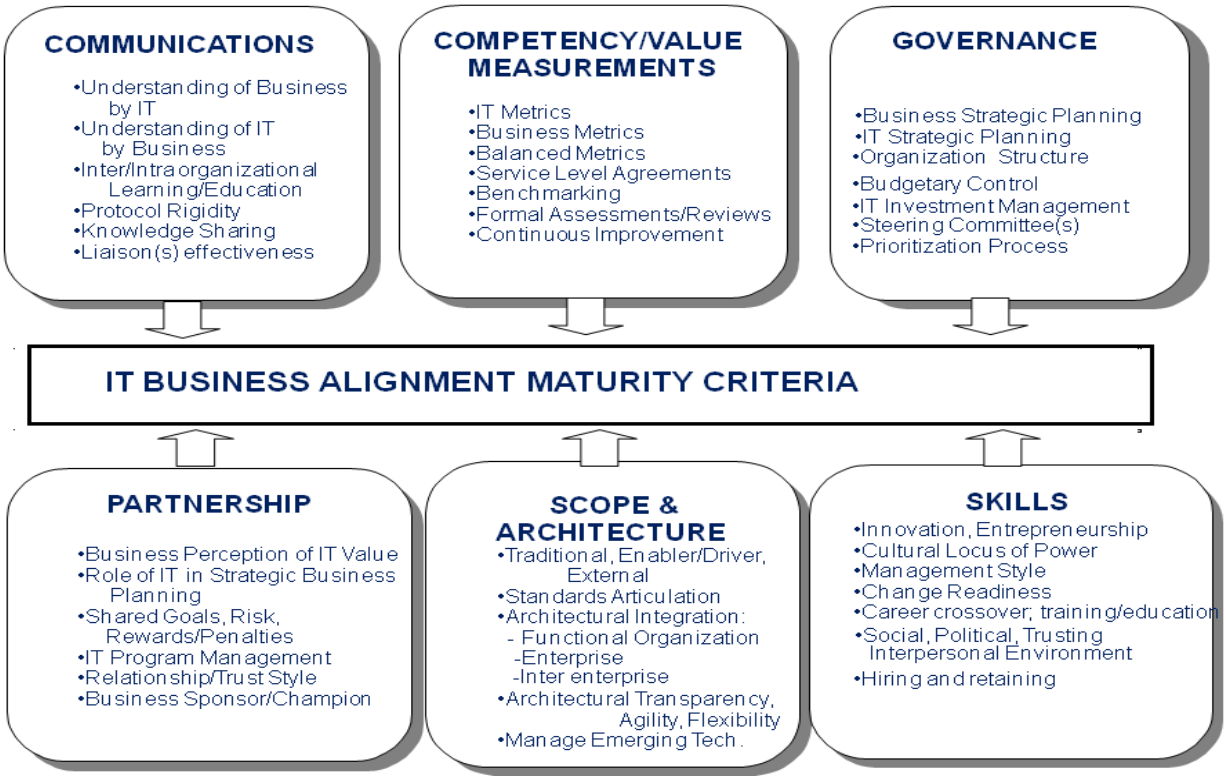

Figure 1: SAMM. Source: (Luftman, 2003)

2.4 Strategic Alignment Model (SAM)

SAM relates the business strategy to IT strategy and the business infrastructure to the IT infrastructure. The strategic fit differentiates between external focus, directed towards the business environment, and internal focus, directed towards administrative structures. The functional integration separates business and IT. Strategic alignment can only occur when three of the four domains are in alignment (Venkatraman, Henderson, & Oldach, 1993).

