# EFFECT OF CLOUD COMPUTING STRATEGIES ON BUSINESS STRATEGIC AGILITY IN COMMERCIAL BANKS IN KENYA

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## ABSTRACT

Commercial banks in Kenya, like several industries, face a dynamic market, new technologies, economic uncertainties, fierce competition and a lot of hard to please customers. Cloud computing strategies haven't been ready to provide Kenya‘s commercial banks bigger flexibility in terms of capability, lightness and prices, nevertheless most banks are still reluctant to embrace and implement cloud strategy. The overall objective of this study was to assess the effect of cloud computing strategy adoption on business strategic agility in commercial banks in Kenya. The study was guided by the following objectives; to establish the effect of on-demand self-service, rapid elasticity, ubiquitous/broadband network access, resource pooling and metering use on business strategic agility in commercial banks in Kenya. This study reviewed the subsequent theories; resource-based theory, diffusion of innovation theory and institutional theory. The study adopted a descriptive research design. The target population for this study was population for this study was the 42 commercial banks in Kenya. The unit of analysis included the Head of Operations, IT Directors, and IT Managers. A sample size of 174 was derived from the target population of 316 with a 95% confidence level and an error of 0.05 using the stratified proportionate random sampling technique. Primary data was obtained using structured questionnaires. The drop and pick method was preferred for questionnaire administration. Data was analyzed using Statistical Package for Social Sciences (SPSS Version 25). Data was analyzed descriptively and inferentially using frequencies, means and standard deviation, correlations and multiple regression analysis. Information was presented in the form of tables. The research established that automation of computing resources, retrieval and use cloud information resources, and access to numerous services at once affected business strategic agility to a great extent. Further, the study established that resource diversification and flexible provisioning of resources affected business strategic agility in commercial banks in Kenya to a moderate extent. The research found that broadband network access affected business strategic agility to a very great extent. The study also found that number of sessions held affected business strategic agility to a moderate extent. The study concluded that rapid elasticity had the most influence on the business strategic agility in commercial banks in Kenya, followed by on-demand self-service, then broadband network access, and metering use had the least influence on the business strategic agility in commercial banks in Kenya. The study recommended that resources are needed to support business processes and to test and develop new software. The study recommends that the usage model of pay per resource support commercial banks in Kenya to implement and test projects faster, saving money from new resources to be procured and made available. The study recommends that change in processes in commercial banks in Kenya would require IT resources to be replaced or new resources to be added. Therefore, the adoption of cloud computing

easily handles these changes by allowing the commercial banks to quickly add or change IT resources easily to support their changed processes.

**Keywords:** On-demand self-service, Rapid elasticity, Broadband network access, Metering use, Business agility.

## INTRODUCTION

The world is rapidly heading to advancement, innovation related an intemperate utilization of modern methods as comes about of compulsory necessities of this time. As of technological changes seen by the planet, the novel idea was presented inside the field of computing called cloud computing, that given information uncommon for organizations on request anytime and wherever by means of the net in understanding with the code and security and secrecy guidelines of the data (Al-Zoubi, 2017). Cloud computing can't be adequately caught on as a standalone improvement inside the IT showcase, be that as it may or maybe as a center fixing of a greater change of the IT trade since it impacts the total IT plot. Cloud computing hence makes a compelling trade case on each specialized and commerce angle (KPMG, 2018). A full change of administrations, as well as work out, capacity, applications, and commerce forms, is right now on the advertisement from third-party cloud providers.

Cloud computing proposes improvement and utilization of Internet-based innovation. A few keeping money controllers require that cash information for managing an account client keep in their domestic nation. Beyond any doubt compliance laws require that information not be intermixed with distinctive information, like on shared servers or databases. As a result, banks ought to have a straightforward understanding of wherever their information dwells inside the cloud (NIST, 2020). Cloud computing selection is the utilization of internet-based advances to conduct trade (Armbrust et al., 2017).

This serving is such that a client will favor extra captivating and worthy benefit by paying more costs. Through this rising technology's approach, the planet of computing moves rapidly to a course where candidates tend to encourage administrations from cloud providers instead of doing work and getting required administrations regionally. So, cloud computing may well be much appreciated to extend capability, or to undertake it powerfully whereas not back in unused foundation. It is conjointly coaching a novel person or authorizing unused code. Because it allows the required measures and arrangements for cloud providers rather than specialize in giving satisfactory local arrangements for the said issues. Moreover, organizations can halt from coherence in giving arrangements for said issues significantly in case the organization itself is a cloud provider (Barnett, 2017).

Managing with alteration has until the end of time been a very critical issue in organizations. In zones wherever amendment is very certain and so the reaction is planned coordinate, organizations must be flexible. The first objective of cloud computing selection is to cut back the cost of IT administrations while expanding prepared outturn, irresponsibleness, comfort and suppleness of trade operations. Cloud computing appropriation includes the utilization of any of the cloud computing benefit models by an enterprise. The selection of cloud computing by an organization is measured in terms of timing, recurrence and degree of appropriation. The timing of appropriation of related development is that the relative earliness of selection among a populace of potential adopters. Timing of cloud computing selection is conceptualized since the period since an enterprise received any of the cloud computing benefit models.

The recurrence of appropriation or frequency of advancement selection measures the sum of development forms received by an enterprise among a chosen sum of your time. Cloud computing is apparently one in each of the first crucial innovative shifts among the final decade (Wang, Rashid & Chuang, 2018). Business legerity might be an administration thought to address the competition, commerce hones and company structures of the ordinal century. The managing an account division is one segment which is able to be power-assisted with satisfactory cloud computing models and might be overseen befittingly. Cloud computing administrations and arrangements from IBM give banks a conservative much obliged to answer to the chop-chop energetic flow of the money world. With over four thousand cloud customer engagements, over 200 million day by day cloud exchanges prepared, and over one thousand overseen virtual machines, IBM has incontestable authority and expansive ability in serving buyers over different businesses, as well as keeping money, take note of the worth of cloud. Cloud-based arrangements empower specialists to get to applications related administrations from wherever inside the world with an Internet-connected gadget. This openness makes the environment tributary to collaboration and extra efficiencies over and among bunches and divisions inside a bank (Jansen & Grance, 2018).

Cloud computing has been an attractive IT tool for industries ranging from retail to real estate for years. The financial sector, however, has been somewhat of a laggard when it comes to a full skyward migration (Akhusama, 2020). Banks have been implementing cloud infrastructure functions since the technology’s nascent days. Many institutions, however, have historically left core transaction processing and other mission-critical tasks up to legacy systems. However, with the Covid-19 pandemic upending how banks and other financial companies had to do business that may soon change. Accessing the cloud can increase banks’ ability to innovate by enhancing agility, efficiency and productivity. It can also help banks to reallocate resources away from the administration of IT infrastructure, and towards innovation and fast delivery of products and services to markets (Song, Benedetto & Nason, 2021).

