



UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

**FACTORS INFLUENCING THE ADOPTION OF CLOUD COMPUTING IN
SOFTWARE DEVELOPMENT COMPANIES IN KENYA**

BY

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P54/86047/2016

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A Research Thesis submitted in partial fulfillment for the requirement of
Master of Science in Information Technology Management Degree of the University
of Nairobi

July 2018

DECLARATION

This research project is my original work and has not been submitted for a degree in any other University.

Signature_____

Date_____

SAMUEL NZOYA MUNGUTI

This research project has been submitted for examination with my approval as the university supervisor.

Signature_____

Date_____

Dr. ELISHA T. O. OPIYO

ABSTRACT

The main aim of this study was to establish the factors that influence cloud computing adoption in the software development companies in Kenya. The study was guided by four specific objectives; to establish the organizational factors influencing the adoption of cloud computing in software development companies in Kenya, to assess the environmental factors influencing the adoption of cloud computing in software development companies in Kenya, to determine the technological factors influencing the adoption of cloud computing in software development companies in Kenya and to evaluate the risk factors influencing the adoption of cloud computing in software development companies in Kenya. The target population of this study composed of the 283 software development companies in Kenya. The sample size of this study comprised of the entire 283 Software Development Companies, which were provided with questionnaires in order to provide the information required, here the ICT managers were the participants. Since the study used primary data, the data was collected using a questionnaire as the main data collection instrument. The study generated both qualitative and quantitative data. The study concludes that organizational related factors, (top management commitment, worker attitudes and right skills), environmental (industry competition and trading partner pressure), technological factors (perceived benefits, complexity and compatibility influenced the adoption of cloud computing technology within organizations. The study also concludes that policy and organisational risks, technical risks and legal risk influenced the adoption of cloud computing technology within organizations. In order to promote cloud computing, service providers should provide successful case studies and statistics in order to help companies realize the potential benefits, to achieve agreement on an industry standard perhaps is the priority in the sector. The standardization will reduce uncertainties and hence encourage adoptions. Trust being a critical factor in cloud adoption. It brings about the emergence of the mitigation strategies. Risk mitigation strategies include audit controls, policies and procedures, service Risks and service level arrangement for similar type risks. Like other information technology adoptions in businesses there are issues other than the technology that need to be taken into account for example compatibility of the technology with organizational policy, structure, value and most importantly products and services. Data security is an essential factor that should be considered during any Cloud Computing implementation, with the current security and privacy issues in the Cloud, this factor must be considered carefully, Companies will have to assess the necessity of cloud computing to their business first and then its compatibility.

DEDICATION

This research project is dedicated to all my family members and friends for the unconditional support and encouragement throughout this period. God bless them all.

ACKNOWLEDGMENTS

My heart-felt thanks and appreciation goes to all those who have continued to assist me in a variety of ways. I express my gratitude to my supervisor, whose experience, encouragement, correction and pieces of advice and supervision saw this proposal completed.

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LIST OF ABBREVIATIONS

IT	Information Technology
ICT	Information Communication Technology
NIST	National Institute of Standards and Technology
PC	Personal Computer
PEOU	Perceived Ease-of-Use
PU	Perceived Usefulness
TAM	Technology Acceptance Model
TOE	Technology-Organization-Environment Framework
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Global competition places huge pressure on organizations to reduce cost, increase profitability and enhance productivity, in order to survive in this rapidly changing environment (Misra & Mondal, 2011). This has encouraged information technology (IT) managers to adopt the most up-to-date technologies that enable them to reduce costs, sustain competitive advantage and improve the bottom line. The use of information Technology can improve the effectiveness of businesses and provide a positive advantage to organizations. As information technology services are becoming increasingly expensive and time consuming, adoption of cloud computing has evolved as a major technological innovation to reduce these processing costs through enhancing reliability, flexibility, availability and processing throughput (Choudhary & Vithayathil, 2013).

Recently, cloud computing has been an important concept in the field of Information Technology; it is recognized as an important area of Information Technology investment. Cloud computing is considered a new phenomenon that provides opportunities for organizations, by offering a large collections of easily accessible virtual computer resources, and it has the possibility for facilitating economic growth by offering existing implemented remote infrastructure for computing and data management needs with lower initial investment capital (Oliveira, Thomas & Espadanal, 2014). Nevertheless, the challenge remains to determine the factors that lead organizations to adopt and deploy cloud computing.

The emergence of Information Technology (IT) is increasingly being used as a key tool to automate business processes at various levels of organizations. Due to severe market competition and dramatically changing business environment, firms have been prompted to adopt various state-of-the-art Information Technologies to improve their business operations

(Sultan, 2010). In modern technology arena therefore, cloud computing has cut a great and specific niche in businesses. Due to the intense market competition and a rapidly changing business environment, firms have been driven to adopt various modern information technologies in order to improve their business operations and increasing their productivity.

The world has witnessed an explosion of computers into almost every facet of our day to day lives as more and more people adopt the use of technology (Alismaili *et al.*, 2015). At home, people are using IT functions that were a predominant reserve for larger organizations 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 organizations 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 increased 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 organizations employees will decrease (Alsanea & Barth, 2014). 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 organizations to exploit these forms of advanced technology literacy among their staff. Adoption of the appropriate mobilization technologies in the organizations affords it flexibility, efficiency and control of IT functions in the business (GCI, 2015). 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, 2015).

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, 2010). Despite its marked youth as a topic of research, Armbrust (2010) 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. 2012). From a review of the literature it is clear that many definitions exist (Mell & Grance, 2011), however, the term is vague, polymorphous and multidimensional, 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; 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 organizations and companies is the extent to which their data is secure. So the issue at hand is the security of cloud computing. The cloud systems structures do not guarantee security conformance among end-users data or applications on them. The software application to be adopted must be secure in their own right. Hogben (2014) 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.

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 field 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 is 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 organizations is that it eliminates the need for IT employees. Maghiros (2013) 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.

Despite the many benefits of cloud computing, today, many organizations in Kenya and other developing countries are struggling to muddle through the rapid market variations. Organizations find it difficult to meet customer expectations alongside growing business

requirements (Omar *et al.*, 2015). Despite the many advantages that organizations may benefit from cloud computing, the adoption rate is however relatively low in some developing countries (Senarathna *et al.*, 2016). However, organizations in the developing countries need to benefit from cloud technology in order to realize increased productivity and enhanced efficiency in businesses operations. This has been a major hurdle for organizations to overcome, which therefore requires great attention.

1.2 Statement of the Problem

The process of purchasing, maintaining, and monitoring computing assets requires a large investment of financial and manpower resources for any institution. An option which centralizes computing assets and can lower the costs and manpower requirements for the organizations is the use of centralized computing assets provided as cloud computing (Jeffrey & Neidecker-Lutz, 2010). Currently, many institutions are interested in using cloud computing capabilities, but they do not know where to expect changes when choosing for the cloud computing concept. This research seeks to identify the factors taken into consideration by software development companies, when making decisions on the adoption of cloud computing technology.

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 25 million mobile phone users are expected to be using mobile money by end 2020, the equivalent of three out of every four adult Kenyans (Demombynes & Thegeya, 2015). 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 organizations. Authors contend that this require an investigation into the organizational, technological and environment influence on the adoption of cloud computing in today's organizations. Cloud computing provide the opportunity for companies to reduce their IT associated costs through offloading. Despite these opportunities most organizations are reluctant to do so mostly owing to security issues.

Several studies have been conducted on adoption of cloud computing. Willcocks (2013) sought to establish the factors that drive and inhibit the adoption of cloud computing. The paper drawn on a composite research based in the UK included two detailed surveys and interviews with 56 participants in the cloud supply chain undertaken between 2010 and 2013. Alshamaila, Papagiannidis and Feng (2013) studied Cloud computing adoption by SMEs in the north east of England. This qualitative exploratory study used semi-structured interviews to collect data in 15 different SMEs and service providers in the north east of England. Locally, Mungai (2012) indicated that Kenyan financial institutions have not taken keen interest in cloud computing. He recommended further studies to be done on implementation risks of cloud computing. Although the potential for cloud computing is evident and much of the extant research has been carried out on cloud computing adoption, empirical studies on the factors that influence cloud computing adoption in Kenya are lacking. This study aims to contribute to a growing body of research on cloud computing by studying the factors that influence cloud computing adoption in the software development companies in Kenya.

1.3 Objectives of the Study

- i). To establish the organizational factors influencing the adoption of cloud computing in software development companies in Kenya
- ii). To assess the environmental factors influencing the adoption of cloud computing in software development companies in Kenya

- iii). To determine the technological factors influencing the adoption of cloud computing in software development companies in Kenya
- iv). To evaluate the risk factors influencing the adoption of cloud computing in software development companies in Kenya

1.4 Research Questions

- i). What are the organizational factors influencing the adoption of cloud computing in software development companies in Kenya
- ii). What are the environmental factors influencing the adoption of cloud computing in software development companies in Kenya
- iii). What are the technological factors influencing the adoption of cloud computing in software development companies in Kenya
- iv). What are the risk factors influencing the adoption of cloud computing in software development companies in Kenya

1.5 Scope of the Study

This study will be conducted on factors influencing the adoption of cloud computing in software development companies in Kenya. The specific area of focus will be the software development companies within Nairobi County where the management will form the study population. The researcher may experience non-cooperation by respondents since it is not easy to convince someone to fill questionnaires hence not reaching the targeted sample size. However, the researcher will assure the respondents of proprietary measures that the findings will be accorded and be will be used only for academic purpose.

1.6 Justification

The key objective of this study is to analyze the key factors influencing the adoption of cloud computing in software development companies in Kenya. These factors will shed light on what would be a successful implementation of cloud technologies especially for software development companies.

From the point of view of software development companies, this study will be of great significance in identifying the key factors that affect adoption and will therefore enable them carry out proper assessments before implementing cloud computing. Secondly, to help cloud vendors or cloud service providers structure their product or service offerings in a way that encourages software houses to adopt cloud computing.

This study is also significant for government agencies and regulatory bodies charged with the responsibility of formulating policies in the ICT sector. Some of the findings of this research are applicable in setting standards in the ICT industry and in establishing policies that would incentivize and grow software development in the country.

From an academic perspective, this study will add knowledge in the field of cloud computing in Kenya. Although the study will focus primarily on software development companies based in Kenya, the findings can be adopted for other regions. The study forms a source of future reference and continued research in cloud computing and software companies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter provides an extensive literature and research related to factors that influence cloud computing adoption in the software development companies in Kenya. This literature review summarized a diverse spectrum of views about cloud computing adoption. The chapter is thus structured into theoretical, conceptual and empirical review. The chapter also presents the knowledge gap the study seeks to fill.

2.2 The Concept of Cloud Computing

Cloud computing is paradigm which combines several existing IT technologies into one service. The term, cloud computing, first emerged in the early 20th century as a commercial web service that allows small companies to have a platform to run their business applications from their own personal computers. The National Institute of Standards and Technology (NIST) defines cloud computing as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (Mell & Grance, 2012). Since then, various definitions have emerged to fit the various aims of studies on cloud computing. Nonetheless, these definitions revolve around the main characteristics of cloud computing, which include on-demand self-services, broad network access, resource pooling, rapid elasticity, and measured service (Mell & Grance, 2012).

Cloud services denote various layers of the cloud computing architecture, including infrastructure as a service (IaaS), platform as a service (PaaS), and SaaS. IaaS refers to the basic level of cloud services that deliver infrastructure services to customers over a network; PaaS offers online access to all the resources that are required to build an application; while

SaaS provides users a piece of software over a network (Gangwar, Date, & Ramaswamy, 2015). Recent studies have shown that cloud for end-user services, such as e-mail or office applications, is increasingly being adopted by the organizations for daily business activities, which create both opportunities as well as challenges (Alshamaila, Papagiannidis, & Feng, 2013). A point to note is that cloud computing has unique characteristics compared to other IT innovations in terms of its customer targets (could be small, medium or large organizations), its interoperability (quality of services), its pricing mechanism (pay-as-need), and its delivery models (public, private or hybrid cloud) (Hsu, Ray, & LiHsieh, 2014).

