CONTEXT, USER PERCEPTION AND ADOPTION LEVEL OF CLOUD COMPUTING AMONG SMALL AND MEDIUM ENTERPRISES IN NAIROBI COUNTY, KENYA

BY

EMILY MWORIA CHEMJOR

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY DEGREE IN BUSINESS MANAGEMENT IN THE DEPARTMENT OF MANAGEMENT SCIENCE

SCHOOL OF BUSINESS AND ECONOMICS,

MOI UNIVERSITY

2018

DECLARATION

Declaration by the Student

This thesis is my original work and has not been presented for a degree in any other University. No part of this thesis may be reproduced without the prior written permission of the author and/or Moi University.

……………………………… ………………………………

EMILY MWORIA CHEMJOR DATE

SBE/DPHIL/BM/001/13

Declaration by Supervisors

This thesis has been submitted with our approval as University supervisors.

……………………………… ………………………………

PROF. LOICE MARU DATE

Department of Management Science,

School of Business and Economics,

Moi University,

Eldoret.

……………………………… ……………………………

DR. CHARLES LAGAT DATE

Department of Marketing Management,

School of Business and Economics,

Moi University,

Eldoret.

DEDICATION

I dedicate this thesis to my dear children, Kevin and Joy. Also I dedicate this work to my loving father Julius Mworia, for tirelessly and continuously instilling the value of education in me. For courageously, battling with cancer keeping the faith that surely one day you shall witness this auspicious moment. I Salute you Dad.

To all those in search of knowledge and especially are concern with and appreciate technology as a main driver of the economy. To the Almighty God to whom be all Glory, all Honour and all Praise!

ACKNOWLEDGEMENTS

I express my appreciation to all who participated in the study. I owe special gratitude to all who have in any way contributed to the successful completion of this thesis. Further, I thank my supervisors Prof. Loice Maru and Dr. Charles Lagat for guiding, helping and supporting me during the writing of this thesis.

Lastly, I thank all my lecturers from the School of Business and Economics of Moi University who have transformed me. Special thanks to Dr. Ronald Bonuke for his invaluable support. I also acknowledge my D. Phil course mates for the diverse experiences we shared and encouragement to press on. In addition, I thank Maina T. Sammy for his editorial contribution.

Finally, I wish to give special appreciations to my family, husband Brian Chemjor, son Kevin and daughter Joy. I thank them for their unrelenting support throughout my academic journey. Many thanks equally go to all other family members especially my parents Julius Mworia and Zipporah Mworia, my sisters, brothers and friends out there who contributed directly or indirectly towards the accomplishment of this thesis.

ABSTRACT

Cloud computing offers a new way for strategic adaptation to change in business and supports efficiency in marketing of products by offering ready-to consume cloud-based Information Technology (IT) services. A review of existing studies revealed that scholars share divergent views on adoption of cloud computing. This study sought to establish the mediating effect of user perception on the relationship between Technological, Organizational and Environmental (TOE) contexts and adoption level of cloud computing by small and medium enterprises in Nairobi city, Kenya. The main objective of the study was to examine the effect of context user perception on adoption of cloud computing among small and medium enterprises in Nairobi County, Kenya. The specific objectives of the study were to determine the; relationship between technology context, organisational context, environmental context and cloud computing adoption, and the mediating effect of user perception on the relationship between technology context, organisational context, environmental context and cloud computing adoption. The Innovation Diffusion Theory and the theory of planned behaviour provided a theoretical basis for the study. The study adopted explanatory research design. It employed cluster sampling to identify participants from the target population of 82,821 registered Small Medium Enterprises in various industries within Nairobi County. Random sampling was used to select a manager, an IT manager or entrepreneur from each small medium enterprise who comprised as the main respondents for this study. A structured questionnaire was used to collect data with items anchored on a five-point Likert scale. Data was analysed using Multiple Regression Model, descriptive and inferential analysis. Construct validity and reliability was achieved by calculating the Cronbach's alpha. The study found that Technological, Organizational, Environmental contexts (TOE) mediated by user perception comprised the key determinants of cloud computing adoption among SMEs. The study further established that technological context had a positive and significant effect on the level of adoption of cloud computing ($\beta 1= 0.414$, $\rho<0.05$), and organization context ($\beta 2= 0.262$, $\rho<0.05$) had a positive and significant effect on the level of adoption of cloud computing. However, environmental context had no significant effect on the level of adoption of cloud computing ($\beta 3= -0.033$, $\rho>0.05$). In addition, the study indicated R^2 with a value 0.418.Therefore, (TOE) explained 41.8% variation of cloud computing adoption. User perception significantly and partially mediated the relationship between technology context and cloud computing adoption (z-value 3.588, p=0.0003). Further testing indicated a significant partial mediation of user perception on the relationship between organization context and cloud computing adoption (z=2.267, p=0.0234). Similarly, there was a significant partial mediation of user perception on the relationship between environmental context and adoption of cloud computing (z=4.500, p=0.000. The study concludes that SMEs are more inclined to adopt a technology perceived to be useful and easy to use. The new knowledge that emerged from this study is the mediating effect of user perception on the determinants of cloud computing adoption. Therefore, study contributes to theory by developing a model that relates the user perception of TOE context and cloud computing adoption. The main implication is that the study provides valuable reference for researchers, service providers in formulating better strategies, and enabling SME managers to effectively deliver services on cloud computing. The study recommends that small medium enterprises should undertake a deliberate policy to adopt innovations perceived to be useful and easy to use and are cost effective to enhance them to compete at a level playing field with the large organisations.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

ICT	Information Communication Technology
IDT	Innovation Diffusion Theory
TPB	Theory of Planned Behaviour
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
SMEs	Small and Medium Enterprises
CEOs	Chief Executive Officers
TAM	Technological Acceptance Model
TOE	Technological-Organizational-Environmental
ERP	Enterprise Resource Planning
IT	Information Technology
IS	Information Systems
Saas	Software as a Service
Iaas	Infrastructure as a Service
Paas	Platform as a Service

OPERATIONAL DEFINITION OF TERMS

Adoption: refers to the action of a potential user when he or she makes a decision to take up or reject an innovation based on beliefs that they form about the innovation (Agarwal, 2000).

Cloud Computing: refer collection of disembody services accessible from anywhere using any mobile device with an internet-based connection. “Cloud computing” refers to the sharing of web infrastructure to deal with Internet data storage, scalability and computation (Kambil, 2009).

Community cloud: refers to a cloud infrastructure that collectively supports organizations that have a shared affinity, concerns, or purpose (Carroll *et al*., 2010).

Diffusion is the process of innovation communication via channels to members of social systems over time (Rogers, 2003).

Hybrid cloud: means a cloud infrastructure comprising two or more clouds (private, community, or public) that is bound together by standardized or proprietary technology that enables data and application portability (Mell and Grance, 2011).

Information technology: is the management of computer-based information systems relating to software applications and computer hardware used to convert, store, protect, process, retrieve with security, or transmit any information (Information Technology Association of America, 2009).

Infrastructure as a Service (IaaS): refers to infrastructure as a service which is the delivery of hardware infrastructure (servers, storage, and so forth) as a service, accessible over the internet and hosted by the cloud provider (Bhardwaj and Jain, 2010).

Platform as a Service (PaaS): Platform as a service is a cloud delivery model which provides infrastructure and platform in the cloud for application developers to build, deploy and run applications on the Internet. To access and make use of these applications, users are billed on a pay-per-use basis (Boniface *et al*., 2010).

Private cloud: Private clouds are largely designed and deployed within the enterprise to be used by internal users only (Ramgovind *et al*., 2010).

Public cloud: Public cloud consists of resources that are shared among cloud subscribers and the shared resources are accessible over the internet (Carroll, Van der Merwe and Kotze, 2010).

Small and medium enterprises (SMEs): SMEs are business firms with 10 to 99 employees (GOK, 2005).

Software as a Service (SaaS): Software as a service is the delivery of software such as ERP, Customer Relationship Management (CRM), E-mail and Collaboration Software, among others, over the Internet as a service (Carroll, Van der Merwe and Kotze, 2010; Dai, 2009).

Technological-Environmental-Organisational Context (TOE): TOE framework is an organization-level theory that explains that three different elements of a firm's context influence adoption decisions. These three elements are the technological context, the organizational context, and the environmental context. All three are posited to influence technological innovation. (Tornatzky and Fleischer's, 1990)

User Perception: Influence to a great extent of the rate and the level of technology adoption (Van Akkeren and Cavaye, 1999).

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the background to the study, statement of the problem, general and specific objectives, and research hypothesis. It also describes the significance and scope of the study.