Banks require intensive use of technology for operation. Traditionally this has been solved by on-premises systems, deployed locally on the company's own computer infrastructure. However, the progress of technology has accelerated dramatically, requiring banks to embrace this development in the financial market. They do so consciously and strategically. Cloud has become a key technology to develop new financial services and to innovate, to collaborate with third parties and to compete in the digital context (Sultan, 2017). The market dictates the speed of change. Flexibility and time to market are imperative for banks and cloud computing is the technology with the greatest potential to meet both needs. Banks need cloud technology to compete with other non-regulated players entering the marketplace on a level playing field. Innovative, fast-evolving cloud technologies allow banks to take advantage of the best-suited technology for customers and business processes at each moment. Nowadays customers demand immediacy and personalization. This can require banks to rely on third parties that provide new–sometimes tailor-made–general-purpose services. Cloud also creates opportunities for increasing specialization. Banks can dedicate their top talent to business problems while leveraging CSPs for non-core capabilities like management of infrastructure (Grigorik, 2016).

Many banks have now launched data centers where majority of their enquiries are handled. With the increased demand for data centers such as power utilization, cooling structure, infrastructure, space, competent IT experts and day-to-day running costs, cloud computing is developing as a vital shift and a changing model on the way services are brought in IT due to its financial and operational gains to businesses (Etro, 2019). Many banks have opted for information technology in their expansion strategies as opposed to opening physical branch networks. Distributing and duplicating data when demand arises, resource utilization is found to be drastically enhanced through cloud computing. In addition, web server hosts portray images of pertinent consumers who demand some level of accessibility across numerous servers and direct requests in accordance to interchange load (Jansen & Grance, 2018).

Agility extends the choices for reaction once eccentric occasions happen. Financial elements have caused the European Union (EU) back organizations all told divisions to grasp. In this manner, cloud computing builds profitability within the common room (European Commission, 2020), in any event banks are to avoid getting the cloud as completely varied enterprises at the indistinguishable rate (Lindroth, 2016). Most banks find it difficult to give up their legacy on-premises applications, with only a few exceptions of early adopters like Capital One—which started a migration to the Amazon Web Services (AWS) cloud in 2012 and closed the last of its eight on-premises data centers in November 2020. To demonstrate contempt for the extremely fact that there are completely varied enterprises that do not use cloud computation, the legitimacy to undertake effectively could be a small amount asking for countless completely varied ventures, with an exceptional match. Sekar and Maniatis (2018) appear that cloud computing gives clients the control to cut back in operation costs and capital uses much obliged to the infrastructure provided to them. An auxiliary of an outsized European bank outlined

spanking modern deals stage backed relate application bundle, that permits tellers to enter information into the framework fair the once, instead of coming into it up to twenty times for different applications.

Also, Ebenezer (2016) appears that cloud computing will still be connected with victory for accounting capacities. A number one retail bank inside the joined together Kingdom of Extraordinary Britain and Northern Ireland disentangled foundation administration for its IT investigation endeavors with a virtualized cloud plan which can without delay back numerous program bundle occasions. With the modern foundation, investigation bunches will rapidly and delivers virtual testing situations whereas not the delays common to commonplace arrangement endeavors. In Russia, there's a related degree expanding assortment of money related and innovative developments: crowd-hosting administrations, common transfer locales, on-line keeping money, computerized monetary standards, portable wallets, advanced information trade stages, high-frequency exchanging, e-commerce, roofed backs and so on. All this might be the beginning of the path that Russian banks and financial corporations must bear to urge the foremost focal points and openings that start the creation of the money related innovation stage. In any case, the quick improvement of later financial advances compares to the zoom of the dangers that go with them (Grigorik, 2016).

Africa is balanced for the ensuing wave of innovation advancement wherever IT administrations are aiming to be right away available to wrap up clients for the inquiring. a few nations in the geographic zone have made critical steps in IT characterized by their embracement of versatile gadgets. Like elective rising markets, landmass has been moderate in getting a handle on cloud computing in any case it's chop-chop beginning to set out with school pros touting the cloud’s tremendous and perhaps inconspicuous potential among the landmass. Pros note that Cloud computing would conceivably really be perfect for landmass, that's characterized by exceptionally small antiquated net framework, questionable power frameworks in a few ranges, related degreed an in advance boom in commerce and improvement. A noteworthy jump to cloud computing selection in landmass has been the shortage of information concerning its points of interest (Conway-Smith, 2016).

Adoption of cloud computing in Africa is at the infant stage. There is a nonattendance of cloud-based mindfulness, indeed among gigantic organizations in landmass. Steady with a Gartner overview conducted among gigantic undertakings in 2011, half of the respondents in rising markets had not recognized either cloud computing or did not get what it implied (Won Kim, 2019). In African nations, the choice center commerce has been the fastest developing space for cloud-based innovation. Rising markets like African nations, African nations are likely to be fundamental financial prepare to drive landmass toward the cloud stage. Kshetri (2018) on largely cloud computing showcase in African nations found that the showcase accomplished incomes of $114.6 million in 2013 and gauges this to realize $288.0 million in 2018. Coding

systems as a benefit can become the preeminent far reaching cloud computing platform. Despite far reaching mindfulness additionally the demonstrated truth that cloud has been around for a long time in African nations, ventures have caught on and grasped cloud computing to shifted degrees. By and colossal, real appropriation of those administrations proceeds to be stricken by segment, and a parcel of appropriately, on venture size.

Numerous organizations are investigating or making prepared to present this unused innovation. The commercial center for the cloud in creating nations is by and by little, be that as it might be expanding chop-chop. In Kenya, cloud requests are tall inside the offshoring trade and innovation center points. In spite of broad mindfulness additionally the demonstrated reality that cloud has been around for a match of a long time in African nation ventures have caught on and grasped cloud computing to shifted degrees. By and gigantic, real selection of those administrations proceeds to be stricken by segment, and a parcel of applicably, on undertaking measure. Kenya's financial frameworks are comparatively well created and heterogeneous. In any case, major basic obstructions hinder it from coming to its full potential (Mwangi, 2017).

A financial framework that is well developed broadens access to outside fund and channels assets to the divisions that require them most (Nicoletti, 2016). Money related frameworks are as of now get a handle on the cloud approach in African nations and source a number of the non-center administrations (Mwangi, 2017). African nations are gradually developing as related degree ICT locale of interest. Compelling financial foundations and markets will encourage economies adapt higher with exogenous stuns like terms of exchange instability and move them off from asset fundamentally based advancement (Guangming, 2017). Kenya comparative to the other African showcase is in any case to totally receive cloud based frameworks much appreciated to believe and security contemplations (Mwangi, 2017).

The appropriation of Cloud fundamentally based money related frameworks in African nations has been moderate much obliged to the consequent reasons: Protection/Security Concerns; Compliance requirements from IRA; Need of integration wherever the frameworks are made up of totally distinctive models; tall costs related to equipment and coding system buy. Wrongdoing postures a risk in financial crime committed by abusing computers conjointly the net. Wrongdoing inside the financial frameworks and administrations segment, different item lines, and versatile keeping money industry arrangements open up money related administrations associations to collect wrongdoing, unless they execute appropriate controls to defend clients and progress information security (Gathungu, 2017).