There are several benefits and advantages of adopting cloud computing for organizations. Firstly, the cloud can reduce costs and save money for both small and large enterprises because it offers an outsourcing model which allows them to rent resources and pay only for the service that they use, rather than building up in-house IT infrastructure. Moreover, the maintenance of IT resources and the upgrades are managed by a third party, which allows organizations to transfer responsibility and save money. Another advantage of cloud migration is that it enables enterprises to grow and scale their services easily without delay and according to their specific needs. For example, sales staff can provide new products and sell them easily and quickly in the cloud environment. Furthermore, by using a cloud environment in organizations, the numbers of IT infrastructure resources, such as servers, will be minimized, and consequently the cost of energy consumption will be reduced. In addition, cloud computing allows the enterprises to run their applications with a minimum failure rate. Finally, the flexibility of delivering computing services is the key benefit that drives organizations to migrate their IT systems to the cloud.

2.3 Theoretical Framework

2.3.1 Technology-Organization-Environment Framework

The TOE framework was proposed by Tornatzky and Fleischer (1990), to analyze the adoption of new IT technologies at an organizational level. This framework investigated the impact of three factors (Technology, Organization and Environment) on the organization's decision to adopt a new technology. The technology aspect describes the effect of internal and external technologies of the firm and how adopting new technology can influence the firm (Chau & Tam, 2007). The organizational context refers to different measures of the organization. For example, firm size, scope and complexity of managerial structure. These measures have a significant impact on the adoption decision. Lastly, the environmental context is the field where an organization runs its business; the industry, competitors and government regulation define the environmental context.

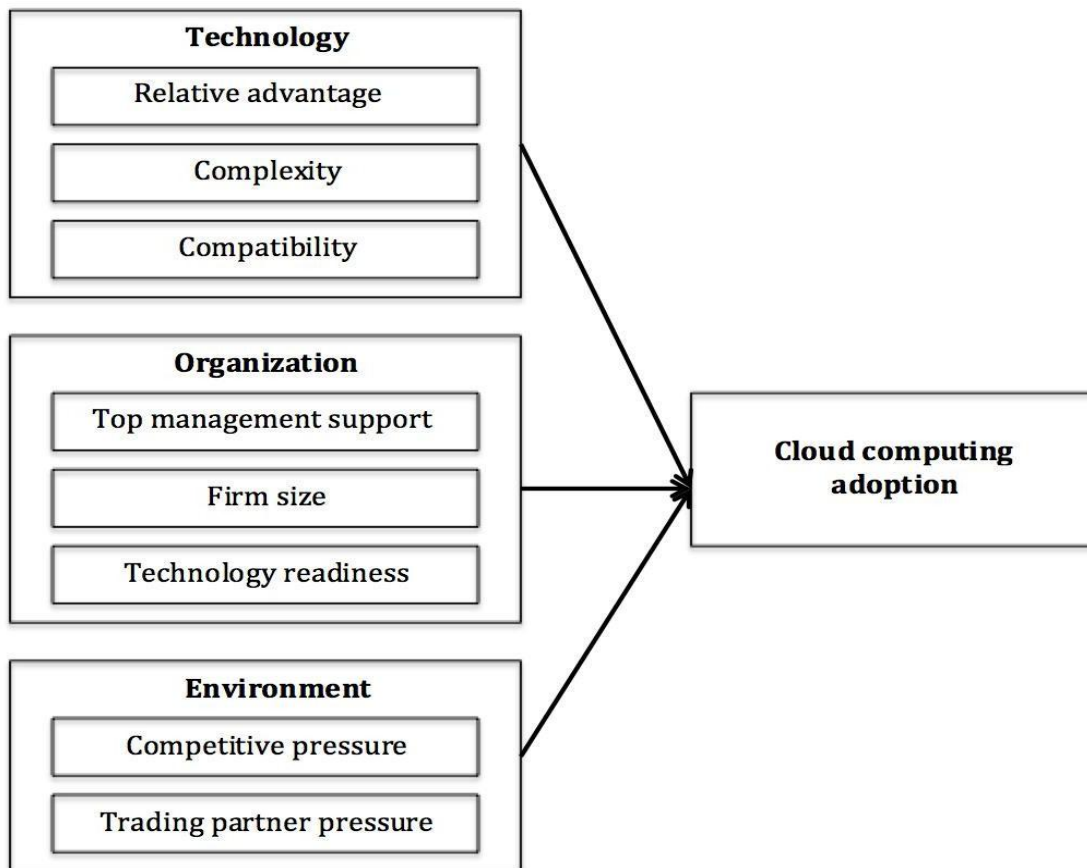


Figure 2.1 The TOE Framework of (Tornatzky and Fleisher 1990) adapted by (Low, Chen and Wu 2011)

There are several reasonable motivations which make TOE framework feasible for Cloud Computing adoption. Cloud Computing adoption is a different scenario to conventional innovation adoption and diffusion (Feuerlicht, 2010). Cloud computing services are usually offered to firms and organizations by a third party (cloud service provider). Thus, Cloud Computing technology compared to other conventional innovations consists of three foremost players: cloud-based services, cloud users (clients), and cloud service providers (Dargha, 2013). As a result, adoption of Cloud Computing is influenced by three major factors which include the characteristics of Cloud Computing technology as a technological context, the characteristics of firms and organizations as an organizational context, and the characteristics

of a third party as an environmental context (Low, et al.; 2011). However, because of the nature of socio-technical factors in cloud- based services, organizational and environmental factors are equally as important as technological factors (Low et al. 2011). TOE framework explains the adoption of technology through three elements: technological, organizational, and environmental contexts. Therefore, TOE framework compared to other adoption and diffusion theories is a much more relevant analytical tool to classify all determinants of Cloud Computing adoption in technological, organizational, and environmental contexts. In addition, the TOE framework is a useful analytical tool for explaining the adoption of innovation by firms and organizations

2.3.2 The Technology Acceptance Model (TAM)

It is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably: Perceived usefulness (PU) - This was defined by Fred Davis as the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease-of-use (PEOU) - Davis defined this as the degree to which a person believes that using a particular system would be free from effort (Davis 1989). TAM has been continuously studied and expanded-the two major upgrades being the TAM 2 (Venkatesh & Davis, 2000 and Venkatesh, 2000). A TAM 3 has also been proposed in the context of e-commerce with an inclusion of the effects of trust and perceived risk on system use, (Venkatesh & Bala, 2008).

TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use (Venkatesh & Bala, 2008). Perceived usefulness is the degree to which a person believes that

using a particular system would enhance his or her job performance; people are more likely to use an information system that they believe will help them perform their job better. Perceived ease of use is the degree to which a person believes that using a particular system would be free of effort. Therefore, even if a system is believed to be useful by an individual, if the system is too difficult to use, the potentially enhanced performance benefits to be derived from the system are outweighed by the effort required of having to use it.

2.3.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

This is a technology acceptance model formulated by Venkatesh, (2000) and others in “User acceptance of information technology: Toward a unified view. The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that four key constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions; the first three being direct determinants of usage intention and behavior, and the fourth a direct determinant of use behavior. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behavior.

Venkatesh, et al (2008) thinks that the purpose of UTAUT model is to offer the manager with using tools, the manager can use UTAUT to weigh the introduction of new technology and predict and explain the user’s behavior of accepting Information and Communications Technology. From previous empirical test results, Koivumäki et al (2008) found that the explanatory power of this UTAUT model is up to 70% with regard to technology using behavior, it is more effective than any of the models that are known before; and the use of UTAUT model has become more extensive in recent years, it is no longer confined to the discussion of the use of information system, such as mobile commerce, online learning and

wireless network; and the problem of this study takes user's prevalence and influence factors for Cloud Computing as the core

2.4 Factors Influencing Adoption of Cloud Computing

2.4.1 Organizational Factors Influencing the Adoption of Cloud Computing

2.4.1.1 Top Management Support

Support from top management is one of the main challenges in innovation adoption. This is due to the fact that the willingness of the top management to approve sufficient financial investment, human resources, and technological competencies, is crucial for enabling the adoption. Generally, it is important for top management, as the organization's decision makers, to understand the benefits of the innovation and how it can create competitiveness (Alshamaila et al., 2013). Oliveira et al., (2014) have argued the importance of top management support to ensure that resources needed to adopt a technology or to expand its use, are available. Lack of top management support would therefore, lead to the failure of implementation (Grandon & Pearson, 2014). Premkumar (2013) refers to top management support as the extent of commitment and resource support given by the top management. The role of the top management in the successful adoption and diffusion of IT has long been recognized. Yigitbasioglu (2015), for instance, found top management support as the most important factor in influencing cloud computing adoption.

Lin and Lee (2015); 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 organizations provides the commitment and vision for innovation and creates an environment that fosters this innovation. Cloud computing involves integration of several resources and reengineering of processes which requires top management support.

Top management support plays a significant role in initiating, implementing, and adopting of information technology (Gangwar, Date & Ramaswamy, 2015). Their support can be seen in their sponsoring of initiatives and engaging in the adoption of new technologies within the organization. Top managers are responsible for setting organizational strategy and for establishing direction for technologies such as cloud computing. Top managers can secure enough resources and produce a supportive climate for cloud computing (Tweel, 2012). Top management awareness of potential benefits of adopting cloud computing is regarded as essential to manage potential organizational change through an expressed vision and commitment, sending positive signals of confidence in the new technology to all employees of the firm. Taking in such support helps the organization to avoid any internal barriers and opposition to change. It can be concluded that top management support is vital for organizations searching to produce a competitive environment, whilst also providing the resources needed to adopt cloud service.

2.4.1.2 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 (Oliveira & Martins, 2010). 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.

2.4.1.3 Skill

The ability and capacity of organizations to adopt new technology has been associated to the technological infrastructure available and the human resources capacity (Zhu *et al.*, 2016). 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.

IT human resources are considered the sources of knowledge and skills that are needed to implement cloud computing related IT applications (Low, Chen, & Wu, 2011). Organizations can be segmented into five different groups based on their technology readiness, from explorers who are the first to adopt a new technology, to laggards who are the last to adopt a new technology and are not technologically motivated.

2.4.1.4 Traceability and Auditability

Another organizational factor impacting adoption included increased traceability and auditability. According to researchers such as Armbrust, (2010) 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).

2.4.2 Environmental Factors Influencing the Adoption of Cloud Computing

2.4.2.1 Competition

According to Laforet (2011), Competitive pressure is the degree of pressure which organizations can face from their rivals in the same industry. This Competition can play a positive role in the adoption of any new technology especially when the technology affects the competition. Adopting technology helps organizations in changing the competitive environment in different ways such as industry structure and outperforming competitors. Cloud computing can increase the operating efficiency, data accuracy, and decrease costs (Low, *et al.*, 2011). Therefore, organizations that are first to adopt cloud computing are expected to derive benefits in terms of competitive advantage and survival.

According to Laforet, (2011), Competitive pressure is the degree of pressure which organizations can face from their rivals in the same industry. This Competition can play a positive role in the adoption of any new technology especially when the technology affects the competition (Ramdani, Kawalek, & Lorenzo, 2012). Adopting technology helps organizations in changing the competitive environment in different ways such as industry structure and outperforming competitors. Cloud computing can increase the operating

efficiency, data accuracy, and decrease costs. Therefore, organizations that are first to adopt cloud computing are expected to derive benefits in terms of competitive advantage and survival (Gangwar, Date, & Ramaswamy, 2015).

