FACTORS INFLUENCING CLOUD COMPUTING ADOPTION IN ORGANISATIONS: A CASE OF COOPERATIVE INSURANCE COMPANY OF KENYA

BY

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UNITED STATES INTERNATIONAL UNIVERSITY

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STUDENT'S DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for academic credit.

Signed: _____ Date: _____

David Kirinya (ID: 633738)

This project has been presented for examination with my approval as the appointed supervisor.

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ABSTRACT

The study sought to investigate the factors influencing cloud computing adoption in organisations adopting CIC INSURANCE Kenya as a case study. The study sought to answer four research questions; what is the influence of technological factors on cloud computing adoption? What is the influence of organizational factors on cloud computing adoption? What is the influence of environmental factors on cloud computing adoption? What is the influence of cloud computing on business operation adoption? The researcher adopted the descriptive research design. The study adopted the stratified random sampling procedure to identify the respondents for the study. The sample size for the study was 90 respondents derived from a target population of 190 respondents. The researcher adopted the questionnaire as the primary tool for data collection and achieved a response rate of 64 % which translated to 58 complete questionnaires.

The study found that there was adoption of cloud computing in the organisations, CIC insurance Limited. CIC insurance is a firm that provides financial services to its clients and its customers. However, the adoption of cloud computing has been gradual albeit hesitant. These findings are consistent with Kiiru (2011) study on cloud computing in bank in Kenya who found that majority of the respondents had computerized their services and work which was a precondition for adopting cloud computing. Lin and Tan (2012) findings shows that most adopters are in the media, information and communication industry with 75 % (9 out of 12 organizations) as well as in the 'others' sector with 59 % (10 out of 17 organizations). It appears that those organisations in the construction and engineering and real estate and leasing services have not adopted cloud computing services yet. Their findings also showed that shows that there is no significant difference between adopter and non-adopters in the private sectors and sole proprietorship or family-owned business, although there are more adopters (63 %) versus non-adopters (37 %) in the public listed organizations.

The study concludes that technological factors were the most significant factors influencing adoption of cloud computing in CIC INSURANCE Kenya Limited. This was attributed to the perceived usefulness of cloud computing to the organization. The study concludes that the change attitude of the organisations is the most predominant factor for cloud computing adoption. In regard to the environmental factors, the study concludes that competition is the most significant contributor to adoption of cloud computing in the organisations. The researcher recommends that top management should invest in

information technology that will work towards the benefit of their organization. The researcher recommends for top management adoption of cloud computing systems will enhance adoption of the system in the organization and for industry research on cloud computing adoption which will enhance contribute to knowledge and awareness on cloud computing systems.

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I am particularly indebted to the management and staff of the Cooperative Insurance Company who deserve my special commendation for their contribution in the realization of this research project.

Finally I thank all those- lecturers, friends, classmates, colleagues, USIU community- who in one way or another supported my cause; May you all be richly blessed.

DEDICATION

This project is dedicated to my wonderful fiancé Ms. Fiona Nanetia Lein, a remarkable woman, friend, and advisor. There is not a doubt in my mind that without your support- materially, emotionally and spiritually- I would not have managed to complete my MBA.

My amazing Mother Stella Kaimenyi; for the material and emotional support, thanks for all the entire home cooked meals and the tough love that kept me focused to the very end.

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LIST OF ABBREVIATIONS

CIC	Cooperative Insurance Company
CPU	Central Processing Unit
ERP	Enterprise Resource Planning
IaaS	Infrastructure as a Service
ICT	Information Communication Technology
IDC	International Data Corporation
IS	Information Systems
IT	information Technology
OMA	Outlook Mobile Access
PaaS	Platform as a Service
PC	Personal Computer
R&D	Research and Development
RAM	Random Access Memory
SaaS	Software as a Service
SLA	Service Level Agreement
SPSS	Statistical Package of Social Sciences
TAM	Technology Acceptance Model
TCO	Total Cost of Ownership
USIU	United States International University
VMs	Virtual Machines
VOIP	Voice over Internet Protocol

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Problem

With the explosion of computers into almost every facet of our day to day lives as more and more people adopt the use of technology. At home, people are using IT functions that were a predominant reserve for larger organisations in the past decades. These functions include such tasks such as managing computer networks, updating of viruses and firewall protections, implementation of data back-up routines and managing data archives such as music and photo files (Gartner, 2009).

These developments have mostly been enhanced by the availability of home working and email devices which have demystified the work and home environments. For instance, sending emails has become a task that can be accomplished from anywhere. The availability of web-based brands have also provided the initiative among users by providing knowledge and awareness to individuals and also to organisations who are willing to explore IT at a minimum or at no cost at all. By November 2009, Gartner found that 2 % of managers in IT employees at the workplace had adopted web storage services that with estimation of end users adoption at 18 % (IDC, 2010).

There has been an increase awareness on IT knowledge among employees with the connectivity potential with mobile devices on the increase, the potential of IT managers to control and dictate the use of these devices and services among organisations employees will decrease. There is a distinction between the IT departments providing support to such employees and teams adopting these services and also their attempts to block these trends or explore the available opportunities. The availability of these devices for the individual means that they no longer require support from IT departments when using these devices at their workplace. It has been estimated that over 40 % of knowledge workers had adopted non-company equipment on company systems and networks (Armbrust, 2010).

The business environment today therefore offers the opportunity for organisations to exploit these forms of advanced technology literacy among their staff. Adoption of the appropriate mobilization technologies in the organisations afford it flexibility, efficiency and control of IT functions in the business. The trends in IT show that employees do not

only accept but are embracing new technology that assist them to perform effectively more so with their own equipment. The availability and penetration of the Personal Computer (PC) with technology and applications means that the next generation of IT business will be more likely to be found away from the office among the mobile staff (Clark, 2005).

IT can then use their expertise to ensure that key features are present, the data is transferrable both out of, and back in to, internal systems and appropriate SLA's are established including data recovery procedures (Armbrust, 2009). Despite its marked youth as a topic of research, Armbrust et al. (2009) describe cloud computing as being the "new-term for the long-held dream of computing as a utility". However, there is currently no single, universally accepted definition of the term "cloud computing (Weinhardt et al. 2009; Foster et al. 2008). From a review of the literature it is clear that many definitions exist (Mell & Grance, 2011), however, the term is vague, polymorphous and multi-dimensional, and is often interpreted and applied inconsistently in the literature (Leimeister, 2010).

The change toward cloud computing is a great movement in IT dependent industries. One of the main segments of this technology is Cloud Platforms. This method affects software engineering events in software production process. Cloud Platform let the developers write programs which can be run in cloud space and either use the services provided in Cloud space. Nowadays, different names are used to refer to Cloud platforms such as on-demand Platform and Platform as a Service (PaaS). Despite all names given to this Platform, this new program supporting method has a good potential to provide users with their desired services (Armbrust, 2010).

The most definitive description of cloud computing can perhaps be associated with that of the US National Institute of Standards and Technology (NIST) definition (Mell & Grance, 2011) that is more pronounced in research and viewed as one of the more articulate, clear yet comprehensive classifications of cloud computing, and as Sriram and Khajeh-Hosseini (2010) state, has "captured the commonly agreed aspects of cloud computing". This definition, which will be the one adopted in this study, describes cloud computing using; Five characteristics: on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service; ii) Four deployment models:

private clouds, community clouds, public clouds, and hybrid cloud and comprises three service models: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

The main issue for organisations and companies is the extent to which their data is secure. So the question at hand is, how secure is cloud computing? The cloud systems structures do not guarantee security conformance among end-users data or applications on them. The software application adopted o used have to be secure in their own right. Hogben (2007) suggest that it is up to the developers of these applications to come up with systems and applications which are secured from the start-up. Recent development in IT infrastructure has led to the accessibility and availability of high connectivity speeds in Kenya but this does not guarantee accessibility of data at the same speed over the cloud. This is often affected by the poor planning of cloud infrastructure and also due to poorly designed and developed systems or applications (Kenya, 2012)

Microsoft has been offering cloud computing accessibility in Kenya, which has however been hampered by the poor knowledge of cloud computing among its targeted consumers. Reporters and journalists in the IT filed also have no strong perceptions of cloud computing and therefore avoid the topic. There is a potential for cloud computing adoption among users but this has been mitigated by their poor comprehension of what cloud computing is all about (Hoikkanen, 2010).

Cloud computing service providers have often been observed to exaggerate their capacity to promote their competitiveness while making a profit. As a potential user of cloud computing, the end user should ensure that the provider indeed has the capacity to deliver what they promise. In regard to the provider, there is no need to have a huge capacity which cannot be used and remains idle. The best practices approach has been to have load testing and active metrics for cloud services testing. It is also prudent to undertake traditional market research before embarking on cloud computing business. IPv6 is fast growing which requires that cloud computing services should be IPv6 compliant. In Kenya, and other developing regions, the use of the IPv4 are still largely used. The IPv6 provides the infrastructure to provide technical flexibility and unlimited addresses required to success in the sky. The predominant advantage of adoption of cloud computing for the organisations is that it eliminates the need for IT employees. Maghiros

(2003) finds that existing IT departments would not require services of their 70 % to 80 % of their IT workforce posing an eminent threat to existing IT staff.

There are weaknesses in innovation adoption research in its failure to take adequate consideration of the business context and its integration with the overall environment (Swanson, 1994). Moreover, there has been an excessive focus on adoption at the individual level and not enough on the organizational level (Eveland and Tornatzy, 1990). It is therefore evident that the theoretical foundation for our study needs to take into consideration specific factors such as the technological, organizational and environmental circumstances of the organization. We thus begin by drawing on the work of Tornatzky and Fleischer (1990). Their model consists of three elements that influence the process by which innovations are adopted – the technology, organization and environment. This framework has been elaborated on in relation to IS adoption studies carried out by (Morgan & Finnegan, 2010; Dedrick & West, 2003).

1.2 Statement of the Problem

Over the last decade, Kenya's ICT sector has grown phenomenally, attracting global attention, especially after the introduction of mobile money. Today, Kenya has the largest mobile money platform in the world. An estimated 15 million mobile phone users are expected to be using mobile money by end 2010, the equivalent of three out of every four adult Kenyans (Demombynes & Thegeya (2011). Kenya has positioned itself to become a global ICT hub, attracting investors who want to extend the ICT revolution domestically as well as look for applications in other developing countries. Past studies have shown that there has been adoption of cloud computing in the personal aspect ignoring the adoption of cloud computing in the organisations. Authors contend that this require an investigation into the organisational, technological and environment influence on the adoption of cloud computing in today's organisations. Cloud computing provide the opportunity for companies to reduce their IT associated costs through offloading. Despite these opportunities most organisations are reluctant to do so mostly owing to security issues.

A survey among 500 chief executives and IT managers in 17 countries found that despite its potential benefits, top management has been reluctant to adopt the system due to

security threats in terms of loss of control of systems and data (Azarnika, Shayana, Alizadehb & Karamizadeha, 2012). moreover, there has been an excessive focus on adoption at the individual level and not enough on the organizational level (Eveland & Tornatzy, 1990). The current adoption of cloud computing is associated with numerous challenges because users are still skeptical about its authenticity. Based on a survey conducted by IDC in 2008, the major challenges that prevent Cloud Computing from being adopted are recognized by organizations are; security, costs, charging and service level agreements. Cloud computing has the potential to become a frontrunner in promoting a secure, virtual and economically viable IT solution in the future. The study therefore seeks to study the factors affecting adoption and non-adoption of cloud computing in organisations in the Kenyan context.

1.3 Purpose of the Study

The study sought to investigate the factors influencing cloud computing adoption in organisations using CIC INSURANCE Kenya Limited as a case study.

1.4 Research Questions

This study is guided by the following research questions formulated to aid in gathering the information regarding the research topic

1. What is the influence of technological factors on cloud computing adoption?
2. What is the influence of organizational factors on cloud computing adoption?
3. What is the influence of Environmental factors on cloud computing adoption?
4. What is the influence of cloud computing on Business Operation adoption?

1.5 Importance of the Study

1.5.1 CIC Insurance Group Limited

CIC Insurance implemented its new cloud based infrastructure in November 2011 by hosting its applications on virtualized servers locally; aiming to reassure its growing customer base after downtimes caused by local and international transit-link and internet failures. The CIC Insurance Cloud virtualized services in computing, network and storage. It has invested US$200,000 in its cloud platform and is expecting to invest more

funds in the next few years. This research will aid CIC Insurance in analyzing the risks and success factors in rolling out cloud based services and applications on their network.

1.5.2 Government of Kenya- Communication Commission of Kenya CCK

It is responsible for formulating and executing ICT policy, supervising and telecommunication institutions, assisting the Government's ICT operations and serving as Government communication regulator, in line with contemporary communication practice the world over. Communication Commission of Kenya supervises the public communication systems of the country.

1.5.3 Researchers and Academics

This study will contribute to the body of knowledge hence will be of interest to both researchers and academicians who seek to explore or investigate the factors that hinder proper product support from business units to other business units or parent or head office operations.