1.2 Background of the Study

Due to rapid changes in contemporary business environment, competition has reached an extremely high point, rendering some products and skills obsolete (Pauly, 2011). Bandyopadhyay *et al*. (2009) note that cloud computing is an online service model by which hardware and software services are made available to consumers on request upon their needs and pay-per-use without incurring high expenses. It is an all-inclusive group of services that offer infrastructure assets using web media and information storage on an intermediary server. It comprises three scopes known as Software level service, Platform level service and Infrastructure service (Fox, 2009).

Small and medium enterprises are the "lifeblood of any vibrant economy" (Popli and Rao, 2009). They are the silent drivers of many developing nations' economies. Innovation is key to any business growth in the current turbulent times. SMEs strive to stand out in increasingly competitive markets; they also struggle to achieve business growth and sustainability. Information and Communication Technology (ICT) solutions have the ability to enhance SMEs' competitiveness. They can contribute towards efficiency and effectiveness for business sustainability. ICT empowers SMEs to compete with large firms (Swash, 1998; Bayo-Moriones and Lera-Lopez, 2007). However, studies have found that SMEs mainly use the traditional

ICT solutions to stay competitive (Bayo-Moriones and Lera-Lopez, 2007). Unfortunately, traditional ICT have several challenges, such as lack of capital, skilled staff and complex management which negatively affect SMEs. In this regard, Think strategies (2002) observes that the application of ICTs requires firms to hire specialist staff to implement and maintain equipment and services.

The main problem faced by the SMEs when it comes to traditional enterprise resource planning execution is that their necessities are far much less, exceeding specification of product offered and especially the cost facet. However, there is need for SMEs to change the way they conduct business by adopting cloud computing services. Cloud computing is a new paradigm shift in which including computing resource services, soft applications of distributed systems and data storage computing world is quickly transforming toward a system of deriving relative applications for millions to extend as a service rather than to run on their personal computers.

Cloud computing is a massive scalable IT-related system that is provided as an internet-based service to external customers (Gartner, 2009). Erdogmus (2009) considers cloud computing a pool of highly scalable abstracted infrastructure capable of hosting end-customer applications that are billed by consumption. IT capabilities are referred to as real-time over-the-Internet services provisioned, delivered and consumed on request (Sultan, 2010). On its part, cloud computing is an enclosed business model that employs new technologies, such as virtualization, applications (Software as a Service [SaaS]), platform (Platform as a Service [PaaS]), and hardware (Infrastructure as a Service [IaaS]) (Goscinski and Brock, 2010).

Organizations are therefore under pressure to find and implement new strategic ideas at an even faster pace to gain competitive edge within the global market. In an attempt to realize business agility and enhance competitiveness, businesses need to streamline output to reasonable costs, improve on process innovation and assimilate new technologies. IT departments are persistently under pressure to offer solutions that are more flexible, efficient and cost-effective to speed up marketing activities. A flexible IT infrastructure can remove some of the barriers to global competition and allow smaller businesses to be efficient and build their competitive edge. Cloud computing has the potential to majorly eradicate inefficiencies and make a dynamic contribution to the growth and competitiveness of organisations. Mutula and Brakel (2006) note that it is comprehensively accepted that in both developed and developing countries, SMEs are the pillar for economic growth and job creation.

Researchers argue that SMEs play a major role in poverty alleviation in developing countries and also stimulate domestic and regional economic growth in national and regional economies (Golding *et al*., 2008). They help to diversify economic activities and are flexible to changing market demands (Ongori, 2009). SMEs must, therefore, be made more competitive, innovative and generate growth. SMEs play a role of increasing importance in the economy, especially in respect to their contribution to job creation, as well as promote social-economic growth wherever they are located (Hartigan, 2005). Therefore, SMEs need to be stimulated into adopting new technologies and to employ competitive innovations to develop and market their products and services.

Given the right business environment, small medium enterprises have the potential to prosper, form a skilled work force and drive economic growth. In this way, small and medium-sized enterprises (SMEs) have the potential to play a vital role in the economy by nurturing competitiveness and employment. However, SMEs are often challenged by problems of access to start-up capital (European Commission, 2005; Njama, 2013; Ebiringa, 2011). Such challenges restrict their access to new technologies or innovations.

By adopting cloud computing service models, SMEs can avoid large up-front costs on IT resources for their production needs and business model of innovation. In healthcare industry, Chatman (2010) and Kuo (2011) have shown that cloud computing is dramatically changing the implementation and adoption of health care information technology, especially in the development of electronic health records. NEC and Fujitsu recommended cloud computing solutions for hospitals in Japan (Japan-NEC, 2012).

Additionally, Microsoft Europe also applies cloud computing technology to improve the quality of patient care. This has led to reduced costs in Italy's largest paediatric research and treatment centre (Lisa, 2011). In theory, it is possible for the developing economies to catch up with the West as cloud computing allows them to have access to the same IT infrastructure, data centres and applications as developed nations. For instance, cloud computing could help them develop world-based researchers to access to data required for research as well as telecommunications and computing infrastructures (Werth, 2009). Moreover, cloud computing has also been found to reduce infrastructure costs and levels the playing field for small and medium-sized enterprises (SMEs) (Irani, 2008).

Unlike client-based computing, which requires installation and configuration of software and regular updates with each new release as well as revisions of other programs with every update, software on the cloud is easier to install, maintain and update (Parikh 2009; Gruman and Knorr, 2008). This benefit is especially important for users in the rural areas who have less IT training (McFedries, 2008).

Arguably, cloud services provide an adopter with the flexibility of scaling up the use if the demand increases (Grossman, 2009). This approach requires a low upfront investment and is thus ideal for SMEs. Apart from cloud overcoming barriers related to the poor broadband deployment in developing economies (Hillesley, 2008). Cloud computing allows a business model in which third parties can provide a cost-effective security for SMEs (Grossman, 2009).

However, little research has been conducted to show how these theoretical postulations about the benefits of cloud computing can translate into practice in developing countries. Prior research reveal that limited studies have taken into account the possibility that important intervening variables may mediate the association between determinants of cloud computing and adoption of cloud computing. This study incorporated the use of Technological, Organizational and Environmental (TOE) context theoretical model (Tornatzky and Fleischer, 1990), integrated with Technological Acceptance Model-TAM. Technological, organizational and environmental context is a major determinant of cloud computing adoption mediated by user perception PU and PEOU salient features derived from TAM.

The study sought to examine the influence of TOE context and user perception on the adoption level of cloud computing adoption among SMEs in Nairobi, Kenya. User perception is a determinant of technology adoption. Organisations are most likely to adopt a technology if they perceive the technology compatible with their existing work, not complex to use and has a relative advantage. However, the top management, firm size and technology readiness of the organisation play a crucial role in effecting the perception of cloud computing adoption. Environment is the arena in which SMEs conduct business and deals with pressures of competition and trading partners, which are major determinants of cloud computing adoption.

The SME sector in Kenya was selected for this study because they are the largest providers of direct and indirect employment hence play a pivotal role in the economic growth of the country. There are various worries from the SMEs about adoption of cloud services, which contribute to the slow adoption in Kenya. There have been inadequate research on utilization of technology for business advantage by SMEs in Kenya; various managers expressed concerns of security as a major drawback to the cloud services adoption and where it can be applied (Kiiru, 2011).

The CEOs of various SMEs in Kenya have adequate awareness of the benefits of technology in their organisations. However, only a few know the benefits of cloud computing beyond the basic description. Many have adopted a wait and see attitude as far as adoption of cloud computing is concerned. According to Ellison (2010), the concept of cloud computing has aroused interest in the enterprise but it is also clear that businesses are testing their options to decide whether they will adopt.

1.3 Statement of the Problem

Due to the increasingly competitive business environment, entrepreneurs are adopting various state-of-the art Information Technologies (IT) such as cloud computing to advance their business operations (Pan and Jang, 2008; Sultan, 2010). Cloud computing is a new technology development that can provide several advantages both strategic and operational to its adopters. Unfortunately, cloud computing adoption rate is not growing as fast as expected (Goscinski and Brock, 2010). However, in Kenya, despite government efforts to increase competitiveness of SMEs through enhancement of internet infrastructure, lowering of costs, among others, the rate of adoption of cloud computing has been slow among SMEs (Makena, 2013).

Previous studies found that technology organizational environmental (TOE) context are useful in understanding critical factors of IT adoption in a given organisation (Tornatzky and Fleischer, 1990). In addition, previous studies have found contradicting findings from different scholars and environment (Tan *et al.*, 2008; To and Ngai, 2006; Wang *et al.*, 2010; Lin and Lin 2008). A Study by Low and Chen (2011) in Taiwan high tech industries has shown significant results on the effect of various aspects of user perception on the rate of adoption of cloud computing. Moreover, the relationship between complexity and compatibility, on the one hand, and adoption of cloud computing, on the other hand, has been inconsistent in previous studies (Oliveira and Martins, 2010; Wang *et al*., 2010). Nevertheless, Lin and Lin (2008) have reported more consistent results on these variables.