2.4.2.2 Trading Partner Pressure

In cloud computing, trading partners relate to the cloud service providers. Organizations, regardless of size, rely on the experience and skills of trading partners when looking to adopt cloud services. Trading partner previous history and past projects can affect on the decision of whether to adopt a new Information Technology innovation or not (Gutierrez, Boukrami, & Lumsden, 2015). Organizations that want to adopt cloud services are concerned about the ability of service providers to ensure the availability of data when needed. To ensure the desired level of availability, service level agreements and a combination of precautionary measures can be used. Security is another concern organizations have with regards to trading partners. Cloud computing security is more than just authenticity, authorization, and accountability; it is also related to data protection, disaster recovery, and business continuity. Privacy and confidentiality also relate to security because service providers have access to all the data and could intentionally or unintentionally use it for unauthorized purposes. Consequently, many companies are reluctant to host their data on external computers that might be co-hosted with other companies' application.

2.4.3 Technological Factors Influencing the Adoption of Cloud Computing

2.4.3.1 Perceived Benefits

Many researchers have measured perceived benefits as the anticipated benefits of technological innovation (Oliveira & Martins, 2010). The benefits of cloud computing

include customization, ease of data analysis, reduction of deployment time, IT, and IT employee costs, and ubiquitous access (Hsu et al., 2014). Low et al. (2011) asserted that cloud computing adoption may increase business communications speed, improve efficiency in inter- organization coordination, create better customer communications, and enhance access to market information mobilization. Hassan and Ismail (2015) discovered that cloud computing leads to strategic (e.g. helping organizations to create competitive advantage and establishing useful links with other organizations) and informational (e.g. easier access to information and improve information accuracy) benefits. With cloud computing, the installation and the maintenance of the information system are no longer under the responsibility of the organization as they are now being managed by the cloud computing vendor, thereby reducing IT-related costs to the organization. Based on this reasoning, cloud computing should provide a marked advantage to adopters.

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). However, firms may not have confidence in a cloud computing system because it is relatively new to them (Buyya *et al.*, 2012). 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.*, 2014). The diffusion of the innovation model is inclined toward investigating the adoption of new technology (Rogers, 1983).

2.4.3.2 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, 2012).

The adoption of cloud computing arrangement for an organizations 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, Think Grid offers enterprise technology to SMEs services that would cost hundreds of thousands of pounds for a low monthly fee (Erdogmus, 2012).

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 organizations 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 organizations 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, 2012).

2.4.3.3 Compatibility

Compatibility refers to the degree to which innovation fits with the potential adopter's existing values, previous practices and current needs. Compatibility has been considered an

essential factor for innovation adoption (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.

Perceived compatibility takes into consideration whether current values, behavioral patterns, and experiences of an organization and its members are consistent with a new technology (Peng, Xiong, & Yang, 2012). Increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions. Compatibility can provide adopters with several benefits. For instance, it can result in time and cost reductions as users will not have to deconstruct a costly infrastructure if a new technology was adopted (Tweel, 2012). The incompatibility between the features of the innovation and the potential adopters' needs and business processes is considered a major barrier affecting the adoption of that innovation. The more the technology is recognized as being compatible with existing systems and organizational values and beliefs, the more likely organizations are to think about adopting cloud computing. Cloud computing allows organizations to keep up with new technology without affecting existing legacy systems aligned with their different organizational, managerial, and operational needs (Gutierrez, Boukrami, & Lumsden, 2015).

2.4.4 Risk Factors Influencing the Adoption of Cloud Computing

2.4.4.1 Policy and Organizational Risks

According to Betcher (2010), policy and organizational risks are business-related IT risks that organizations may face when considering cloud computing service providers. Such risks include lock-in, loss of governance, compliance risks, loss of business reputation, and cloud service termination or failure. Lock-in refers to the inability of a customer to move their data

and or programs away from a cloud computing service provider (Armbrust, 2010). While customer lock-in may be attractive to cloud computing providers, customers are vulnerable to price increases, reliability problems, or even to providers going out of business (Armbrust, 2010). Loss of governance is another policy and organizational risk which has been identified as a top security risk as customers may cede control to cloud computing service providers on a number of issues that may impact their security, mission, and goals (ENISA, 2009).

2.4.4.2 Technical Risks

Betcher (2010) stated that technical risks are IT-related risks that have a direct, technological impact on the cloud computing systems that host customer programs and or data. Such risks include availability of Service. With respect to high performance computing applications Armbrust (2010) believes the problem with virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously. With regard to data storage, Youseff *et al.* (2012) argue that availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous.

2.4.4.3 Legal Risks

Legal risks are the IT-related risks that are legal in nature, and can also have a negative impact on an organization using cloud computing services (Betcher, 2010). Such risks include Subpoena and e-discovery where if computer systems are confiscated by law enforcement agencies or through civil suits, the centralization of storage and shared tenancy of physical hardware imparts more risk of unwanted data disclosure to cloud computing clients (ENISA, 2009). For example the United States Patriot Act allows the government to, among other things, demand access to data stored on any computer, and if the data is stored by a third party, the data is to be handed over without the knowledge or permission of the

company or person using the hosting service (Abadi, 2012). Some businesses may not like the ability of a country to get access to their data via the court system (Armbrust, et al., 2010).

2.5 Conceptual Framework

A conceptual framework is a structure that tries to explain the relationship between variables in the study and shows the relationship by use of diagrams. It is a hypothesized model identifying the concepts under study and their relationship (Mugenda & Mugenda, 2008). The Occurrence or change of independent variables will result in change in the dependent variable. The conceptual framework model in the study hypothesizes that, the adoption of cloud computing is a function of, organizational factors, technological factors, environmental factors and risk factors. These four factors to a great extent, determine the adoption of cloud computing. These variables and their relationship are illustrated in the following conceptual framework.

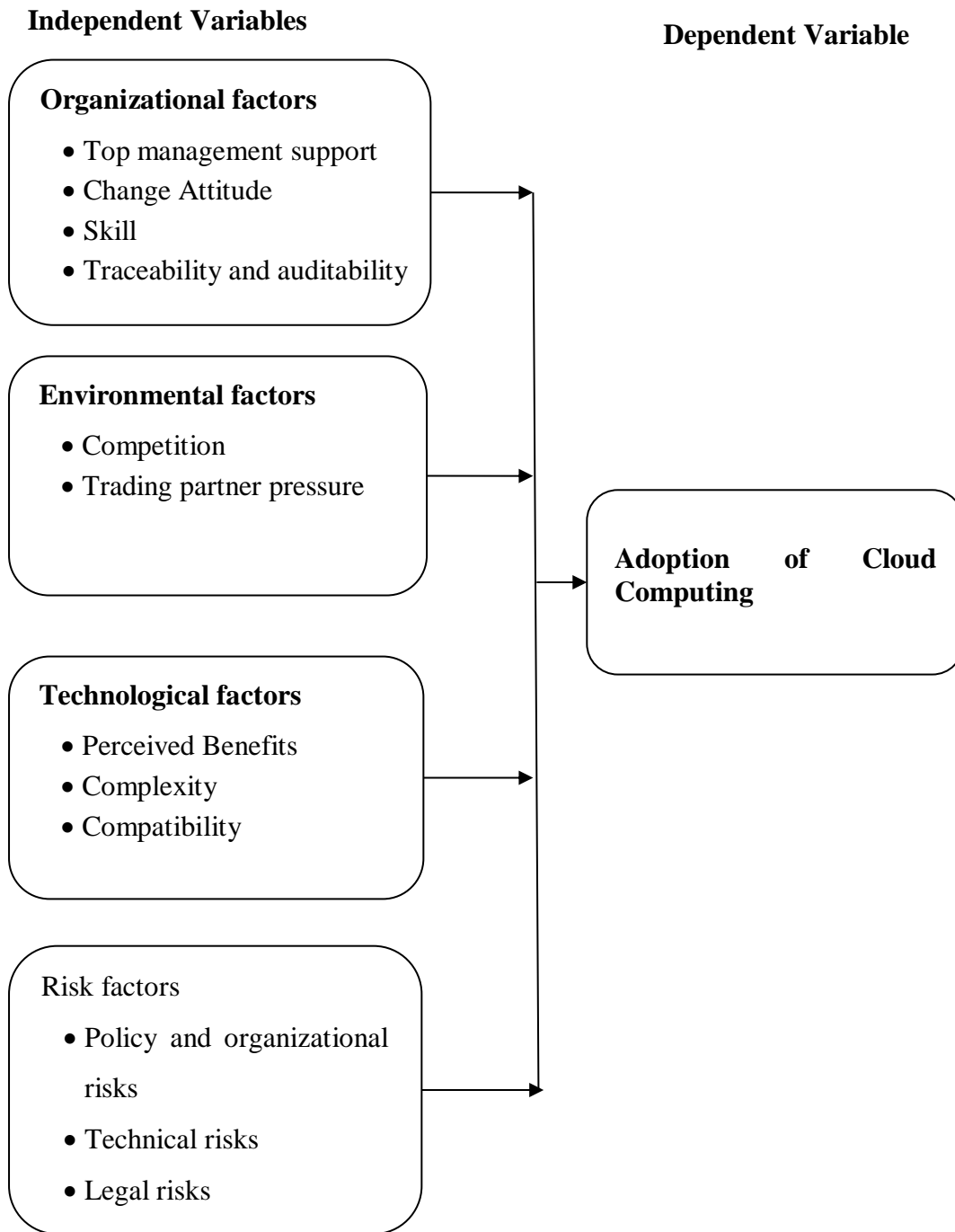


Figure 2.2 Conceptual Framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the research methodology that was used to carry out the study. Included in this chapter is the research design, target population, sample size, sampling procedure and techniques. Research instrument, validation of research instrument is also explained in this chapter. Data collection procedures, processing, analysis and presentation as well as ethical consideration and dissemination strategy are also elaborated in this chapter.

3.1 Research Design

Orodho (2009) defines a research design as the scheme, outline or plan that is used to generate answers to research problems. According to Kombo and Tromp (2013) research design can be thought of as the structure of research. This study used descriptive cross-sectional survey research design. This design normally describes and reports the way things are. It is characterized by a systematic collection of data from members of a given population mainly through questionnaires (Ogula, 2012). This design has been chosen in this study for the following reasons that: The design is ideal in describing the characteristics of the targeted population, it is appropriate for a large sample which is expected to participate in the study, the design also accommodates both quantitative and qualitative approaches of analysis.

3.2 Target Population

Target population is the specific population about which information is desired. According to Bryman and Bell, (2009) a population is a well-defined or set of people, services, elements, events, group of things or households that are being investigated. Cooper and Schindler (2008) describe a population as the total collection of elements whereby references have been made. Borg and Crall (2009) also describes target population as a universal set of study of all members of real or hypothetical set of people, events or objects to which an investigator

wishes to generalize the result. The target population of this study used 283 software development companies in Kenya.

3.3 Sample Size

A sample size is the number or size of items, objects or individual selected for research to represent the population as a whole. Kothari (2004) points out that an optimum sample is one that has the ability to fulfill the requirements of efficiency, representativeness, reliability and flexibility. The level of desired precision and the population size are the key factors for consideration of the sample size. In this study, a census survey adopted to select the study sample. Census is a study of every unit, everyone or everything, in a population. It is known as a complete enumeration, which means a complete count. The advantages of a census survey are: it provides a true measure of the population (no sampling error) and the benchmark data may be obtained for future studies. Also, it provides true information regarding the elements of study because it targets those people with the coherent knowledge regarding the area of study. Therefore, the sample size of this study was the entire 283 Software Development Companies, which was provided with questionnaires in order to provide the information required, here the ICT managers were the participants because they are deemed to have the relevant information regarding adoption of Cloud Computing by the Software development Companies.