1.6 Scope of the Study

CIC INSURANCE Group is a leading co-operative enterprise and a pioneer micro-insurer in East Africa with three major subsidiaries namely; CIC INSURANCE Life Assurance Limited, CIC INSURANCE General Insurance Limited and CIC INSURANCE Asset Management Limited. The study will focus on CIC INSURANCE Top, Mid-Level and Low level Management employees in CIC's departments charged with execution and implementation of strategic plans. All three of CIC's subsidiaries are headquartered in Nairobi Upper Hill area. The study was limited to the population of 190 respondents and the study was conducted from the October, 2013 to July, 2014. The study was limited in terms of the administration of the questionnaires to the desired sample as the researcher had to adjust his daily schedule to be able to personally administer the questionnaires. This required the researcher to work overtime in order to compensate for the duration to the field.

1.7 Definition of Terms

1.7.1 Cloud Service

This is a software system which is designed to supply and improve interaction over cloud space (other cloud service or platforms), since the computer applications are becoming more service oriented their capabilities are accessible more easily to the newer applications (Juniper, 2012).

1.7.2 Cloud Platform

A cloud platform provides services based on the cloud space and allow users to create their own applications on it, i.e., creating SaaS. So users are developers not just the end users who use the service. Generally when applications and programs are installed, whether their platform is based on cloud or is On-premises or off-premises, most of them use some of available Software Platforms in the device on which they are running e.g., Local storage or library functions, which are a part of Foundation or Infrastructure Service. When companies want to supply Storage or computing capability or both on the cloud space, based on the structure they need, they have to be equipped with some prerequisite and be provided with some basic needs (Cisco, 2012).

1.7.3 Virtual Machine

A virtual machine (VM) is a software implementation of a machine that executes programs like a physical machine. Virtual machines are separated into two major categories, namely system virtual machine and process virtual machine (Vmare, 2012).

1.7.4 Technological factors

These refer to the technical aspects of the software and hardware required to adopt and utilize cloud computing in the organization

1.7.5 Environmental factors

These refer to the external an internal factors within the organisations operations, these may include the industry trends and the new technology that is available

1.7.6 Organisational factors

Refer to the policies, culture, values, and beliefs of the organisations and the manner in which they conduct operations within n the organisations and with outside clients.

1.8 Chapter Summary

The chapter identified the gap that the research intended to address. Cloud computing as means for sharing and communication has been widely adopted in developed countries organisations as well as Small medium enterprises. However, there is limited adoption of cloud computing in Kenya and the study objectives were based on the perceived factors influence on cloud computing adoption. The second chapter of the study focuses on the literature review on the concept of cloud computing and influence of technological, environment, organisational factors and the influence of cloud computing on business operations. Chapter three of the study present the research techniques adopted by the researcher. Chapter four presents the study findings in tables with the researcher interpretation. Chapter five provides the summary, conclusions and recommendation of the study based on the study findings.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter of the study presents the literature related to the concept of adoption and non-adoption of cloud computing. The chapter presents the concept of cloud computing, the theoretical framework and the empirical framework based on the study research objectives and the research questions.

2.2 Cloud Computing

Several studies (Chau and Tam, 1997; Chong and Ooi, 2008; Kuan and Chau, 2001; Oliveira and Martins, 2010; Pan and Jang, 2008; Shirish and Teo, 2010; Zhu et al., 2004) have been credited with proposing the TOE framework, developed by Tornatzky and Fleischer (1990), to analyze IT adoption by firms. The TOE framework identifies three context groups: technological, organisational, and environmental. The technological context refers to internal and external technologies applicable to the firm. Organisational context refers to several indexes regarding the origination, such as firm size and scope, centralization, formalization, and complexity of managerial structure and the quality of human resources. Environmental context refers to a firm's industry, competitors and government policy or intention. The TOE framework is consistent with Roger et al. (2002) theory of innovation diffusion (Pan and Jang, 2008; Shirish and Teo, 2010; Wang et al., 2010), which recognizes the following five technological characteristics as precedents for any adoption decision: relative advantage, complexity, compatibility, observability, and trialability. Therefore, the TOE framework explains the adoption of innovation and a considerable number of empirical studies have focused on various IS domains.

The organization must decide to either develop or invest in its own recourses or to make changes based on consideration of the environmental situation. Based on the literatures that supported the TOE framework for the examination of IT and IS innovations, including open systems, e-business, e-commerce, ICT, ERP, and RosettaNet standard technology adoption and performance (Swanson, 1995; Chau and Tam, 1997; Kuan and Chau, 2001; Zhu et al., 2004; Shirish and Teo, 2010). This study stipulated that the following three features influence cloud computing adoption: technological context (relative advantage, complexity, and compatibility), organisational context (top

management support, firm size, and technology readiness), and environmental context (competitive and trading partner pressures).

Strategic management is a broader term than strategy and is a process that includes top management's analysis of the environment in which the organization operates prior to formulating a strategy, as well as the plan for implementation and control of the strategy. The difference between a strategy and the strategic management process is that the latter includes considering what must be done before a strategy is formulated through assessing the success of an implemented strategy (Mitzberg, 1988). Operations strategy can be viewed as the effective use of production capability and technology for achieving business and corporate goals. These goals include profit, innovations, customizations, product flexibility, product reliability, quality, response, delivery reliability and after sales service (Lowson, 2002).

In this traditional model, servers are considered as a single, functional unit that encompasses the hardware, operating system, application, utilities, and storage for the application. When the capacity of the server is exceeded, additional hardware or storage must be added to the physical machine. It is possible to set up clusters of servers, all of which are configured exactly the same, to ensure greater fault tolerance. This helps protect the organization from the undesirable consequences of a server hardware failure. However, there are limitations on the scalability of clusters due to constraints in either the operating system or database management software. An additional factor is that not all applications will function correctly in a clustered environment.

The traditional server model has been in use for several decades because it is relatively easy to implement and deploy. Moreover, conceptually the model is not unduly complicated and almost all applications have been designed using this model. The downside is that it has inherent limitations related to scalability both up and down. Increasing scalability requires additional hardware that exactly duplicates the current physical hardware. On the other hand, when a server is not busy it is impossible to use that extra capacity for other workloads. Given the insular nature of the model, disaster recovery is complicated because a replica of the entire environment needs to be recreated to reestablish functionality (Scale, 2009).

In fact, research firm International Data Corporation (IDC) calls cloud computing the foundation for the technology industry's next 20 years of growth, saying, "it is nothing less than the complete transformation of the industry's core offering and business models." According to IDC, public clouds (delivered to multiple customers via the internet) and private clouds (built by or delivered to a single organization via private network) will account for 15% of IT spending in 2011 and grow at a compound annual rate of about 26% for the next four years. This is roughly five times the growth rate of the technology industry as a whole. In addition, 80% of all new software offerings in 2011 will be available as cloud services (regardless of whether they are also available via traditional on premise business models) (IDC, 2011).

Both cloud computing and sustainability are emerging as transformative trends in business and society. Most consumers (whether they are aware of it or not) are already heavy users of cloud-enabled services, including email, social media, online gaming, and many mobile applications. According to (Dhar, 2012) there is evidence to suggest that the business fraternity has begun to entertain the concept of cloud computing as an approach to reduce costs while improving IT and business swiftness. The recent explosion towards cloud computing over the years has led to many innovations and technologies.

2.3 Cloud Computing Characteristics

In the cloud computing structure, applications are run and interact through the web and are hosted by a desktop and/or a remote client where the cloud application is at the top of the cloud pyramid. Adoption of cloud computing does not require users to purchase expensive software licenses, instead, the cost of the system is included in the subscription fee. A cloud application does away with the need to install and run on the customer computer thus eliminating costs associated with software maintenance, support and ongoing operations (Hurwitz et al., 2010).

In the middle of the pyramid structure is the cloud platform which provides a computing framework or platform as a service. The cloud computing platform provisions reconfigures, configures and de-provisions servers in relation to increases and decreases in demand. This task is performed by a distributed computing model, where several servers amalgamate to deliver and infrastructure or application request.

The cloud pyramid offers the delivery of IT infrastructure through virtualization. This allows the splitting of a single physical piece of hardware into self-governed, independent environments which are called in terms of the Random Access Memory (RAM), Central Processing Unit (CPU) and the storage disk. This infrastructure comprises of networks, servers, hardware equipment delivered as either infrastructure “farms” or "cloud centres" “Web Services” which are then interlinked for additional capacity and resilience (Hurwitz et al, 2010).

The concept of public cloud also referred to as external cloud refers to the conventional meaning of cloud computing. These refers to the dynamically provision and, scalable visualized resources available over the web from an off-site third-party provider based on dividing bills and resources among its clients through a ‘utility’ base (COSO, 2012). The private cloud also known as the ‘corporate’ or ‘internal’ cloud denotes a computing architecture which is provided on private networks. This is often used among large companies which allows their corporate network and data center administrators to become in-house service providers catering to clients within the corporation. This however avoids the several benefits afforded by cloud computing as it requires the organisations to purchase manage and setup their own clouds (COSO, 2012).

According to Low et al. (2011) there a myriad of services available with adoption of cloud computing. For instance, hosted desktops alienate the use of PCs in the workplace and cost reduction of services needed by the organisations. A hosted desktop works regularly the only comparison being that the software and data customers are in remote, highly secure data centers but not in their machines. This allows the users to access their hosted PCs from any location through the internet by using a PC, laptop or a customized device known as a thin client (Gmbh, 2009).

Microsoft Exchange plans is perhaps the most popular form of reliable and secure email platforms that organisations are moving towards. The service uses the email platform which allows both large and small organisations to enjoy the benefits of MS Exchange® accounts with limited costs of investing in costly infrastructure. In this systems, the email is stored on centrally managed servers, which provided fast connectivity and reduced redundancy from any location. This service allows the user to access their contacts, calendar, emails and shared files by a variety of ways such as Outlook®, Outlook Mobile Access (OMA) and Outlook Web Access (IBM, 2012).

The VOIP (Voice over Internet Protocol) is an approach of carrying phone calls and services across digital internet functions. The systems is not much different form the traditional telephony functionality as a VOIP-enabled phone works as the normal' phone. However, its distinction is in its advantages, as it replaces installation, handsets, and expensive phone installations, BT lines and numbers with a simple, cost-effective option that is available to use on a monthly subscription rate. A pre-configured handset needs to be plugged into the broadband or office network to allow access to services as IVR, voicemail and more (Vmware, 2012).

Cloud storage is growing in popularity due to the benefits it provides, such as simple, CapEx-free costs, anywhere access and the removal of the burden of in-house maintenance and management. It is basically the delivery of data storage as a service, from a third party provider, with access via the internet and billing calculated on capacity used in a certain period (e.g. per month) (Vmware, 2012).

Dynamic servers are the next generation of server environment, replacing the conventional concept of the dedicated server. A provider like ThinkGrid gives its customer's access to resources that look and feel exactly like a dedicated server, but that are fully scalable. You can directly control the amount of processing power and space you use, meaning you don't have to pay for hardware you don't need. Typically, you can make changes to your dynamic server at any time, on the fly, without the costs associated with moving from one server to another (Juniper, 2012).

2.4 Influence of Technological Factors on Cloud Computing

Considering the way in which adoption of cloud computing can revolutionize the business scenario in different technological innovations, its facilities and resources could be accessed on demand (Tuncay, 2010). Many previous studies in the field of cloud computing have addressed the areas of new technologies, security requirement and the future expectations in these emerging environments. From the financial point of view, Misra and Mondal (2010) built two types of business models that can be drawn for companies (cloud users) willing to adopt cloud computing services.

There are business models for companies with an existing IT infrastructure and business models for startup companies. A contemporary survey found that the current changing pattern and other factors of the cloud make it highly suitable for small- and medium-sized

firms (Misra and Mondal, 2010). However, firm size was found to have an effect on perceived strategic importance of cloud computing in innovative technological development. Pyke (2009) has stated that firm applications typically would be in charge of their localized sets of processes, with the connection of applications to these processes.

Prior studies have proposed a trade-off equation that indicates which technology can lead to higher profits. Misra and Mondal (2010) tried to broaden this outlook with a model that not only helps identify the suitability of a company for cloud computing by clearly tracing all the factors but also tries to give a certain profitability valuation of the benefits associated with cloud computing. Banerjee (2009) provides an overview of technological research studies that were performed in HP labs and that adopted cloud-scale smart environments, such as utility computing and the smart data centre.

2.4.1 Perceived Usefulness

Rogers (1983) defined relative advantage as the degree to which a technological factor is perceived as providing greater benefit for firms. It is reasonable that firms take into consideration the advantages that stem from adopting innovations. Cloud computing services, which allow operations to be generalized and mobilized through internet transactions, can substitute for or complement ERP software. The expected benefits of embedded cloud computing services include the following: speed of business communications, efficient coordination among firms, better customer communications, and access to market information mobilization (Armbrust et al., 2010; Hayes, 2008). However, firms may not have confidence in a cloud computing system because it is relatively new to them (Buyya et al., 2009). It may take users a long time to understand and implement the new system. Thus, complexity of an innovation can act as a barrier to implementation of new technology; complexity factor is usually negatively affected (Premkumar et al., 1994). The diffusion of the innovation model is inclined toward investigating the adoption of new technology (Rogers, 1983).