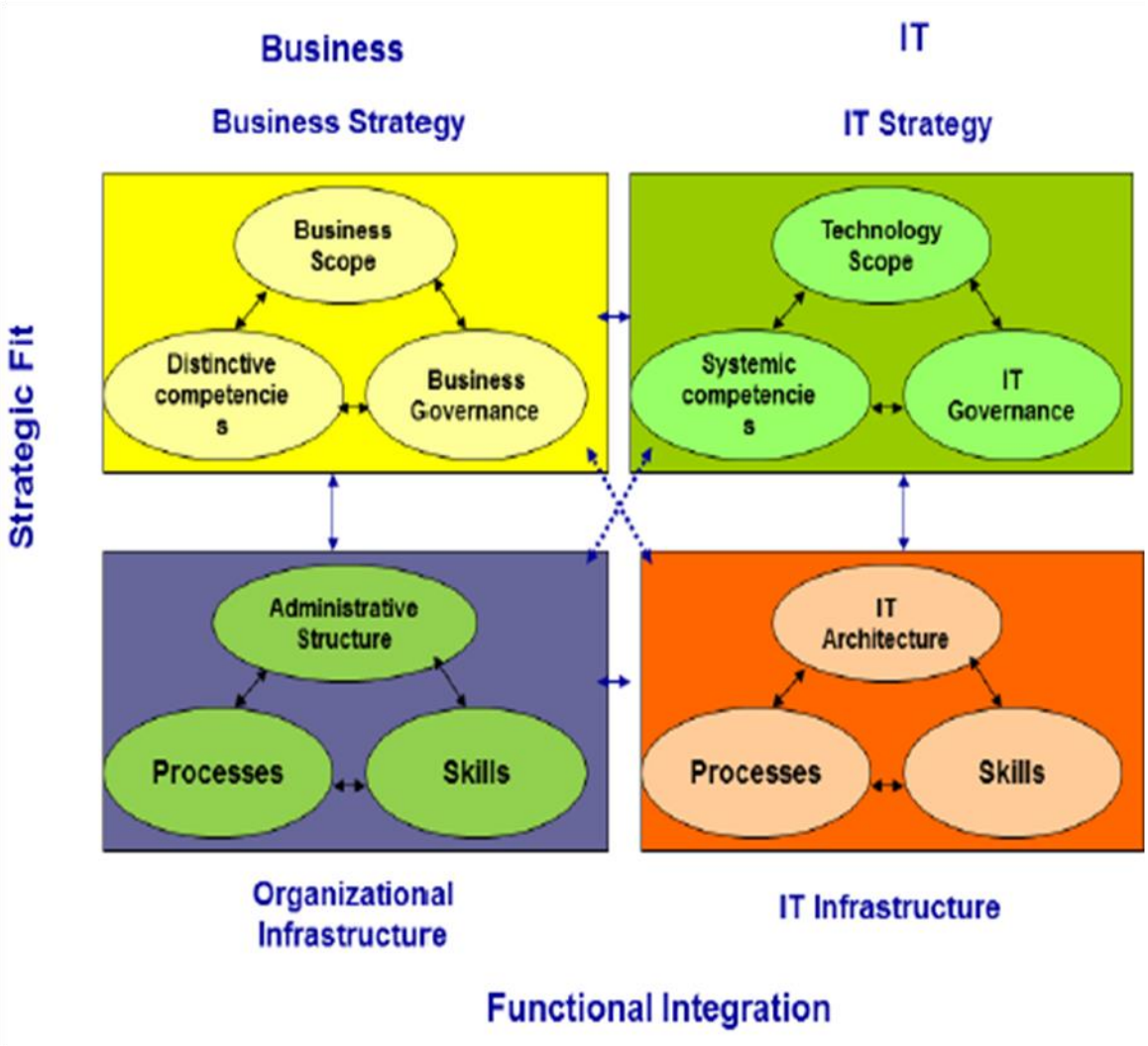

Figure 2: Source: (Venkatraman, Henderson, & Oldach, 1993)

2.5 IT Infrastructure Library (ITIL)

The ITIL (Information Technology Infrastructure Library) framework is designed to standardize the selection, planning, delivery and support of IT services to a business. The goal is to improve efficiency and achieve predictable service levels. The ITIL framework enables IT to be a business service partner, rather than just back-end support. ITIL guidelines and best practices align IT actions and expenses to business needs and change them as the business grows or shifts

direction.

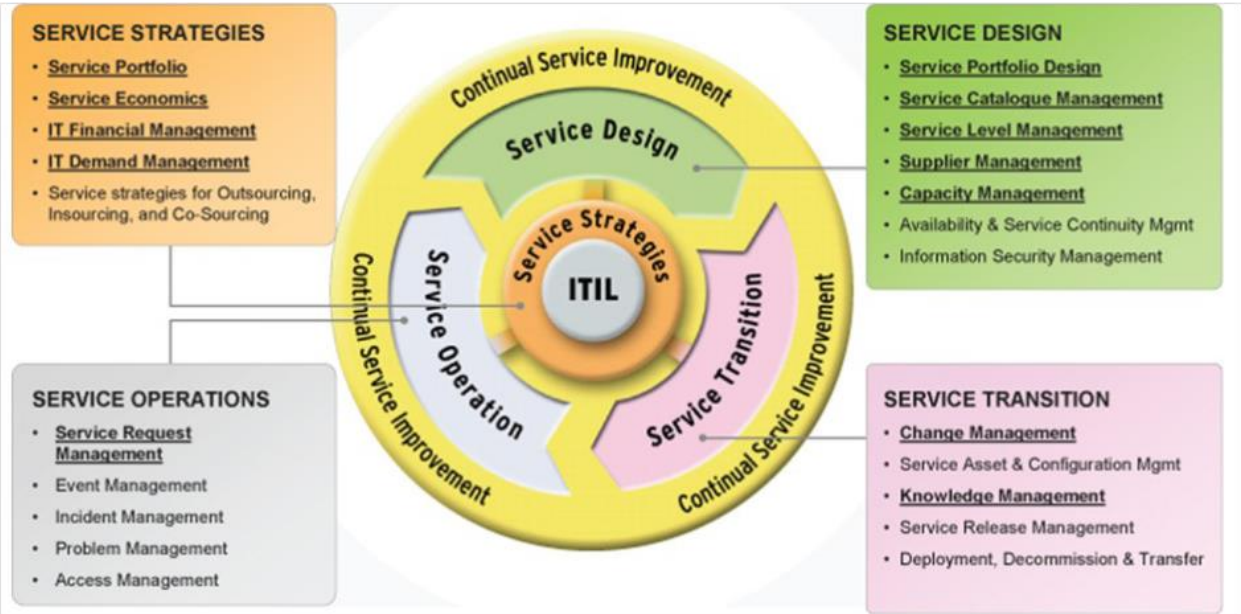

Figure 3: Source: (Luftman, 2012)

2.6 The Open Group Architecture Framework (TOGAF)

The Open Group Architecture Framework, or TOGAF, provides a structured approach for organizations seeking to organize and govern their implementation of technology, particularly software technology. The objective is to employ an encompassing conceptual framework to ensure that software development projects meet business objectives, that they are systematic and that their results are repeatable (TechTarget, 2018e).

2.7 COBIT

COBIT is a framework for developing, implementing, monitoring and improving information technology (IT) governance and management practices.

The COBIT framework is published by the IT Governance Institute and the Information Systems Audit and Control Association (ISACA). The goal of the framework is to provide a common language for business executives to communicate with each other about goals, objectives and results. The original version, published in 1996, focused largely on auditing. The latest version, published in 2013, emphasizes the value that information governance can provide to a business' success. It also provides quite a bit of advice about enterprise risk management.

COBIT 5 is based on five key principles for governance and management of enterprise IT:

- Principle 1: Meeting Stakeholder Needs
- Principle 2: Covering the Enterprise End-to-End
- Principle 3: Applying a Single, Integrated Framework
- Principle 4: Enabling a Holistic Approach
- Principle 5: Separating Governance from Management (TechTarget, 2018f).

2.8 International Data Corporation (IDC) MaturityScape

IDC developed the MaturityScape for organizations that are pursuing digital transformation. The five levels are Ad hoc, Opportunistic, Repeatable, Managed and Optimized. It identifies the stages, dimensions, outcomes, and actions required for businesses to digitally transform their operations, organizations, products, and services. It also serves as a guide for business and technology executives to identify areas in need of improvement in support of digital transformation.