3.4 Data Collection: Instruments and Techniques

According to Ngechu (2014) there are many methods of data collection. The choice of a tool and instrument depends mainly on the attributes of the subjects, research topic, problem question, objectives, design, expected data and results. This is because each tool and instrument collects specific data. According to Kagwiria (2014) primary data is the data which is collected afresh and for the first time and thus happen to be original in character.

Since the study used primary data, the data was collected using a questionnaire as the main data collection instrument. Structured questionnaires allowed for uniformity of responses to questions. The questionnaire is a fast way of obtaining data as compared to other instruments (Mugenda & Mugenda, 2008). Questionnaires give the researcher comprehensive data on a wide range of factors. Both open-ended and closed-ended questions were used. Questionnaires allow greater uniformity in the way questions are asked, ensuring greater compatibility in the responses. In developing the questionnaire two broad categories of questions were considered, namely: structured and unstructured questions. According to Field (2015), structured questions are usually accompanied by a list of all possible alternatives from which respondents select the answer that best describes their position. Questions were constructed so as to address specific objectives and provide a variety of possible responses.

Unstructured questions give the respondent freedom of response which helps the researcher to gauge the feelings of the respondent. These kinds of questions expose respondents' attitudes and views very well (Field, 2015). A 5 point Likert scale ranging from 1 to 5 was used as answers to statement like questions where 1 represented strongly disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly agree. The Likert - type format was selected as the format yields equal - interval data, a fact that allows for the use of more powerful statistical to be used to test hypotheses (Kiess & Bloomquist, 2008).

3.5 Validity and reliability of the research instrument

In addressing the question on the characteristics of a good measurement tool in research, Cooper & Schindler (2011) argued that the tool should be an accurate counter or indicator of what the research is interested in measuring. Besides, the instrument should be easy and efficient to use. Such a measurement tool would, thus, be subjected to tests of validity (the extent to which a test measures what the researcher wishes to measure, reliability (the

accuracy and precision of a measurement procedure) and practicality (concerns factors of economy, convenience and interpretability). Content validity of a measuring instrument is the extent to which it provides adequate coverage of investigative objectives of the study. Therefore, to ensure that the research instruments collect the desired data, it is important to validate them before they are administered to the sample population, different means of validity was used to validate them which include content and face validity.

To ensure validity of the instrument, the instruments were given to the supervisors, colleagues, and other experts in research to check on content and face validity. This helped to determine the degree to which the instrument gathered the intended information. The feedback from the supervisors, colleagues, and other researchers and scholars were used to make the necessary adjustments on the instrument for instance by removing the ambiguous items, spelling mistakes and other typographical errors that might have been made.

The questionnaires were subjected to overall reliability analysis of internal consistency. This was measured using Cronbach alpha as a coefficient of internal consistency. Internal consistency measures the correlations between different items on the same test (or the same subscale on a larger test) and whether several items that propose to measure the same general construct produce similar scores. Castillio (2009) provide the following rules of the thumb: >0.9 – Excellent, >0.8 – Good, >0.7 – Acceptable, >0.6 – Questionable, >0.5 – Poor and <0.5 – Unacceptable. The acceptable value of 0.7 was used as a cut-off of reliability for this study.

3.6 Ethical Considerations

The researcher sought approval to perform the study from; the university, and the targeted organizations. For this to succeed, the researcher provided a final proposal to the university and received a letter to take to the organizations. The study adhered to ethical issues that are the baseline of any research. The researcher informed the respondents that they have a right

not to participate in the study if they so wish. The researcher also informed the respondents that they have a right to withdraw from the study at any time without giving a reason as to their withdrawal.

3.7 Data Analysis

Data analysis is the whole process which starts immediately after data collection and ends at the point of interpretation and processing data (Kothari, 2004). Therefore before processing the responses, the completed questionnaires were edited for completeness and consistency. The study generated both qualitative and quantitative data. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 21) and analyzed using descriptive statistics. Descriptive statistics involved the use of absolute and relative (percentages) frequencies, measures of central tendency and dispersion (mean and standard deviation respectively). Quantitative data was presented in tables and graphs and explanation were presented in prose.

The study used correlation to show the degree of association between the independent variables and the dependent variable. Correlation is used when a researcher wants to predict and describe the association between two or more variables in terms of magnitude and direction (Oso, 2009). The researcher further employed a multivariate regression model to study the relationship between adoption of cloud computing and factors that influence its adoption. The research deemed regression method to be useful for its ability to test the nature of influence of independent variables on a dependent variable. Regression is able to estimate the coefficients of the linear equation, involving one or more independent variables, which best predicted the value of the dependent variable. The researcher used a multivariate regression model to analyze the data. The regression model was as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where: Y = Adoption of Cloud Computing; β_0 = Constant Term; β_1 , β_2 , β_3 and β_4 = Beta coefficients; X1 = Organizational Factors; X2 = Environmental Factors; X3= Technological Factors; X4 = Risk Factors; ε = Error term

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presents the findings of the study and the corresponding interpretations. It also presents the background information of the respondents and findings of the analysis based on the objectives of the study. Descriptive statistics have been used to discuss the findings of the study.

4.1.1 Response rate

The study targeted a sample size of 283 respondents from which 249 filled in and returned the questionnaires making a response rate of 85.5%. This response rate was satisfactory to make conclusions for the study as it acted as a representative. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was excellent.

Table 4.1: Response Rate

	Questionnaires Administered	Questionnaires filled & Returned	Percentage
Respondents	283	249	88.0

4.2 Background Information

This section presents information on the respondent's demographic information. Specifically, this section presents data on respondents gender category, age category, period of service with the organisation, education level, and position held within the department and period which the organisation has been utilizing cloud computation technology.

4.2.1 Distribution of Respondents by Gender Category

Table 4.3 shows the distribution of respondents by gender category. This was sought in view of ensuring fair engagement of male and female respondents in the current research.

Table 4.2: Gender category

Category	Frequency	Percentage
Male	164	65.9
Female	85	34.1
Total	249	100

The study established that, majority of the respondents as shown by 65.9% response rate were males whereas 34.1% of the respondents were females (Table. 4.16). This is an indication that both genders were fairly involved in this research and thus the findings of this study did not suffer from gender biasness.

4.2.2 Distribution of Respondents by Age categories

The researcher also investigated the distribution of age among the respondents. The ages were categorized into: below 30 years, 31- 40 years, 41-50 years, and Over 50. The findings are presented in Table 4.4

Table 4.3: Age category

Age category	Frequency	Percentage
Less than 30 Years	59	23.7
31-40 Years	77	30.9
41-50 years	67	26.9
More than 50 Years	46	18.5
Total	249	100

The results indicate that most of the respondents (30.9%) were aged between 31 to 40 Years, followed by those aged between 41 to 50 years, as indicated by 26.9% then those aged below 30 years (23.7%) and finally those aged above 50 Years as show by 18.5%. the findings show fair distribution of respondents across various age groups.

4.2.3 Highest Level of Education

Level of education is closely related with the individual interpretation of various subjects. In view of ascertaining respondents understanding with the subject, respondents were required to ideate their educational level.

Table 4.4: Highest level of education

Education level	Frequency	Percentage
Secondary level	10	4.0
College level	56	22.5
University level	98	39.4
Post graduate level	85	34.1
Total	249	100

The findings in Table 4.5 indicate that most of the respondents (39.4%) indicated university level, 34.1% indicated post graduate level, and 22.5% indicated college level while 4% indicated secondary level. These above findings show that all the respondents were literate and thus they were in a position to comfortably respond to the research questions with ease.

4.2.4 Period of Service

Table 4.6 presents information relating to the period which the respondents had worked in the current organization.

Table 4.5: Period of Service

	Frequency	Percentage
1- 5 years	30	12.0
6 - 10years	88	35.3
11- 15 years	75	30.1
Above 16 years	56	22.5
Total	249	100

Results in table 4.6 show that 35.3% of the respondents had had served the current organization for a period of 6 to10 years, 30.1% of the respondents indicated 11 to15 years

22.5% of the respondents indicated Above 16 years while 12.0% of the respondents indicated 1- 5 years. The findings show that considerable number of the responders had worked for respondents with the current organization for considerable period of time and thus they were in a position to give credible information relating to this research.

4.2.5 Work Position in the Organisation

Respondents were required to indicate the position that one held in the current work department. Results are presented in Table 4.7

Table 4.6: Work Position in the Organization

	Frequency	Percentage
Manager	36	14.5
Unit Head	49	19.7
Supervisor	38	15.3
Assistant Manager	45	18.1
Technical personnel	57	22.9
Departmental Head	24	9.6
Total	249	100

Results in Table above show that most of the of the respondents (22.9%) indicated that they worked as technical personnel, 19.7% of the respondents indicated that they worked as unit heads 18.1% of the respondents indicated that they worked as assistant managers 15.3% of the respondents indicated supervisors while 9.6% of the respondents indicated departmental heads. The findings show that employees holding various managerial positions were fairly involved in this study.

4.2.6 Adoption of Cloud Computing Technology

Respondents were required to indicate whether the company had adopted cloud computing.

Results are presented in Table 4.8.

Table 4.7: Adoption of cloud computing technology

Opinion	Frequency	Percentage
Yes	207	83.1
No	42	16.9
Total	249	100

The findings of the research show that majority of the respondents (83.1%) agreed that their organization had adopted cloud computing while 16.9% were of the contrary opinion. This implies that considerable number of organization involved in this study had adopted cloud computing tech

4.2.7 Period which the organization used cloud computing

Table 4.9 shows the period which the organization has been utilizing used cloud computing technology.

Table 4.8: Period which the organization used cloud computing

	Frequency	Percentage
1-3 years	28	13.5
4-6 years	64	30.9
7-10 years	74	35.7
Above 10 years	41	19.8
Total	207	100

From the research findings, 35.7% of the respondents indicated that the organization has been utilizing cloud computing technology for a period of 7 to10 years, 30.9% of the respondents indicated 4 to 6 years, 19.8% of the respondents indicated for more than 10 years while

13.5% the respondents indicated for a period of 1 to 3 years. The findings show that most of the organizations have been utilizing cloud computing technology for a period of a period of 4 to 10 years.

4.3 Organizational Factors Influencing the Adoption of Cloud Computing

This section investigates the relationship between organizational factors and adoption of cloud computing technology.

4.3.1 Organizational factors influenced the adoption of cloud computing technology

This research investigated the extent to which organizational factors influenced the adoption of cloud computing technology within organizations.

Table 4.9: Extent to which organizational factors influenced the adoption of cloud computing

Extent	Frequency	Percent
To a very great extent	112	45.0
To a great extent	69	27.7
To a moderate extent	47	18.9
To a low extent	21	8.4
Total	249	100

Table 4.10 shows that majority of the respondents (45.0%) were of the opinion that organizational related factors influenced the adoption of cloud computing technology within organizations very great extent. 27.7% of the respondents indicated great extent 18.9% of the respondents indicated moderate extent while 8.4% of the respondents indicated low extent. This implies that organizational related factors influenced the adoption of cloud computing technology within organizations to very great extent.

4.3.1 Top management support

The research sought to establish the extent to which respondents agreed with following statements relating to top management support and adoption of cloud computing.