In an effort to grow the adoption of cloud services efficiently across Africa, KCB collaborated with Oracle to hold a developer's day targeting the firm's ecosystem of customers, partners, independent software vendors, user groups and innovation hubs. KCB is one of the few banks that have revolutionized the access of credit among Kenyans through the provision of loans

entirely through the mobile phone. Kenya Commercial Bank (KCB) Group was however barred from using a core banking software over IP infringement and software piracy. This is after Nagalakshmi Solutions Ltd (NLS) sued the bank for continuing to use the software, which powers its withdrawals and cash deposits. NLS argued that it had incurred huge losses over the continued use of the software by the KCB. This therefore presented the reason behind investigating the effect of cloud computing strategy adoption on business strategic agility in Kenya.

## Statement of the Problem

In the current competitive market scenario, business agility is one key enabler for businesses to sustain their operations and achieve competitive gains. Business agility is all about adapting quickly to rapid market conditions and not getting lost in the competition. Conventional IT infrastructures have issues in quickly provisioning resources to support new business initiatives. Cloud computing models are an ideal IT service solution to overcome issues in IT resources and simultaneously promote business agility to achieve competitiveness. Cloud computing offers firms greater flexibility in terms of capacity, agility and costs yet banks are reluctant to embrace cloud technology wholly, the emerging trend is deployment of non-core applications such as email on the cloud (Yang & Hsu, 2018).

Commercial banks in Kenya, like all elective industries, confront an energetic showcase, unused advances, financial instabilities, furious competition and a part of strict clients. Adoption of cloud computing is still limited in the management of HR functions as observed in the Kenyan banking sector (Akelola, 2017). Akhusama (2020) notes that various commercial banks have acknowledged that digital transformation processes are key to fostering the performance of commercial banks. However, the progress and benefits of these processes have been inconsistent and slow in being realized on the bottom line of commercial banks. Statistics indicate that only 17% of commercial banks have adopted transformation to scale. In comparison, 41% of commercial banks had adopted digital transformation partially, 38% of commercial banks indicated the processes were in design level, and 11% of commercial banks had limited deployment of digital transformation processes (Kinyanjui, 2020).

Cloud computing provides the opportunity for the banks to reduce their IT associated costs through offloading. Despite these opportunities, commercial banks in Kenya are reluctant to do so which therefore results to poor agility (KPMG, 2018). The banks are however required to have real-time data of each client over portions, items, locales and channels. They moreover require the capacity to perform analytics over exchanges, which can nourish both customer-centricity and operational ability. According to a survey done by Benlian and Hess (2018), issues like security, lack of a clear value proposition, lack of standardization, funding, security and managing complexity were major barriers to adopting cloud computing. Although the benefits of

cloud computing are well documented and is the dominant focus for vendors and customer alike, most do not know the key IT related risks of cloud computing and the mitigation strategies, these strategies vary depending on service model that has been deployed (Willcocks, Whitley & Venters, 2016).

Previously, cloud computational research have been performed such as; Wachira (2016) who studied business banks' use of cloud computation in Kenya, Meshack (2020) performed a survey on cloud computational appropriations in protective businesses in Kenya; Mrunal and Anil (2016) surveyed the issues confronted by keeping money segment within the world of cloud based computing to attain tall execution: an overview, Oredo (2016) inspected cloud computing vision, regulation strengths, organizational mindfulness, cloud appropriation and execution of chosen firms in Kenya, Oredo and Njihia (2016) inspected the challenges of cloud computing in trade: towards modern organizational competencies, Al-Zoubi (2017) decided the impact of cloud computing on components of bookkeeping data framework, Mirrazavi and Khoorasgani (2016) inspected the effects of cloud computing innovation on organizational execution; monetary, client, operational. Kiriinya (2016) inspected the components impacting cloud computing advertisement. Most of the writing that has considered cloud computing in developing nations have centered on developing markets, especially bigger nations with expansive introduced IT foundations. There is a need for more inquiry on the effect of cloud computing strategy adoption on business strategic agility in commercial banks in Kenya.

### Objective of the study

The study was guided by the following objectives;

i. To determine the effect of cloud on-demand self-service on business strategic agility in commercial banks in Kenya.
ii. To examine the effect of rapid elasticity of cloud services on business strategic agility in commercial banks in Kenya.
iii. To establish the effect of broadband internet access on business strategic agility in commercial banks in Kenya.
iv. To assess the effect of metering use on cloud services on business strategic agility in commercial banks in Kenya.

## THEORETICAL FRAMEWORK

According to Sekar and Maniatis (2018), a theory is a group of propositions, assumptions, or facts accepted which aims at providing a rational or a reasonable explanation of the causes and effects of relationships in a group of phenomena observed. A theoretical framework is a set of associated ideas, which guides a research project (Wang, Rashid & Chuang, 2018). In this section, the target is on a number of behavioral, economic as well as organizational theories

pertaining to agility strategies as a key construct. This study assessed the following theories; resource-based theory, diffusion of innovation theory and institutional theory.

## Resource Based Theory

The resource-based theory was created by Penrose (1959). This hypothesis sees related association to be a bundle of assets indicated match associations claim heterogeneous asset bases (Song, Benedetto & Nason, 2021). The thought clarifies the significance of rising assets and aptitudes that are valuable, rare, alone and non-substitutable that so progressively licenses short-run and long-run enhancement in execution (Newbert, 2016). RBV offers a hypothetical focal point for net benefit knowledge to see IS assets and capabilities play a role inside the technique and execution of a company's (Taher, 2017). According to hypothesis, a foundation might be a collection of human related physical resources certain along in a body system, that is that the space of body coordination and definitive communication (Peppard & Ward, 2004). The organizations have assets that alter them to accomplish a competitive advantage and cause prevalent long-run execution (Wade & Hullan, 2004). Important and uncommon assets improve competitive advantage though unreproducible, non-substitutable and stable assets provide a firm with a property competitive advantage.

These explanations lay the conceptual foundation for subsequent analyses of how resource-based advantages might be leveraged via diversification. Marston, Li, Bandyopadhyay, Zhang and Ghalsasi (2018) identified significant roles for resource richness and diversification of resource usage, the analysis highlights the importance of resource characteristics underlying factor market imperfections as drivers of alliance formation in a single primary input supply chain. The results suggest that resource heterogeneity is important for alliance formation and organizational success in specialized supply. Thus, alliances can be understood as mechanisms that extend the resource horizons of firms across its existing boundaries as a means to seek necessary resources and competencies. Organizations therefore seek alliances to be able to access resources that are with other organizations. These resources would be either expensive for one organization or inaccessible for another organization (Mahoney & Pandian, 1992). Marston et al. (2018) state that cloud computing's significance is measured dynamically in terms of its competitive benefits.
The resource based view was relevant in the study as it explores the role of resources and dynamic capabilities and their effects on firms. In the banking industry, growth in customer number is key and hence the ability to possess key resources and capabilities tend to have a positive effect on the success of the firm in the market. Commercial banks' resources and capabilities have been at the heart of the firm's performance and competitive advantage. Their ability to exploit these resources and capabilities has made the sector the largest by assets as well as market share.