Kituku (2012) observes that cloud computing is still new to both academia and commerce in Kenya. Despite the great advantage of cloud computing many research discoveries are in the developed countries (Osterman, 2012; Sharif, 2009; Gartner, 2009; Chan and Chen, 2010). This study sought to address the research gap by analysing the determinants of cloud computing adoption. It was therefore imperative to consider the possibility of user perception, as an intervening variable, which may mediate the association of the determinants and adoption of cloud computing in the developing countries, and more specifically analyzing different industries. Therefore, the intention of this research was to explain TOE as a determinant of cloud computing adoption mediated by user perception as recommended by (Chinyao and Chen, 2011).

1.4 Research Objectives

The study was guided by a general objective and specific objectives.

1.4.1 General Objectives

The study sought to examine the effect of context, user perception on the adoption level of cloud computing among small and medium enterprises in Nairobi County, Kenya.

1.4.2 Specific Objectives

The study sought to achieve the following specific objectives:

(i). To determine relationship between technology context and cloud computing adoption

(ii). To examine the relationship between organisational context and cloud computing adoption

(iii). To determine the relationship between environmental context and cloud computing adoption

(iv). (a) To determine the mediating effect of user perception on the relationship between technology context and cloud computing adoption

(b) To examine the mediating effect of user perception on the relationship between organisational context and cloud computing adoption

(c) To determine the mediating effect of user perception on the relationship between environmental context and cloud computing adoption

1.5 Research Hypotheses

To measure the above research objectives, it was hypothesized that:

Ho_1 There is no significant relationship between technology context and cloud computing adoption.

Ho_2 There is no significant relationship between organisation context and cloud computing adoption.

Ho_3 There is no significant relationship between environmental context and cloud computing adoption.

Ho_4 (a) There is no significant mediating effect of user perception on the relationship between technology context and cloud computing adoption.

(b) There is no significant mediating effect of user perception on the relationship between organisational context and cloud computing adoption.

(c) There is no significant mediating effect of user perception on the relationship between environmental context and cloud computing adoption.

1.6 Significance of the Study

The study sought to examine the mediating effect of user perception on the relationship between TOE context and cloud computing adoption. Findings of this study will help both entrepreneurs and managers of SMEs to identify strategies to improve their businesses. It will further enable SMEs to be innovative and hence competitive to attain effectiveness in businesses. To academicians, this study will contribute to the existing body of knowledge by providing new insights on the determinants of cloud computing and the relationship between the independent and dependent variables. The results of the study will contribute to theory by filling the knowledge gap, the lack of predictive model to determine the expected cloud computing adoption for SMEs based on the predefined influential factors.

To practitioners, the findings of this research will greatly influence the uptake of cloud services, which could effectively and efficiently deliver services, which could have otherwise been only accessible by large blue chip corporations and multinationals. Furthermore, the model may be useful to owner/managers and IT managers to enrich decision framework, including cloud computing strategy, cloud computing services, deployment model selection and the implementation priority.

This study will benefit both entrepreneurs and managers of SMEs to improve their businesses through technology empowerment. It will further enable SMEs enhance their innovative and competitive strategies, to attain operational effectiveness and efficiency in businesses and even out the competitive arena. Cloud computing may enhance the reduction of the required upfront capital funding for IT infrastructure or operational expenses for data security compliance, availability of in-house IT expertise, and the ability to maintain high IT resource utilization (Good, 2013).

Government policy makers will also benefit from the theoretical and empirical knowledge contributed to the study and enhancing insight for further research, training and support.

1.7 Scope of the Study

The scope of the study was on the influence of TOE context on cloud computing adoption level, mediated by user perception among SMEs. Specifically, the study evaluated the following key parameters TOE determinants: technological context (relative advantage, complexity, compatibility); organizational context (top management support, technology readiness, firm size), and environmental context (trading partners pressure and competitive pressure). The cloud computing adoption level indicators comprised of Infrastructure as a service (IaaS), software as a service (SaaS) and platform as a service (PaaS). The mediating effect of user perception on the relationship between technology organizational and environmental context (TOE) was the main purpose of the study. The study adopted a cross-sectional survey research design. The study also narrowed down the geographical scope by limiting the same to selected 398 SMEs from various industries in Nairobi County owing to the diversity of business within the area. The study period was from 6th March to 9th June 2016.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of existing literature on cloud computing, cloud computing concepts, cloud-computing adoption, theories of technology adoption, determinant of cloud computing adoption and perceptions of technology adoption. The chapter also discusses the theoretical and conceptual frameworks that guided this study.

2.2 Concept of Cloud Computing

The facets of work and personal life are moving towards the concepts of availability of everything online. By understanding this trend, the big and giant web based companies like Google, Amazon, and Salesforce.com. Kambil (2009) notes that cloud computing is the sharing of web infrastructure comprising of internet information storage, versatility and computation. Cloud computing incorporates figuring asset services, delicate uses of circulated frameworks and information storage. Cloud computing has been rendered as another outlook change in which the computing scene is rapidly changing toward an arrangement of inferring relative applications for millions to stretch out as a service instead of utilizing personal computers.

Mell and Grance (2011) note that the National Institute of Standards and Technology (NIST) has given an extensively and broad meaning of cloud computing that is a model for empowering helpful, on-request organize access to a mutual pool of configurable computing assets that is rapidly and effortlessly open with limited cooperation and ad-ministration exertion from the service provider. Computing is characterized as a hugely adaptable IT-related capacity, gives administration to outer clients utilizing web advances (Gartner, 2009). Cloud computing is considered a pool of profoundly versatile, abstracted framework fit for facilitating end-client application charged by utilization.

According to Sultan (2010), IT capabilities are real time over the internet services requested, provisioned, delivered, and consumed on demand. Cloud computing is an advancing innovation enveloping different ideas. In this manner, David (2010) asserts that comprehension of cloud computing by SMEs can be helpful in their approach for distributed computing administrations use. Cloud computing depends on an arrangement of numerous prior and all around explored ideas, for example, distributed and framework computing, and virtualization. Cloud computing has been viewed differently by various scholars, organizations and technologist.

Albeit, large portions of the ideas are not novel, the genuine development of cloud computing contains computing services made accessible to clients (Leimeister *et al*., 2010). Succinctly, cloud computing is another processing model whereby computing services, for example, information storage, programming applications, are accessed over the internet. Computing model services have been commoditized and conveyed in a way like customary utilities, for example, water, power, gas and communication. This computing model permits clients get to benefit in view of their prerequisites in any case to where the services are facilitated or how they are conveyed. Cloud business and clients can get to applications from any place on the planet on request. Subsequently, the computing scene is quickly changing towards creating computer programs for millions to utilize as a service as opposed to keep running on their individual personal computers.

2.3 Cloud Computing Adoption

Qureshi and Kamal (2011) note that cloud-computing adoption is classified into three type cloud services models such as Platform as a Service (PaaS), Infrastructure as a Service (IaaS), and Software as a Service (SaaS). Boniface *et al*. (2010) note that PaaS cloud conveyance model gives a foundation and stage in the cloud for application designers to fabricate, send and run applications on the internet and clients are charged per-use. Cases of PaaS incorporate Microsoft Windows Azure and Google App Engine.

IaaS is the conveyance of equipment foundation (i.e., servers, storage) as a service, available over the web and facilitated by the cloud supplier (Bhardwaj, Jain *et al*., 2010). Cases of IaaS offerings incorporate (EC2) and Secure Storage Service (S3). Carroll *et al*. (2010) and Dai (2009) point out that SaaS is the conveyance of programming, for example, ERP, Customer Relationship Management (CRM), e-mail and Collaboration Software, among others, over the internet as a service. Cases of SaaS offerings incorporate Microsoft Office 365, Google Apps, Hosted Exchange Server, and so on which are offered on a membership based pricing model, therefore paying for just what you utilize.

Mell and Grance (2011) note that cloud deployment is characterized into four: private cloud, community cloud, public cloud and hybrid cloud. Public cloud comprises of assets that are shared among cloud subscribers and the mutual assets are available over the web (Carroll *et al*., 2010). Some cases of public cloud are Google applications, Amazon Web administrations (AWS) and Sales force. Ramgovind, Ellof and Smith (2010) noted that private clouds are generally outlined and conveyed inside the venture to be utilized by inner clients only. Conway and Curry (2012) and Chowhan and Saxena (2011) noted that hybrid cloud comprises of components of public and private cloud. NIST characterize hybrid cloud as a synthesis of at least two unmistakable cloud frameworks (private, community or public) that remain unique yet are bound together by institutionalized or restrictive innovation that empowers information and application portability (for instance cloud bursting for load balancing between clouds). Conway and Curry (2012) and Carroll *et al.* (2010) observe that community cloud is shaped by organizations and institutions that regularly has a similar arrangement of qualities, for example, shared mission and objectives, security necessities, approaches and compliance.