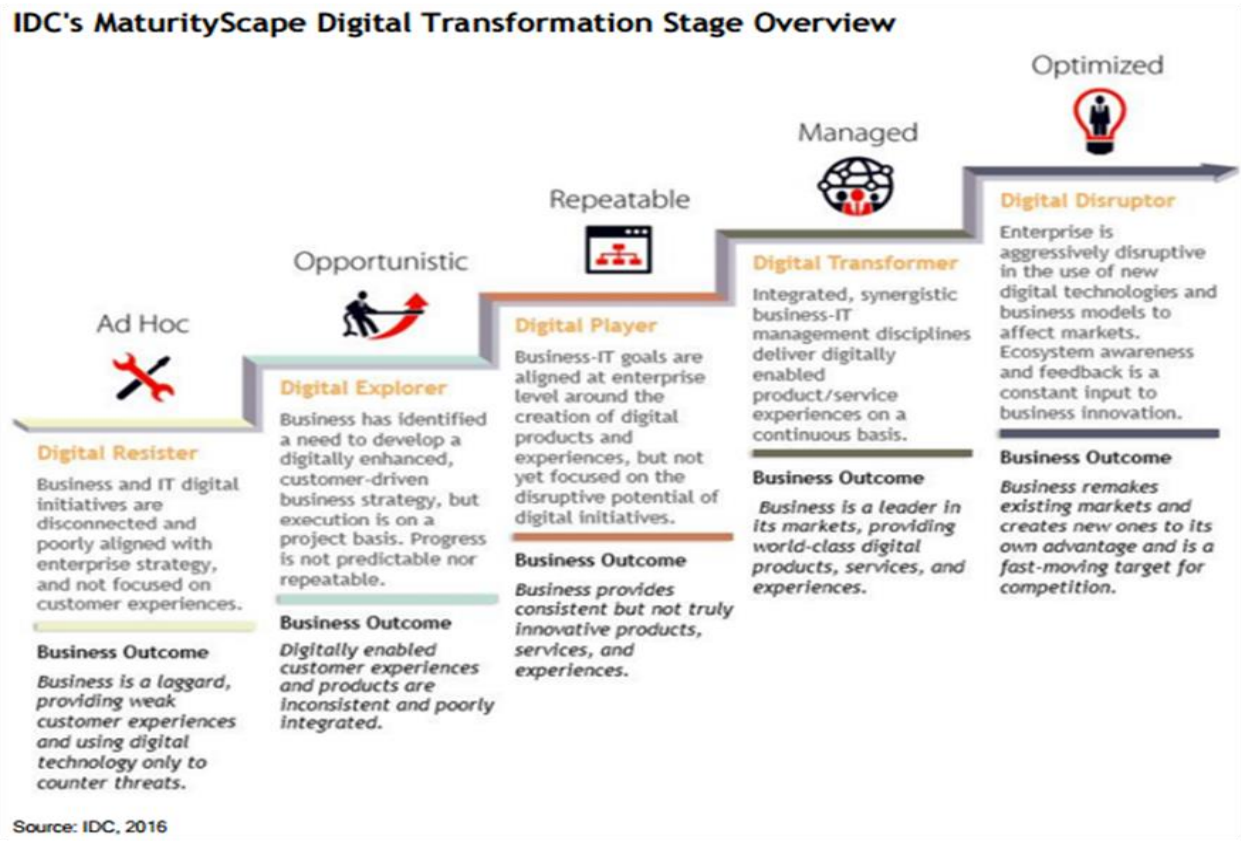

Figure 4: IDC MaturityScape. Source: (IDC, 2016)

2.9 Gartner Hype Cycle

The hype cycle is a graphical representation of the life cycle stages a technology goes through from conception to maturity and widespread adoption. The hype cycle is a branded tool created by Gartner. Managers use the hype cycle's stages as reference points in marketing and technology reporting. Businesses can use the hype cycle to guide technology decisions in accordance with their level of comfort with risk. Each stage of the cycle is associated with its own risks and opportunities. The hype cycle identifies five overlapping stages in a technology's lifecycle (TechTarget, 2018b)

2.10 Conceptual Framework

The relationship is assessed between the dependent and the independent variables. The independent variables are the maturity levels of the six criteria namely, Governance, Communications, Value, Partnership, Technology Scope, and Skills. The two dependent variables are the profit after tax (PAT) and the return on assets (ROA).

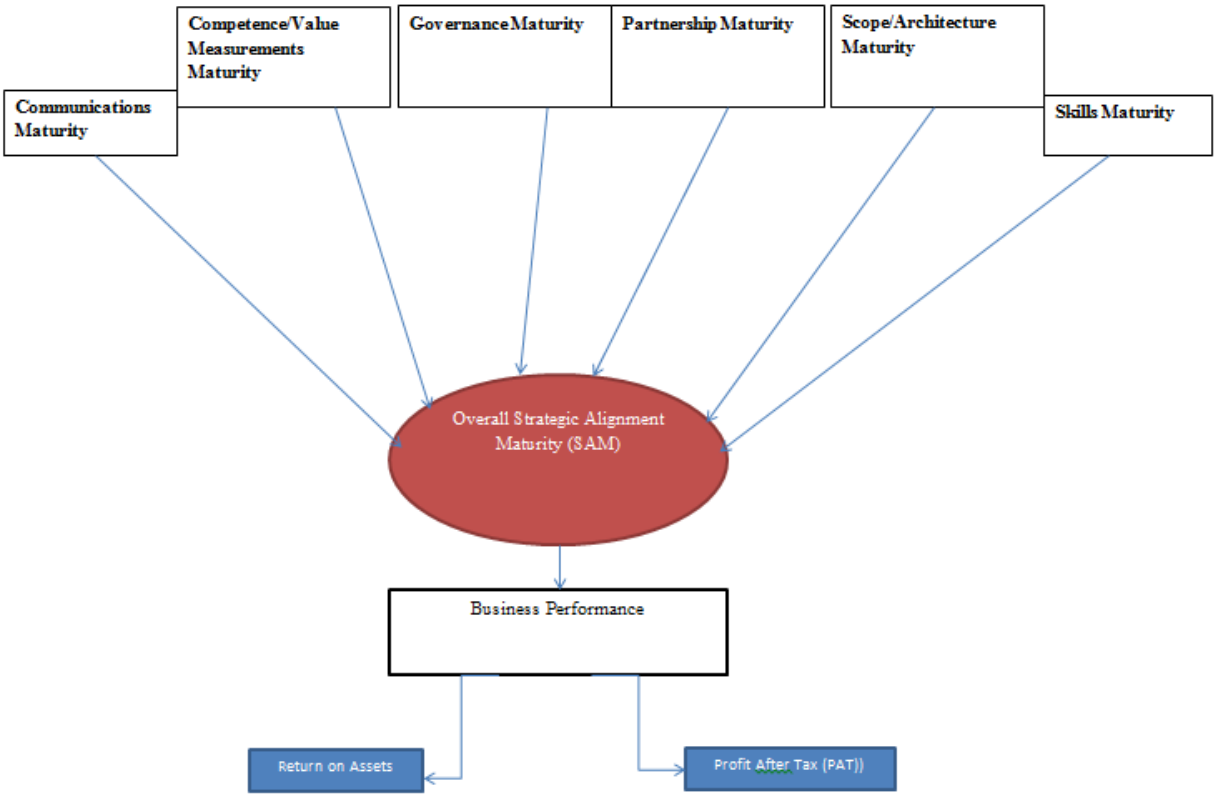

Figure 5: Source (Chege, Nyamboga, & Wanyembi, 2018).