## Diffusion of Innovation Theory

The Diffusion of Innovation Theory was created by Rogers in 1995. Inside Office hypothesis bargains with the unfurl through societies, agent at the person and firm level of later concepts and innovation also, through the thought, developments are communicated through beyond any doubt channels over time and interior a chosen framework. In significance this think about, the thought can legitimize be that as it may the mien of people to receive developments is a few commonly disseminated over time and so emerging varieties in cloud computing procedure execution in Kenyan Banks. These individuals are categorized into trailblazers, early adopters, early lion's share, late lion's share, slow pokes once the conventional dissemination is broken into sections (Rogers, 1995).

The characteristic of innovation component of DOI identifies five features of an innovation that determines its rate of diffusion in a given population: complexity, relative advantage, observability, and compatibility. DOI suggest that when the technology being proposed meets all these five characteristics, it is more likely to be adopted within the shortest time. DOI final component, innovation decision process, is concerned with the process that is used to introduce a new idea or technology to a given population. DOI suggest that to facilitate faster adoption of innovations, the decision process should adhere to five steps, which are: knowledge, decision, implementation, decision, and persuasion. These steps should happen between items of the same social system, with time and in a series of communication networks.

DOI has offered a theoretical platform to discuss matters pertaining adoption at an international level as well as at an individual level. In conclusion, DOI more inclined towards the environmental dynamics, organizational attributes and system features. However, it is less effective when it comes to explanatory purposes and not satisfactorily practical in terms of outcome prediction in comparison to other models of adoption.

## Institutional Theory

Institutional theory was created by Scott and Christensen in 1995. Organization hypothesis emphasizes the significance of organization situations to create rapid snap and activities. structure choices from the regulation hypothesis point of view, are driven not exclusively by judicious strength objectives, in any case moreover by social and social components and authenticity contemplations. Cultures, structures and schedules work at different levels and diagram foundations. The thought contends enterprises are getting extra comparable due to authenticity weights (Dimaggio & Powell, 1983). This proposes enterprises inside the same segment appear to end up comparative over time as they are driven to rehash exchange pros by energetic and customer weights. As an illustration, firms are without a doubt to be evoked to

embrace and utilize e-commerce by outside isomorph weights from competitors, mercantilism partners, clients, and government rather than making an inner call to adopt e-commerce.

This theory is exceptionally critical because of its employment related organization approach to permeable e-commerce and advancements. It is well known that mimetic, coercive, related standardizing structure weights that happen in an institutionalized air will have an impact on an organizations' status to an inter-organizational framework that depends on that. If enterprises grasp a way or development that copies rivals, mimetic weights are decided. capable weights are a bunch of formal or casual strengths that diverse organizations depend on previous organizations to work out on. Standardizing weights are caused by two connections amid which firms share information, rules and guidelines. The sharing of those benchmarks among organized individuals through relationship channels encourages understanding, that progressively will increment the quality of those measures and their potential effect on structure behavior (Powell & DiMaggio, 1991). Even though this hypothesis addresses variables affecting development digestion, it does not clarify how development such as cloud computing methodology can be done, consequently; the requirement for more speculations to be investigated in this study.

Lastly, standardizing weights are brought almost by professionalization coming about from inter-organizational systems, comparable instructive foundations and mimetic practices in a calling. Depending on social disease writing, (Burt, 1987), fights that a central organization with coordinate or backhanded ties with other organizations that have embraced development is able to memorize approximately that advancement and its related benefits and costs, and is likely to be induced to act so also. The inter-organizational learning that leads to regulating weights happens through social channels among individuals of an organization which encourages agreement which in turn increments the quality of these standards and their potential impact on organizational conduct (Powell & DiMaggio, 1991).

## RESEARCH METHODOLOGY

### Research Design

A descriptive research design was used in this study. According to Sekaran (2018), the relationship between variables and the frequency with which something occurs is the major concern of descriptive design. Descriptions were of great use in identifying variables as the study aims at collecting comprehensive information therefore this approach will be suitable in this research.

Teddlie and Tashakkori (2017) attest that descriptive research design looks for to initiate data that depicts existing marvels by inquiring questions with respect to person recognitions and demeanors. in keeping with Lindroth (2016), amid descriptive think about, analysts watch, tally, portray, and classify. They extrapolate clear investigation ponders as things that have, as their

primary objective, the right depiction of the characteristics of people, circumstances, or bunches, and/or the recurrence with that bound marvels happen.

Rynes (2018) watches that a few descriptive things are cross-sectional in nature. Sekaran (2018) portrays a clear cross-sectional study as a comprehensive fashion that licenses monsters and various sums of data to be collected at interims for a brief time period and analyzed quantitatively, giving a legitimate introduction of comes about.

## Target Population and Sampling Frame

According to Saunders et al. (2019), Target population is the total number of the subjects of interest to the researcher. Based on the recommendations of Churchill and Iacobucci (2017), Frankfort-Nachmias, and Nachmias (2017) in defining the unit of analysis for a study, the target population for this study was the 42 commercial banks in Kenya. The unit of analysis included the Head of Operations, IT Directors, and IT Managers.

Sampling frame refers to a complete and correct list of population members where a sample is randomly chosen (McDaniel & Gates, 2001). Denscombe (2003) emphasizes that a standard inspecting outline got to be imperative – which suggests that: it must contain things decisively joined to the examination point; be added up to by covering all noteworthy things; and be genuine and up subsequently far off. Hence, the inspecting outline was drawn from the following category; departmental heads, and their assistants as well as other staff members.

Sampling might be a considered elective of grouping of joined along and are to supply the information from that will draw conclusions with reference to a few bigger clusters whom these people talk to (Jankowicz, 2017). The sample size is a subset of the population that was taken to be representative of the entire population (Rynes, 2018). A test populace of 174 was obtained from the target populace of 316 with a 95% confidence level and an error of 0.05 using an equation taken from Kothari (2004).

$$n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2}$$

Where; N = Size of the population and given as 316,

$n$ = Size of the sample,

$\partial p$ = The standard deviation of the population and given as 0.5 where not known,

e = Acceptable error and given as 0.05,

Z = Standard variate at a confidence level given as 1.96 at 95% confidence level.

The study selected the respondents using stratified proportionate testing procedure. Stratified examining is a fair-minded reviewing technique of gathering heterogeneous open sets into homogenized sets at that time making amplification among the individual sets to assert representativeness. The target of stratification was to appreciate the desired characterization from

altered sub-groups inside the open. In stratified analyzing subjects are chosen in such a few approaches that the winning sub-groups inside the open are parcels of or less spoken to among the check (Kothari, 2004). The procedure furthermore incorporates isolating the populace into a briefing of important strata that proposes that the check is likely going to progress to be a parcel of agent (Saunders et al., 2019).