2.4 Theories of Technology Adoption

This review utilizes two noteworthy hypothetical models: Technology Adoption Model (TAM) (Gefen, 2004; Taylor and Tedd, 1995; Davis *et al* 1989) and Technological, Organizational and Environmental (TOE) context (Tornatzky and Fleischer, 1990). The TAM clarifies the acknowledgment of IS/IT yet it is questionable whether the model can be connected in each occurrence of IS/IT appropriation and execution. Cater and Be'langer (2005) and Legris, Ingham and Colerette (2003) note that numerous observational reviews prescribe coordinating TAM with different hypotheses (such as IDT, or Delone and Mclean's IS success model) to adapt to fast changes in IS/IT and enhance specificity and illustrative power. TOE and TAM have a few builds similarity with IDT theories. They supplement each other to inspect the reception of IS/IT.

The TOE structure distinguishes three setting groups: technological, organizational and environmental. Tornatzky and Fleischer (1990) point out that these three settings exhibit both limitations and opportunities for technological advancement. These components influence a company's level of technological advancement. The TOE structure is predictable with Rogers' (1983) hypothesis of development dissemination (Pan and Jang, 2008; Shirish and Teo, 2010; Wang *et al.*, 2010). The constructs utilized in TAM are in a general sense a subset of perceived innovation qualities;

subsequently, Wu and Wang (2005) and Chen, Gillenson and Sherrell (2002) note that the mix of these hypotheses could give a significantly more grounded mod-el than either remaining solitary.

In their past reviews, Tornatzky and Fleischer (1990) found that TOE systems are valuable in comprehension basic components of new IT appropriation in a given association. A past review in Taiwan healthcare, TOE with HOT fit model have been coordinated and centred around on the selection of medical services data frame-works inside the health facility setting. The basic sympathy toward receiving cloud computing innovation in Taiwan as a product organization included; similarity with organizations' approach, IS environment and business needs and relative points of interest as the most vital (Lin and Chen, 2012).

For British Small and Medium Enterprises (SMEs), Sultan (2011) notes that the significant attentiveness toward embracing cloud computing innovation are such variables as control, vendor lock in, execution, latency, security, protection and dependability. Low, Chen, and Wu (2011) note that in Taiwan's innovative industry, the basic determinants for receiving cloud computing innovation are relative preferred standpoint, best administration support, firm size, competitive pressure, and trading partner pressure.

In view of the experimental reviews, it is noticed that distinctive ventures have their own worries towards cloud computing selection. In the greater part of the experimental reviews, the work is constrained to the TOE structure, which may not expressly call attention to the real constructs in the model and the factors in every unique circumstance. Consequently, this study attempts to fill in the gap by joining more than one hypothetical model to express a superior comprehension of IT selection phenomenon and to further strengthen the study, series of variable relationships and influences through mediator will be examined. Observational reviews demonstrate that almost none has been explored on developing nations along these lines the review tries to discover SMEs reception of cloud computing innovation by concentrating on selected enterprises, for example, manufacturing, hospitality, communication and consultancy in Nairobi, Kenya. In this study, the Innovation Diffusion Theory, the Theory of Planned Behaviour was used to explain the adoption of cloud computing among SMEs in Nairobi County.

2.4.1 Innovation Diffusion Theory

Diffusion is the procedure by which a development is embraced by individuals from a specific group. Research into on diffusion of innovation has been generally connected in sectors, for example, education, sociology, communication, agriculture, marketing and data innovation (Rogers, 1995; Karahanna *et al.*, 1999; Agarwal, Sambamurthy and Stair, 2000). Rogers (1995) noted that an innovation is a thought practice, or element that is seen as new by an individual or another unit of adoption. Rogers (1995) also notes that diffusion is not a solitary, general hypothesis, yet rather a few hypothetical points of view that identify with the general idea of diffusion, that is, it is a meta-hypothesis. On the other hand, diffusion is the procedure by which an innovation is imparted through specific channels after some time among the individuals from a social framework (Rogers, 1995). Accordingly, Agarwal (2000) points out that the IDT hypothesis contends that potential clients settle on choices to receive or dismiss an innovation in view of convictions that they shape about the innovation.

According to Rogers (1995), four variables impact the reception of an innovation by individuals from an organization: (1) the innovation itself, (2) the correspondence channels used to spread data about the innovation, (3) time and (4) the nature of the group to which it is presented.

As indicated by Rogers (1995), there are two noteworthy hypotheses that deal with the dissemination of innovation particularly for reasons for embracing ICT for organizations like SMEs. These are: (1) the individual innovativeness hypothesis, (2) the hypothesis of perceived properties. The Individual Innovativeness Theory depends on who embraces the innovation and when. With an innovator who is daring and pioneers driving the way, they can receive regardless of a high level of vulnerability about the innovation at the season of adoption, and will acknowledge an incidental difficulty when another thought demonstrates unsuccessful.

The second group is known as the early adopters: they come on board early and help spread the news about the innovation to others. The third group is the early majority: they are induced to embrace by the innovators and early adopters and may think for quite a while before totally receiving the new thought. Their development choice period is generally longer than that of the innovators and early adopters. The fourth group is the late majority: they approach innovating mindfully and hold up to ensure that reception is to their greatest advantage. Thus, they do not embrace until most others have done so.

The fifth group is known as the laggards: these are the people who are exceedingly distrustful and oppose embracing until completely necessary. The hypothesis of perceived characteristics/attributes depends on the idea that people will embrace an innovation on the off chance that they see that it has the accompanying traits. To begin with, the innovation must have some relative preferred standpoint over a current innovation or business as usual. Second, the innovation must be good with the current qualities, past experience, and practices of the potential adopter. Third, the innovation cannot be excessively perplexing or seen as troublesome, making it impossible to comprehend. Fourth, the innovation must have trialability; that is, it can be tried temporarily without reception. Fifth, the innovation must offer discernible outcomes (Rogers, 1995).

Business visionaries and managers of SMEs constitute the adopters who at their own particular volition and relying upon the apparent expenses and benefits decide to adopt information and communication technology Diffusion hypothesis gives a structure that comprehends why ICT is embraced by a few people and not by others. This hypothesis can clarify, anticipate, and represent elements that expand or obstruct the dispersion of innovations. Reviews on ICT appropriation have by and large adopted three conceivable strategies: a diffusion approach, an adoption approach and a domestication approach (Pedersen, 2003).Roger's Diffusion of Innovation hypothesis (as referred to by Van Akkeren and Harker, 2003) contends that media and interpersonal contacts give data that impacts an individual’s supposition and judgment as summarized in Figure 2.1.

The hypothesis involves four components: creation, diffusion through the informal organizations, time and results. Data channels through the systems and relying upon the way of the systems and the parts of its supposition pioneers, innovation are either embraced or dismissed. Opinion leaders influence a group of people through individual contact while mediators, for example, change opera-tors and guardians additionally add to the procedure of diffusion. The adoption approach portrays and clarifies the selection choice of clients applying diverse individual and social basic leadership speculations. Pedersen (2003) notes that there are three generally utilized models incorporating the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the augmentation of TRA into a Theory of Planned Behaviour (TPB).