Table 4.10: Top management support and adoption of cloud computing

Statement	Mean	Std dev
The company's top management provides strong leadership and engages in the process of adoption	4.25	0.25
Top management is willing to take risks involved in the adoption of cloud computing	4.02	0.78
The top management team has nothing to do with the cloud computing adoption project	1.55	1.28
It is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations	1.75	0.31
The management approves sufficient financial investment for adoption of cloud computing	2.08	0.22
The management creates a conducive environment for adoption of new technologies	3.89	0.38

From the findings in Table 4.11, majority of the respondents agreed that the company's top management provides strong leadership and engages in the process of adoption (mean = 4.25, std dev =0.25) the management creates a conducive environment for adoption of new technologies (mean = 4.02, std dev = 0.78) and that the management creates a conducive environment for adoption of new technologies (mean =3.89, std dev = 0.38). The findings are in line with the findings by Alshamaila et al., (2013) top management support is essential for providing the resources needed to adopt a new technology

However, the study noted that in majority of the respondents disagreed top management team has nothing to do with the cloud computing adoption project (mean =1.55, std dev = 0.38). It is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations (mean =1.75, std dev = 0.31) and that The management approves sufficient financial investment for adoption of cloud computing (mean =2.08, std dev 0.32). The findings are in support of the findings by Grandon & Pearson, (2014). That lack of top management support would therefore, lead to the failure of implementation

4.3.2 Change Attitude

The research sought to establish the extent to which respondents agreed with following statements relating to change of attitude and adoption of cloud computing.

Table 4.11: Change Attitude and adoption of cloud computing

Statements	Mean	Std dev
Using the Cloud computing solutions is attractive	4.15	0.58
Using the Cloud computing solutions is a way to increase employee confidence.	3.85	0.14
Using the Cloud computing solutions makes work easier	4.17	0.78
Using cloud computing is a symbol of being technologically receptive	3.95	0.22
Using cloud computing solutions promotes service stability	4.19	0.74
Using the Cloud computing solutions is secure.	3.98	0.18
Using the Cloud computing solutions improves user performance.	4.26	0.33

The findings in Table 4.12, majority of the respondents agreed that using the cloud computing solutions improves user performance (mean = 4.26, std dev =0.33) using cloud

computing solutions promotes service stability (mean = 4.19, std dev =0.74), using the cloud computing solutions makes work easier (mean = 4.17, std dev = 0.78) and using the cloud computing solutions is attractive (mean = 4.15, std dev =0.58) The findings are in support of the findings by Oliveira & Martins, (2010) adoption of cloud computing is highly depended on employee competence and the positive attitude towards technology

The study also revealed that using the cloud computing solutions is secure (mean = 3.98, std dev =0.18), using cloud computing is a symbol of being technologically receptive (mean = 3.95, std dev =0.22), using the cloud computing solutions is a way to increase employee confidence (mean = 3.85, std dev = 0.14). The findings are in line with the findings by Tweel, (2012) the attitude plays a significant role in the technology acceptance decisions

4.3.3 Skills and adoption of cloud computing

The research sought to establish the extent to which respondents agreed with following statements relating to skills and adoption of cloud computing.

Table 4.12: Skills and adoption of cloud computing

Statements	Mean	Std dev
Learning to operate the system is easy for me	4.16	0.28
I find it easy to get the system to do what I want it to do	3.98	0.17
My interaction with the system is clear and understandable	2.20	0.18
I find the system to be flexible to interact with	4.10	0.22
IT human resources provide the knowledge and skills to implement cloud computing-related IT applications	4.00	0.17
It's easy for me to become skillful at using the system	2.18	0.47

The findings further show that majority of the respondents agreed that learning to operate the system is easy for most of the employees (mean = 4.16, std dev = 0.28), employees find the system to be flexible to interact with(mean = 4.10, std dev = 0.22) it human resources

provide the knowledge and skills to implement cloud computing-related it applications (mean = 4.10, std dev =0.22) and that employees find it easy to get the system to do what they want it to do(mean = 3.98, std dev = 0.17). The findings are in line with the study findings by Low, Chen, & Wu, (2011) human resources provide the necessary skills, experience and knowledge base required to implement and integrate a new cloud computing service.

However majority of the respondents disagreed that it's easy for the employees become skillful at using the system (mean = 2.18, std dev =0.47) and that employee interaction with the system is clear and understandable (mean = 2.20, std dev = 0.18) The findings concurs with the study findings by Wang et al., (2010) adoption of new IT innovations is depended on readiness of an organization, which includes the technological infrastructure and IT human resources.

4.4 Environmental Factors Influencing the Adoption of Cloud Computing

This research investigated the extent to which environmental factors influenced the adoption of cloud computing technology within organizations. Results are presented in table 4.14

Table 4.13: Extent to which environmental factors influence the adoption of cloud computing

Extent	Frequency	Percent
To a very great extent	87	34.9
To a great extent	105	42.2
To a moderate extent	38	15.3
To a low extent	19	7.6
Total	249	100

From the findings, majority of the respondents (42.2%) were of the opinion that environmental l related factors influenced adoption of cloud computing technology within organizations great extent. 34.9% of the respondents indicated very great extent 15.3% of the respondents indicated moderate extent while 7.6% of the respondents indicated low extent.

This implies that environmental factors influenced the adoption of cloud computing technology within organizations to great extent.

4.4.1 Competition

The study sought to determine the respondents level of agreement with the following the statements relating to Competitors and adoption of cloud computing.

Table 4.14: Competitors and adoption of cloud computing

Statements	Mean	Std dev
Competitors in the industry that use the system have more prestige than those who do not	4.28	0.11
Competitors in the industry who use the system have a high profile	3.90	0.33
Having the system is a status symbol in my organization	4.35	0.78
The system has given the company a competitive advantage	3.97	0.17
Research and development driven by ICT innovation is good for the industry	3.88	0.18

From the findings in Table 4.15 , majority of the respondents agreed that having the system is a status symbol in my organization (mean = 4.35, std dev =0.78),competitors in the industry that use the system have more prestige than those who do not, (mean = 4.28, std dev =0.78)the system has given the company a competitive advantage (mean = 3.97, std dev =0.17) competitors in the industry who use the system have a high profile (mean = 3.90, std dev =0.33) and that research and development driven by ICT innovation is good for the industry (mean = 3.88std dev = 0.18). The findings are in line with the findings by Laforet (2011), Low, Chen and Wu (2011) suggest the pressure from both competitors and trading partners on the business to stay current and adopt new technologies

4.4.2 Trading Partner Pressure

The study sought to determine the respondent's level of agreement with the following the statements relating to trading partner pressure and adoption of cloud computing.

Table 4.15: Trading Partner Pressure and adoption of cloud computing

Trading Partner Pressure	Mean	Std dev
The system allows for reliable interaction with trade partners	3.78	0.33
Industry players believe use of innovative systems bring competitive advantages	4.48	0.25
Trading partners relate to the cloud service providers	3.99	0.01
We rely on the experience and skills of trading partners when looking to adopt cloud services	4.26	0.44

From the findings in Table 4.16, majority of the respondents agreed that industry players believe use of innovative systems bring competitive advantages (mean = 4.48, std dev =0.25) the organization relied on the experience and skills of trading partners when looking to adopt cloud services (mean = 4.26, std dev = 0.44), trading partners relate to the cloud service providers (mean = 3.99, std dev =0.01) and the system allows for reliable interaction with trade partners (mean = 3.78, std dev =0.33). The findings are in support of the findings by Gutierrez, Boukrami, & Lumsden, (2015) This competitive pressure has resulted in many organizations outsourcing their IT infrastructure to not only improve effectiveness but also to enable lower prices to be offered, as an attempt to increase their market share

4.5 Technological Factors Influencing the Adoption of Cloud Computing

The research sought to demine the extent to which technological factors influence the adoption of cloud computing in the organization. Results are presented in table 4.17

Table 4.16: Extent to which technological factors influence the adoption of cloud computing

Extent	Frequency	Percent
To a very great extent	94	37.8
To a great extent	86	34.5
To a moderate extent	37	14.9
To a low extent	32	12.9
Total	249	100

From the findings, most of the respondents (37.8%) were of the opinion that technological related factors influenced adoption of cloud computing technology within organizations very great extent. 34.5% of the respondents indicated great extent 14.9% of the respondents indicated moderate extent while 12.9% of the respondents indicated low extent. This implies that technological factors influenced the adoption of cloud computing technology within organizations to very great extent.

4.5.1 Perceived Benefits

The study sought to determine the respondents level of agreement to the following statements relating to perceived benefits and adoption of cloud computing.

Table 4.17: Perceived Benefits and adoption of cloud computing

Statements	Mean	Std dev
Using the system in my job enables me to accomplish tasks more quickly.	4.36	0.30
Using the system improves my job performance	3.98	0.25
Cloud computing has increased business communications speed	4.25	0.25
Adoption of the technology has improved efficiency in inter-organization coordination	3.95	0.11
The technology has created better customer communications	4.22	0.04
The technology has enhanced access to market information mobilization	3.66	0.14

From the findings in Table 4.18, majority of the respondents agreed that using the system enables employees to accomplish tasks more quickly (mean = 4.36, std dev = 0.30)the technology has created better customer communications (mean = 4.22, std dev =0.04) using the system improves employee job performance (mean = 3.98, std dev = 0.25), adoption of the technology has improved efficiency in inter- organization coordination (mean = 3.95, std dev = 0.11) and that the technology has enhanced access to market information mobilization (mean = 3.66, std dev = 0.14). The findings concurs with the study findings by Hassan and Ismail (2015) discovered that cloud computing leads to strategic (e.g. helping organizations to create competitive advantage and establishing useful links with other organizations) and informational (e.g. easier access to information and improve information accuracy) benefits

4.5.2 Complexity

The study sought to determine the respondents level of agreement to the following statements relating to complexity and adoption of cloud computing.

Table 4.18: Complexity and adoption of cloud computing.

Complexity	Mean	Std dev
It takes too long to learn how to use the cloud computing to make it worth the effort	1.37	0.38
Learning to use the cloud computing system is easy for me	4.46	0.35
When we use cloud computing, we find it difficult to integrate our existing work with the cloud-based services	1.44	0.75
In general cloud computing is very complex to use	1.35	0.51
The use of cloud computing is complicated, it is difficult to understand what is going on	4.17	0.32

From the findings majority of the respondents agreed that learning to use the cloud computing system is easy for the employees (mean = 4.46, std dev =0.35) however respondents disagree that when the firm uses cloud computing, it is find it difficult to integrate the existing work with the cloud-based services (mean = 1.44 std dev =0.75), it takes too long to learn how to use the cloud computing to make it worth the effort(mean = 1.37, std dev =0.38) in general cloud computing is very complex to use(mean = 1.35std dev =0.35) and that the use of cloud computing is complicated, it is difficult to understand what is going on(mean =4.17, std dev = 0.32) The findings concurs with the study findings by Oliveira & Martins, (2010) The complexity of integrating different Cloud services with the existing infrastructure is a real challenge to many organisations.

4.5.3 Compatibility

The study sought to determine the respondents level of agreement to the following statements relating to compatibility and adoption of cloud computing.

Table 4.19: Compatibility

Statements	Mean	Std dev
Cloud computing fits well into our company's work style	4.17	0.18
Cloud computing services is compatible with our routine business works	4.46	0.75
Cloud services are compatible with existing technological architecture of my company	4.14	0.35
There is no difficulty in exporting applications/ data to cloud services	3.95	0.21

The findings show that cloud computing services is compatible with the business routine works (mean = 4.46, std dev =0.75), cloud computing fits well into the company's work style (mean = 4.17, std dev =0.18) cloud services are compatible with existing technological architecture of the company (mean = 4.14, std dev =0.35) and that there is no difficulty in exporting applications/ data to cloud services (mean = 3.95, std dev =0.21). The findings concur with the study findings by Peng, Xiong, & Yang, (2012). Increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions

4.6 Risk Factors Influencing the Adoption of Cloud Computing

This research investigated the extent to which risk factors influenced the adoption of cloud computing technology within organizations.