2.11 Business Performance

The business performance measures from the balanced scorecard assess financial or non-financial performance in the four primary areas of financial, learning/growth, internal processes and the customer. Business performance measures may also be known as organizational performance, results or key success indicators and are closely related to an organization's key performance indicators (KPI). The financial performance measures, in this case, are the return on assets and the profit after tax.

2.12 Kenyan Banking Industry

In Kenya there are a total of 40 commercial banks, with Imperial Bank under receivership, 1 mortgage finance company, 12 microfinance banks, 8 representative offices of foreign banks, 86 foreign exchange bureaus, 14 money remittance providers and 3 credit reference bureaus.

Financial inclusion in Kenya has continued to rise, with the percentage of the population living within 3 kilometres of a financial services access point rising to 77.0% in 2016 from 59.0% in 2013. The digital business transformation drove this growth, with Mobile Financial Services (MFS), like the Safaricom M-Pesa, rising to be the preferred method to access financial services in 2016.

Kenya's listed banks recorded a negative Earnings Per Share (EPS) growth of 0.8% in 2017, compared to an average positive growth of 4.4% in 2016. The poor performance was on the back of a decline in Net Interest Income (NII) following the capping of interest rates. The Net Interest Margin (NIM) declined to 8.4% in 2017 from 9.2% in 2016. Listed banks recorded net loans and advances growth of 5.6% to Kshs 1.9 trillion in 2017 from Kshs 1.8 trillion in 2016, slowing down from the 5-year compounded annual growth rate of 13.2%. On the other hand, deposits grew 11.6% to Kshs 2.4 trillion in 2017 from Kshs 2.1 trillion in 2016, also a decline from the 5-year CAGR of 12.5% (Cytonn, 2018).

2.13 Drivers for growth

Diversification to different revenue streams: Banks are exploring different avenues of revenue generation such as Bancassurance, in a bid to increase non-funded income and further diversify their revenue sources, given the introduction of the interest rate cap which has negatively impacted funded income for banks

2) Increased adoption of technology to improve efficiency: In a bid to minimize costs, banks have embraced technology to reduce operational costs and hence drive efficiency. Some of these measures include integration with mobile application platforms and internet banking to facilitate the increased collection of deposits and disbursement of loans with fewer operating costs

3) The growth of the middle class: As the middle-class grows rapidly in Kenya, faster than the majority of the countries in the region, there is an inherent increase in consumption expenditure and an increase in the percentage of the population that will require banking services

4) Innovation: In a bid to reduce operating expenses and improve efficiency, banks are putting an emphasis on innovation, and agency and digital banking are proving to be key drivers of diversification for banks and distribution channels of banking products (Cytonn, 2018).

5) Launch of PesaLink by Kenya Bankers Association (KBA): KBA launched its real-time interbank switch, PesaLink, which has allowed customers make payments between banks in real-time, without the need for intermediaries and customers are also able to initiate transactions from diverse channels including from mobiles, banks' branches, ATMs, agency banking outlets and through the internet

2.14 Metrics

Under the regulated loan pricing framework, there was a decline in net interest margins and higher levels of NPLs; and this, coupled with the rising costs are points of concern to the sector.

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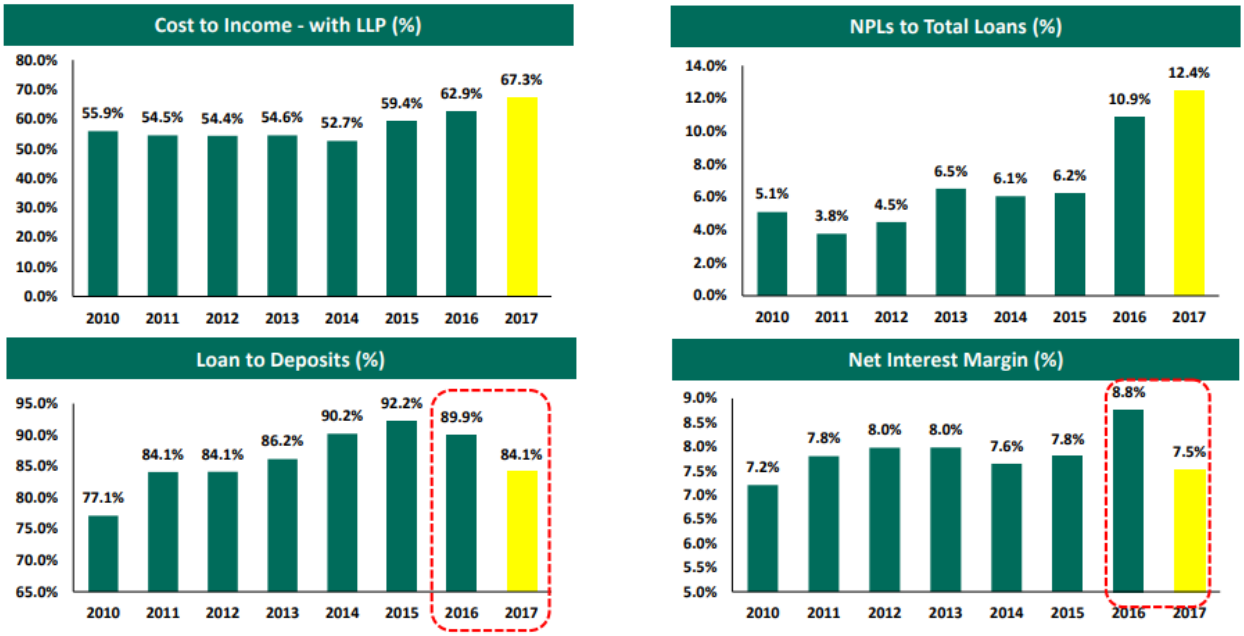

Figure 6: Metrics. Source: (Cytonn, 2018)

2.15 Earnings and Growth

Kenya's banking sector year 2017 core EPS declined by 1.0% compared to a growth of 4.4% in the year 2016.