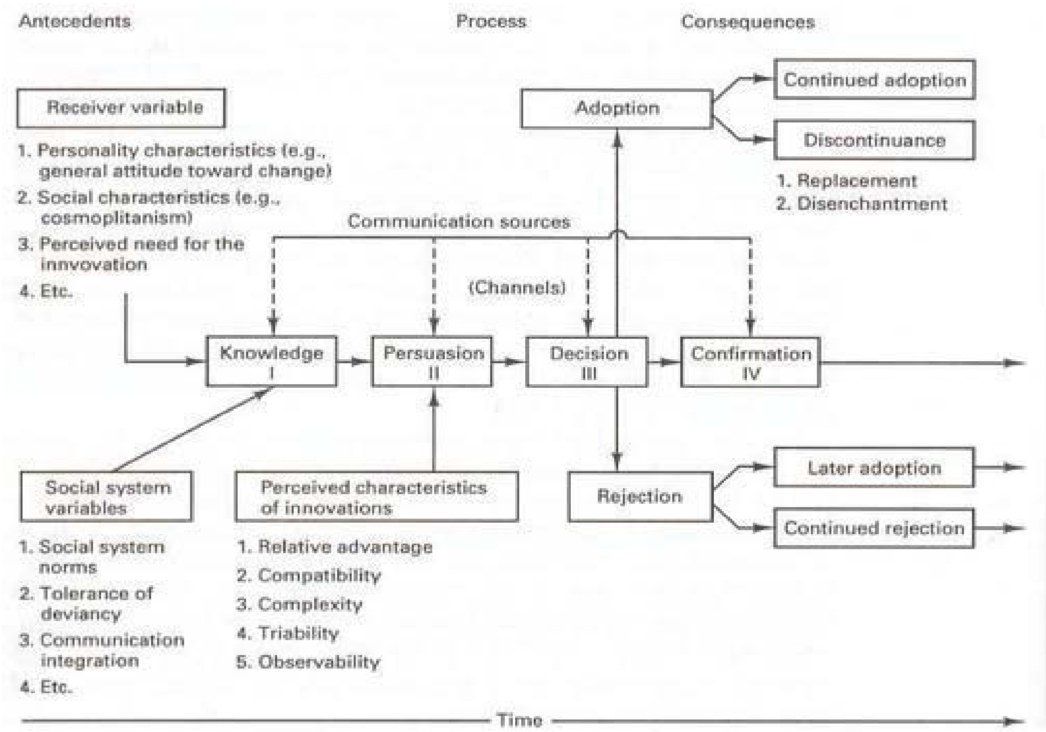


Figure 2.1: Rogers' Diffusion of Innovation Model
Source: Rogers (1995)

The TAM introduced by Davis (as discussed by van Akkeren and Cavaye, 1999) proposes that when a client is given another innovation, various elements impact their choice with respect to how and when they will utilize it. This incorporates its apparent usefulness and its apparent convenience. Be that as it may, the TAM does not represent the impact and individual control elements on conduct. Different variables, for example, financial elements, outside impacts from providers, clients and rivals are additionally not considered by the TAM.

The domestication process concentrates on the procedure in which innovation turns into an indispensable piece of our regular propensities. Reasonable setting refinements are connected to new wonders. Three imperative refinements incorporate work and relaxation setting; end-clients that have a place or do not have a place with a demographic group and the private and public. Pedersen (2003) points out that this view is commanded by social scientists and is regularly portrayed by demographic factors, for example, age and gender.

2.4.2 Theory of Planned Behaviour

According to Azjen (1991), TPB is proposed to wipe out the constraints of the first model in managing conduct over which individuals have fragmented volitional control. Basically, TPB contrasts from TRA in that it has the extra part of perceived conduct control. The TPB endeavours to determine this impediment (Jae-Nam and Young-Gul, 2005) the presumption that when somebody frames a goal to act, they will be allowed to act without confinement. Practically speaking, requirements, for example, constrained capacity, time, natural or organizational limits, and oblivious propensities will restrict the flexibility to act. Issues emerge with the TRA when the hypothesis is connected to conducts that are not completely under volitional control.

The TPB endeavours to determine this constraint (Jae-Nam and Young-Gul, 2005). The TPB considers that not all conduct is under volitional control and that practices are situated sooner or later along a continuum that reaches out from total control to an entire absence of control. The individual may have overall control when there are no imperatives of any sort to embracing a specific conduct. On the other end, there might be a complete absence of control if appropriation of a given conduct requires opportunities, for example, assets or abilities that might be absent. Control variables incorporate both inward and outside elements. Inner elements are such things as aptitudes, capacities, data, feelings, for example, stress while outside variables incorporate such things as circumstance or ecological elements.

To address this constraint, Ajzen adjusted the Theory of Reasoned Action by including a third precursor of expectation called Perceived behavioural control. Perceived behavioural control alludes to how much an individual feels that execution or non-execution of the conduct being referred to is under his or her volitional control. Individuals are not prone to shape a solid expectation to play out a conduct in the event that they trust that they do not have any assets or chances to do as such regardless of the possibility that they hold uplifting dispositions toward the conduct and trust that other vital factors would favour the conduct (subjective norm).

Perceived behavioural control can impact conduct directly or indirectly through behavioural intentions. An immediate way from perceived behavioural control to conduct is relied upon to develop when there is some agreement between perceived control and the individual's genuine control over the conduct. It is the third precursor of behavioural goal and is characterized as the individual's conviction concerning how simple or troublesome playing out the conduct will be. It regularly reflects genuine behavioural control.

2.5 Technology Adoption Models

Technology Acceptance Model (TAM) and Technological Organizational and Environmental (TOE) models will be reviewed.

2.5.1 Technology of Acceptance Model

Scholars such as Chin and Todd (1995), Segars and Grover (1993) concur that TAM is substantial in foreseeing the individual acknowledgment of various frameworks.

Two remarkable convictions, PU and PEOU, decide innovation acknowledgment and are the key forerunners of behavioural expectations to utilize data innovation. The TAM is an appropriation model, which is created from the TRA. Marchewka, Liu and Kostiwa (2007) contend that TAM can recognize the effect of the outside variables on the inner conviction, state of mind and aims. Consequently, it decides the states of mind towards the expectation of utilizing a specific innovation. Davis *et al.* (1989) note that the principal conviction, PU is how much an individual trusts that a specific framework would enhance work execution inside an organizational setting. According to Davis *et al*. (1989), PEOU, the second key conviction, is how much an individual trusts that utilizing a specific framework would be free of exertion.

2.5.2 Technology Organizational Environmental Model

A hypothetical model for cloud computing diffusion needs to consider the shortcomings in the adoption and diffusion technological innovation that are created by the particular innovative, organizational, and ecological settings of the firm. A few studies (Chau and Tam, 1997; Chong and Ooi, 2008; Kuan and Chau, 2001; Lin and Lin, 2008; Oliveira and Martins, 2010; Pan and Jang, 2008; Shirish and Teo, 2010; Zhu *et al*., 2004) have been credited with proposing the TOE structure, created by Tornatzky and Fleischer (1990), to break down IT adoption by firms.

The TOE system recognizes three setting groups: innovative, organizational, and environmental. The innovative setting alludes to inside and outer technologies appropriate to the firm. Organizational setting alludes to a few lists with respect to the beginning, for example, firm size and extension, centralization, formalization, and many-sided quality of administrative structure and the nature of human resource. Environmental/ecological setting alludes to an organizations industry, rivals and government approach or aim.

The TOE structure is steady with Rogers' (1983) hypothesis of innovation diffusion (Pan and Jang, 2008; Shirish and Teo, 2010; Wang *et al*., 2010), which perceives the accompanying five technological qualities as points of reference for any adoption choice: relative advantage, unpredictability, similarity and trialability. Accordingly, the TOE system clarifies the adoption of innovation and a significant number of experimental reviews have concentrated on different IS areas. TOE has been connected effectively to various reviews (for example, Iacovou *et al*., 1995; Kuan and Chau, 2001). Different utilizations of the TOE demonstrate reviews focusing on big business frameworks (Ramdani and Kawalek, 2008); web based business (Scupola, 2003; Seyal *et al*., 2004); EDI (Kuan and Chau, 2001); communication technologies (Premkumar and Roberts, 1999).

2.6 Determinants of Cloud Computing Adoption

The determinants of cloud computing adoption in this review depend on the TOE structure, which distinguishes three setting groups: technological, organizational, and environmental. Tornatzky and Fleischer (1990) noted that these three settings display both requirements and chances for technological innovation. These components impact the firm's level of technological development. The technological setting alludes to inner and outside innovations appropriate to the firm (Rui, 2007; Oliveria and Martins, 2011). Organizational setting alludes to a few files with respect to the beginning, for example, firm size and extension, centralization, formalization, and multifaceted nature of administrative structure and the nature of human resource (Hong and Zhu, 2006; Oliveira and Martins, 2010). Environmental setting alludes to an organization's industry, rivals and government approach (To and Ngai, 2006; Oliveira and Martins, 2010).

2.6.1 Technology Context

Baker (2011) notes that technological setting speaks to the inner and outer advancements identified within the firm; both advances that are as of now being used at the firm and in addition those that are accessible in the market yet not at present being used. These advancements may incorporate either equipment or practice.

Rogers (1983) characterized relative favourable position as how much a technological variable is seen as giving more noteworthy advantage to firms. To and Ngai (2006) note that it is sensible that organizations mull over the points of interest that originate from adopting innovations. Cloud computing services, permit operations to be summed up and prepared through web exchanges, can substitute for or supplement ERP computer programs.