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research studies that were performed in HP labs and that adopted cloud-scale smart environments, such as utility computing and the smart data centre. Buyya et al. (2009) have also dealt with market-oriented resource allocation of cloud computing by leveraging third-generation Aneka enterprise grid technology. Grossman et al. (2009) developed a cloud-based infrastructure that had been optimized for performance networks and supported necessary data mining applications

2.4.2. Compatibility

Compatibility refers to the degree to which innovation fits with the potential adopter's existing values, previous practices and current needs (Rogers, 1983). Compatibility has been considered an essential factor for innovation adoption (Cooper & Zmud, 1990; Wang et al., 2010). When technology is recognized as compatible with work application systems, firms are usually likely to consider the adoption of new technology. When technology is viewed as significantly incompatible, major adjustments in processes that involve considerable learning are required.

From their vigorous analysis of diffusion studies, Jeyaraj et al. (2006) found relative advantages, complexity and compatibility as the most utilized independent technological characteristics for IT adoption among organizations. In this research, perceived usefulness is considered as an important technologies attribute instead of relative advantages. Perceived usefulness was identified by Davis et al. (1986), in their technologies acceptance model, which is another popular theory among diffusion researchers. Finally, this research motivated by diffusion of innovation theory developed by Rogers (1983) He defined innovation as "an idea, practices or object that is perceived as knew by an individual or other unit of adoption". Based on this definition, web technologies consider as an innovation and organizations considered as unit of adoption. This theory provides a strong theoretical background for the diffusion process. More specifically, this theory helps to identify the important determinants for diffusion of an innovation.

2.4.3 Complexity

Cloud services are finally taking off because technology advances, particularly ubiquitous high-speed internet connectivity and the ever-decreasing cost of storage, have finally enabled service providers to meet buyers' needs for simplicity, cost and flexibility. For consumers, the recent proliferation of smart mobile devices that are actually handheld wireless computers has accelerated the development of cloud services that provide

application functionality to those devices. This is an example of why consumers have been such rapid adopters of the cloud: cloud computing has the potential to instantly simple, easy-to-use, sophisticated and high-powered computer applications and information that consumers could not otherwise access (Rao, 2009).

The adoption of cloud computing arrangement for an organisations can be done in minutes. In the past, there has been a huge discrepancy between the IT resources available to relatively smaller businesses. The advent of cloud computing has made it possible for small enterprises to compete with large companies on the same level. The concept of 'renting' core IT services compared to investing in software and hardware makes them much more affordable. For instance, ThinkGrid offers enterprise technology to SMEs services that would cost hundreds of thousands of pounds for a low monthly fee (Erdogmus, 2009).

Adoption of cloud computing services provide users with the benefit of the economies of scale, more so among those using large-scale data centers which are much more efficient which use multi-tenant architecture to share resources between several clients. This model allows cloud computing providers to pass saving costs to their clients. There is also the advantage of scalability and flexibility in using cloud computing; customers are able to make changes as per the IT needs, such as reducing capacity and users when required and the ability to respond to real rather than projected requirements. Cloud computing services are also offered in terms of the actual consumption thus customers are able to benefit from greater elasticity of resources without paying premiums (Armbrust, 2010).

Cloud –based services allows the user to access applications and data securely from any location through internet connections. It also assist in collaboration where multiple users can work simultaneously on the same project, share contacts and calendars. It also offers the advantage in that if the connectivity in the workplace or home fails or one has n redundancy you can still access the data from the nearest Wi-Fi enabled data point. This flexible remote working allows organisations to cut overheads, keep staff happy while meeting new working regulations (Buyya, 2009).

The combination of resources in the form of large clouds significantly reduces costs and maximizes utilization of resources only when required. With adoption of cloud computing organisations don't need to worry over over-positioning for services that does not meet

their predictions or under-provisioning for services that become rapidly popular. By moving more infrastructure and applications within the cloud frees up time, effort and financial resources to concentrate on the real job of using technology to improve the core business of the enterprise. By sharing computing power among several tenants improves utilization rates, as servers are constantly in use and not idle which also reduces the costs whilst increasing speed of the application developer. The side effect however, is that the computer capacity rises as customers cannot engineer for peak loads (Willenborg, 2009).

As discussed earlier, customers are able to reduce their spending on purchase and installation of IT infrastructure and/or applications. This allows the organisations to use this capital expenditure on other core business operations offering simple operational expenses which can be budgeted for on a monthly basis. Further, there is no need for customers to pay for resources to meet fluctuating demands as IT solutions can be patched and upgrade remotely by the provider, deployed extremely quickly and managed, maintained. Similarly, technical support is also provided 24 hours by dependable service providers such as ThinkGrid with limited charges thus reducing the burden of IT staff. This means that they are free to focus on business-critical tasks, and businesses can avoid incurring additional manpower and training costs. IT giant IBM has pointed out that cloud computing allows organisations to streamline procurement processes, and eliminates the need to duplicate certain computer administrative skills related to setup, configuration, and support (Juniper, 2012).

2.5 Influence of Organizational Factors on Cloud Computing

2.5.1 Change Attitude

An organization should recognize the risks and other effects cloud computing can have on its operating environment and account for them in its organizational day to day programs. In some cases, cloud computing can easily enter into an organization while bypassing typical management oversight controls. When an organization invests significant resources in an endeavor that could take months or years to complete, conventional processes and controls require management’s involvement and approval. Such endeavors are highly likely to attract senior management’s attention in the form of risk assessments, audits, and steering committees.

Some cloud solutions can easily be adopted within a short period of time while requiring a small monetary investment and the involvement of very few personnel. The equation of

big investment equals big impact is different with cloud computing, where a small investment can have a big impact. The need to expend a great amount of effort to analyze cloud computing risks and perform the related due diligence may be counterintuitive. Consequently, management could neglect to perform time-consuming steps such as confirming compliance with legal or regulatory requirements or evaluating the potential impact of the CSP on the organization's operations and risk profile.

Recent research has indicated that around 90% of businesses do not have adequate disaster recovery or business continuity plans, leaving them vulnerable to any disruptions that might occur. Providers like ThinkGrid can provide an array of disaster recovery services, from cloud backup (allowing you to store important files from your desktop or office network within their data centres) to having ready-to-go desktops and services in case your business is hit by problems. Hosted Desktops (or Hosted VDI) from ThinkGrid, for example, mean you don't have to worry about worry about data backup or disaster recovery, as this is taken care of as part of the service. Files are stored twice at different remote locations to ensure that there's always a copy available 24 hours a day, 7 days per week (Banerjee, 2009). Researchers (Hong and Zhu, 2006; Oliveira and Martins, 2010) conceptualize the organisational context as including the size, quality of workforce and the complexity of the management structure.

2.5.2 Top Management Buy In

Lin and Lee (2005); Wang et al., 2010) posit the importance of top management in creating a conducive environment for adoption of new technologies by providing adequate resources. The top management of the organisations provides the commitment and vision for innovation and create an environments that fosters this innovation. Cloud computing involves several integration of resources and reengineering of processes which requires top management support. Further, research shows that the size of the firm is a strong predictor of IT innovation (Dholakia & Kshetri, 2004; Hong and Zhu, 2006; Pan and Jang, 2008). Studies (Pan and Jang, 2008; Zhu et al., 2004) have shown that there is a strong positive relationship between the top management support level and the adoption of new technologies. Large firms have been found to adopt more innovations due to their flexibility and ability to undertake risks (Pan and Jang, 2008; Zhu et al., 2004). As such the study hypothesizes that the firm size is a significant factor that affects the perceived planned importance of cloud computing in technological advancement.

SMEs typically has less slack resources with which to absorb the shocks of an unsuccessful investment in IS adoption. Because of the unique characteristics of an SME, there is a need to examine whether models of cloud computing adoption developed in the large-business context can be equally applied to small and medium size enterprises. While large enterprise suffers from many of the same constraints, the effect on small businesses is more significant. The skills, time, and staff necessary for planning are not major issues in large businesses, yet these same issues represent most of the difficulties in SMEs (Oliviera & Martins, 2010). Larger businesses have more resources and infrastructure to facilitate innovation adoption. SMEs suffer from a special condition commonly referred to as resource poverty. Resource poverty results from various conditions unique to SME, such as operating in a highly competitive environment, financial constraints, lack of professional expertise, and susceptible to external forces.

Quinn (1985) contends that there exist two diverse grounds for mitigating the beneficial relationship between top management backing and technological acceptance of modernization. The abundant disbursement of organizational resources (financial, technical, and human) for the perfect acceptance and execution of an IT innovation can be initially assured by powerful top management backing. Secondly, top management can offer lasting vision, suggestions, backing, and the responsibility to produce a favorable environment for the IT innovation to reduce organizational conflicts on adopting an IT innovation (Quinn, 1985). Hence, it is very possible that organizations with a firmer top management support for KM systems would most probably accept such systems (Alawati, 2012).

2.5.3 Skill

The ability and capacity of organisations to adopt new technology has been associated to the technological infrastructure available and the human resources capacity (Pan & Jang, 2008; Oliveira & Martins, 2010; Wang et al., 2010; Kuan & Chau, 2001; Zhu et al., 2006). Technological infrastructure refers to installed network technologies and enterprise systems, which provide a platform on which the cloud computing applications can be built. IT human resources provide the knowledge and skills to implement cloud-computing-related IT applications (Wang et al., 2010). Cloud computing services can become part of value chain activities only if firms have the required infrastructure and technical competence. Therefore, firms that have technological readiness are more prepared for the adoption of cloud computing. According to a report by the European

Commission (2010), there are many reasons why organizations of all sizes and types are adopting this model of IT. Cloud computing provides a way to increase capacity or add capabilities on the fly without investing in new infrastructure, training new personnel, or licensing new software. Ultimately, it can save companies a considerable amount of money. As a result, there is a lower level of awareness of the benefits of cloud computing and a lack of IS knowledge and technical skills in small businesses (Shahamiri, 2011) .In addition, SMEs lack financial resources and are highly susceptible to short-range planning in response to their highly competitive environment.

2.5.4 Traceability and Auditability.

Another organizational factor impacting adoption included increased traceability and auditability. According to researchers such as Armbrust, 2009 and Iyer & Henderson (2010), cloud capabilities such as traceability enables the usage of every information service within an organization to be tracked. The ability to trace the history, location, or application of an item through recorded documentation is vital for ensuring that companies conform to internal and external constraints. Internally, compliance rules may require companies to audit the use of their data from other parts of the world (Iyer & Henderson, 2010).

2.6 Influence of Environmental Factors on Cloud Computing

2.6.1 Competition

Competitive pressure refers to the level of pressure felt by the firm from competitors within the industry (Oliveira & Martins, 2010). They have been suggested that the experience of intense competition is an important determinant of IT adoption (Kuan & Chau, 2001; Zhu et al., 2004). As high-tech industry has the characteristics of rapid changes, firms face pressure and become increasingly aware of and follow their competitors' adoption of new technologies. By adopting cloud computing, firms benefit greatly from better understanding of market visibility, greater operation efficiency, and more accurate data collection (Misra & Mondal, 2010). Additionally, many firms rely on trading partners for their IT design and implementation tasks (Pan and Jang, 2008). Some empirical research studies have suggested that trading partner pressure is an important determinant for IT adoption and use (Chong & Ooi, 2008; Lai et al., 2007; Lin & Lin, 2008; Pan & Jang, 2008; Zhu et al., 2004).

Greenfield projects have limited budgets: most of the organizations often roll out new services and offerings to their customers with innovative solutions for higher customer satisfaction and gain market share. With limited IT budgets, it is always difficult to make investments on such initiatives. By choosing Cloud services for these new initiatives, the up-front investment to get started becomes minimal, and there are no penalties due to infrastructure failures. In addition, Cloud services allow to quickly deploying infrastructure and services on demand. Hence innovative pilot projects can easily take advantage of the Cloud services and deploy them with minimal risk (Buyyaa et al., 2009).

IT operations and systems management along with maintenance expenses are high as well as complex: when IT operations and systems management is complex and costs are high, Cloud computing offers low cost easy to manage operational solutions and minimize capital expenditure. Some Cloud service providers offer automatic failover systems and monitoring services that reduce overall management and operational costs (Weinhardt et al., 2009).

Business processes have unpredictable demand for IT services: in many occasions, systems are engineered to handle large-scale operations while in reality the demand of such computing needs seldom reaches its peak. The fluctuations in computing demand varies over time and hence many systems are underutilized and computing recourses are wasted. This leads to inefficient use of infrastructure (both hardware and software) and poor capacity planning. Cloud computing addresses these issues with on demand elastic services which can be easily scalable as computing need grow (Hogben, 2009).

2.6.2 Trends

From a business point of view, firms are increasingly attempting to integrate business processes into their existing IS applications and build internet-based technologies for transacting business with trading partners (Tuncay, 2010). In high-tech industries, ubiquitous data transformation practices have become one of the key aspects for improving operation efficiency. To enhance competitive advantage, developing cloud computing capability is an important undertaking because it is not only rapidly changing the way that enterprises buy, sell, and deal with customers, but it is also becoming a more integral part of enterprises' business tactics (Tuncay, 2010).