Listed Banks FY'2017 Earnings and Growth Metrics

Bank	Core EPS Growth	Interest Income Growth	Interest Expense Growth	Net Interest Income Growth	Net Interest Margin	Non-Funded Income (NFI) Growth	NFI to Total Operating Income	Growth in Total Fees& Commissions	Deposit Growth	Loan Growth	Growth in Govt. Securities
NBK	479.0%	(17.7%)	(24.9%)	(13.7%)	7.4%	(15.0%)	26.5%	(1.2%)	0.4%	0.4%	(4.8%)
Equity Group	14.0%	(6.6%)	8.1%	(10.2%)	9.0%	24.2%	42.0%	22.0%	10.7%	4.9%	27.3%
KCB Group	(0.1%)	1.4%	(3.1%)	2.9%	8.7%	2.5%	32.2%	16.4%	11.5%	9.6%	7.4%
Stanbic	(2.5%)	(3.0%)	(5.3%)	(2.0%)	5.2%	10.0%	44.2%	38.6%	24.1%	8.1%	42.6%
NIC Group	(4.3%)	(3.2%)	11.5%	(11.5%)	6.3%	3.6%	27.9%	14.2%	24.2%	4.6%	77.9%
Barclays Bank	(6.4%)	(3.4%)	(7.2%)	(2.4%)	9.7%	(9.5%)	27.9%	8.6%	12.5%	(0.7%)	20.1%
I&M Holdings	(7.1%)	(0.1%)	0.0%	0.6%	7.8%	15.9%	27.0%	22.0%	15.5%	13.6%	10.9%
Co-op Bank	(10.0%)	(4.5%)	(3.9%)	(4.7%)	9.2%	5.6%	32.4%	0.3%	9.2%	7.1%	19.7%
DTBK	(10.3%)	2.4%	3.6%	1.5%	6.5%	4.1%	21.1%	5.3%	11.8%	5.2%	23.3%
Standard Chartered	(24.0%)	1.9%	20.3%	(4.1%)	8.4%	2.3%	32.1%	(0.4%)	14.3%	2.9%	26.7%
HF Group	(86.1%)	(17.1%)	(11.1%)	(24.3%)	5.2%	78.2%	31.1%	(37.6%)	(3.7%)	(8.9%)	(44.0%)
Weighted Average*	**(1.0%)**	**(2.4%)**	**2.6%**	**(3.8%)**	**8.4%**	**9.1%**	**33.6%**	**13.4%**	**12.5%**	**6.1%**	**22.2%**
Weighted 2016 Average	**4.4%**	**15.5%**	**6.2%**	**20.3%**	**9.2%**	**2.4%**	**31.0%**	**12.6%**	**6.4%**	**6.3%**	**45.8%**

** The weighted average is based on Market Cap as at 13th April, 2018*

Figure 7: Earnings. Source: (Cytonn, 2018).

2.16 Return on Assets (ROA)

Kenya's banking sector year 2017 ROACE is at 17.6%

Listed Banks FY'2017 Operating Metrics

Bank	LDR	CIR	ROACE	Deposits per Branch (bns)	Gross NPL Ratio	NPL Coverage	Tangible Common Ratio
Co-operative Bank	88.3%	60.9%	15.9%	1.9	7.2%	37.6%	17.6%
KCB Group	84.6%	59.2%	19.5%	1.9	8.4%	67.9%	15.9%
Diamond Trust Bank	73.6%	59.6%	13.9%	1.9	7.2%	67.5%	13.0%
Equity Group	74.8%	58.7%	21.6%	1.3	6.2%	50.3%	16.6%
I&M Holdings	90.4%	56.2%	17.9%	4.0	12.1%	40.0%	18.5%
NIC Group	86.2%	62.5%	12.9%	3.0	11.9%	45.7%	16.0%
Barclays Bank	90.5%	65.8%	16.0%	2.1	7.1%	70.0%	15.9%
Standard Chartered	59.2%	63.2%	16.5%	4.8	12.8%	74.4%	15.3%
Stanbic Holdings	74.1%	71.7%	10.4%	5.5	7.0%	47.4%	13.5%
HF Group	135.4%	92.3%	1.1%	1.5	15.6%	36.4%	15.6%
National Bank	55.5%	91.4%	5.8%	1.3	40.6%	57.1%	5.6%
Weighted Average*	**80.0%**	**61.1%**	**17.6%**	**2.4**	**8.3%**	**56.4%**	**16.1%**
Weighted 2016 Average	**84.2%**	**51.1%**	**16.8%**	**2.2**	**7.3%**	**57.4%**	**15.9%**

** The weighted average is based on Market Cap as at 13th April, 2018*

Figure 8. ROACE. Source: (Cytonn, 2018).

2.17 Franchise value

KCB Group emerged top in the franchise value rankings, with HF Group coming last

Key Ranking Metrics

Rank	Bank	LDR *	CIR **	ROACE ***	NIM ****	PEG ratio	P/TBV	Deposit per Branch	Gross NPL Ratio	NPL Coverage	Tangible Common Ratio	Non Interest Income to Revenue	Camel Rating	Corporate Governance Score	Total Score	FY'17 Rank	Q3'17 Rank
1	KCB	1	3	2	4	1	7	7	6	3	5	4	9	1	53	1	1
2	Equity	6	2	1	3	2	11	10	1	6	3	2	1	7	55	2	3
3	Co-op	3	5	6	2	6	9	8	4	10	2	3	4	4	66	3	2
4	I&M	4	1	3	6	3	6	3	8	9	1	9	8	7	68	4	5
5	Barclays	5	8	5	1	10	8	5	3	2	5	7	7	5	71	5	4
6	NIC	2	6	8	9	4	3	4	7	8	4	8	2	9	74	6	6
7	SCBK	9	7	4	5	9	10	2	9	1	8	5	5	3	77	7	9
8	DTBK	8	4	7	8	5	5	6	5	4	10	11	3	2	78	8	6
9	Stanbic	7	9	9	11	8	4	1	2	7	9	1	6	11	85	9	8
10	NBK	10	10	10	7	7	2	11	11	5	11	10	11	6	111	10	10
11	HF Group	11	11	11	10	11	1	9	10	11	7	6	10	9	117	11	11

- The bank ranking assigns a value of 1 for the best performing bank, and a value of 11 for the worst
- The metrics highlighted a bank's profitability, efficiency, growth, asset quality, liquidity, revenue diversification, capitalization and soundness
- KCB Group ranked 1st position on the back of a high return on average equity of 19.5% compared to an industry average of 13.8% as well as an optimal loan to deposit ratio of 84.6%, compared to an industry average of 83.0%
- HF Group ranked 11th, owing to increased costs and low return, with their Cost to Income Ratio and Return on average common equity at 92.3% and 1.1%, respectively, as compared to an industry average of 67.4%, and 13.8%, respectively