The normal advantages of inserted cloud computing services incorporate the accompanying: speed of business correspondences, productive coordination among firms, better client interchanges, and access to market data preparation (Armbrust *et al.*, 2010; Hayes, 2008). Cloud computing has advantage over different innovations, for example, decreased cost, versatility, portability and shared assets. Feuerlicht and Govardhan (2010) note that cloud computing offers leased services on pay-as-you-utilize premise, which prompt to changing the level of utilization as indicated by the present needs of the firm. The likelihood of reception will increase when organizations see a relative preferred standpoint in an innovation (Thong *et al.*, 1994; Thong, 1999; Lee, 2004).

In this way, Sokolov (2009) comments that relative focal points of cloud computing are show even from ICT capability-ties viewpoint. In any case, Buyya *et al.* (2009) point out that firm might not have trust in a cloud-computing framework since it is generally new to them. It might require clients a long investment to comprehend and execute the new framework. Subsequently, many-sided quality of an innovation can go about as a hindrance to usage of new innovation; unpredictability component is typically adversely influenced (Premkumar *et al*., 1994).

Rogers (2003) contends that adoption will be less likely if the innovation is considered as being all the more difficult to utilize. At the point when SMEs are faced with difficulties regarding changing the procedures in which they cooperate with their business frameworks, then they are no doubt not to receive new innovation. Subsequently, Parisot (1995) and Sahin (2006) note that new innovations must be easy to use and simple to use so as to expand the adoption rate.

Rogers (1983) argues that the diffusion of the innovation model is inclined toward examining the adoption of new innovation. The five properties of innovations are relative favourable position, similarity, unpredictability, trialability, and discernibleness. Shih (2007) and Lee (2007) point out that perceived relative advantage influences the expectation to utilize a framework. In addition, empirical reviews give evidence demonstrating that many-sided quality had an essentially negative impact on the aim to utilize a framework (Shih, 2007; Lee, 2007). Jain and Bhardwaj (2010) opine that portability offers clients the facility of getting to and working away at their records from anyplace on the planet; if they have access to a personal and a web connection. Clients require not have a personal computer for utilizing services of cloud computing. Jain and Bhardwaj (2010) observe that shared assets is another preferred standpoint to the organizations offered by cloud computing which empowers their workers to get to assets set on cloud from any area and hence it saves organizations time and money.

Rogers (1983) avers that similarity alludes to how much innovation fits with the potential adopter's current qualities, past practices and current needs. Similarity has been viewed as a fundamental component for adoption of innovation (Cooper and

Zmud, 1990; Wang *et al*., 2010). At the point when innovation is perceived as good with work application frameworks, firms are generally prone to consider the adoption of new innovation. At the point when innovation is seen as fundamentally contrary, significant modification in procedures that include impressive learning are required. The impact of similarity was observed to be noteworthy in connection to PU (Chau and Hu, 2001). Earlier reviews have demonstrated similarity from various angles supporting its effect on PU and PEOU (Hardgrave *et al.*, 2003).

2.6.2 Organizational Context

The organizational setting incorporates properties, for example, size, nature of human resource, and unpredictability of the organization's administrative structure (Hong and Zhu, 2006; Oliveira and Martins, 2010). Top management support, firm size, technological status is essential determinant in any firm. Top administration support is basic for making a strong atmosphere and for giving satisfactory assets to the adoption of innovations (Lin and Lee, 2005; Wang *et al*., 2010). Top managers' support alludes to regardless of whether the administrators comprehend the nature and elements of cloud computing innovation and subsequently completely support the advancement. An investigation by Chang *et al.* (2006) in a Taiwan health facility found that top manager's support influence IS adoption and the advantage of IS prompts to a positive adoption. As the many-sided quality and modernity of technologies increase, top management can give a vision and duty to make a positive situation for innovation (Lee and Kim, 2007; Pyke, 2009).

Top management assumes an imperative part since cloud computing usage may include reconciliation of assets and reengineering of procedures. Some experimental reviews have shown that there is a positive relationship between top management support and adoption of new innovation (Pan and Jang, 2008; Zhu *et al*., 2004). Top management support and mentalities towards change have impact towards adoption of technology innovation (Premkumar and Michael, 1995; Eder and Igbaria, 2001; Daylami *et al*., 2005).

Thong (1999) notes that the change specialists for innovation selection at organizational level may incorporate the support and attitude of key decision makers, for example, owner managers and CEOs (Scupola, 2006; Gibbs *et al*., 2007). These key leaders have indispensable part to play in purchasing, arranging and innovation adoption choices in small businesses. Through top management support verbalized vision for the firm and critical signs of the new innovation are passed on to different individuals from the firm (Low *et al*., 2011).

Besides, Manueli *et al*. (2007) recommend that business activity is driven from owner inclusion as the key decision makers in charge of characterizing suitable objectives and distinguishing basic ICT business needs and distributing money related assets to encourage innovation adoption. Subsequently, top management support is considered to affect ICT development appropriation (Thong, 1999; Daylami *et al*., 2005; Wilson *et al*., 2008). Gray (2006) posits that SMEs owner managers with specialized and professional qualifications will probably participate in more adoption exercises that incorporate ICT adoption and improvement of e-business. Furthermore, entrepreneurs with fitting capabilities and ICT abilities are more development oriented while those without these essential qualities will probably be development disinclined.

Further audit of literature uncovered that age and experience of owner managers are a portion of the particular qualities which impact innovation adoption in independent companies (Manueli *et al*., 2007; Windrum and de Berranger, 2002). In this way, regarding age Beckinsale and Ram (2006) note that the second era (youthful) entrepreneurs will probably be responsive to innovation adoption than their original (elderly) partners. Obviously, this view conveys a presumption that second and third era (young) entrepreneurs, conceived and taught as of late described by cutting edge innovations and applications in day by day exercises, have more noteworthy attention to IT adoption than the original (elderly) partners.

Notwithstanding, monetary assets are among key authoritative qualities that impact innovation adoption in small companies (Van Akkeren and Cavaye, 1999; Manueli *et al*., 2007; Gibbs *et al.*, 2007). Likewise, SMEs adopt an innovation because of the diminishing expense and accessibility of programming and in addition the general advantages and openings brought by innovation adoption (Seyal and Rahman, 2003). For SMEs, cloud-computing guarantees to convey substantial business benefits, regularly at much lower cost as they pay for the assets required, offering great profit for investment of their constrained assets. As a result, SMEs concentrate just on what conveys an incentive to their clients and business, consequently results to competitive advantage.

Bandiera and Rasul (2002) contend that SMEs which pick not to adopt innovation do as such in light of the fact that they might be new to the innovation and need organizational preparation (Zappala and Gray, 2006). The organizational status can be reflected in the size, sort, nature of business and also innovation mastery and perceived benefits maintained by the management and workers (Gibbs *et al*., 2007; Van Akkeren and Cavaye, 1999; Manueli *et al.*, 2007). Moreover, past research has found that the measure of a firm is one of the real determinants of IT innovation (Dholakia and Kshetri, 2004; Hong and Zhu, 2006; Pan and Jang, 2008).

It is frequently announced that extensive firms have a tendency to embrace more innovations, generally because of their more prominent adaptability and capacity to risk (Pan and Jang, 2008; Zhu *et al.*, 2004). It is regularly contended that bigger firms have more assets, aptitudes, experience and capacity to survive disappointments than smaller firms do. Then again, on account of their size, small firms can be more imaginative, they are sufficiently adaptable to adjust their activities to the speedy changes in their surroundings (Damanpour, 1992; Jambekar and Pelc, 2002). This is contrasted with larger firms which have numerous levels of organization and this can drag basic leadership forms (Oliveira and Martins, 2011).

Premkumar (2003) contends that it is moderately simpler for small firms to embrace cloud computing because of IT selection co-appointment needs. As a result, firm size is an essential element that influences the apparent vital significance of cloud computing in creative innovative improvement. Therefore, the review proposes top management and firm size to have a huge association with adoption of cloud computing. The innovative status of firms, which means technological foundation and IT human resource, impacts the adoption of new innovation (Kuan and Chau, 2001; To and Ngai, 2006; Oliveira and Martins, 2010; Pan and Jang, 2008; Wang *et al*., 2010; Zhu *et al*., 2006). Technological infrastructure alludes to introduced network technologies and enterprise frameworks, which give a stage on which the cloud computing applications can be established. Wang *et al*. (2010) noted that IT human resources give the information and aptitudes to execute cloud computing related IT applications.

Cloud computing services can turn out to be a piece of significant worth chain exercises just if firms have the required framework and specialized skill. Accordingly, firms that have technological preparation are more arranged for the adoption of cloud computing. In accordance with past reviews when workers saw frameworks as being simpler to utilize they had a tendency to be more helpful and less demanding to utilize (Huang, 2004; Yang, 2007). Thus, technological preparation positively affects PU and PEOU to adopt cloud computing.