Table 4.20: Extent to which risk factors influenced the adoption of cloud computing

Extent	Frequency	Percent
To a very great extent	95	38.2
To a great extent	70	28.1
To a moderate extent	55	22.1
To a low extent	29	11.6
Total	249	100

From the findings, majority of the respondents (38.2%) were of the opinion that risk factors adoption of cloud computing technology within organizations very great extent 28.1% of the respondents indicated great extent 22.1% of the respondents indicated moderate extent while 11.6% of the respondents indicated low extent. This implies that risk factors influenced the adoption of cloud computing technology within organizations to very great extent

4.6.1 Policy and Organizational Risks

Respondents were requested to indicate their level of agreement with the following statements relating to influence of policy and organizational risks on adoption of cloud computing.

Table 4.21: Policy and Organizational Risks

Statements	Mean	Std dev
There is a risk of inability of us to move our data or programs away from a cloud computing service provider	4.48	0.52
Customers are vulnerable to price increases	4.25	0.38
There is a risk of providers going out of business	3.88	0.47
Loss of governance is a top security risk	3.85	0.77

From the findings in Table 4.22, majority of the respondents agreed that there is a risk of inability of us to move our data or programs away from a cloud computing service provider (mean =4.48, std dev =0.52) customers are vulnerable to price increases (mean =4.25, std dev = 0.38) there is a risk of providers going out of business (mean =3.88, std dev = 0.47) and that loss of governance is a top security risk (mean =3.85, std dev =0.77). The findings are in line with the findings by Armbrust, (2010) policies and procedures related to cloud computing services should determine the procedures related information to management approaches that are acceptable and auditable from both client and organizational perspectives.

4.6.2 Technical Risks

Respondents were requested to indicate their level of agreement with the following statements relating to influence of technical risks and adoption of cloud computing.

Table 4.22: Technical Risks

Statement	Mean	Std dev
virtual machines and operating systems do not provide a programmatic way to ensure all threads of a program run simultaneously	4.35	0.14
There is the risk of unavailability of Service	4.18	0.41
Availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous	3.73	0.25

From the findings in Table above, majority of the respondents agreed that virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously (mean =4.35, std dev =0.14) there is the risk of unavailability of service (mean =4.18, std dev =0.41) and that availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous (mean = 3.73, std dev =0.25). The findings are in line with the findings by Armbrust (2010) believes

the problem with virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously.

4.6.3 Legal Risks

Respondents were requested to indicate their level of agreement with the following statements relating to influence of legal risk and adoption of cloud computing.

Table 4.23: Legal Risks

Legal Risks	Mean	Std dev
Computer systems may be confiscated by law enforcement agencies or through civil suits	4.28	0.33
Some businesses may not like the ability of a country to get access to their data via the court system	4.05	0.17
Compliance Challenges	3.95	0.33
Changes of jurisdiction	4.04	0.31

From the findings, majority of the respondents agreed that computer systems may be confiscated by law enforcement agencies or through civil suits (mean = 4.28, std dev = 0.33) some businesses may not like the ability of a country to get access to their data via the court system (mean =4.05, std dev =0.17) compliance challenges (mean =4.05, std dev =0.31) and that changes of jurisdiction (mean =3.95, std dev =0.33). The findings are in line with the findings by Betcher, (2010) the centralization of storage and shared tenancy of physical hardware imparts more risk of unwanted data disclosure to cloud computing clients

4.7 Adoption of Cloud Computing

Respondents were requested to indicate their level of agreement with the statements relating to adoption of cloud computing in organizations.

Table 4.24: Adoption of Cloud Computing

Statements	Mean	Std dev
Cloud Computing is a force that is reshaping IT and powering innovation	4.03	0.85
At micro level, the diffusion of cloud has been advantageous for our company	3.87	0.47
At macro level, Cloud Computing has been beneficial for the economy and environment	3.95	0.29
The Cloud Computing services have helped us improve, protect and grow the business as users carry out their duties with minimum capital	4.28	0.31
We have adopted cloud for end-user services, such as e-mail and office applications, for daily business activities	3.88	0.44

From the findings majority of the respondents agreed that the cloud computing services have helped us improve, protect and grow the business as users carry out their duties with minimum capital (mean =4.28, std dev = 0.31), cloud computing is a force that is reshaping it and powering innovation (mean = 4.03, std dev =0.85), at macro level, cloud computing has been beneficial for the economy and environment (mean =3.95, std dev =0.29) at micro level, the diffusion of cloud has been advantageous for our company (mean =3.88, std dev =0.44)and the most of the organisations had adopted cloud for end-user services, such as e-mail and office applications, for daily business activities (mean =3.87, std dev =0.47). The findings are in line with the findings by Senarathna et al., (2016) organizations in the

developing countries need to benefit from cloud technology in order to realize increased productivity and enhanced efficiency in businesses operations.

Table 4.25: Models that the organization has adopted for its Cloud computing operations

Model	Percent
Software-as-a Service (SaaS)	56%
Platform-as-a-Service (PaaS)	78%
Infrastructure-as-a-Service (IaaS)	40%
Hardware as a service (HaaS)	42%

Results show that majority of the respondents agreed that organization has adopted Platform-as-a-Service (PaaS) (78%) Software-as-a Service (SaaS) (56%) Infrastructure-as-a-Service (IaaS) (40%) and Hardware as a service (HaaS) (42%). The findings are in line with the findings by Omar *et al.*, 2015) Despite the many advantages that organizations may benefit from cloud computing, the adoption rate is however relatively low in some developing countries Armbrust et al,(2009) The introduction of a cloud computing technology has significantly impacted on organizational performance and has had a fundamental contribution to growth and competition amongst organisations.

4.8 Correlation

Table 4. 26: Correlations

		Adoption of cloud computing	Organizational factors	Environmental factors	Technological factors	Risk factors
Adoption of cloud computing	Correlation Coefficient	1.000	.553	.711	.672	-.644
	Sig. (1-tailed)	.	.476	.439	.335	.958
	N	249	249	249	249	249
Organizational factors	Correlation Coefficient	.553**	1.000	.142	.037	.001
	Sig. (1-tailed)	.001	.	.000	.003	.002
	N	249	249	249	249	249
Environmental factors	Correlation Coefficient	.711**	.142	1.000	.046	.008
	Sig. (1-tailed)	.003	.001	.	.000	.000
	N	249	249	249	249	249
Technological factors	Correlation Coefficient	.672**	-.037	.046	1.000	.124
	Sig. (1-tailed)	.002	.000	.001	.	.002
	N	249	249	249	249	249
Risk factors	Correlation Coefficient	-.644**	.001	.008	.124	1.000
	Sig. (1-tailed)	.000	.001	.003	.000	.
	N	249	249	249	249	249

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

On the correlation of the study variable, the researcher conducted a Pearson moment correlation. from the finding in the table above, the study found that there was strong positive correlation coefficient between adoption of cloud computing and organizational factors as shown by correlation factor of 0.553, this strong relationship was found to be statistically significant as the significant value was 0.001 which is less than 0.05, the study found strong positive correlation between adoption of cloud computing and environmental factors as shown by correlation coefficient of 0.711, the significant value was 0.003 which is less than

0.05, the study found strong positive correlation between adoption of cloud computing and technological factors as shown by correlation coefficient of 0.672, this too was also found to be significant at 0.002, and finally the study found strong negative correlation between adoption of cloud computing and risk factors as shown by correlation coefficient of 0.644 at 0.000 levels of confidence the findings concur with Franks and Curswoth, (2003) who found out that strong positive correlation between technological factors and Adoption of cloud computing. The findings further agree with Ayodele (2011) who found out that strong negative correlation between risk factors and Adoption of Information technology

4.4 Regression

Table 4.27: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874	.763	.746	.223

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the above table the value of R squared was 0.763 an indication that there was variation of 76.3 percent on adoption of cloud computing in software development companies in Kenya due to changes in organizational factors, environmental factors technological factors and risk factors. This shows that 76.3 percent changes in adoption of cloud computing in software development companies in Kenya could be attributed to organizational factors, environmental factors technological factors and risk factors.

Table 4.28: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1					
Regression	2.188	4	.547	4.841	.001 ^b
Residual	27.572	244	.113		

Total	29.76	248
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Critical value =2.50

From the ANOVA statics, the study established the regression model had a significance level of 0.1% which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (4.841>2.50) an indication that organizational factors, environmental factors, technological factors and risk factors All affects the adoption of cloud computing in software development companies in Kenya. The significance value was less than 0.05 indicating that the model was significant.

Table 4.29: Coefficients^a

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	1.342	1.023		1.312	.001
Organizational factors	.711	.118	.213	6.025	.002
1 Environmental factors	.841	.125	.207	6.728	.000
Technological factors	.622	.124	.206	5.016	.001
Risk factors	-.536	.114	-.211	-4.702	.000

From the data in the above table the established regression equation was

$$Y = 1.342 + 0.711X_1 + 0.841X_2 + 0.622 X_3 + (-0.536 X_4)$$

From the above regression equation it was revealed that holding organizational factors, environmental factors, technological factors and risk factors to a constant zero, the adoption of cloud computing in software development companies in Kenya would be at 1.342, a unit increase in organizational factors would enhance the adoption of cloud computing in software

development companies in Kenya by a factor of 0.711, a unit increase in environmental factors would enhance the adoption of cloud computing in software development companies in Kenya of 0.841, a unit increase in technological factors would enhance the adoption of cloud computing in software development companies in Kenya by a factor of 0.622 and that a unit increase in risk factors would negatively affect the adoption of cloud computing in software development companies in Kenya by a factor of - 0.536 and. all the variables were significant as their significant value was less than ($p < 0.05$).

4.8 Discussion of the Findings

In line with the first objective, the research investigated the extent to which organizational factors influenced the adoption of cloud computing technology within organizations. The organisational context was assessed under the sub measures top management, change of attitudes, and availability of right skills and competence. Descriptive results revealed that organizational related factors influenced the adoption of cloud computing technology within organizations to very great extent. company's top management in most of the organisation provided strong leadership in the process of adoption (mean = 4.25) it also created a conducive environment for adoption of new technologies (mean = 4.02,) and that the management creates a conducive environment for adoption of new technologies (mean =3.89, std dev = 0.38). The findings are in line with the findings by Alshamaila et al., (2013) Top management support is essential for providing the resources needed to adopt a new technology

However the findings of this research noted that in majority of the respondents disagreed top management team has nothing to do with the cloud computing adoption project (mean =1.55), that It is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations (mean =1.75) and that the management

approves sufficient financial investment for adoption of cloud computing (mean = 2.08). The findings are in support of the findings by Grandon & Pearson, (2014) that Lack of top management support would therefore, lead to the failure of implementation.

Relating to change of attitude and adoption of cloud computing, results obtained show that that using the cloud computing solutions improves user performance (mean = 4.26,) using cloud computing solutions promotes service stability (mean = 4.19), using the cloud computing solutions makes work easier (mean = 4.17) and using the cloud computing solutions is attractive (mean = 4.15) The findings are in support of the findings by Oliveira & Martins, (2010) adoption of cloud computing is highly depended on employee competence and the positive attitude towards technology. The study also revealed that using the cloud computing solutions is secure (mean = 3.98), using cloud computing is a symbol of being technologically receptive (mean = 3.95), using the cloud computing solutions is a way to increase employee confidence (mean = 3.85,). The findings are in line with the findings by Tweel, (2012) the attitude plays a significant role in the technology acceptance decisions.

On the influence of skills on adoption of cloud computing, the findings show that learning to operate the system is easy for most of the employees (mean = 4.16), employees find the system to be flexible to interact with (mean = 4.10,) human resources provided the knowledge and skills to implement cloud computing-related it applications (mean = 4.10) and that employees find it easy to get the system to do what they want it to do (mean = 3.98). The findings are in line with the study findings by Low, Chen, & Wu, (2011) human resources provide the necessary skills, experience and knowledge base required to implement and integrate a new cloud computing service. However the findings show that it's not easy for the employees to become skillful at using the system (mean = 2.18,) and that employee

interaction with the system is not very clear and understandable (mean = 2.20.) The findings concurs with the study findings by Wang et al., (2010) adoption of new IT innovations is depended on readiness of an organization, which includes the technological infrastructure and IT human resources.