*Table 1: Sampling Frame*

| Department | Population | Ratio | Sample |
|---|---|---|---|
| Head of Operations | 148 | 0.549 | 81 |
| IT Directors | 42 | 0.549 | 24 |
| IT Managers | 126 | 0.549 | 69 |
| **Total** | **316** | | **174** |

## Data Collection Instruments

Primary data was obtained through semi-structured self-administered surveys. The questionnaire was made of closed ended questions. The closed ended questions allowed the respondent to respond from limited options that had been stated. The open-ended questions was used so as to encourage the respondent to give an in-depth and felt response without feeling held back in illuminating any information and the closed ended questions allow the respondent to respond from limited options that had been stated. As per Saunders (2017), the open total or unstructured queries permit significant reaction from the respondents. The questionnaires were used to conserve time and money as well as to facilitate an easier analysis as they are in immediate usable form.

The researcher received from the university an introductory letter, which was presented to each institution in order to allow the collection of the necessary data. This letter was used to seek approval for research from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher personally administered the questionnaire to establish rapport, explain the purpose of the study and the meaning of items that may not be clear as observed by Saunders et al. (2019). The questionnaires were administered through Google forms to all respondents of the study to abide by the Covid19 guidelines. The researcher booked an appointment with the respondent organizations at least two days before he visited to administer questionnaires.

## Pilot Testing

Pilot testing refers to putting the research questions into test to a different study population but with similar characteristics as the study population to be studied (Lindroth, 2016). Pilot testing of the research instruments was conducted using the questionnaire to 17 respondents representing 10% of the sample size. The purpose of the pilot testing was to establish the validity and reliability of the research instrumentation and to enhance face validity. From the pilot results,

reliability and validity were tested. Sekaran and Bougie (2017) propose that the frame pre-tests are done by individual interviews to see at the respondent's responses and states of mind. All angles of the frame are pre-tested as well as address substance, wording, arrangement, sort and format, address issue and bearings. The input gotten are usually reexamined the shape some time recently regulating it to the ponder respondents.

## Validity

Validity of the research instrument is used to indicate the extent to which a research instrument measures what it purports to measure. Validity refers to the accuracy and technical soundness of the research instrument. In this study, validity of the research instruments will be guaranteed by piloting of the instrument and collecting data from reliable sources. According to Saunders (2017), a piloting should be conducted using at least 6 questionnaires to qualifying respondents. However, the respondents used in the piloting were not sampled during the actual data collection. Piloting help to clarify the wording and grammar of the data collection instrument to avoid misinterpretations; detect ambiguous questions and avoid research bias. This ensured that the data used in this analysis was valid. The study used both face and content validity to ascertain the validity of the questionnaires.

Content validity assesses whether a test is representative of all aspects of the construct. To produce valid results, the content of a test, survey or measurement method must cover all relevant parts of the subject it aims to measure. If some aspects are missing from the measurement (or if irrelevant aspects are included), the validity is threatened. In content validity, the questionnaire was formulated and operationalized as per the study variables to ensure adequacy and representativeness of the items in each variable in relation to the purpose and objectives of the study. Content validity was verified through expert opinion from supervisors and practitioners in the industry. This assisted in improving validity of the collected data. It as well ensured the appropriate modification and revision of instruments of research thus augmenting validity.

Face validity measures how representative a research instrument is on its face value and whether it appears to be a good research instrument. It involved subjectively determining whether the research instrument covered the concept, it purports to measure (Rynes, 2018). Face validity considers how suitable the content of a test seems to be on the surface. It is similar to content validity, but face validity is a more informal and subjective assessment. As face validity is a subjective measure, it was often considered the weakest form of validity. However, it can be useful in the initial stages of developing a method. In face validity, questionnaire items were from the study constructs as picked from the conceptual framework. Instruments developed for other similar studies were also used for comparison purposes.

## Reliability

Reliability of research refers to the measure of internal consistency of the research instrument. Obligation is on edge with the address of whether the comes about of a ponder are repeatable. A build composite duty coefficient (Cronbach alpha) of 0.7 `and above, for all the builds, was taken under consideration to be satisfactory for this ponder (Rousson, Gasser & Seifer, 2017). Obligations consistent with the investigation instrument were surveyed to abuse Cronbach's alpha (α).

## Data Analysis and Presentation

Concurring to Saunders et al. (2019), quantitative data is predicated on implications determined from numbers, the gathering leads to numerical and standardized data and examination conducted through the utilization of charts. Be that as it may, subjective data is predicated on implications communicated through words, combination of leads to non- standardized data requiring classification into classes and analyzing conducted through the utilization of conceptualization.

Primary data collected through the questionnaires were analyzed using Statistical Package for Social Sciences (SPSS Version 25.0). All the shapes gotten are aiming to be reported and things inside the survey were coded to encourage data passage. When data cleansing involved checking for mistakes in section, graphic insights like frequencies, percentages, mean score and standard deviation are planned to be calculable for all the quantitative factors and information offered advice of tables . Descriptive statistics such as frequencies, percentages, measures of central tendency measurements (mean score) and dispersion measurements (standard deviation) will be considered the most appropriate for closed-ended questions. The results of the study were presented using tables and other graphical presentations.

Inferential data analysis was done using regression analysis. Multiple regression analysis was used to set up the relations between the independent and dependent variables. Different relationship devices are reaching to be utilized as a result of it's the strategy that employs two or extra autonomous factors to foresee a variable amount. The think about can utilize numerous relapses investigation to examine the collected data. Numerous relationships make an endeavor to work out whether a bunch of factors along anticipates a given variable amount (Lindroth, 2016). This study the multiple regression model generally assumed as the following equation;

$$\mathbf{Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Where: - Y= Business strategic agility; $\beta_0$=constant ; $\beta_1$, $\beta_2$,, $\beta_3$, and $\beta_4$ = Beta coefficients; $X_1$= On- demand self –service; $X_2$= Rapid elasticity; $X_3$= Broadband network access; $X_4$= Metering use; ε = Error term

## RESEARCH FINDINGS AND DISCUSSION

### Reliability Analysis

Reliability analysis was subsequently done using Cronbach's Alpha, which measures the internal consistency by establishing if certain items within a scale measure the same construct. Malhotra (2015) established the Alpha value threshold at 0.7, thus forming the study's benchmark.

***Table 1: Reliability Analysis***

| | Alpha value | Comments |
|---|---|---|
| Cloud on-demand self-service | .747 | Reliable |
| Rapid elasticity | .810 | Reliable |
| Broadband internet access | .854 | Reliable |
| Metering use | .767 | Reliable |
| Business strategic agility | .731 | Reliable |

Cronbach Alpha was established for every objective, which formed a scale. The findings in Table 2 illustrates that all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Malhotra, 2015). This, therefore, depicts that the research instrument was reliable and therefore required no amendments.

### Assumptions of Regression Model

To provide unbiased estimates of the study parameters, various assumptions of regression were tested. These include sampling adequacy, autocorrelation test, normality test, Heteroscedasticity test and multicollinearity test.

### Sampling Adequacy Test

Kaiser-Meyer-Olkin measure (KMO) and Bartlett's Test of Sphericity tests were performed to establish sampling adequacy of the research data. KMO measure varies between 0 and 1, and values closer to 1 are better with a threshold of 0.5. Williams, Khiewngamdee and Yan (2019) stated that KMO of 0.50 is acceptable degree for sampling adequacy. Bartlett's Test of Sphericity tests the null hypothesis that the correlation matrix is an identity matrix; that is, it analyzes if the samples are from populations with equal variances. These results are presented in Table 3.