2.6.3 Environmental Context

Environmental setting alludes to the field in which a firm leads its business; it can be identified with encompassing components, for example, industry, rivals and the nearness of technology service providers. Competitive and trading partner pressure assumes a noteworthy part in deciding cloud-computing reception in the environmental setting. Competitive pressure alludes to the level of pressure felt by the firm from rivals inside the business (To and Ngai, 2006; Oliveira and Martins, 2010).

Experience of serious rivalry is a critical determinant of IT adoption (Kuan and Chau, 2001; Zhu *et al*., 2004). As cutting edge industry have the attributes of quick changes, firms confront pressure and turn out to be progressively mindful of and take after their rivals' adoption of new technologies. With regards to private ventures, competitive pressure was an essential determinant of adoption (Premkumar and Roberts, 1999). By adopting cloud computing, Misra and Mondal (2010) point out that firms benefit significantly from better comprehension of market perceivability, more noteworthy operation effectiveness, and more exact information gathering. Moreover, Pan and Jang (2008) note that many firms depend on trading partners for their IT plan and implementation assignments. Some experimental research studies have proposed that trading partner pressure is an essential determinant for IT adoption and utilization (Chong and Ooi, 2008; Lai *et al*., 2007; Lin and Lin, 2008; Pan and Jang, 2008; Zhu *et al*., 2004).

2.7 User Perceptions of Technology Adoption

Analysts have proposed that administrative choices might be affected by the mediating impact of client impression of a person. Perceived usefulness and perceived ease of use have been seen as real determinants of client conduct to innovation adoption. This takes after from the meaning of the word helpful: "equipped for being utilized advantageously;" how much an individual is confident that utilizing a specific framework would upgrade his or her occupation execution (Davis *et al*., 1989). Inside an organizational setting, individuals are by and large strengthened for good execution by raises, advancements, rewards, and different rewards (Pfeffer, 1982; Schein, 1980; Vroom, 1964).

A framework high in perceived usefulness, as a result, is one for which a client has confidence in the existence of a positive use performance relationship. In this way, in cloud computing adoption, the framework will be seen to convey advantages, for example, productivity, versatility, unwavering quality and security adequacy. Davis *et al*. (1989) argue that on the differentiation perceived ease of use, alludes to how much an individual trusts that utilizing a specific framework would be free of exertion. This is gotten from the meaning of simplicity: opportunity from trouble or great exertion. Radner and Rothschild (1975) stated that exertion is a limited asset that a man may designate to the different exercises for which he or she is mindful.

Schultz and Slevin (1975) and Robey (1979) recommend the effect of perceived usefulness on framework use. Robey (1979) theorizes that a system that does not help people perform their jobs is not likely to be received favourably in spite of careful implementation efforts. Different lines of research show the hypothetical significance of perceived usefulness and perceived ease of use as determinants of client conduct. As indicated by the TAM display, Schillewaert *et al*., (2005) note that innovations that are anything but difficult to utilize can be more helpful since convenience is regarded as a determinant of perceived usefulness. In any case, in the opposite adage convenience may not really decide the usefulness of an innovation it is begging to be proven wrong whether an innovation perceived to be troublesome may not be helpful or most likely there might be imperviousness to adoption.

2.7.1 User Perception and Determinants of Cloud Computing Adoptions

User perception is a determinant of technology adoption. Determinants of cloud computing adoption in this review in light of the TOE system, recognizes three setting groups: technological, organizational, and environmental. Firms are well on the way to adopt an innovation on the off chance that they see the innovation perfect with their current work, not perplexing to utilize and has a relative favourable position. Perceived relative favourable position influences the goal to utilize a framework (Shih, 2007; Lee, 2007). Essentially, experimental reviews give evidence demonstrating that many-sided quality had a fundamentally negative impact on the aim to utilize a framework (Shih, 2007; Lee, 2007).

Lin (2006) notes that it has additionally revealed that the more unpredictable a framework is seen as being, the lower the clients expectation to utilize the framework. Moreover, an exact review shows that top management, firm size and technology preparedness of the firm assumes a pivotal part in affecting the view of cloud computing adoption. In past reviews, when workers perceive frameworks as being less demanding to utilize they had a tendency to be more valuable and simpler to utilize (Huang, 2004; Yang, 2007). Consequently, innovation availability positively affects PU and PEOU to adopt cloud computing. Environment is the field in which SMEs lead business and manages pressures of rivalry and trading partners, which are a noteworthy determinant of cloud computing adoption.

2.7.2 User Perception and Cloud Computing Adoption

Cloud computing adoption framework will be seen to convey advantages, for example, efficiency, adaptability, unwavering quality and security viability. Perceived ease of use, interestingly, alludes to how much a man trusts that utilizing a specific framework would be free of exertion (Davis *et al*., 1989). An application perceived to be simpler to use than another will probably be acknowledged by clients. The effect of perceived usefulness on framework use was proposed by the work of Schultz and Slevin (1975) and Robey (1979). Subsequently, Robey (1979) points out that a framework that does not help individuals play out their occupations is not liable to be gotten positively despite watchful execution endeavours.

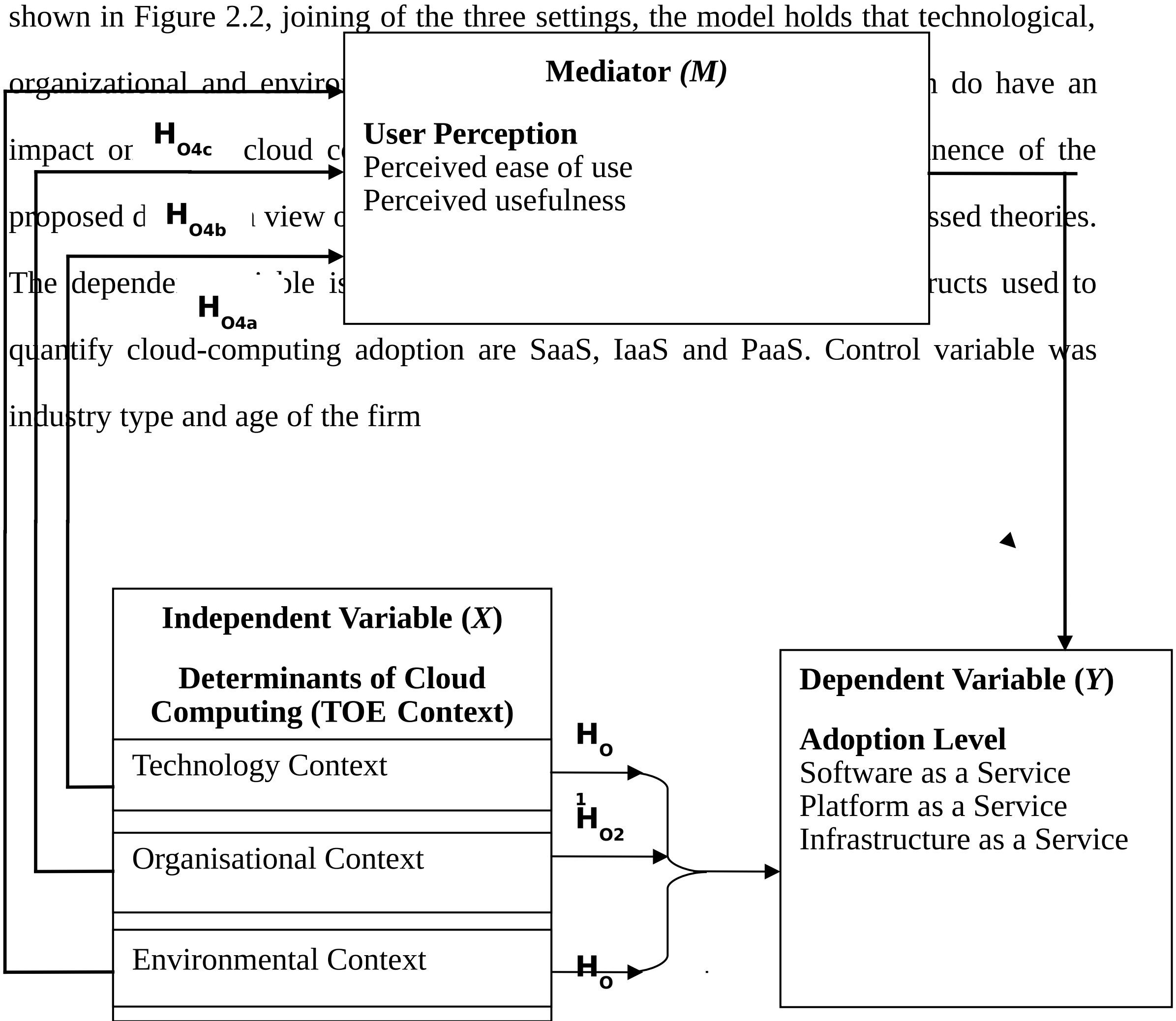
2.8 Conceptual Framework

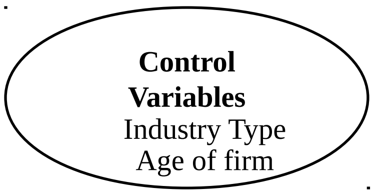
The TOE framework is an organization-level model which represents one segment of innovation process that is how the firm context influences the adoption and implementation of innovations (Baker, 2011). Based on this framework, the technology innovation adoption process is influenced by three aspects of an enterprise's context; technology, organizational and environmental context.