In line with the second objective, the study investigated the extent to which environmental factors influenced the adoption of cloud computing technology within organizations. Results obtained show that environmental factors influenced the adoption of cloud computing technology within organizations to great extent. having the system is a status symbol in within the organization (mean = 4.35), competitors in the industry that use the system have more prestige than those who do not, (mean = 4.28) the system has given the company a competitive advantage (mean = 3.97,) competitors in the industry who use the system have a high profile (mean = 3.90,) and that research and development driven by ICT innovation is good for the industry (mean = 3.88). The findings are in line with the findings by Laforet (2011), Low, Chen and Wu (2011) suggest the pressure from both competitors and trading partners on the business to stay current and adopt new technologies.

The findings further shoe that that industry players believe use of innovative systems bring competitive advantages (mean = 4.48,) the organization relied on the experience and skills of trading partners when looking to adopt cloud services (mean = 4.26,) trading partners relate to the cloud service providers (mean = 3.99,) and the system allows for reliable interaction with trade partners (mean = 3.78,). The findings are in support of the findings by Gutierrez, Boukrami, & Lumsden, (2015) This competitive pressure has resulted in many organizations outsourcing their IT infrastructure to not only improve effectiveness but also to enable lower prices to be offered, as an attempt to increase their market share

The research demined the extent to which technological factors influence the adoption of cloud computing in the organization. Descriptive results findings show that technological factors influenced the adoption of cloud computing technology within organizations to very great extent. Using the system enables employees to accomplish tasks more quickly (mean = 4.36,), the technology has created better customer communications (mean = 4.22, using the system improves employee job performance (mean = 3.98), adoption of the technology has improved efficiency in inter- organization coordination (mean = 3.95) and that the technology has enhanced access to market information mobilization (mean = 3.66). The findings concurs with the study findings by Hassan and Ismail (2015) discovered that cloud computing leads to strategic (e.g. helping organizations to create competitive advantage and establishing useful links with other organizations) and informational (e.g. easier access to information and improve information accuracy) benefits.

The findings also show that agreed that learning to use the cloud computing system is easy for the employees (mean = 4.46,) however responds disagree that when the firm uses cloud computing, is find it difficult to integrate the existing work with the cloud-based services (mean = 1.44), it takes too long to learn how to use the cloud computing to make it worth the effort(mean = 1.37,) in general cloud computing is very complex to use(mean = 1.35std dev =0.35) and that the use of cloud computing is complicated, it is difficult to understand what is going on(mean =4.17) The findings concurs with the study findings by Oliveira & Martins, (2010) The complexity of integrating different Cloud services with the existing infrastructure is a real challenge to many organisations.

Further the study findings show that cloud computing services is compatible with the business routine works (mean = 4.46), cloud computing fits well into the company's work style (mean =4.17) cloud services are compatible with existing technological architecture of

the company (mean = 4.14,) and that there is no difficulty in exporting applications/ data to cloud services (mean = 3.95). The findings concur with the study findings by Peng, Xiong, & Yang, (2012). Increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions

In line with the fourth objective, this research investigated the extent to which risk factors influenced the adoption of cloud computing technology within organizations. Descriptive findings show that risk factors influenced the adoption of cloud computing technology within organizations to very great extent. There is a risk of inability of organisations to move their data or programs away from a cloud computing service provider (mean = 4.48,) customers are vulnerable to price increases (mean =4.25) there is a risk of providers going out of business (mean =3.88) and that loss of governance is a top security risk (mean =3.85). The findings are in line with the findings by Armbrust, (2010) policies and procedures related to cloud computing services should determine the procedures related information to management approaches that are acceptable and auditable from both client and organizational perspectives.

On the influence of technical risks and adoption of cloud computing, the findings show that that virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously (mean =4.35) there is the risk of unavailability of service (mean =4.18) and that availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous (mean = 3.73). The findings concurs with the findings by Armbrust (2010) believes the problem with virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously.

Relating to legal risk and adoption of cloud computing, research findings show that computer systems may be confiscated by law enforcement agencies or through civil suits (mean = 4.28) some businesses may not like the ability of a country to get access to their data via the court system (mean = 4.05) compliance challenges (mean =4.05,) and that changes of jurisdiction (mean =3.95). The findings are in line with the findings by Betcher, (2010) the centralization of storage and shared tenancy of physical hardware imparts more risk of unwanted data disclosure to cloud computing clients

The study also noted that cloud computing services have helped us improve, protect and grow the business as users carry out their duties with minimum capital (mean =4.28), cloud computing is a force that is reshaping it and powering innovation (mean = 4.03), at macro level, cloud computing has been beneficial for the economy and environment (mean =3.95) at micro level, the diffusion of cloud has been advantageous for our company (mean =3.88,)and the most of the organisations had adopted cloud for end-user services, such as e-mail and office applications, for daily business activities (mean =3.87). The findings concurs with the findings by Senarathna et al., (2016) organizations in the developing countries need to benefit from cloud technology in order to realize increased productivity and enhanced efficiency in businesses operations. most of the organization has adopted Platform-as-a-Service (PaaS) (78%) Software-as-a Service (SaaS) (56%) Infrastructure-as-a-Service (IaaS) (40%) and Hardware as a service (HaaS) (42%). The findings are in line with the findings by Omar *et al.*, 2015) Despite the many advantages that organizations may benefit from cloud computing, the adoption rate is however relatively low in some developing countries Armbrust et al,(2009) The introduction of a cloud computing technology has significantly impacted on organizational performance and has had a fundamental contribution to growth and competition amongst organisations.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Overview

This chapter presents the summary of key data findings, the conclusion drawn from the findings and recommendations proposed by the study. The conclusions drawn and recommendations proposed focused on addressing the objective of the study. The study sought to establish the influence of organizational factors in the adoption of cloud computing in software development companies in Kenya, to assess the environmental factors influencing the adoption of cloud computing in software development companies in Kenya, to determine the technological factors influencing the adoption of cloud computing in software development companies in Kenya and to evaluate the risk factors influencing the adoption of cloud computing in software development companies in Kenya

5.2 Summary of the Findings

5.2.1 Organizational Factors and Adoption of Cloud Computing Technology

In line with the first objective, the research investigated the extent to which organizational factors influenced the adoption of cloud computing technology within organizations. The organisational context was assessed under the sub measures top management, change of attitudes, and availability of right skills and competence. Descriptive results revealed that organizational related factors influenced the adoption of cloud computing technology within organizations to very great extent. company's top management in most of the organizations provided strong leadership in the process of adoption, it also created a conducive environment for adoption of new technologies and that the management creates a conducive environment for adoption of new technologies (mean =3.89, std dev = 0.38). The findings are

in line with the findings by Alshamaila et al., (2013) Top management support is essential for providing the resources needed to adopt a new technology

However, the the study also found out the concerns of the respondents with respect to adopting cloud computing. Majority of the respondents disagreed top management team has nothing to do with the cloud computing adoption project, that it is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations and that the management approves sufficient financial investment for adoption of cloud computing. The findings are in support of the findings by Grandon & Pearson, (2014). That lack of top management support would therefore, lead to the failure of implementation.

Relating to change of attitude and adoption of cloud computing, results obtained show that that using the cloud computing solutions improves user performance, using cloud computing solutions promotes service stability, using the cloud computing solutions makes work easier and using the cloud computing solutions is attractive. The findings are in support of the findings by Oliveira & Martins, (2010) adoption of cloud computing is highly depended on employee competence and the positive attitude towards technology. The study also revealed that using the cloud computing solutions is secure, using cloud computing is a symbol of being technologically receptive, using the cloud computing solutions is a way to increase employee confidence. The findings are in line with the findings by Tweel, (2012) the attitude plays a significant role in the technology acceptance decisions

On the influence of skills on adoption of cloud computing, the findings show that learning to operate the system is easy for most of the employees; employees find the system to be

flexible to interact with. Human resources provided the knowledge and skills to implement cloud computing-related applications and employees find it easy to get the system to do what they want it to do. The findings are in line with the study findings by Low, Chen, & Wu, (2011) human resources provide the necessary skills, experience and knowledge base required to implement and integrate a new cloud computing service.

However, the findings show that it's not easy for the employees to become skillful at using the system and that employee interaction with the system is not very clear and understandable. The findings concurs with the study findings by Wang et al., (2010) adoption of new IT innovations is depended on readiness of an organization, which includes the technological infrastructure and IT human resources.

5.2.2 Environmental Factors Influencing the Adoption of Cloud Computing

In line with the second objective, the study investigated the extent to which environmental factors influenced the adoption of cloud computing technology within organizations. Results obtained show that environmental factors influenced the adoption of cloud computing technology within organizations to great extent. having the system is a status symbol within the organization, competitors in the industry that use the system have more prestige than those who do not, the system has given the company a competitive advantage, competitors in the industry who use the system have a high profile and that research and development driven by ICT innovation is good for the industry. The findings are in line with the findings by Laforet (2011), Low, Chen and Wu (2011) suggest the pressure from both competitors and trading partners on the business to stay current and adopt new technologies.

The findings further show that that industry players believe use of innovative systems brings competitive advantages, most organizations relied on the experience and skills of trading

partners when looking to adopt cloud services, trading partners relate to the cloud service providers and the system allows for reliable interaction with trade partners. The findings are in support of the findings by Gutierrez et al. (2015). This competitive pressure has resulted in many organizations outsourcing their IT infrastructure to not only improve effectiveness but also to enable lower prices to be offered, as an attempt to increase their market share

5.2.3 Technological Factors Influencing the Adoption of Cloud Computing

The research demined the extent to which technological factors influence the adoption of cloud computing in the organization. Descriptive results show that technological factors influenced the adoption of cloud computing technology within organizations to very great extent. Using the system enables employees to accomplish tasks more quickly, the technology has created better customer communications, using the system improves employee job performance, adoption of the technology has improved efficiency in inter-organization coordination and that the technology has enhanced access to market information mobilization. The findings concurs with the study findings by Hassan and Ismail (2015) discovered that cloud computing leads to be strategic (e.g. helping organizations to create competitive advantage and establishing useful links with other organizations) and informational (e.g. easier access to information and improve information accuracy) benefits

The findings also show that learning to use the cloud computing system is easy for the employees (mean = 4.46) however responds show that when the firm uses cloud computing, it is very difficult to integrate the existing work with the cloud-based services (mean = 1.44), it takes too long to learn how to use the cloud computing services to make it worth the effort, in general cloud computing is very complex to use, and that the use of cloud computing is complicated, it is difficult to understand what is going on. The findings concurs with the

study findings by Oliveira & Martins, (2010) The complexity of integrating different Cloud services with the existing infrastructure is a real challenge to many organizations.

Further the study findings show that cloud computing services are compatible with the business routine works, cloud computing fits well into the company's work style, cloud services are compatible with existing technological architecture of the company and that there is no difficulty in exporting applications/ data to cloud services. The findings concur with the study findings by Peng, Xiong, & Yang, (2012). Increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions

5.2.5 Risk Factors Influencing the Adoption of Cloud Computing

Despite the perceived benefits of cloud computing Cloud computing adoption is faced with a number of risks, these risks are: security risks, legal and compliance risks and organizational risks. Linked to all these risks is the issue of trust between clients and vendors, because cloud computing calls for organizations to trust vendors with the management of their IT resources and data. Descriptive findings show that risk factors influenced the adoption of cloud computing technology within organizations to very great extent. There is a risk of inability of organisations to move their data or programs away from a cloud computing service provider, customers are vulnerable to price increases, there is a risk of providers going out of business, and that loss of governance is a concern for most organizations. The findings are in line with the findings by Armbrust, (2010) policies and procedures related to cloud computing services should determine the procedures related to information management approaches that are acceptable and auditable from both client and organizational perspectives.