***Table 3: KMO and Bartlett's Test***

| | KMO | Bartlett's Test of Sphericity | | |
|---|---|---|---|---|
| | Measure of Sampling Adequacy | Approx. Chi-Square | Df | Sig. |
| Cloud on-demand self-service | .733 | 928.302 | 124 | .001 |
| Rapid elasticity | .585 | 74.437 | 124 | .023 |
| Broadband internet access | .680 | 429.893 | 124 | .000 |
| Metering use | .802 | 510.767 | 124 | .001 |

Table 3 shows that KMO measures of sampling adequacy produced values of between 0.585 and 0.802 while Bartlett's test of sphericity had a consistent significance of calculated probability of 0.000 well below the 0.05 threshold. Therefore, the research sample was adequate, factorable and further statistical analysis could be performed as recommended by Khiewngamdee and Yan (2019).

## Autocorrelation Test

The researcher tested the autocorrelation assumptions that imply zero covariance of error terms over time which means errors associated with one observation are uncorrelated with the errors of any other observation. Independence of error terms, which implies that observations are independent, was assessed through the Durbin-Watson test. Durbin Watson (DW) test check that the residuals of the models were not autocorrelated since independence of the residuals is one of the basic assumption of regression analysis. DW statistic ranges from zero to four where scores between 1.5 and 2.5 indicate independent observations (Newman & Gough, 2020). These results are shown in Table 4.

*Table 4: Autocorrelation Test Results*

| Model | Durbin Watson | Comment |
|---|---|---|
| 1 | 1.987 | No autocorrelation |

The Durbin Watson statistic, according to Bhattacherjee (2017), is a value that is always between 0 and 4 and tests for autocorrelation in the residuals from a statistical regression study. A score of 1.987 shows that the sample has no autocorrelation. Positive autocorrelation is indicated by values around 0; negative autocorrelation is indicated by values near 4. According to the data in Table 4.16, the model's Durbin-Watson value was 1.987. As a result, the null hypotheses for the model were rejected, and autocorrelation was not a concern.

## Normality Test

Regression assumes that variables have normal distributions. Non-normally distributed variables can distort relationships and significance tests. Shapiro –Wilk (W) test was used to test normality. Shapiro –Wilk (W) Test for normality was used because the size of respondents is small. Shapiro – Wilk (W) test is appropriate where the size is between 7 to 2000 respondents (Shapiro & Wilk, 1965). The results are presented in Table 5.

*Table 5: Test of Normality*

| | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Cloud on-demand self-service | 0.183 | 124 | 0.021 | 0.907 | 124 | 0.610 |
| Rapid elasticity | 0.171 | 124 | 0.016 | 0.902 | 124 | 0.530 |
| Broadband internet access | 0.172 | 124 | 0.009 | 0.812 | 124 | 0.080 |
| Metering use | 0.124 | 124 | 0.011 | 0.917 | 124 | 0.262 |
| Business strategic agility | 0.139 | 124 | 0.017 | 0.872 | 124 | 0.439 |

The study tested the normality of the regression model to determine whether the assumption of normality of distribution was attained. From Table 5, the p-value for both tests of normality, the Kolmogorov Smirnov test and the Shapiro-Wilk tests, is more than 0.05, indicating that the study rejected Ho and concluded that data on both the response and predictor factors were distributed normally, which aids in the prediction of dependent variables. The data is considered normal if the Shapiro-Wilk Test's Significance score is greater than 0.05, according to Park (2015). If it is less than 0.05, the data deviates significantly from a normal spread.

## Heteroscedasticity Test

Homoscedasticity assumes that the dependent variable show an equivalent level of variance across the range of predictor variable. Homoscedasticity is one of the assumptions required for multivariate analysis. The Levene test was utilized in this study to detect the problems of heteroscedasticity (Dźwigoł, 2018). This presented in Table 6.

***Table 6: Heteroscedasticity Test***

| | Levene Statistic | Df1 | Df2 | Sig. |
|---|---|---|---|---|
| Cloud on-demand self-service | 0.183 | 1 | 124 | 0.021 |
| Rapid elasticity | 2.171 | 1 | 124 | 0.014 |
| Broadband internet access | 3.172 | 1 | 124 | 0.031 |
| Metering use | 4.238 | 1 | 124 | 0.003 |
| Business strategic agility | 2.331 | 1 | 124 | 0.034 |

As indicated in Table 6, the p-value for all the variables (on-demand self-service, rapid elasticity, broadband network access, metering use and business strategic agility in commercial banks) were below 0.05 so the null hypotheses for equal variances was rejected. This further demonstrates that the data set is homoscedastic and so suited for regression equation modeling.

## Multi-Collinearity Test

Multi-collinearity occurs when the independent variables are not independent from each other. Collinearity (also called multi-Collinearity) refers to the assumption that the independent variables are uncorrelated (Noor, 2014). Multi-collinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables. The study utilized Collinearity Statistics to find out whether the independent variables are adequately correlated to show a substantial causal correlation. This is presented in Table 7.

***Table 7: Test of for Multi-collinearity***

| | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| On-Demand Self-Service | 0.927 | 1.079 |
| Rapid elasticity | 0.466 | 2.146 |
| Broadband network access | 0.603 | 1.658 |
| Metering use | 0.638 | 1.567 |
| Business strategic agility | 0.776 | 1.289 |

Based on the coefficients output, on-demand self-service had a VIF value of 1.079, rapid elasticity had a VIF value of 2.146, broadband network access had a VIF value of 1.658, metering use had a VIF value of 1.567, while business strategic agility had a VIF value of 1.289. The VIF values for all the variables were less than 10 and a tolerance greater than 0.1 implying that there was no Multicollinearity symptoms as indicated by Bartlett, Kotrlik and Higgins (2011).

## Regression Analysis

The researcher conducted a multiple linear regression analysis to ascertain the relationship between business strategic agility in commercial banks in Kenya and the four independent factors namely: on-demand self-service, rapid elasticity, broadband network access, and metering use. The results are as shown on Table 8, 9 and 10.

***Table 8: Model Summary***

| Model | R | R Square | Adjusted R Square | Std. Error |
|---|---|---|---|---|
| 1 | 0.899 | 0.809 | 0.802 | 0.873 |

The results in Table 8 indicate an adjusted $R^2$ of 0.802. This means that 80.2% of variation in business strategic agility in commercial banks in Kenya is explained by on-demand self-service, metering use, rapid elasticity and broadband network access in the model and that 19.8% of the variation is due to factors not considered in this model.

***Table 9: ANOVA Results***

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 396.696 | 4 | 99.174 | 126.954 | 3.77E-42 |
| | Residual | 93.742 | 120 | 0.781 | | |
| | **Total** | **490.438** | **124** | | | |

The results in Table 9 showed that the overall significance of the model was statistically significant at F=126.954 and P-value=3.77E-42. This means that the model was statistically significant at 95% confidence level. The findings also implied that there was a significant combined effect of the 4 cloud computing adoption strategies used in the study. Consequently, the findings indicate that commercial banks in Kenya should incorporate the four variables so that the desired objectives can be achieved.