Figure 9: Source: (Cytonn, 2018)

2.18 Intrinsic Value

NIC Group has the highest upside with a total potential return of 42.3%

Banks	Price*	Price	(Downside)	Yield	Return	Ranking	Ranking
NIC Group	44.0	61.6	40.0%	2.3%	**42.3%**	**1**	**1**
Diamond Trust Bank	210.0	272.9	29.9%	1.2%	**31.2%**	**2**	**3**
KCB Group	52.5	63.7	21.3%	5.7%	**27.0%**	**3**	**2**
I&M Holdings	129.0	151.2	17.2%	2.7%	**19.9%**	**4**	**5**
Barclays Bank	13.0	13.7	5.2%	7.7%	**12.9%**	**5**	**4**
Co-op Bank	19.3	20.5	6.6%	4.2%	**10.8%**	**6**	**6**
NBK	8.3	8.6	4.2%	0.0%	**4.2%**	**7**	**11**
Equity Group	55.5	54.3	(2.1%)	3.6%	**1.5%**	**8**	**7**
Stanbic Holdings	91.0	87.1	(4.2%)	5.8%	**1.5%**	**9**	**9**
HF Group	12.1	11.0	(9.3%)	2.9%	**(6.4%)**	**10**	**8**
Standard Chartered	240.0	192.6	(19.8%)	7.1%	**(12.7%)**	**11**	**10**

Prices as at 13th April 2018

- The Intrinsic Valuation is computed through a combination of valuation techniques, with a weighting of 75.0% on Discounted Cash flow Methods and 25.0% on Relative Valuation
- NIC Group has the highest upside at 42.3%, followed by DTBK and KCB Group at 31.2% and 27.0%, respectively
- NBK rose 4 places to position 7 from 11 in Q3'2017, with an expected return of 4.2%

Figure 10: Intrinsic Value. Source: (Cytonn, 2018).

2.19 Overall Bank Rankings

Overall, KCB Group ranked highest, while 8 banks shifted positions from Q3'2017

CYTONN'S FY'2017 BANKING REPORT RANKINGS					
Bank	Franchise Value Total Score	Intrinsic Value Score	Weighted Score	FY'2017 Rank	Q3'2017 Rank
KCB Group	53.0	3.0	23.0	**1**	**1**
Equity Group	55.0	8.0	26.8	**2**	**4**
I&M Holdings	68.0	4.0	29.6	**3**	**7**
Co-operative Bank	66.0	6.0	30.0	**4**	**2**
NIC Bank	74.0	1.0	30.2	**5**	**5**
Barclays Bank	71.0	5.0	31.4	**6**	**3**
Diamond Trust Bank	78.0	2.0	32.4	**7**	**6**
Standard Chartered Bank	77.0	11.0	37.4	**8**	**9**
Stanbic Holdings	85.0	9.0	39.4	**9**	**8**
National Bank of Kenya	111.0	11.0	48.6	**10**	**10**
HF Group	117.0	10.0	52.8	**11**	**11**

- In our ranking, franchise value was assigned a weighting of 40.0% while the intrinsic value was assigned 60.0% weight
- KCB Group maintained the 1st position, while Equity Group moved up 2 positions to 2nd, while I&M Holdings moved up 4 positions to 3rd
- Co-operative Bank declined 2 spots to position 4 from 2nd in Q3'2017, while Barclays Bank declined 3 spots to Position 6 from Position 3 in our Q3'2017 Banking Sector Report
- National Bank and HF Group maintained their positions at 10th and 11th in FY'2017, same as in Q3'2017

Figure 11: Overall ranking. Source: (Cytonn, 2018)

2.20 Market share

The 8 Tier 1 banks control 65.3 % of the market share. The six Tier 1 banks control 54% of the market share.

Peer Group	Weighted Market Share	No. of Institutions	Total Net Assets, (KShs. M)	Customer Deposits, (KShs. M)	Capital & Reserves (KShs. M)
Large	65.32%	8	2,404,194	1,739,278	373,516
Medium	25.90%	11	981,099	654,602	159,814
Small	8.77%	20	310,651	211,273	59,094
Total*	**100.00%**	**39**	**3,695,944**	**2,485,919**	**540,578**

** Charterhouse Bank under Statutory Management, Fidelity Commercial Bank, undergoing acquisition and Imperial Bank & Chase Bank under Receivership have been excluded*

Source: CBK

Figure 12: Market share. Source: (Cytonn, 2018).

3.0 RESEARCH METHOD

We employed the mixed method for the research.

- Analyze qualitative data first
- Then quantitative data
- Employed Stratified Sampling
- The 6 Tier banks are the sample
- The CEO, CFO and CIO as participants
- The 39 banks are in the population
- Utilized the Correlation Design (Multiple Regression)

3.1 Data Analysis

The researchers adopted the following multiple linear regression model;

- $\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon}$
- Where: Y = Dependent Variable (Return on Assets and Profit after Tax)
- Independent variables, which include:
- X_1 is communication criteria
- X_2 is competency/value criteria
- X_3 is governance criteria
- X_4 is partnership criteria
- X_5 is scope and architecture criteria
- X_6 is skills criteria
- α = the constant
- β_{1-6} = the regression coefficient or change included in Y by each X
- ϵ = error term

- The closer the p-values of the regression results are closer to +1 the higher the association between the research variables.