On the influence of technical risks and adoption of cloud computing, the findings show that that virtual machines and operating systems do not provide a programmatic way to ensure all threads of a program run simultaneously, there is the risk of unavailability of services and that availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous. The findings are in line with the findings by Armbrust (2010) believes the problem with virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously.

Relating to legal risk and adoption of cloud computing, research findings show that computer systems may be confiscated by law enforcement agencies or through civil suits some businesses may not like the ability of a country to get access to their data via the court system. The findings are in line with the findings by Betcher, (2010) the centralization of storage and shared tenancy of physical hardware imparts more risk of unwanted data disclosure to cloud computing clients

The study also noted that cloud computing services have helped us improve, protect and grow the business as users carry out their duties with minimum capital, cloud computing is a force that is reshaping IT and powering innovation, at macro level, cloud computing has been beneficial for the economy and environment, at micro level, the diffusion of cloud has been advantageous for most companies and the most of the organisations have adopted cloud for end-user services, such as e-mail and office applications, for daily business. The findings are in line with the findings by Senarathna et al., (2016) organizations in the developing countries need to benefit from cloud technology in order to realize increased productivity and enhanced efficiency in businesses operations. Most organizations have adopted Platform-as-a-Service

(PaaS) (78%) Software-as-a Service (SaaS) (56%) Infrastructure-as-a-Service (IaaS) (40%) and Hardware as a service (HaaS) (42%). The findings are in line with the findings by Omar *et al.*, (2015) Despite the many advantages that organizations may benefit from cloud computing, the adoption rate is however relatively low in some developing countries Armbrust et al, (2009) The introduction of a cloud computing technology has significantly impacted organizational performance and has had a fundamental contribution to growth and competition amongst organisations.

5.3 Conclusions

5.3.1 Organizational related factors

Based on the study findings, the study concludes that organizational related factors (top management commitment, worker attitudes and right skills) pose significant influence on adoption of cloud computing technology within business firms. The top management team has a big task in steering the cloud computing adoption project, adoption of cloud computing is highly depended on employee competence and the positive attitude towards technology and that human resources should provide the necessary skills, experience and knowledge base required to implement and integrate a new cloud computing service. However, the study concludes that it's not easy for the employees become skillful at using the system and that employee interaction with the system is not very clear and understandable

5.3.2 Environmental factors influenced

The study concludes that environmental related factors such as industry competition and trading partner pressure influenced the adoption of cloud computing technology within organizations. The study concludes that competitors in the industry that use the system have more prestige than those who do not, the system allows for reliable interaction with trade partner and that this competitive pressure has resulted in many organizations outsourcing

their IT infrastructure to not only improve effectiveness but also to enable lower prices to be offered, as an attempt to increase their market share

5.3.3 Technological factors

The study concludes that technological factors such as perceived benefits, complexity and compatibility influenced the adoption of cloud computing technology within organizations. Cloud computing leads to strategic advantages in the organization e.g. helping organizations to create competitive advantage and establishing useful links with other organizations and informational e.g. easier access to information and improve information accuracy. The complexity of integrating different Cloud services with the existing infrastructure is a real challenge to many organizations and that increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions

5.3.4 Risk Factors Influencing the Adoption of Cloud Computing

The Study concludes that policy and organisational risks, technical risks and legal risk influenced the adoption of cloud computing technology within organizations. The study concludes that there is a risk of vendor-lock in where it becomes very difficult for an organization to switch between one cloud computing service provider to another, there is the risk of unavailability of service and that availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous and that centralization of storage and shared tenancy of physical hardware imparts more risk of unwanted data disclosure to cloud computing clients.

5.4 Recommendations

In order to promote cloud computing, service providers should provide successful case studies and statistics in order to help companies realize the potential benefits, to achieve

agreement on an industry standard perhaps is the priority in the sector. The standardization will reduce uncertainties and hence encourage adoptions. Trust being a critical factor in cloud computing adoption, it has led to the emergence of mitigation strategies. Risk mitigation strategies include audit controls, policies and procedures, service Risks and service level arrangement for similar type risks. Like other information technology adoptions in businesses there are issues other than the technology that need to be taken into account for example compatibility of the technology with the organizational policy, structure, value and most importantly products and services. Data security is an essential factor that should be considered during any cloud computing implementation, with the current security and privacy issues in the cloud, this factor must be considered carefully, companies will have to assess the necessity of cloud computing to their business first and then its compatibility.

5.5 Recommendations for Further Research

The study focused on factors that influence cloud computing adoption in the software development companies in Kenya. Further research on cloud computing should focus on investigating the sustainability of cloud adoption in Kenya. There is also need to investigate the effectiveness of cloud computing adoption in creating comparative businesses advantage. Further research also needs to identify the issues faced by organizations when adopting the cloud. Since cloud computing is still new to both academia and commerce the outcome of these studies will help academics and practitioners alike assess the actual uses of the cloud in practice and the business benefits and risks of adopting it.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Please answer all the questions by ticking on the spaces provided or use the spaces left for you.

PART A: Demographic Information

1. Gender

Male []

Female []

2. Age:

Less than 30 Years []

31-40 Years []

41-50 years []

More than 50 Years []

3. Highest level of education

Secondary level []

College level []

University level []

Post graduate level []

4. How long have you worked in this organization?

1- 5 years [] 6 - 10years []

11 - 15 [] Above 16 years []

5. Kindly indicate the position that you hold in the department.

Manager [] Unit Head [] Supervisor []

Assistant Manager [] Technical personnel []

Departmental Head []

Any other (specify).....

6. Has your company adopted cloud computing?

Yes [] No []

7. If yes for how long has your organization used cloud computing?

1-3 years [] 4-6 years []

7-10 years [] above 10 years []

PART B: Organizational Factors Influencing the Adoption of Cloud Computing

8. To what extent do organizational factors influence the adoption of cloud computing your organization?

To a very low extent [] To a low extent []

To a moderate extent [] To a great extent []

To a very great extent []

9. Kindly indicate your level of agreement to the statements below relating to organizational factors influencing the adoption of cloud computing. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements	1	2	3	4	5
Top management support					
The company's top management provides strong leadership and engages in the process of adoption					
Top management is willing to take risks involved in					

the adoption of cloud computing					
The top management team has nothing to do with the cloud computing adoption project					
It is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations					
The management approves sufficient financial investment for adoption of cloud computing					
The management creates a conducive environment for adoption of new technologies					
Change Attitude					
Using the Cloud computing solutions is attractive					
Using the Cloud computing solutions is a way to increase employee confidence.					
Using the Cloud computing solutions makes work easier					
Using cloud computing is a symbol of being technologically receptive					
Using cloud computing solutions promotes service stability					
Using the Cloud computing solutions is secure.					
Using the Cloud computing solutions improves user performance.					
Skills					

Learning to operate the system is easy for me					
I find it easy to get the system to do what I want it to do					
My interaction with the system is clear and understandable					
I find the system to be flexible to interact with					
IT human resources provide the knowledge and skills to implement cloud computing-related IT applications					
It's easy for me to become skillful at using the system					

10. In your own view, are there any other organizational factors that influence the adoption of cloud computing your organization?

.....

.....

.....

PART C: Environmental Factors Influencing the Adoption of Cloud Computing

11. To what extent do environmental factors influence the adoption of cloud computing in your organization?

To a very low extent [] To a low extent []

To a moderate extent [] To a great extent []

To a very great extent []

12. Kindly indicate your level of agreement to the statements below relating to environmental factors influencing the adoption of cloud computing. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements	1	2	3	4	5
Competition					
Competitors in the industry that use the system have more prestige than those who do not					
Competitors in the industry who use the system have a high profile					
Having the system is a status symbol in my organization					
The system has given the company a competitive advantage					
Research and development driven by ICT innovation is good for the industry					
Trading Partner Pressure					
The system allows for reliable interaction with trade partners					
Industry players believe use of innovative systems bring competitive advantages					
Trading partners relate to the cloud service providers					
We rely on the experience and skills of trading					

partners when looking to adopt cloud services					
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13. Are there any other environmental factors that influence the adoption of cloud computing your organization?

.....

.....

.....

PART D: Technological Factors Influencing the Adoption of Cloud Computing

14. To what extent do technological factors influence the adoption of cloud computing in your organization?

- To a very low extent [] To a low extent []
- To a moderate extent [] To a great extent []
- To a very great extent []

15. Kindly indicate your level of agreement to the statements below relating to technological factors influencing the adoption of cloud computing. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements	1	2	3	4	5
Perceived Benefits					
Using the system in my job enables me to accomplish tasks more quickly.					
Using the system improves my job performance					
Cloud computing has increased business					

communications speed					
Adoption of the technology has improved efficiency in inter- organization coordination					
The technology has created better customer communications					
The technology has enhanced access to market information mobilization					
Complexity					
It takes too long to learn how to use the cloud computing to make it worth the effort					
Learning to use the cloud computing system is easy for me					
When we use cloud computing, we find it difficult to integrate our existing work with the cloud-based services					
In general cloud computing is very complex to use					
The use of cloud computing is complicated, it is difficult to understand what is going on					
Compatibility					
Cloud computing fits well into our company's work style					
Cloud computing services is compatible with our routine business works					
Cloud services are compatible with existing					

technological architecture of my company					
There is no difficulty in exporting applications/ data to cloud services					

16. In your own opinion, what other technological factors influence the adoption of cloud computing your organization?

.....

.....

.....

PART E: Risk Factors Influencing the Adoption of Cloud Computing

17. To what extent do risk factors influence the adoption of cloud computing in your organization?

- To a very low extent [] To a low extent []
- To a moderate extent [] To a great extent []
- To a very great extent []

18. Kindly indicate your level of agreement to the statements below relating to risk factors influencing the adoption of cloud computing. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements	1	2	3	4	5
Policy and Organizational Risks					
There is a risk of inability of us to move our data or programs away from a cloud computing service provider					
Customers are vulnerable to price increases					
There is a risk of providers going out of business					
Loss of governance is a top security risk					
Technical Risks					
virtual machines and operating systems is that they do not provide a programmatic way to ensure all threads of a program run simultaneously					
There is the risk of unavailability of Service					
Availability, scalability and performance are conflicting goals as the requirements for each of these individual needs are rigorous					
Legal Risks					
Computer systems may be confiscated by law enforcement agencies or through civil suits					
Some businesses may not like the ability of a country to get access to their data via the court system					
Compliance Challenges					
Changes of jurisdiction					

19. In your own view, are there any other risk factors that influence the adoption of cloud computing your organization?

.....

.....

.....

PART E: Adoption of Cloud Computing

20. Kindly indicate your level of agreement to the statements below relating to adoption of cloud computing in your organization. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements	1	2	3	4	5
Cloud Computing is a force that is reshaping IT and powering innovation					
At micro level, the diffusion of cloud has been advantageous for our company					
At macro level, Cloud Computing has been beneficial for the economy and environment					
The Cloud Computing services have helped us improve, protect and grow the business as users carry out their duties with minimum capital					
We have adopted cloud for end-user services, such					

as e-mail and office applications, for daily business activities					
--	--	--	--	--	--

21. Kindly select all the models that your organization has adopted for its Cloud Computing operations

Model	
Software-as-a Service (SaaS)	
Platform-as-a-Service (PaaS)	
Infrastructure-as-a-Service (IaaS)	
Hardware as a service (HaaS)	

Thanks for your Participation