Cloud computing diffusion becomes a significant research topic because it enables firms to execute data transactions along value chain activities (e.g. including manufacturing, finance, distribution, sales, customer service, information sharing and collaboration with trading partners) (Gartner, 2009). Non-core IT operations are commoditized: many IT services that can be commoditized such as e-mail, archiving, storage, etc. are ideal candidates for Cloud services. By outsourcing these services to a Cloud service provider will often lead to a reduced IT infrastructure expenditure and operational overheads to maintain and manage such services (Armbrust et al., 2010).

While cloud computing has been discussed as a new technology develop that can provide several advantages, both strategic and operational, to its adopters, the cloud computing adoption rate is not growing as fast as expected (Banerjee, 2009). In fact, surveyed different companies from different industries that have built custom applications in the cloud and analyzed how cloud computing affected the companies' operations in security integration areas. The future of computing lies in cloud computing, whose major goal is reducing the cost of IT services while increasing processing throughput, reliability, availability, and flexibility and decreasing processing time (Hayes, 2008).

Considering the way in which adoption of cloud computing can revolutionize the business scenario in different technological innovations, its facilities and resources could be accessed on demand (Tuncay, 2010). Many previous studies in the field of cloud computing have addressed the areas of new technologies, security requirement and the future expectations in these emerging environments. From the financial point of view, Misra and Mondal (2010) built two types of business models that can be drawn for companies (cloud users) willing to adopt cloud computing services. There are business models for companies with an existing IT infrastructure and business models for startup companies. A contemporary survey found that the current charging pattern and other factors of the cloud make it highly suitable for small- and medium-sized firms (Misra and Mondal, 2010). However, firm size was found to have an effect on perceived strategic importance of cloud computing in innovative technological development.

2.6.3 Industry

Kenya’s financial services industry continues to evolve in response to the regulatory environment, innovation, technology and talent. Technology is a powerful force in

Kenya's financial services industry. IT has the potential to revolutionize the insurance business (Mwangi, 2012). The elusive value of IT in the insurance industry with many insurers increasingly focused on IT-driven transformation projects to differentiate them. Realizing value from IT investments can be a challenge, however, unless insurers—and all financial services organisations—invest the time, resources and expertise necessary. One of the downsides of a technology-intensive business like financial services is the threat of cybercrime. Cybercrime, also known as computer crime, is an economic crime committed using computers and the internet. In Cybercrime in the financial services sector, diverse product lines and mobile banking solutions open up financial services organisations to increased cybercrime, unless they implement appropriate controls to safeguard customers and improve information security (Gathungu, 2012).

Increasing opportunities mean increasing competition among the 44 underwriters in Kenya's insurance industry. Several players are positioning themselves to grow their market share through new products like bancassurance, micro-insurance and agri-insurance as well as new service delivery channels. However, undercutting and other forms of unfair industry practices pose a threat to growth compounded by a lack of public confidence fuelled by the collapse of at least seven underwriters in the last ten years. In this environment, the pursuit of profitable growth calls for a paradigm shift. Insurers are looking increasingly to IT-driven transformation projects to differentiate themselves. IT has the potential to revolutionize the insurance business (Mwangi, 2012).

Firms employ information and communication technology (ICT) in their pursuit of competitive growth and the productivity-related business value that accrues from its use is widely acknowledged (Peppard et al., 2007).In order to handle the ever-increasing amount of data at their companies, many data center managers are turning to the use of server virtualization strategies or creating virtual environments in their data centers. Forty-five percent (45%) of all data center managers surveyed reported that their companies are using virtualization strategies with their companies' servers. Fifty-six percent (56%) of the data center managers that aren't currently using virtualization (30% of the total survey population) reported they plan to use virtualization strategies at some point in the future. One can conclude that there is significant interest in the technology by those not currently using virtualization, yet there are major concerns that are preventing them from implementing virtualization (Foster, 1998).

2.7 Influence of Cloud Computing on Business Operations

Operations strategic planning can be viewed as the effective use of production capability and technology for achieving business and corporate goals. These goals include profit, innovations, customizations, product flexibility, product reliability, quality, response, delivery reliability and after sales service (Lowson, 2002).

Traditionally, organizations have implemented applications by installing software for the application on one or more physical servers. In many cases, multiple servers may be used when an application services a high transaction volume or when there needs to be a high level of assurance that the failure of a single server will not cause an application to completely fail. A classic example of this type of application is a university's student registration system. During peak registration periods, transaction levels will be very high and the university needs to ensure that the application will not go down due to a hardware failure. In the middle of the semester, however, the application will be barely used and an outage would likely not affect many people (Ojal, 2011).

2.7.1 Software as a Service (SaaS)

This is the highest level of abstraction on the Cloud and the applications are delivered over the World Wide Web as a service. This layer of Cloud service offers a wide range of applications from productivity applications to enterprise applications such as e-mail hosting, supply chain management or enterprise resource planning. (Buyyaa, 2009)

2.7.2 Platform as a Service (PaaS)

This is the second level of the cloud abstraction, which is not only the technical abstraction but essential application infrastructure services such as computation, messaging, connectivity, access control, etc. In the traditional in-house computing model, a group of network, database, and system management experts are needed to keep everything up and running. With Cloud computing, these services are now provided remotely by Cloud providers under this layer (Weinhardt, 2009).

2.7.3 Infrastructure as a Service (Iaas)

This is the lowest layer in Cloud computing. IaaS providers abstract IT infrastructure resources such as storage and memory as services. A Cloud service provider manages the physical infrastructure; provisions virtualized infrastructure of operating systems to the end-user. The consumer here is given complete ownership of the virtual image which one

can configure according to the requirements. Products offered through this layer include the remote delivery and support (via World Wide Web) of a full computer infrastructure (e.g. virtual servers, storage devices, etc.) (Buyyaa et al., 2009)

2.7.4 Risks

While one of the advantages of a cloud is that an organization does not need to know the details of the physical hardware, an organization will often want to know where the application's cloud "lives." One of the ways cloud providers keep expenses down is to place data center in locations where the cost of real estate, utilities, and labor are low. Given this scenario, many clouds may be hosted in foreign countries (Cisco, 2012).

The major problem with clouds that are hosted internationally is that the application and data are subject to the laws and policies of the host nation. For example, many Canadian provinces have made it illegal for applications in their province to be hosted in the USA because the data would then be subject to provisions of the Patriot Act. Similarly, some applications in the USA cannot be hosted overseas because of restrictions in the export of computer system technology.

Because of this, where a cloud is hosted is important in the context of concerns related to compliance, auditability, and eDiscovery. Since cloud computing is a variation on computer outsourcing, an organization will need to have a high degree of confidence in the security procedures and protocols of their cloud computing provider. Depending on the nature of the application and data hosted in the cloud, an organization may have to deal with issues related to HIPPA, FERPA, PCI, GLBA, and other mandates or regulatory agencies. An organization needs to ensure that their provider can address any requests for information related to regulatory or statutory issues. The Cloud Security Alliance (2009) has developed a comprehensive guide to help organizations sort out the issues related to many of these concerns.

Perhaps most importantly, an organization can best protect itself by only working with cloud providers that are committed to transparency. There is no valid reason that prevents cloud providers from being able to disclose their security practices and hosting procedures to the organization purchasing cloud computing services. Microsoft has recently promoted the Cloud Computing Advancement Act (Microsoft Corporation, 2010)

as a way to provide a greater degree of transparency and openness in the cloud computing arena. This, along with the work of the Cloud Security Alliance, provides a solid framework for organizations to address the complex issues related to cloud computing.

IaaS providers offer their customers the illusion of unlimited compute, network, and storage capacity — often coupled with a 'frictionless' registration process where anyone with a valid credit card can register and immediately begin using cloud services. Some providers even offer free limited trial periods. By abusing the relative anonymity behind these registration and usage models, spammers, malicious code authors, and other criminals have been able to conduct their activities with relative impunity. PaaS providers have traditionally suffered most from this kind of attacks; however, recent evidence shows that hackers have begun to target IaaS vendors as well. Future areas of concern include password and key cracking, DDOS, launching dynamic attack points, hosting malicious data, botnet command.

Cloud computing providers expose a set of software interfaces or APIs that customers use to manage and interact with cloud services. Provisioning, management, orchestration, and monitoring are all performed using these interfaces. The security and availability of general cloud services is dependent upon the security of these basic APIs. From authentication and access control to encryption and activity monitoring, these interfaces must be designed to protect against both accidental and malicious attempts to circumvent policy. Furthermore, organizations and third parties often build upon these interfaces to offer value-added services to their customers. This introduces the complexity of the new layered API; it also increases risk, as organizations may be required to relinquish their credentials to third parties in order to enable their agency (Vmware, 2007).

The threat of a malicious insider is well-known to most organizations. This threat is amplified for consumers of cloud services by the convergence of IT services and customers under a single management domain, combined with a general lack of transparency into provider process and procedure. For example, a provider may not reveal how it grants employees access to physical and virtual assets, how it monitors these employees, or how it analyzes and reports on policy compliance. To complicate matters, there is often little or no visibility into the hiring standards and practices for cloud employees. This kind of situation clearly creates an attractive opportunity for an

adversary - ranging from the hobbyist hacker, to organized crime, to corporate espionage, or even nation-state sponsored intrusion. The level of access granted could enable such an adversary to harvest confidential data or gain complete control over the cloud services with little or no risk of detection (Chute et al, 2011).

IaaS vendors deliver their services in a scalable way by sharing infrastructure. Often, the underlying components that make up this infrastructure (e.g., CPU caches, GPUs, etc.) were not designed to offer strong isolation properties for a multi-tenant architecture. To address this gap, a virtualization hypervisor mediates access between guest operating systems and the physical compute resources. Still, even hypervisors have exhibited flaws that have enabled guest operating systems to gain inappropriate levels of control or influence on the underlying platform. A defense in depth strategy is recommended, and should include compute, storage, and network security enforcement and monitoring. Strong compartmentalization should be employed to ensure that individual customers do not impact the operations of other tenants running on the same cloud provider. Customers should not have access to any other tenant's actual or residual data, network traffic, etc. (Wallis et al. 2008).

There are many ways to compromise data. Deletion or alteration of records without a backup of the original content is an obvious example. Unlinking a record from a larger context may render it unrecoverable, as can storage on unreliable media. Loss of an encoding key may result in effective destruction. Finally, unauthorized parties must be prevented from gaining access to sensitive data. The use of cloud computing further increases the compromise in terms of the number of interactions between risks and challenges which are specific to the cloud or are more dangerous due to the architectural or operational characteristics of the cloud environment.

Similarly, there are other risks such as phishing, fraud and exploitation of software weaknesses. There is also the reuse of credentials and passwords which further magnifies the severity of such attacks. Cloud solutions have also been found to add to the threat to the landscape such as eavesdropping on transactional activities, manipulation of data, and redirection of clients to high risk sites and return falsified information. The major advantage of cloud computing is the reduction of software and hardware requirements such as maintenance and ownership which then allows companies to focus on their core

business which enhances their financial and operational benefits. The organisations needs to undertake a cost-benefit analysis of the security concerns

Versions of software, code updates, security practices, vulnerability profiles, intrusion attempts, and security design, are all important factors for estimating your company's security posture. Information about who is sharing your infrastructure may be pertinent, in addition to network intrusion logs, redirection attempts and/or successes, and other logs. Security by obscurity may be low effort, but it can result in unknown exposures. It may also impair the in-depth analysis required highly controlled or regulated operational areas (Vmware, 2012).

2.7.5 Costs

Many organizations are outsourcing their information technology (IT) related services to a third party vendor for quite some time. However, the IT services industry including outsourcing is going through rapid changes with the increasing adoption of Cloud computing. Global information technology (IT) outsourcing has been going through significant changes as many organizations are increasingly using Cloud services (Zhang et al., 2010).

According to (2012) IT outsourcing is an act of delegating or transferring some or all of the information technology related decision making rights, business processes, internal activities, and services to external providers, who develop, manage, and administer these activities in accordance with agreed upon deliverables, performance standards and outputs, as set forth in the contractual agreement. Global offshore outsourcing involves contracting with a low-cost offshore service provider that assumes responsibility for all or part of the information systems development lifecycle. In addition to lower cost, other benefits of offshore development and outsourcing include access to specialized technical skills and services, and the ability to respond to IT labor shortages according to variations in global supply and demand.

Cloud computing is the latest trend to outsource some or complete IT operations to run a business from the public Cloud that provides a flexible and highly scalable technology platform for an organization's business operations (Armbrust et al., 2010) It lowers IT costs and provides organizations with the people and expertise to create a "pre-integrated suite" of software applications. Various analysts' reports predict billions of dollars in revenue from Cloud computing (Gartner Press Release, 2010) Market research firm

Gartner believes that worldwide Cloud services revenue is projected to reach $148.8 billion in 2014 (Gartner Press Release, 2010). IT research firm Forrester predicts that the global Cloud computing market will be $241 billion in 2020 (Reuters, 2011).