4.0 RESULTS AND FINDINGS

4.1Correlation Analysis of SAM scores and Return on Assets (ROA)

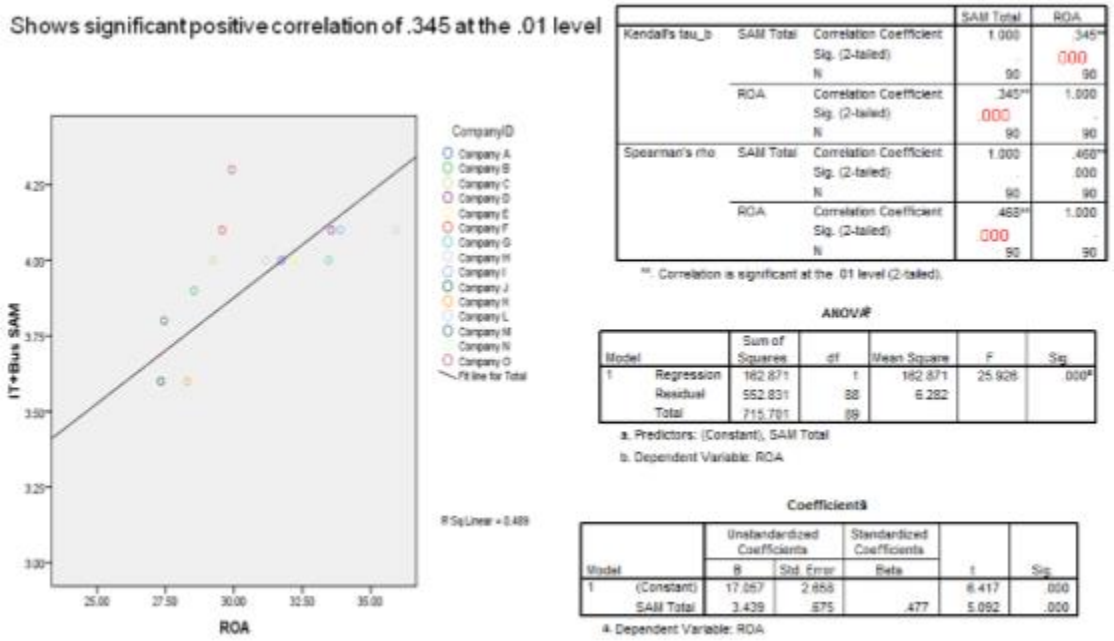

Figure 13: Correlation. Source (Chege, Nyamboga, & Wanyembi, 2018).

The Profit after Tax (PAT) and maturity relationship showed a positive correlation.

5.0 CONCLUSION

The researches showed that companies are getting better at aligning their business and IT; albeit alignment is still a pervasive and persistent problem. There is evidence that higher levels of alignment have positive effects on company performance regardless of industry type or organization structure. The results from the assessment of the six Tier-one banks show that some banks clearly do a better job of aligning their IT and business operations than others. The higher alignment maturity levels are linked with better business performance measures including the ROA and NPM. KCB had the highest level of maturity, followed by Equity bank, Co-operative Bank, Barclays Bank, Standard Chartered Bank and CFC Stanbic bank in that order.

Achieving significantly higher levels of IT-business alignment across a wider range of organizations is a long-term journey. The journey in each organization 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 organization. And in the quest for continuous improvement within a dynamic global environment, the journey may never end.

REFERENCES

Atanasoff, L., & Venable, M. (2017). TECHNOLOGY and WELLNESS: Implications for Career Development and the Workplace. *Career Planning & Adult Development Journal*, *33*(1), 65.

Belalcàzar, A., Diaz, J., & Molinari, L. (2016). Towards the Strategic Alignment of Corporate Services with IT, applying Strategic Alignment Model (SAM). *Journal Of Computer Science & Technology (JCS&T)*, *16*(1), 52-58.

Benaroch, M., & Chernobai, A. (2017). OPERATIONAL IT FAILURES, IT VALUE DESTRUCTION, AND BOARD-LEVEL IT GOVERNANCE CHANGES. *MIS Quarterly*, *41*(3), 729-A6.

Benlian, A., & Haffke, I. (2016). Does mutuality matter? Examining the bilateral nature and effects of CEO–CIO mutual understanding. *Journal Of Strategic Information Systems*, *25*(2), 104. doi:10.1016/j.jsis.2016.01.001

Boljanović, J. Đ., Vukašinović, J., & Veinović, M. (2014). Information Technologies in Knowledge Economy. *Singidunum Journal Of Applied Sciences*, *11*(2), 11-19. doi:10.5937/sjas11-4447

Central Bank of Kenya. (2016). *Bank sector annual reports*. Retrieved from https://www.centralbank.go.ke/

CioIndex. (2018). *Seven steps to business and IT alignment*. Retrieved from https://www.cioindex.com/

ComputerWeekly. (2018). *IT capability maturity model*. Retrieved from https://www.computerweekly.com/

Cytonn. (2018). *Cytonn 2017 banking sector report*. Retrieved from https://cytonn.com/

Dalia Suša, V., Mario, S., & Mirjana Pejić, B. (2017). IT GOVERNANCE ADOPTION IN BANKING AND INSURANCE SECTOR: LONGITUDINAL CASE STUDY OF COBIT USE. *International Journal For Quality Research, Vol 11, Iss 3, Pp 691-716 (2017)*, (3), 691. doi:10.18421/IJQR11.03-13

Emmanuel, O., Sanjay, M., Rytis, M., Robertas, D., & Luis, F. (2017). Optimizing Green Computing Awareness for Environmental Sustainability and Economic Security as a Stochastic Optimization Problem. *Sustainability, Vol 9, Iss 10, P 1857 (2017)*, (10), 1857. doi:10.3390/su9101857

Evans, N. D. (2016). FUTURE SKILLS. *Itnow*, *58*(1), 50-51.

Farhan, L., Kharel, R., Kaiwartya, O., Hammoudeh, M., & Adebisi, B. (2018). Towards green computing for Internet of things: Energy oriented path and message scheduling approach. *Sustainable Cities And Society*, *38*195-204. doi:10.1016/j.scs.2017.12.018

Gbangou, L. D., & Rusu, L. (2016). Factors Hindering Business-IT Alignment in the Banking Sector of a Developing Country. *Procedia Computer Science*, 100280. doi:10.1016/j.procs.2016.09.156

Gellweiler, C. (2017). Bridging IT requirements to competitive advantage: The concept of IT value planning. *Procedia Computer Science*, *121*145. doi:10.1016/j.procs.2017.11.020

Goepp, V., & Avila, O. (2015). An Extended-Strategic Alignment Model for technical information system alignment. *International Journal Of Computer Integrated Manufacturing*, *28*(12), 1275-1290. doi:10.1080/0951192X.2014.964774

Govindaraju, R., Dwipayana, I. K., & Salamah, S. Y. (2018). IT GOVERNANCE AND ERP POST-IMPLEMENTATION: ANALYSING THE IMPACT OF IT BUSINESS ALIGNMENT AND IT BENEFITS MANAGEMENT ON ERP OPERATION AND ENHANCEMENT. *International Journal Of Technology*, *9*(3), 578-588. doi:10.14716/ijtech.v9i3.1205

Han, G., Que, W., Jia, G., & Zhang, W. (2017). Resource-utilization-aware energy efficient server consolidation algorithm for green computing in IIOT. *Journal Of Network And Computer Applications*, doi:10.1016/j.jnca.2017.07.011

International Data Corporation. (2016). *MaturityScape.* Retrieved from https://IDC.com/

Joshi, A., Bollen, L., Hassink, H., De Haes, S., & Van Grembergen, W. (2018). Explaining IT governance disclosure through the constructs of IT governance maturity and IT strategic role. *Information & Management*, *55*(3), 368-380.