***Table 10: Regression Coefficients***

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 9.753 | 4.499 | | 2.168 | 0.031 |
| | On-Demand Self-Service | .870 | .295 | .178 | 2.943 | 0.004 |
| | Rapid elasticity | .991 | .376 | .827 | 2.634 | 0.009 |
| | Broadband network access | .762 | .379 | .153 | 2.008 | 0.046 |
| | Metering use | .671 | .313 | .088 | 2.145 | 0.033 |

a. Dependent Variable: Business strategic agility in commercial banks in Kenya

Based on the results, the predictive model for business strategic agility in commercial banks in Kenya was formulated as:

Business strategic agility = 9.753+0.870OD +0.991RE +0.762BN +0.671M
Where, **OD** = On-Demand Self-Service;
**RE** = Rapid elasticity
**BN** = Broadband network access
**M** = Metering use

The coefficient results in Table 10 revealed that the relationship between the on-demand self-service and business strategic agility in commercial banks in Kenya was statistically significant (Regression coefficient =0.870, P-value=0.004). This implies that for one unit increase in on-demand self-service, business strategic agility in commercial banks in Kenya increases by a factor of 0.870 when holding other factors constant.

Similarly, the relationship between rapid elasticity and business strategic agility in commercial banks in Kenya was statistically significant (Regression coefficient =0.991, P-value = 0.009). This implies that upon an increase of rapid elasticity by one unit, business strategic agility in commercial banks in Kenya is expected to increase by a factor of 0.991. Etro (2019) mentioned that like businesses, banks are ceaselessly attempting to discover ways in which to improve their gentility and adjust to advance requests. Cloud computing will encourage fast prototyping and advancement by authorizing businesses to rapidly alter forms, items and administrations to fulfill the ever changing showcase needs.

The association between broadband network access and business strategic agility in commercial banks in Kenya was also statistically significant (Regression coefficient = 0.762, P-value=0.046). This implies that an increase in broadband network access by one unit leads to an increase in business strategic agility in commercial banks in Kenya by a factor of 0.762 when holding other factors constant. Sultan (2017) stated that companies most often use the same software to access their information centers to access their own personal clouds. This can include a network operator's Internet VPN or VPN service. Public cloud computing networks are internal and therefore not visible to the user, so it is very important to understand how your provider connects its cloud computing elements when securing public cloud computing services.

Further, the relationship between metering use was statistically significant (Regression coefficient=0.671, P-value=0.033). This infers that an increase in metering use by one unit leads to an increase in business strategic agility in commercial banks in Kenya by a factor of 0.671 when holding other factors constant. The results are in line with Linthicum (2019) who stated that measured facilities are becoming progressively prevalent in business information technology (IT) settings. For instance, to meet fluctuating requirements, a business can purchase computational funds with utility computation. This strategy is supported as being more cost-effective for the business than keeping a big facility that exceeds the company's average computing power demands.

Overall, the rapid elasticity had the most influence on the business strategic agility in commercial banks in Kenya, followed by on-demand self-service, then broadband network access, and metering use had the least influence on the business strategic agility in commercial banks in Kenya. All the variables were significant since their p-values were less than 0.05.

## Conclusions of the Study

The study found that cloud on-demand self-service affected business strategic agility in commercial banks in Kenya significantly. The study concluded that on-demand self-service allows customers to use cloud computing as required without human contact between consumers and service providers. Using the features of on-demand self-service, consumers can arrange various cloud resources as needed.

The study found that rapid elasticity of cloud services affected business strategic agility in commercial banks in Kenya significantly. The study deduced that rapid elasticity enables commercial banks to scale resources up and down at any time, eliminating the need to keep additional infrastructure in reserve to handle dynamic workload surges. Cloud providers are considered more elastic if they can quickly adjust resources to commercial banks' changing requirements.

The study found that broadband internet access affected business strategic agility in commercial banks in Kenya significantly. Broad network access is what makes the cloud available to any device from any location. A cloud provider ensures that it provides its customers with broad network access capabilities.

The study found that metering use affected business strategic agility in commercial banks in Kenya significantly. The study concluded that that consumer only pay for the computing resources they have used. Metering measures levels of resource utilization, such as network bandwidth usage and data storage volume, consumed by the cloud services subscribers.

## Recommendations of the Study

The study recommended that resources are needed to support business processes and to test and develop new software. Procuring new resources and implementing them within the existing infrastructure can be time consuming and can introduce significant delays in capitalizing business opportunities. This can also be a business risk since money is spent on new expensive resources and must not become counterproductive. Adopting a cloud model will eliminate these risks as resources are available on-demand which saves time. Further, the usage based payment offered by cloud models replaces the initial up-front cost spent on new resources within the company.

The study recommends that the usage model of pay per resource supports commercial banks in Kenya to implement and test projects faster, saving money from new resources to be procured and made available. This eliminates budget allocation for IT capital expenditure, and supports finance to easily allocate fixed costs incurred on monthly basis. Cloud models makes it possible to have good control on unexpected IT spending with very little effort.

The study recommends that clouds should be adopted since they are flexible and can scale quickly to provide speed and efficiency for business processes and transactions. Cloud applications can be accessed via the internet which supports businesses to access their elements and have more productive interactions with customers. IT teams have less burden of maintaining an infrastructure and the focus can be more on implementing new applications that are productive and will drive business results.

The study recommends that change in processes in commercial banks in Kenya would require IT resources to be replaced or new resources to be added. Therefore, the adoption of cloud computing easily handles these changes by allowing the commercial banks to quickly add or change IT resources easily to support their changed processes.

## REFERENCES

Akelola, S. (2017). *Fraud in the banking industry: A case study of Kenya* (Doctoral dissertation, Nottingham Trent University).

Akhusama, P. M. (2020). *Cloud computing adoption in insurance companies in Kenya* (Doctoral dissertation, University of Nairobi).

Al-Zoubi, A. M. (2017). The Effect of Cloud Computing on Elements of Accounting Information System. *Global Journal of Management*. 17(3), 1-10.

Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R., Konwinski, A., ..., Zaharia, M. (2017). A View of Cloud Computing. *Communications of the ACM, 53*(4), 50-58.

Barnett, E. (2017). *Facebook's Mark Zuckerberg says privacy is no longer a 'social norm'*. English: Telegraph Media Group Limited.

Benlian, A. & Hess, T. (2018). Opportunities and risks of software-as-a-service: Findings from a survey of IT executives. *Decision Support Systems*, 52(1), 232-246.

Burt, R. S. (1987). Social Contagion and Innovation: Cohesion versus Structural Equivalence. *American Journal of Sociology*, 92(6), 1287–1335.

Buyya, R., Yeo, C., Venugopal, S., Broberg, J. & Brandic, I., (2019). Cloud computing and emerging IT platforms: vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*, 25(6), 599– 616.

Churchill, G. A. & Iacobucci, D. (2017). *Marketing research: methodological foundations*. New York: Dryden Press.