Multi-tenancy drives value. Multi-tenancy means that a single instance of particular software runs on a server and it can serve multiple clients (tenants) simultaneously. By implementing a multi-tenant architecture, each software application is configured to virtually partition its data and each client works with a customized pre-configured virtual application instance. This kind of architecture has several advantages – for example, a single instance to maintain including troubleshooting, fixing, and upgrading. By doing this, the Cloud service provider is able to manage its resources efficiently. Please note that designing the multi-tenant architecture may be more expensive to begin with but the long-term benefits outweigh the up-front costs that may be higher initially (Weinhardt et al., 2009).

Faster time-to-market with on demand, elastic IT services. Cloud computing lowers IT expenditure in two fundamental ways – it leverages a "virtual suite" of pre-integrated Cloud-based applications and infrastructure and simplifies the complexity of traditional IT services. Cloud computing also reduces infrastructure management and monitoring costs and optimizes resource utilization by provision on demand (Buyyaa et al., 2009). Cloud computing depends on service providers also known as Cloud providers for various low level management and service levels of their multi-tenant applications, platforms, and infrastructures. This also leads to minimal capital expenditure (Capex) through pay-as-you-use-model. It implies that the reduction of the TCO by optimally using the hardware and software licenses (Armbrust et al., 2010).

2.7.6 Research and Development

Today's business world is global, Internet driven, and obsessed with speed. The challenges it creates for strategic managers are often complex, ambiguous, and unstructured. Add to this the constant allegations of top management wrongdoings, ethical blunders, and skyrocketing executive compensation, and it is easy to see why firm leaders are under greater pressure than ever to respond to strategic problems quickly, decisively, and responsibly. Hence, the need for effective strategic management has never been more pronounced than it is today.

We begin by clarifying the nature of an operations strategy. Slack and Lewis (2002) suggest the following definition, it is clearly, a step in the right direction, but perhaps not particularly informative. Following an earlier part of this study, Lowson (2001) can offer an enhanced perspective. Major decisions about, and strategic management of: core competencies, capabilities and processes; technologies; resources; and key tactical activities necessary in any supply network, in order to create and deliver products or services and the value demanded by a customer. The strategic role involves blending these various "building-blocks" into one or more unique, organization-specific, strategic architectures.

There are a number of broad influences that have led to the development of the operations strategy. They can be classified under the heading of demand trends and competitive priorities. Organisations today face a huge number of unprecedented, volatile and complex demands. Harvey (1990) suggests that this new consumer era is typified by a society in pursuit of individualism and the increasing fragmentation of traditional social groups. Goods, whether clothes or basic foodstuffs, are no longer merely products with utilitarian values, but represent a patina of symbols, signs, images and statements of difference (Douglas, 1982). Their symbolic meaning is often of more importance than any other, and it is created, reinforced and sustained through the mechanism of branding. Crook et al. (1992) suggest that the brand assumes the status of a "bundle of meanings" in support of a lifestyle, and serves as a signpost through the confusion and clutter of postmodern life. The value of products becomes less their ability to satisfy primary needs and more the way they function within society to show who we are and our position or status in life.

Flexibility and responsiveness can be accomplished. If we accept the picture of increasing variety in both goods and services and the search for ways to customize products at an individual level, we can see that many industries are characterized by complexity and dynamism. Unfortunately, for a number of reasons modern organizations are often ill-equipped to deal with such uncertainty.

At the turn of the twentieth century, manufacturing, for example, was characterized by an emphasis on mass-markets, high volume, and the use of interchangeable parts. When the principles of scientific management, as promulgated by Frederick Taylor and his

disciples, were also adopted, it produced a new era of industrial power that was eagerly exploited by the likes of Henry Ford, Isaac Singer and Andrew Carnegie.
Then, in 1974, Wickham Skinner proposed the idea that manufacturers have to learn to focus their plants (or even departments within plants) on a limited range of technologies, volumes, markets and products, and that strategies, tactics and services should all be arranged to support that focus. The maxim was that a factory that succeeds in focusing its activities will out-perform one that does not. Costs would be lower than in unfocused operations due to experience curve and scale benefits; consequently focus provides competitive advantage.

There are, however, always trade-offs with such an approach; for example, low cost and flexibility are inappropriate bedfellows. If the market demands greater variety and diversification, the focused factory comes under considerable strain, often alleviated only at the expense of high inventory levels. As we reached the 1980s, it soon became apparent that organizations operating in this manner were unable to cope with one particular demand: variety. Fundamental and radical new methods of organization and management were needed, once the demand for diversity reached a critical level. We are still searching for many of these new approaches and the whole "movement" has been typified by calls for mass customization (Skinner, 1974).

The aim of mass customization is to provide varied and customized products at the low cost of standardized, mass-produced goods. As Pine et al. (1993) comment, Mass customization calls for flexibility and quick responsiveness. In an ever-changing environment, people, processes, units and technology reconfigure to give customers exactly what they want. Management of coordinated independent, capable individuals, and an efficient linkage system is crucial. Result: low-cost, high quality, customized goods and services. Clearly, operations strategies will reflect both demand trends (perhaps a reactive "pull" upon the organization) and competitive concerns (more a proactive "push" response). We now turn to the latter's influence upon the operations strategy.

Slack (1991) was one of the earliest commentators to address the notion of a "doctrine of competitiveness" as far as an operations strategy is concerned. Competitiveness, in his view, can be achieved through a manufacturing contribution to creating strategic advantage. In this context, the author refers only to a narrow range of operations

strategies (those concerned with physical production). Nevertheless, his contention that competitive advantage can be achieved by "making things better, right, fast, on time, cheaply and flexibly" has clear resonance for operations strategies in general and is a good point of departure for considering their competitive priorities.

The units of competitive advantage, Porter (1996) offers us a second contribution to this debate that has direct implications for the development and role of the operations strategy. For any organization, he suggests, the creation of true economic value (the gap between price and cost to produce) will be bottom-line in terms of their survival or failure. Sustainable competitive advantage can only be achieved by operating at lower cost, by commanding a premium price through differentiation, or doing both operational effectiveness includes, for example, better technologies, superior inputs, better-trained employees, more effective management structure, etc., and is the domain of the operations strategy, while strategic positioning, meanwhile, includes a different set of features, a different array of services or different logistical services (these aspects are mainly the focus of the wider business strategy, but will also be of some concern for an operations strategy).

According to Porter (1996) simply improving operational effectiveness does not provide competitive advantage .This can only be done by achieving and sustaining higher levels of operational effectiveness than competitors. Best practice tends to be copied quickly. As it becomes harder to sustain operational advantages, strategic positioning becomes all the more important. This goes far beyond the pursuit of best practices (the quest of the operations strategy). It involves the highly integrated configuration of a tailored value chain – the series of primary activities required to produce and deliver a product or service (inbound logistics, operations, outbound logistics, marketing and sales and after-sales services – the first three again being the province of the operations strategy). We now examine a contemporary strategic debate, offering two alternative perspectives concerning strategy formulation.

The market-driven view of strategy formulation argues that it is not just the industry that is important, but where the organization wants to compete, and the nature of the competition. This competition is provided by rivalry between existing firms, the threat of potential entrants and substitute products, and the bargaining power of buyers and

suppliers. It is now also suggested that companies can in fact "be all things to all people" – or most of them anyway. Good strategy, comments Ghemawat (1999), embraces the idea that competitive position must consider both relative cost and differentiation, and it recognizes the tension between the two. Positioning, in this view, is an effort to drive the largest possible wedge between cost and differentiation (or price). Market-driven views are still widely held. Nevertheless, there are those that reject many of the aspects of this approach in favour of the resource-based view.

Here, we can conceptualize companies as a collection of resources, rather than holding purely market positions. The notion of distinctive competencies (first discussed by Ansoff, 1965) was further reiterated by Prahalad and Hamel (1990) in their analysis of key resources, skills and technologies – they called them core competencies. Since the end of the 1980s, the resource-based view has been extended to the field of strategic analysis and strategic choice by identifying the importance of resources in strategy development (Rumelt, 1984).

A resource is a basic element that a firm controls in order to best organize its processes. A resource, or set of resources, can be used to create competitive advantage. The sustainability of this advantage depends upon the ease with which the resources can be imitated or substituted (Peteraf, 1993). When resources are combined, they can lead to the formation of competencies and capabilities (Prahalad & Hamel, 1990).

Competencies refer to the fundamental knowledge owned by the firm (knowledge, know-how, experience, innovation, and unique information). Competitive advantage can come from a focus upon key competencies (those things in which the firm specializes or does well). Capabilities, meanwhile, reflect an organization's ability to use its competencies. Capabilities refer to the dynamic routines acquired by the firm – the managerial capacity to improve continuously the effectiveness of the organization (Hamel, 1990).

The essence of the resource-based view is its focus on the individual resources, competencies and capabilities of the organization, rather than on a market-based strategy that may have commonalities with others in the industry. The resource-based view draws attention to combinations of these internal resources that are generated and cannot be purchased externally. Organizations are bundles and clusters of resources and managers must develop these in individual ways. They can be managed and combined to create the difference that supports a strategic positioning (Porter, 1996).

2.8 Chapter Summary

Although cloud computing is widely recognized as a technology game changer because it offers anytime, anywhere services, its potential for driving business innovation remains virtually untapped. In fact, cloud technology has the power to fundamentally shift competitive landscapes by providing a new platform for creating and delivering business value. To take advantage of the cloud's potential to transform internal operations; customer relationships and industry value chains, organizations need to determine how best to employ cloud-enabled business models that promote significant and sustainable competitive advantage. Many organizations are outsourcing their information technology (IT) related services to a third party vendor for quite some time. However, the IT services industry including outsourcing is going through rapid changes with the increasing adoption of Cloud computing.

Increasing opportunities mean increasing competition among the 44 underwriters in Kenya's insurance industry. Several players are positioning themselves to grow their market share through new products like bancassurance, micro-insurance and agri-insurance as well as new service delivery channels. However, undercutting and other forms of unfair industry practices pose a threat to growth compounded by a lack of public confidence fuelled by the collapse of at least seven underwriters in the last ten years. In this environment, the pursuit of profitable growth calls for a paradigm shift. Insurers are looking increasingly to IT-driven transformation projects to differentiate themselves. IT has the potential to revolutionize the insurance business. In the next chapter, we look at how determination of extent of effect cloud computing on strategic planning in CIC INSURANCE will be realized (Mwangi, 2012).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a discussion of the research methodology that were used in this study. It discusses the research design especially with respect to the choice of the design. It also discusses the population of study, sample and sampling techniques, data collection methods as well as data analysis and data presentation methods employed in the study.

3.2 Research Design

The research design employed in this study is descriptive in nature. Descriptive studies describe characteristics associated with the subject population. According to Cooper and Schindler (2000) descriptive statistics discover and measure cause and effect relationships among variables. The independent variables include organisational factors, technological factors and environment factors and the dependent variable is adoption of cloud computing. The study is guided by three independent variables; benefits of cloud computing, risk factors of cloud based services and role of cloud computing in strategic business operations and cloud computing adoption. The study adopted a descriptive design because it enabled the researcher to collect in depth information about the population being studied. The descriptive design provided proper and succinct recommendations to the management of CIC INSURANCE Group and other financial services industry players.

3.3 Population and Sampling Design

3.3.1 Population

According to Cooper and Schindler (2000), a population is the total collection of elements about which we wish to make inferences. The target population in the study was high level management and mid-level management staff of CIC INSURANCE departments. It is cheaper to carry out the research from a sample rather than from the entire organization due to the logistical aspects of such a large organization.

3.3.2 Sample Design

Sampling frame is an objective list of the population from which the researcher can make a selection (Denscombe, 1998). Cooper and Schindler (2000) add that a sampling frame should be a complete and correct list of population members only. The sampling frame

for this study was list of all senior and mid-level management employees of CIC INSURANCE departments obtained from the Human Resource Manager; the list constitute a total of 250 employees drawn from all three CIC INSURANCE subsidiaries The employees were categorized into senior level management and middle level management.

3.3.2.1 Sampling Frame

The sample will be determined using statistics. Stratified sampling technique will be used to select the sample. This method allows the researcher to divide the sample into appropriate strata that are mutually exclusive. According to Coopers and Schindler (2000) stratified sampling gives statistical efficiency increase on a sample, provides adequate data for analyzing the various sub-population and enables different research methods and procedures to be used in different strata. Denscombe (1998) poised that, the sample must be carefully selected to be representative of the population and the researcher also needs to ensure that the subdivisions entailed in the analysis are accurately catered for. The sample size for the study is summarized in Table 3.1.

Table 3.1: Sampling Frame

Category	Population	Percentage	Sample Size
Senior Level Management	20	50	10
Middle Level Management	41	50	20
Departmental Staff	121	50	60
Total	**190**		**90**

Source: CIC INSURANCE Human Resource Office (2014)

3.4 Data Collection Methods

Primary data collection method was adopted used in this study. Data was collected using an interview guide (questionnaire) developed by the researcher on the basis of research questions. The interview guide, has five parts, part 1 contains the general information (division of staff, working experience of staff and usage of cloud computing services). Part 2 of contains the cloud computing (infrastructure as a service, platform as a service and software as a service). Part 3 comprises of the technological factors; part 4 comprises the organizational factors; part 5 contains the environmental factors. Part 6 contains the cloud computing factors influence on business operations. The questionnaire tool is based

on a 5 point Likert Scale. The Likert scales points include Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. A Likert scale is composed of a series of four or more Likert-type items that are combined into a single composite score/variable during the data analysis process (Boone & Boone, 2012). The questionnaire is structured and the respondent will be guided by the interviewer through the illustrated answers to ensure that the respondent understands them and therefore respond suitably.