Juarez, F., Ejarque, J., & Badia, R. M. (2018). Dynamic energy-aware scheduling for parallel task-based application in cloud computing. *Future Generation Computer Systems*, *78*257-271. doi:10.1016/j.future.2016.06.029

Karpowicz, M. P., Arabas, P., & Niewiadomska-Szynkiewicz, E. (2018). Design and implementation of energy-aware application-specific CPU frequency governors for the heterogeneous distributed computing systems. *Future Generation Computer Systems*, *78*302-315. doi:10.1016/j.future.2016.05.011

Luftman, J. (2003). ASSESSING IT/BUSINESS ALIGNMENT. *Information Systems Management*, *20*(4), 9-15.

Luftman, J. N. (2012). *Managing IT resource*. Upper Saddle River, N.J: Prentice Hall.

Luftman, J., & Kempaiah, R. (2007). AN UPDATE ON BUSINESS-IT ALIGNMENT: "A LINE" HAS BEEN DRAWN. *MIS Quarterly Executive*, *6*(3), 165-177.

Luftman, J., Lyytinen, K., & Zvi, T. b. (2017). Enhancing the measurement of information technology (IT) business alignment and its influence on company performance. *Journal Of Information Technology (Palgrave Macmillan)*, *32*(1), 26-46. doi:10.1057/jit.2015.23

Majstorović, M. N. (2016). BUSINESS AND IT ALIGNMENT. *Military Technical Courier / Vojnotehnicki Glasnik*, *64*(2), 496-512. doi:10.5937/vojtehg64-9263

Malta, P., & Sousa, R. D. (2016). Process Oriented Approaches in Enterprise Architecture for Business-IT Alignment. *Procedia Computer Science*, *100*888. doi:10.1016/j.procs.2016.09.239

Marotta, A., Avallone, S., & Kassler, A. (2018). A Joint Power Efficient Server and Network Consolidation approach for virtualized data centres. *Computer Networks*, *130*65-80. doi:10.1016/j.comnet.2017.11.003

Mihalescu, G., Gheorghe, A., & Boiangiu, C. (2017). TEACHING SOFTWARE PROJECT MANAGEMENT: THE COLLABORATIVE VERSUS COMPETITIVE APPROACH. *Journal Of Information Systems & Operations Management*, *11*(1), 96.

Niemi, T., Nurminen, J. K., Liukkonen, J., & Hameri, A. (2018). Towards Green Big Data at CERN. *Future Generation Computer Systems*, *81*103-113. doi:10.1016/j.future.2017.11.001

Orcher, L. T. (2014). *Conducting research: social and behavioural methods* (2nd ed.). Glendale, CA: Pyrczak Publishing.

Pallant, J. (2013). *SPSS survivor manual: A step-by-step guide to data analysis using SPSS for Windows* (5th ed.). Berkshire, England: Open University Press.

Patricia Pérez, L., & Lourdes Francisca García, Á. (2013). THE EVALUATION AND IMPROVEMENT OF IT GOVERNANCE. *Journal Of Information Systems And Technology Management, Vol 10, Iss 2, Pp 219-234 (2013)*, (2), 219. doi:10.4301/10.4301%2FS1807-17752013000200002

Piman, S., & Poldee, W. (2016). A Proposed for Assessing Hotel E-Readiness for Tourism in Southern Thailand. *SHS Web Of Conferences, Vol 23, P 02007 (2016)*, 02007. doi:10.1051/shsconf/20162302007

Renaud, A., Walsh, I., & Kalika, M. (2016). Is SAM still alive? A bibliometric and interpretive mapping of the strategic alignment research field. *Journal Of Strategic Information Systems*, *25*(2), 75-103. doi:10.1016/j.jsis.2016.01.002

Research on the relationship between informatization level and global competitiveness. (2017). *2017 IEEE International Conference on Intelligence and Security Informatics (ISI), Intelligence and Security Informatics (ISI), 2017 IEEE International Conference on*, 198. doi:10.1109/ISI.2017.8004911

SUBRIADI, A. P., HADIWIDJOJO, D., DJUMAHIR, RAHAYU, M., & SARNO, R. (2013). INFORMATION TECHNOLOGY PRODUCTIVITY PARADOX: A RESOURCE-BASED VIEW AND INFORMATION TECHNOLOGY STRATEGIC ALIGNMENT PERSPECTIVE FOR MEASURING INFORMATION TECHNOLOGY CONTRIBUTION ON PERFORMANCE. *Journal Of Theoretical & Applied Information Technology*, *55*(1), 137.

TechTarget. (2018a). *The first rule of IT governance is too cut costs and align business and IT*. Retrieved from https://searcherp.techtarget.com/

TechTarget. (2018b). *Gartner hype cycle*. Retrieved from https://whatis.techtarget.com/

TechTarget. (2018c). *IT Governance*. Retrieved from https://searcherp.techtarget.com/

TechTarget. (2018d). *Capability maturity model*. Retrieved from https://searchsoftwarequality.techtarget.com/

TechTarget. (2018e). *The Open Group Architecture Framework*. Retrieved from https://searchmicroservices.techtarget.com/

TechTarget. (2018f). *COBIT*. Retrieved from https://searchsecurity.techtarget.com/

Turel, O., Liu, P., & Bart, C. (2017). Board-Level Information Technology Governance Effects on Organizational Performance: The Roles of Strategic Alignment and Authoritarian Governance Style. *Information Systems Management*, *34*(2), 117-136. doi:10.1080/10580530.2017.1288523

Venkatraman, N., Henderson, J. C., & Oldach, S. (1993). Continuous strategic alignment: Exploiting information technology capabilities for competitive success. *European Management Journal, 11* (2), 139-149.

Wachnik, B. (2017). An analysis of ERP and CRM system implementations in Poland between 2013 and 2016. *Journal Of Economics & Management*, *27*(1), 134-149. doi:10.22367/jem.2017.27.08