Conway-Smith, E. (2016). *Can cloud computing take off in Africa?* Boston: Global Post.

Denscombe, M. (2003). Ground rules for good research. *Nurse Researcher*, 11(1), 80-82.

Dimaggio, P.J. & Powell, W.W. (1983). The iron cage revisited - institutional isomorphism and collective rationality in organizational fields, "*American Sociological Review", 48*(2), 147-160.

Ebenezer, E.E.S. (2016). *Accounting in the cloud: How could computing can transform businesses (the Ghanaian perspective), Proceedings of the second international conference on global business, economics, finance and social sciences*. Chennai: Chennai Conference.

Etro, F. (2019). The Economic Impact of Cloud Computing on Business Creation, Employment and Output in Europe: An application of the Endogenous Market Structures Approach to a GPT innovation. *Review of Business and Economics*, 54(2), 179–208.

European Commission. (2020). *European Cloud Computing Strategy*.

Frankfort-Nachmias, C. & Nachmias, D. (2017). *Study guide for research methods in the social sciences*. London: Macmillan.

Grigorik, I. (2016). *High Performance Browser Networking: What every web developer should know about networking and web performance*. Sebastopol: O'Reilly Media, Inc.

Guangming, L. I. (2017). Rural Financial Information Service Platform Based on "Smarter Finance". *Journal of Shanghai Finance University*, 1(2), 6-8.

Jankowicz, D. (2017). Why does subjectivity make us nervous? Making the tacit explicit. *Journal of Intellectual Capital*, 2(1), 61-73.

Jansen, W. A. & Grance, T. (2018). *Guidelines on security and privacy in public cloud computing*. Gaithersburg: National Institute of Standards and Technology.

Kinyanjui, E. (2020). *Influence of digital transformation processes on customer relationship management among commercial banks in Kenya* [Thesis, Strathmore University]. http://hdl.handle.net/11071/10420

Kiriinya, D. (2016). *Factors Influencing Cloud Computing Adoption in Organizations: A Case of Cooperative Insurance Company of Kenya* (Doctoral dissertation, United States International University-Africa).

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Delhi: New Age International.

KPMG. (2018). *The Cloud - Changing the Business Ecosystem.*

Kshetri, N. (2018). Cloud computing in the global south: drivers, effects and policy measures. *Third World Quarterly*, 32(6), 997-1014.

Linthicum, D. S. (2019). *Cloud computing and SOA convergence in your enterprise: a step by-step guide*. London: Pearson Education.

Mahoney, J. T. & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal*, 13(5), 363–380.

Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J. & Ghalsasi, A. (2018). Cloud computing -the business perspective. *Decision Support Systems*, 51 (1), 176-189.

McDaniel, C. & Gates, R. (2001). *Marketing research essential, Cincinnati*. Ohio:South-Western College.

Meshack, A. P. (2020). *Cloud Computing Adoption in Insurance Companies in Kenya*. A Doctoral dissertation, University of Nairobi.

Mirrazavi, S. & Khoorasgani, G. H. (2016). The impact of cloud computing technology on organizational performance; financial, customer, operational (Case Study: Zarin Iran Porcelain Industries Co.). *Mediterranean Journal of Social Sciences*, 7(4), 279-289.

Mrunal, M. & Anil, W. (2016). Issues faced by the banking sector in the world of cloud-based computing to achieve high performance: A survey. *International Journal of Advances in Computer Science and Cloud Computing*, 1(1), 10-16.

Mwangi, P. (2017). *Emerging market opportunities for Kenyan Corporations in East Africa and beyond*. Nairobi. Finance and Systems.

Newbert, S. L. (2016). Assessing performance measurement in RBV research. *Journal of Strategy and Management*, 7(3), 265-283.

Nicoletti, B. (2016). *Cloud Computing in Financial Services*. New York: Palgrave Macmillan.

NIST (2020). *The NIST Definition of Cloud Computing*. *Recommendations of the National Institute of Standards and Technology*.

Oredo, J. O. & Njihia, J. (2016). Challenges of cloud computing in business: Towards new organizational competencies. *International Journal of Business and Social Science*, *5*(3), 25-29.

Oredo, J. O. (2016). *Cloud computing vision, institutional forces, organizational mindfulness, cloud adoption and performance of selected firms in kenya* (Doctoral dissertation, Univeraity of Nairobi).

Penrose, E. G. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.

Peppard, J. & Ward, J. (2004). Beyond strategic information systems: towards an IS capability. *The Journal of Strategic Information Systems*, 13(2), 167–194.

Powell, W. & DiMaggio, P. (1991). *The New Institutionalism in Organizational Analysis* (1st Ed.). Chicago: University of Chicago Press.

Rogers, E. M. (1995). *Diffusion of innovations*. New York: Free Press.

Rousson, V., Gasser, T. & Seifert, B. (2017). Assessing interrater, interrater and test–retest reliability of continuous measurements. *Statistics in medicine*, 21(22), 3431-3446.

Rynes, A. (2018). *The Role of Corporate Finance in Evaluating a Cloud Computing Strategy-A Chief Financial Officer perspective*. A Master's Thesis, Modul University.

Saunders, M. (2017). *Research methods for business students*. Italy: Pearson.

Sekar, V. & Maniatis, P. (2018). Verifiable resource accounting for cloud computing services. In *Proceedings of the 3rd ACM workshop on Cloud computing security workshop*, 2(1), 21-26.

Sekaran, U. & Bougie, R. (2017). Theoretical framework in theoretical framework and hypothesis development. *Research methods for business: A skill building approach*, 80(1),28-29.

Song, M., Di Benedetto, C. A. & Nason, R. W. (2021). Capabilities and financial performance: the moderating effect of strategic type. *Journal of the Academy of Marketing Science*, 35(1), 18-34.

Sultan, N. (2017). Cloud computing for education: A new dawn? *International Journal of Information Management*, 30(2), 109-116.

Taher, M. (2017). Resource-Based View Theory. *Information Systems Theory*. 1(1), 151–163.

TechEquity. (2016). *Cloud Computing in Africa*. Gurugram: TechEquity.

Teddlie, C. & Tashakkori, A. (2017). A general typology of research designs featuring mixed methods. *Research in the Schools*, 13(1), 12-28.

Wachira, H.W. (2016). *Implementation of Cloud Computing Strategy by Commercial Banks in Kenya.* A MBA project, University of Nairobi.

Wade, M. & Hulland, J. (2004). Review: the resource-based view and information systems research: review, extension, and suggestions for future research. *MIS Q.*, 28(1), 107–142.

Wang, W., Rashid, A. & Chuang, H.-M. (2018). Toward the Trend of Cloud Computing. *Journal of Electronic Commerce Research*, 12(4), 238–242.

Willcocks, L. P., Whitley, E. A. & Venters, W. (2016). *Moving to the Cloud Corporation: How to face the challenges and harness the potential of cloud computing*. Basingstoke: Palgrave Macmillan.

Yang, S. & Hsu, C. (2018). The Organizing Vision for Cloud Computing in Taiwan. *Journal of Electronic Commerce Research*, 12(4), 257–271.