3.5 Research Procedures

The questionnaires designed by the researcher based on the research questions were pre-tested through a pilot study to ascertain the validity and reliability of the tool before the actual administration. The pilot study was conducted among 20 respondents to check for inconsistencies in the research instrument. The questionnaire was estimated to take ten minutes to complete. The researcher sought the services of a research assistant to administer the refined questionnaire and assist in data entry.

3.6 Data Analysis Methods

This study used the quantitative method of data analysis. To ensure easy analysis, the questionnaire was coded according to each variable of the study to ensure the margin of error is minimized to assure accuracy during analysis. The quantitative analysis is applied using descriptive statistics. According to Denscombe (1998) descriptive statistics involves a process of transforming a mass of raw data into tables, charts, with frequency distribution and percentages which are a vital part of making sense of the data. The researcher also used inferential statistics to explain the relationships between the independent variables and dependent variables. These tools included the regression analysis, factor analysis to explain the strength of relationship of the independent variables on the dependent variable. Multiple regression examines the relationship between the independent and dependent variable and shows the strength of association between the two variables. Data will be analyzed using Statistical Package for Social Sciences (SPSS) program and presented using tables and pie charts to give a clear picture of the research findings at a glance.

3.7 Chapter Summary

The chapter described the methodology adopted in carrying out the study. The research design was descriptive in nature focusing on CIC. The population is all the staff of CIC. The sample size, the sampling techniques and questionnaire as a primary data collection instrument were described. The questionnaire developed was pilot tested before a refined one was administered to the respondents. The chapter also indicated that, data was analyzed using SPSS and presented in chart and tables. The next chapter will present the findings of the research.

CHAPTER FOUR

4.0 DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter of the study comprises of the data analysis presentation and interpretation of the study findings. They are presented in sub-sections which include the general information, cloud computing and the study objectives. Data is presented in tables and charts. The response rate for the study was 58 respondents out of the expected sample size of 90 respondents which translates to a response rate of 64 %.

4.2 General Information

4.2.1 Division

In terms of which division, the majority of the respondents were in the it department and accounted for 62.1 % o the respondents, 12.1 % were in operations, 15.5 % were in marketing, 3.9 % were in finance department and 3.4 % were in the human resource department as depicted in Figure 1.

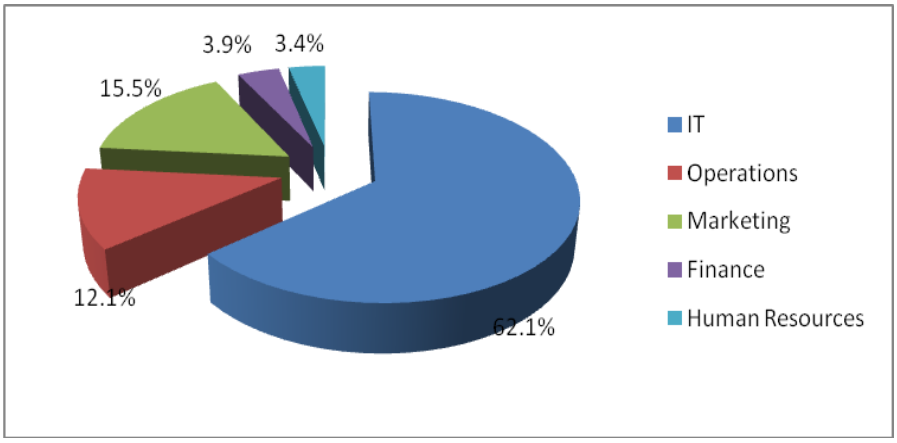

Figure 1: Staff Division

4.2.2 Working Experience

Figure 2 shows respondents working experience in CIC INSURANCE where 39.7 % had less than 2 years, 27.6 % were 2-5 years, 19.0 % were 6-8 years and 13.8 % had 9 years and over in the organization.

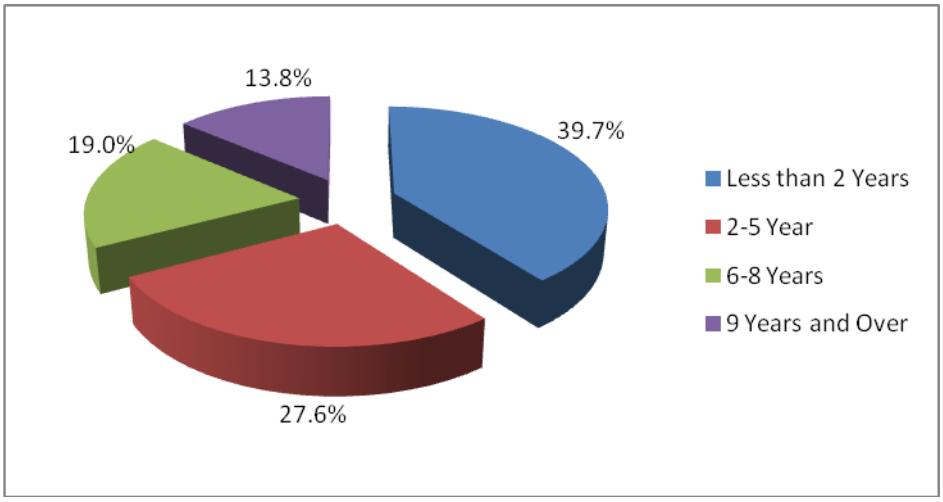

Figure 2: Staff Working Experience

4.2.3 Cloud Computing Services

The study sought to establish the frequency and use of cloud computing services among staff at CIC. As depicted in Figure 3, the majority of the responses cited were few times in a month accounting for 62.1 %, 19.0 % cited many times in a week, 15.5 % were never and 3.4 % were many times daily.

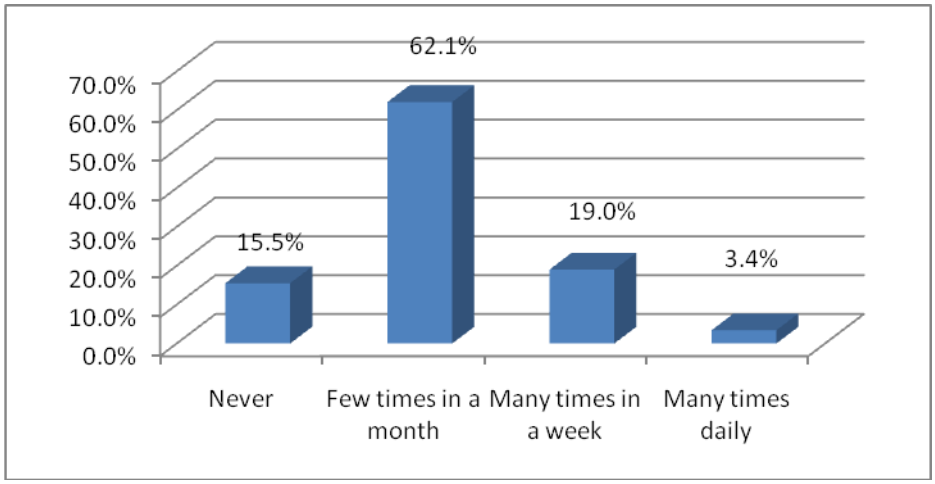

Figure 3: Use and Frequency of Cloud Computing Services

This implies that cloud computing is still at its initial stages of adoption among individual employees despite availability and accessibility of the system in the organization.

4.3 Inferential Statistics

The researcher performed a factor analysis of the variables which included the independent and dependent variables in order to obtain a factor values for all the variables which was used in the correlation analysis and regression analysis. The independent variables of the study were technological factors, organisational factors and environmental factors and the dependent variable was adoption of cloud computing cloud computing. As show in table 4.2 the numbers in bold represent the highest observed values for the variables and show the most significant influence on the dependent variable.

Table 4.1 Summary of Exploratory Factor Analysis Results for variables

Independent variables	**Factor**		
	1	2	3
Perceived Usefulness	**.863**	.093	-.032
Complexity	.740	.622	-.181
Compatibility	.506	-.739	-.449
Intention To Use Cloud Computing Systems	**.737**	.638	-.171
Change Attitude	-.411	.608	.414
Top Management –Buy In	**.620**	.113	-.095
Skills	.553	-.242	.427
Competition	.433	-.228	.524
Industry	.504	-.226	.518
Trends	.518	-.215	.038

Extraction Method: Unweighted Least Squares.
a 3 factors extracted. 7 iterations required.

4.3.1 Technological Factors

In regard to the relationship between the technological factors and usage of cloud computing, complexity had a correlation value of 0.088, compatibility (0.176) and perceived influence and usage of cloud computing was 0.274 as shown in Table 4.1. This findings imply that the perceived usefulness of cloud computing among the users is a significant predictor for adoption of these services.

Table 4.2: Technological Factors Correlations

	Perceived usefulness	Complexity	Compatibility	Usage of cloud computing
Perceived usefulness	1			
Complexity	.692(**)	1		
Compatibility	.373(**)	.000	1	
Usage of cloud computing	.274(*)	.088	.176	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

The significance value is .000 which is less that 0.05 thus the model is statistically significant in predicting the influence of technological factors on adoption of cloud computing. This shows that the overall model was significant as shown in Table 4.2.

Table 4.3 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.537	3	5.512	7.356	.000(a)
	Residual	40.463	54	.749		
	Total	57.000	57			

a Predictors: (Constant), Perceived usefulness, complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends
b Dependent Variable: adoption of cloud computing

The researcher performed a multiple regression analysis at 95 % confidence level shows that perceived usefulness had the most significant influence to adoption of cloud computing with a factor of 0.540 followed by compatibility with a factor of 0.178. Table 4.4 shows that complexity was the least contributing factor to adoption of cloud computing with a factor of -0.189.

Table 4.4: Coefficients for Technological Factors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-1.70E	.114		.000	1.000
	Perceived usefulness	.540	.186	.540	2.913	.005
	Complexity	-.189	.172	-.189	-1.098	.277
	Compatibility	.178	.134	.178	1.331	.189

a Dependent Variable: REGR factor score 1 for analysis 8

4.3.2 Organisational Factors

Table 4.6 shows the correlations for organisational factors where skills had the highest correlational value of 0.112, there was a negative relationship (-0.146) between top management buy – in and usage of cloud computing, and a correlation of 0.91 was observed between change attitude and usage of cloud computing. These results suggest that skills had the most significant influence of adoption of cloud computing among the organisational factors.

Table 4.5: Correlations for Organisational Factors

	Change attitude	Top Management buy-in	Skill	Usage of cloud computing
Change attitude	1			
Top Management buy-in	.000	1		
Skill	.527(**)	-.174	1	
Usage of cloud computing	.091	-.046	.112	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 4.5 shows the significance value is .001 which is less than 0.05. As such the model is statistically significant in predicting organisational factors on adoption of cloud computing.

Table 4.6: ANOVA for Organisational Factors

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.226	3	4.742	5.986	.001(a)
	Residual	42.774	54	.792		
	Total	57.000	57			

a Predictors: (Constant), Perceived usefulness, complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends
b Dependent Variable: adoption of cloud computing

Table 4.6 presents the regression analysis which shows skills as the most predominant factor in influencing adoption of cloud computing with a beta coefficient of 0.428, change attitude and top management was shown to have a less than significant prediction on cloud computing adoption with beta coefficients of -0.225 and -0.044 respectively. In terms of our objective of the organisational factors and their influence on adoption and cloud computing. The findings suggest that the skill of the employees is the most determining factor.

Table 4.7: Coefficients for Organisational Factors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-2.86E-016	.117		.000	1.000
	Change attitude	-.044	.140	-.044	-.313	.756
	Top management buy-in	-.225	.120	-.225	-1.870	.067
	Skills	.428	.142	.428	3.019	.004

a Dependent Variable: adoption of cloud computing

4.3.3 Environmental Factors

In terms of the influence of environmental factors, the study found that there was a strong relationship between trends and usage of cloud computing with a value of 0.506, similarly, competition had a significant value of 0.534 and industry was observed at 0.180 There was a weak relationship between industry factors and adoption of cloud computing as illustrated in Table 4.7.

Table 4.8: Correlations for Environmental Factors

	Competition	Industry	Trends	Usage of cloud computing
Competition	1			
Industry	.388(**)	1		
Trends	.285(*)	.528(**)	1	
Usage of cloud computing	.534(**)	.180	.506(**)	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

As depicted in table 4.8, the significance levels was less than 0.05 and the model was thus found to be significance in predicting the influence of environmental factors on adoption of cloud computing.

Table 4.9: ANOVA for Environmental Factors

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.166	3	3.055	3.449	.023(a)
	Residual	47.834	54	.886		
	Total	57.000	57			

a Predictors: (Constant), Perceived usefulness, complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends
b Dependent Variable: adoption of cloud computing

Table 4.9 shows the regression analysis which shows that trends were the most significant factors in predicting cloud computing adoption with a beta coefficient of 0.325 followed by competition with a beta coefficient of 0.125. The industry was found to have no influence on adoption of cloud computing with a beta coefficient of -0.011. the study results suggest that if there were emergence of cloud computing use among competitor in the industry this would involve a more favourable environment for adoption of cloud computing. These findings agree with Kiiru (2011) study on the survey of cloud computing adoption among commercial banks which showed that there was none of the banks had adopted cloud computing thus explaining the slow adoption of cloud computing in financial institutions.

Table 4.10: Coefficients for Environmental Factors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-8.93E	.124		.000	1.000
	Competition	.125	.163	.125	.764	.448
	Industry	-.011	.159	-.011	-.067	.947
	Trends	.325	.156	.325	2.077	.043

a Dependent Variable: adoption of cloud computing

4.4 Inferential Statistics Summary

Table 4.11 shows the model summary where the R value is 55 which indicates that 55 % of the variations observed in the dependent variables is caused by the independent variables. The other 45 % of variations observed may be due to other factors not captured in the study.

Table 4.11: model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.551(a)	.304	.173	.90937314

a Predictors: (Constant), Perceived usefulness, complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends
b Dependent Variable: adoption of cloud computing

Table 4.12 shows that the observed significance level in our model is 0.029 which is less than 0.05 which indicates that our model is statistically significant in predicting adoption of cloud computing with our independent variables which are perceived usefulness,

complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends).

Table 4.12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.306	9	1.923	2.325	.029(a)
	Residual	39.694	48	.827		
	Total	57.000	57			

a Predictors: (Constant), Perceived usefulness, complexity, compatibility, change attitude, top management buy-in, skills, competition, industry, trends
b Dependent Variable: adoption of cloud computing

Table 4.13 shows a regression summary of the influence of our independent variables on the dependent variable. The most significant factor according to the regression model was perceived usefulness with a beta coefficient of 0.451 and the least contributing factor was competition with a beta coefficient of -0.135. Other observations included complexity (-0.132), compatibility (0.067), change attitude (0.047), top management buy-in (0.211), skills (0.000), industry (.365) and trends (-0.123).

Table 4.13: Coefficients Summary

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-2.613	1.179		-2.216	.031
	Perceived usefulness	.702	.315	.451	2.227	.031
	Complexity	-.132	.240	-.132	-.552	.584
	Compatibility	.067	.209	.067	.320	.750
	Change attitude	.047	.285	.047	.166	.869
	Top management buy-in	.211	.255	.211	.829	.411
	Skills	.000	.170	.000	-.002	.999
	Competition	-.135	.169	-.135	-.802	.427
	Industry	.365	.142	.365	2.576	.013
	Trends	-.019	.156	-.019	-.123	.902

a Dependent Variable: Adoption of cloud computing

4.5 Chapter Summary

This chapter presented the findings of the study. The chapter was presented in terms of the employee division in the organisations, working experience and usage of cloud computing services and were graphically presented using charts and figures. The findings in regard to the objectives of the study were analysis suing the ANOVA and regression analysis and were presented in tables. These findings were further discussed in the following chapter five.

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this chapter is to summarize the major findings of this study and to draw conclusions based on the same results. It also provides recommendations for adoption and implementation of cloud computing. The chapter includes the summary and discussions.

5.2 Summary of the study

The purpose of this study was to analyze of the effect of cloud computing on strategic planning by using CIC INSURANCE Kenya Limited as a case study The study sought to answer four research questions which were; what is the influence of technological factors on cloud computing? What is the influence of organizational factors on cloud computing? What is the influence of Environmental factors on cloud computing? And what is the influence of cloud computing on Business Operation (costs, Risks, R&D)? The researcher conducted a literature review based on the study research questions from published articles and available material from internet sources. The researcher adopted a case study approach as the appropriate research design. The study sampled staff from the top-management, mid-level management and staff from departments in the CIC INSURANCE Kenya Limited company. The study had a sample of 120 respondents and the researcher was able to acquire 58 complete questionnaires for the data analysis process. The data collected was captured through the Microsoft Excel software and copied to SPSS for further analysis. The study conducted descriptive statistics which summarized the data into percentages and frequencies presented in tables and pie charts.

5.2.1 Summary of Key Findings

The study found that there was adoption of cloud computing in the organisations, CIC insurance Limited. CIC insurance is a firm that provides financial services to its clients and its customers. However, the adoption of cloud computing has been gradual albeit hesitant. These findings are consistent with Kiiru (2011) study on cloud computing in bank in Kenya who found that majority of the respondents had computerized their services and work which was a precondition for adopting cloud computing. Lin and Tan (2012) findings shows that most adopters are in the media, information and communication industry with 75 % (9 out of 12 organizations) as well as in the ‘others’

sector with 59 % (10 out of 17 organizations). It appears that those organisations in the construction and engineering and real estate and leasing services have not adopted cloud computing services yet. Their findings also showed that shows that there is no significant difference between adopter and non-adopters in the private sectors and sole proprietorship or family-owned business, although there are more adopters (63 %) versus non-adopters (37 %) in the public listed organizations.

5.3 Discussion

5.3.1 Influence of Technological Factors on Adoption of Cloud Computing

The most significant factor among the technological factors was perceived usefulness with a beta coefficient of 0.451; complexity of the system with a beta coefficient of 0.132 and the least predictor was compatibility with a beta coefficient of 0.067. Similarly the correlation analysis showed that perceived usefulness was positively related to adoption of cloud computing with r = .274 which was followed by compatibility (r =.176) and complexity (r = .088). Perceived usefulness was identified by Davis et al. (1986), in their Technology Acceptance Model (TAM). According to our objective of technological factors our, TOE framework states that an organisations is likely to adopt a technology as they perceive how useful it will be to their operations. Perceived usefulness has been widely studied and applied as a critical factor associated with the adoption of technology in information systems research. Technological context refers to internal and external technologies applicable to the firm (Kuan & Chow, 2000). According to Rogers (2003), adopting an innovation is affected by its perceived characteristics, including relative advantage, compatibility, complexity and trialability. Of these, relative advantage of the technology has been consistently identified as one of the most critical adoption factors (Iacovou et al., 1995; Kuan & Chau, 2001). These findings support Buyya et al. (2009) whom argue that firms may not have confidence in a cloud computing system because it is relatively new concept to them. Similarly, findings agree with Premkumar et al. (1994) agreeing that complexity of an innovation can act as a barrier to implementation of new technology; complexity factor is usually negatively affected. According to Armbrust et al. (2010) many IT services can be commoditized and include e-mail, archiving and storage of documents. According to Lin and Tan (2012) when perceived benefit is high, there are higher chances that the organization will allocate more managerial, financial and technological resources to implement the technological system.

5.3.2 Influence of Organizational Factors on Adoption of Cloud Computing

Organizational context includes several indexes regarding firm size and scope, centralization, formalization, and complexity of managerial structure and quality of human resources (Kuan & Chow, 2000). Prior research finds that larger businesses are often more well-equipped with resources and infrastructure to facilitate innovation adoption, while small firms might suffer from resource poverty (Thong, 1999). In Iacovou et al. (1995) study on adoption of IT in small firms, found cost of investment and lack of IT expertise are two major concerns among organizational members. Among the organisational factors influencing cloud computing adoption was change attitude with a beta coefficient of 0.285; top-management buy-in with a beta coefficient of 0.255 and the least contributing was skills of the staff with a beta coefficient of 0.170. The correlation analysis at 95 % confidence level showed that there was a positive relationship between skills and adoption of cloud computing with a value of r = .112, followed by top management buy-in r = -091 and change attitude with a value of r =-.046. Top management was found to be also significant in determining cloud computing adoption. Lin and Tan (2012) report that companies of different sizes, locations, and industries embrace cloud as a way to reduce complexity and costs associated with traditional IT approaches. 72 percent of executives in the IBM survey indicated their companies had piloted, adopted or substantially implemented cloud and 90 percent would adopt cloud computing in the next three year (Berman et al., 2011).

The findings show that the most significant organisational factor influencing adoption of cloud computing systems in CIC INSURANCE Kenya Limited was skills, followed by change attitude and the least contributing factor was top management buy-in. The findings agree with previous research (Kuan & Chau, 2001; Oliveira & Martins, 2010; Pan & Jang, 2008; Wang et al., 2010; Zhu et al., 2006) that the technological readiness of organisations, meaning technological infrastructure and IT human resources, influences the adoption of new technology. Similarly, findings support Wang et al. (2010), view of IT human resources as providing the knowledge and skills to implement cloud-computing-related IT applications.

5.3.3 Influence of Environmental Factors on Adoption of Cloud Computing

Environmental context refers to a firm's industry, competitors and government policy (Kuan & Chau, 2000). Organizations operate their businesses within an environmental

context which bring them opportunities and constraints. Although the external environment can provide an organization with information, resources and technology, it has regulations and restrictions on the flow of capital and information (Damanpour & Schneider, 2006). The multiple regression analysis shows that among the environmental factors, the regression analysis shows that competition was the most was the most significant with a f beta coefficient of 0.395, followed by competition with a beta coefficient of 0.169; trends with a beta coefficient of 0.142 and the least contributing factor was found to be industry with a beta coefficient of 0.1742 at 95 % confidence level, the correlation analysis revealed that there was a positive and strong relationship between competition and adoption of cloud computing with a value of r = .534, trends r = .506 and the industry at r = .180. This implies that the trends of using information technology in organisations drives or motivates organisations to adopt cloud computing systems so as to gain competitive advantage and to remain relevant in the sector that they are involved in. similarly, competition was found to influence adoption of cloud computing in organisations. Researchers (Kuan & Chau, 2001; Zhu et al., 2004) suggest that the experience of intense competition is an important determinant of IT adoption. Study findings indicate that however although there is competition between financial firms; the slow adoption of cloud computing in the sector does not significantly influence adoption of cloud computing systems at CIC INSURANCE Kenya Limited. These findings are consistent to Banerjee (2009) pointing out cloud computing has been discussed as a new technology that can provide several advantages, both strategic and operational, to its adopters. However, the cloud computing adoption rate is not growing as fast as expected. Kiiru (2011) reports that by 2010 there were no financial institutions (commercial Banks) that were using cloud computing.

5.4 Conclusion

5.4.1 Influence of Technological Factors on Adoption of Cloud Computing

The study concludes that technological factors were the most significant factors influencing adoption of cloud computing in CIC INSURANCE Kenya Limited. This was attributed to the perceived usefulness of cloud computing to the organization. Perceived usefulness is a significant factor towards adoption of information technology according to the Technology Acceptance Model developed by Davis et al. (1986). This shows that an organization is more likely to adopt information technology based on the benefits that it can provide for its staff and overall performance of the organization.

5.4.2 Influence of Organizational Factors on Adoption of Cloud Computing

The study concludes that the change attitude of the organisations is the most predominant factor for cloud computing adoption. This shows that the attitude of the top management of the organisations towards new technologies such as cloud computing will determine the direction which the organisations will take in terms of adoption. The top executives can act as champions of a technology to enable other staff and employees in adopting the innovation. However, the study found that the skills of the staff is the most dominant factor. This is because organisations work through their employees who are also assumed to be using the cloud computing technology in their day to day duties.

5.4.3 Influence of Environmental Factors on Adoption of Cloud Computing

In regard to the environmental factors, the study concludes that competition is the most significant contributor to adoption of cloud computing in the organisations. Adoption of new technology is associated with gaining a competitive advantage in their market share and as such competition in the insurance sector prompt organisations such as CIC INSURANCE to adopt cloud computing. The study concludes that technological factors are the most dominant factor in our model to influence adoption of cloud computing. These is attributed to the technological capability of the organisations would influence their ability to consider adoption of cloud computing. These requirements would include both software and hardware. The results showed that organisational factors also contribute to adoption of cloud computing whereas environmental factors were the least contributing factor to the adoption of cloud computing in the organisations.

5.5 Recommendations

5.5.1 Recommendations for Improvement

Based on the study findings the researcher gives the following recommendations;

1. The researcher recommends that top management should invest in information technology that will work towards the benefit of their organization.
2. The researcher recommends for top management adoption of cloud computing systems will enhance adoption of the system in the organization
3. The researcher recommends for industry research on cloud computing adoption which will enhance contribute to knowledge and awareness on cloud computing systems

5.5.2 Recommendations for Further Studies

1. The researcher recommends for further research on the adoption of cloud computing among small and medium enterprise (SMEs). Small and medium enterprise lay a critical role in the economy of a country and would therefore benefit from the advantages of using cloud computing in costs reduction. The researcher therefore recommends for academicians to explore or investigate the extent tow which Kenyan SMES are ready to adopt cloud computing.
2. The researcher also recommends further studies on the challenges facing organisations adopting cloud computing. The most significant risk for the study in terms of cloud computing was found to be the confidentiality of information from internal and external users. There needs to be research on the challenges and issue of cloud computing in Kenyan organisations.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE ON CLOUD SERVICES

Thank you for sparing some time to fill this questionnaire. Your views will go a long way in enhancing this research. Information obtained from this questionnaire will be treated with utmost confidentiality and will only be used for purposes of this research.

Kindly answer all the questions according to the instructions by filling in the spaces provided or checking on one of the options given and please ensure to send or email the Researcher back the questionnaire on his mailing address dkaimenyi@westconafrica.com

PART I: GENERAL INFORMATION

Q1. Which Division within CIC INSURANCE are you working?

1.☐ IT 2. ☐ Operations 3. ☐ Marketing 4. ☐ Finance 5. ☐ Human Resource 6. ☐ Other

Q2. How long have you worked for this organization?

1. ☐ Less than 2 years 2. ☐ 2-5 years 3.☐ 6-8 years 4. ☐ 9 years and over

Q3. Which of the following cloud computing services do you use/access and at what frequency?

Usage of Cloud Computing Services	Hourly	Many times daily	A few times a day	Many times a week	Few times in a month	Never
Internet	**5**	**4**	**3**	**2**	**1**	0
Email	**5**	**4**	**3**	**2**	**1**	0
Storage of documents	**5**	**4**	**3**	**2**	**1**	0
Storage of personal data	**5**	**4**	**3**	**2**	**1**	0
Remote computers	**5**	**4**	**3**	**2**	**1**	0
Online banking	**5**	**4**	**3**	**2**	**1**	0
Facebook	**5**	**4**	**3**	**2**	**1**	0
You Tube	**5**	**4**	**3**	**2**	**1**	0
My Space	**5**	**4**	**3**	**2**	**1**	0
Linked-in	**5**	**4**	**3**	**2**	**1**	0
Gmail	**5**	**4**	**3**	**2**	**1**	0
Yahoo	**5**	**4**	**3**	**2**	**1**	0
Hotmail	**5**	**4**	**3**	**2**	**1**	0
Dropbox	**5**	**4**	**3**	**2**	**1**	0

PART II: CLOUD COMPUTING

Q1. Infrastructure as a Service	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1.The internet has made the system easily accessible	**1**	**2**	**3**	**4**	**5**
2.Multiple tasks are easy to conduct in the system	**1**	**2**	**3**	**4**	**5**
3.You can store large amounts of data in the system	**1**	**2**	**3**	**4**	**5**
4.It's easy to access the system remotely through mobile devices	**1**	**2**	**3**	**4**	**5**
5.It's safe sending sensitive data through the system	**1**	**2**	**3**	**4**	**5**
Q2. Platform as a Service					
1.System Applications are easily accessible	**1**	**2**	**3**	**4**	**5**
2.The system has rigid access controls	**1**	**2**	**3**	**4**	**5**
3.Data integrity is guaranteed in the system	**1**	**2**	**3**	**4**	**5**
4.Data security incidents are resolved quickly	**1**	**2**	**3**	**4**	**5**
5.It is safe to access the system remotely	**1**	**2**	**3**	**4**	**5**
Q3. Software as a service					
1.It is easy to find all the information I need to work through the system	**1**	**2**	**3**	**4**	**5**
2.Our customers can easily access services through our system	**1**	**2**	**3**	**4**	**5**
3. The system allows for quick modification of existing products and services	**1**	**2**	**3**	**4**	**5**
4.The system responds quickly to requests	**1**	**2**	**3**	**4**	**5**

PART III: INFLUENCE OF TECHNOLOGICAL FACTORS ON CLOUD COMPUTING

Q.1 Perceived Usefulness	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. Using the system in my job enables me to accomplish tasks more quickly.	**1**	**2**	**3**	**4**	**5**
2. Using the system improves my job performance.	**1**	**2**	**3**	**4**	**5**
3. Using the system in my job would increase my productivity.	**1**	**2**	**3**	**4**	**5**
4. Using the system enhances my effectiveness on the job.	**1**	**2**	**3**	**4**	**5**
5. Using the system makes it easier to do my job.	**1**	**2**	**3**	**4**	**5**
6. I find the system useful in my job	**1**	**2**	**3**	**4**	**5**
Q2. Complexity					
1. My interaction with the system is clear and understandable.	**1**	**2**	**3**	**4**	**5**
2. Interacting with the system does not require a lot of my mental effort.	**1**	**2**	**3**	**4**	**5**
3. I find the system to be easy to use.	**1**	**2**	**3**	**4**	**5**
4. I find it easy to get the system to do what I want it to do.	**1**	**2**	**3**	**4**	**5**
5. My interaction with the system is clear and understandable.	**1**	**2**	**3**	**4**	**5**
6. Interacting with the system does not require lot of my mental effort.	**1**	**2**	**3**	**4**	**5**

Q3. Compatibility					
1. Using the system is compatible with all aspects of my work.	**1**	**2**	**3**	**4**	**5**
2. I think that using the system fits well with the way I like to work.	**1**	**2**	**3**	**4**	**5**
3. Using the system fits into my work Interacting with the system does not require lot of my mental effort.	**1**	**2**	**3**	**4**	**5**
Q4 Intention To Use Cloud Computing Systems					
1. I intend to use the cloud systems for my office work.	1	2	3	4	5
2. I intend to use the cloud systems for social activities and general information.	1	2	3	4	5
3. I intend to use cloud systems for my data storage	1	2	3	4	5
4. I intend to use the e-mail for academic and personal communications.	1	2	3	4	5
5. Assuming I have access to cloud systems , I intend to use them	1	2	3	4	5
6. Given that I have access to cloud systems I would use them	1	2	3	4	5

PART IV: INFLUENCE OF ORGANIZATIONAL FACTORS ON CLOUD COMPUTING

Q1. Change Attitude	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1. Using the system is a good idea.	**1**	**2**	**3**	**4**	**5**
2.The system workflow is easy to understand	**1**	**2**	**3**	**4**	**5**
3. The system makes work more interesting.	**1**	**2**	**3**	**4**	**5**
4.I look forward to those aspects of my job that require me to use the system	**1**	**2**	**3**	**4**	**5**
5. Once I start working on the system, I find it hard to stop.	**1**	**2**	**3**	**4**	**5**
6.I get bored quickly when using the system	**1**	**2**	**3**	**4**	**5**
Q2. Top management Buy-In					
1. I use the system because of the proportion of coworkers who use the system.	**1**	**2**	**3**	**4**	**5**
2.Senior management has been helpful in the use of the system	**1**	**2**	**3**	**4**	**5**
3. My supervisor is very supportive of the use of the system for my job.	**1**	**2**	**3**	**4**	**5**
4. In general, the organization has supported the use of the system	**1**	**2**	**3**	**4**	**5**
5. Senior management are concern about the effectiveness of the system	**1**	**2**	**3**	**4**	**5**
Q3. Skill					
1.Learning to operate the system is easy for me	**1**	**2**	**3**	**4**	**5**
2. I find it easy to get the system to do what I want it to do.	**1**	**2**	**3**	**4**	**5**
3.My interaction with the system is clear and understandable	**1**	**2**	**3**	**4**	**5**
4. I find the system to be flexible to interact with.	**1**	**2**	**3**	**4**	**5**
5. It's easy for me to become skillful at using the system.	**1**	**2**	**3**	**4**	**5**
6. I find the system easy to use.	**1**	**2**	**3**	**4**	**5**

PART V: INFLUENCE OF ENVIRONMENT ON CLOUD COMPUTING

Q1. Competition	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1.Competitors in the industry that use the system have more prestige than those who do not	**1**	**2**	**3**	**4**	**5**
2.Competitors in the industry who use the system have a high profile	**1**	**2**	**3**	**4**	**5**
3.Having the system is a status symbol in my organization	**1**	**2**	**3**	**4**	**5**
4. The system has given the company a competitive advantage	**1**	**2**	**3**	**4**	**5**
Q2. Industry					
1.The insurance industry supports use of improved ICT systems	**1**	**2**	**3**	**4**	**5**
2.Research and development driven by ICT innovation is good for the industry	**1**	**2**	**3**	**4**	**5**
3.Industry regulators support use of improved ICT systems	**1**	**2**	**3**	**4**	**5**
4.Industry players believe use of innovative systems bring competitive advantages	**1**	**2**	**3**	**4**	**5**
Q3. Trends					
1.The insurance industry supports use of improved ICT systems	**1**	**2**	**3**	**4**	**5**
2.Research and development driven by ICT innovation is good for the industry	**1**	**2**	**3**	**4**	**5**
3.Industry regulators support use of improved ICT systems	**1**	**2**	**3**	**4**	**5**
4.Industry players believe use of innovative systems bring competitive advantages	**1**	**2**	**3**	**4**	**5**
5.The system allows for reliable interaction with trade partners	**1**	**2**	**3**	**4**	**5**
6.The system has integrated well with other core systems within the network	**1**	**2**	**3**	**4**	**5**

PART VI: INFLUENCE OF CLOUD COMPUTING ON BUSINESS OPERATIONS

Platform as a Service **Q1.Security and Access Controls (Risks)**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1.It is easy to access the system	**1**	**2**	**3**	**4**	**5**
2.There are strict system access controls	**1**	**2**	**3**	**4**	**5**
3.Data is hard to corrupt in in the system	**1**	**2**	**3**	**4**	**5**
4.The system can easily be hacked	**1**	**2**	**3**	**4**	**5**
5.I feel safe sending sensitive data across through the system	**1**	**2**	**3**	**4**	**5**
Q2. Internet Down-Time					
1.The system is slow when the internet is down	**1**	**2**	**3**	**4**	**5**
2.The system does not function when there is an internet breakdown	**1**	**2**	**3**	**4**	**5**
3.The system is wholly dependent on the internet	**1**	**2**	**3**	**4**	**5**
4.The system can easily be hacked	**1**	**2**	**3**	**4**	**5**

5.I feel safe sending sensitive data through the system	**1**	**2**	**3**	**4**	**5**
Q3 Infrastructure as a service (Cloud Efficiency)-Costs					
1.The system storage capacity is sufficient	**1**	**2**	**3**	**4**	**5**
2.The system has fast processing speed	**1**	**2**	**3**	**4**	**5**
3.The system allows for multiple transactions simultaneously	**1**	**2**	**3**	**4**	**5**
4.The system is hardware dependent	**1**	**2**	**3**	**4**	**5**
5.It takes long to load files into the system	**1**	**2**	**3**	**4**	**5**

Research and Development

Software as a service **Q4.Data collection & Management**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1.It is easy to find information in the system	**1**	**2**	**3**	**4**	**5**
2.The system makes it easy for me to analyses data	**1**	**2**	**3**	**4**	**5**
3.Data is logically organized in the system	**1**	**2**	**3**	**4**	**5**
4.It is easy to do data entry in the system	**1**	**2**	**3**	**4**	**5**
Q.5 Software as a service-(Product Development)					
1.The system has improved delivery of products	**1**	**2**	**3**	**4**	**5**
2.It is easy to create new products and services using the system	**1**	**2**	**3**	**4**	**5**
3.The system allows for quick modification of existing products and services	**1**	**2**	**3**	**4**	**5**
4.It takes a shot time to deploy a new business process in the system	**1**	**2**	**3**	**4**	**5**

Improved organizational performance

Q.6 Cloud computing improves	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
1.company profits	**1**	**2**	**3**	**4**	**5**
2.Employee motivation	**1**	**2**	**3**	**4**	**5**
3.Service Quality	**1**	**2**	**3**	**4**	**5**
4 Cost reduction	**1**	**2**	**3**	**4**	**5**

- **THANK YOU FOR TAKING YOUR TIME TO COMPLETE THE QUESTIONNAIRE**

APPENDIX 2: DESCRIPTIVES SUMMARY

Factors	Items	Mean	Standard Deviation
Cloud computing			
	Infrastructure as a service	3.62	.671
	Platform as a service	3.41	.702
	Software as a service	3.71	.749
Technological Factors			
	Perceived usefulness	4.02	.662
	Complexity	3.83	.653
	Compatibility	3.78	.594
	Intention to use cloud computing	3.98	.713
Organisational Factors			
	Changes attitude	3.66	.614
	Top management buy-in	3.60	.699
	Skill	3.67	.659
Environmental Factors			
	Competition	3.93	.752
	Industry	4.29	.749
	Trends	4.14	.619
Business Operations			
	Security and access control risks	3.59	.676
	Internet down-time	3.21	.789
	Infrastructure as a service	3.64	.693
	Data collection and management	3.57	.728
	Software as a service	3.72	.643
	Cloud computing improves	3.93	.835

APPENDIX 3: CORRELATIONS

	1	2	3	4	5	6	7	8	9	10
Perceived usefulness	1									
Complexity	.692(**)	1								
Compatibility	.373(**)	.000	1							
Change attitude	.689(**)	1.000(**)	-.012	1						
Top management buy-in	-.297(*)	-.024	-.863(**)	.000	1					
Skills	.572(**)	.527(**)	.270(*)	.527(**)	-.174	1				
Competition	.433(**)	.219	.270(*)	.215	-.249	.175	1			
Industry	.313(*)	.088	.189	.090	-.076	.217	.574(**)	1		
Trends	.400(**)	.134	.168	.133	-.135	.228	.551(**)	.519(**)	1	
Adoption of cloud computing	.476(**)	.185	.380(**)	.182	-.300(*)	.444(**)	.298(*)	.230	.388(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).