Technological context which represents the external and internal technologies related to the organization, both technologies that are already in use at the firm as well as those available in the marketplace but not currently in use (Baker, 2011). Equipment or practices are the main constituents of these technologies. Organizational context is crucial in determining adoption of technology bearing in mind that this context is related to the resources and characteristics of the firm, size and managerial structure. Additionally, environmental context, which refers to the arena in which a firm conducts its business it can be related to surrounding elements such as industry, competitor's and the presence of technology service providers. It is noteworthy, that while exist writing addresses TOE influencing cloud computing adoption, this review tried to set up the interceding impact of client recognition on cloud computing adoption.

Therefore, this study sought to establish the mediating effect of user perception on cloud computing adoption. According to literature reviewed, technology adoption is constrained to TOE structure which may not expressly address the real constructs in the model and the factors in every unique circumstance. Consequently, this study model attempts to fill in the gap by integrating more than one model to strengthen the constructs in each model. Further, a series of variable relationship and influences is examined through mediator (Gefen, 2004; Taylor and Todd, 1995; Davis *et al*., 1989; Tornatzky and Fleischer, 1990). TAM declares two striking convictions, perceived usefulness (PU) and perceived ease of use (PEOU), which are a subset of perceived innovation qualities. As observed by Wu and Wang (2005) and Chen, Gillenson and Sherrell (2002), the mix of these hypotheses could give a significantly more grounded model than either remaining solitary.

Moreover, TOE hypothetical structure; technological, organizational and environmental settings are imperative determinants of cloud computing adoption. As shown in Figure 2.2, joining of the three settings, the model holds that technological, organizational and enviro[...] do have an impact or cloud c[...]nence of the proposed d[...] view c[...]ssed theories. The depende[...]ble is[...]ructs used to quantify cloud-computing adoption are SaaS, IaaS and PaaS. Control variable was industry type and age of the firm





Source: Researcher (2017)

Figure 2.2: Conceptual Framework of the User Perception and Determinants of Cloud Computing Adoption

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that guided the study in addressing the set objectives and hypotheses. The chapter describes the study area, research design, target population, sample design and sampling techniques used to get the appropriate sample size, data collection procedure followed by data analysis and ethical considerations.

3.2 Study Area

Nairobi County is composed of 17 constituencies: Westlands, Dagoretti South, Langata, Kibra, Roysambu, Kasarani, Ruaraka, Embakasi South, Embakasi North, Embakasi Central, Embakasi East, Embakasi West, Makadara, Kamukunji, Starehe and Mathare (Nairobi City Council, 2012). The study was conducted among Small and Medium Enterprises (SMEs) in Nairobi County. The study area was deemed appropriate after taking into cognizance its diversity in terms of types of industries (manufacturing, hospitality, consulting, information technology, computer retail, and tours and travels).

3.3 Research Paradigm

This study is in line with positivism approach, which seeks to use existing theory to develop hypotheses that are tested and confirmed wholly, in part, or otherwise refuted leading to further improvement of hypothesis to be tried with further research. Saunders, Lewis and Thornhill (2009) are of the view that through positivism, the analyst is worried with realities and not impressions.

3.4 Research Design

Research design is a strategy that indicates the strategies and techniques for gathering and breaking down required data to answer research questions. They incorporate exploratory, informative and descriptive methodologies (Greener, 2008; Zikmund *et al*., 2010). This study utilized explanatory survey research design as the study sought to explain the phenomena under study by testing hypotheses by measuring relationships between variables, namely, technology context, organizational context, environmental context and adoption of cloud computing among SMEs in Nairobi county, Kenya. Studies that establish causal relationships between variables use explanatory design (Saunders, 2011).

This study adopted an explanatory, descriptive survey design. Descriptive survey involves an investigation of variables that constitute what is happening or what has happened and of which the researcher has no control over (Greener, 2008). Kothari (2012), states that descriptive research incorporates studies and reality discovering enquiries of various types. It describes the data in order to draw conclusions about the population characteristics or phenomenon studied. The research design, according to Kerlinger (1986), allows you to employ both quantitative and qualitative approaches.

Descriptive methodology coordinated with survey design to gather thorough qualitative and quantitative information enhances the result of the review. As indicated by Hair *et al*. (2006), explanatory design permits the utilization of questionnaires and hence utilization of inferential statistics in setting up the essentialness of the relationship between the factors. Cross-sectional design is conducted to estimate the outcome of interest of a given population.

This research design was deemed appropriate as it is often identified with survey research that yields data that can be used to examine relationships among variables (Saunders *et al*., 2011; Frankfort- Nachmias and Nachmias, 2008). Therefore, the approach was relevant to ascertain the actual factors determining the relationship between user perception and adoption of cloud computing by SMEs.

3.5 Target Population

The study population comprised of SMEs managers drawn from estimated 102,963 registered SMEs within Nairobi County (Nairobi County, Ministry of Trade, 2015). In light of cloud computing service provider, the study focused on 82,821 SMEs (Ministry of Trade, 2015; AICT, 2012)

Table 3.1: Target Population

Industry Type	Target Population
Manufacturing	11392
Hospitality	18759
Consulting	9267
Information technology	13157
Computer retail	13627
Tours & travel	16619
Total	82821

Source: Nairobi County, Ministry of Trade (2015)

3.6 Sample Design and Sampling Techniques

The strategy of sampling contains utilizing a part of a population to make deductions about the entire population (Zikmund *et al.*, 2010). The study employed cluster-sampling technique in selecting a sample from the target population. The sampling technique considered diversity within a target population and selected those clusters within the geographical regions that were representative of the entire populations considering the constraints faced.

Cluster sampling technique also has an added advantage over other sampling techniques as it deselects redundant clusters from sample that makes it economical (Yates, Moore and Starnes, 2008). The target population of 17 constituencies was clustered into 4 constituencies drawn from South, East, North and West regions of the County. Further, the regions Sub-clustered into various industries to ensure that all sectors (industry) that SMEs operate in are included in the sample. Sub-clustering achieved grouping of the heterogeneous population into homogenous subsets (per industry) to ensure representativeness. The industries were travel and accommodation, manufacturing, hospitality, retail trade, information technology and consultancy service. SMEs were chosen, from each stratum, ac-cording to specific data percentages. This was adequate to ensure representation without being subject to data redundancy that would be the case with larger sample sizes.

Random sampling technique was used to select one respondent who may be owner manager/manager or IT managers, who gave judgmental and expert information relevant to the study. The statistical justification for this is a constraint on time to cover all the possible SMEs. In addition, it gave us a wide range of views from a cross section of the SMEs. From a total population of 82821, a sample size was calculated within the clustered regions with the help of the formula below (Fluid Survey, 2015).

A sample size was calculated using the formula below.

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = Sample size

N = Population size

e = the error of Sampling

This study will allow the error of sampling on 0.05. Thus, sample size will be as follows:

$$n = \frac{82821}{1+82821(0.05^2)}$$ =398 employees

To determine the number of SMEs per Industry, the study applied cluster and simple random sampling proportionate to the cluster size as indicated in Table 3.2 below.

Table 3.2: Sample Size

Industry Type	**Target Population**	**Sample Size**	**Number of Managers**
Manufacturing	11392	11392/82821 X 398 = 55	55
Hospitality	18759	18759/82821 X 398 =	90

		90	
Consulting	9267	9267/82821 X 398 = 45	45
Information technology	13157	13157/82821 X 398 = 63	63
Computer retail	13627	13627/82821 X 398 = 65	65
Tours & travel	16619	16619/82821 X 398 = 80	80
Total	82821	398	398

Source: Researcher (2017)

3.7 Data Collection Procedures

This section describes the type and source of data employed in the study.

3.7.1 Type and Source of Data

The study adopted primary data collected from IT managers, managers or entrepreneurs through pre-tested structured questionnaires. IT managers were favoured on the grounds that they were in a superior position to comprehend IT issues of SMEs and in a position to give the correct data. However, considering the constraints of SMEs to have a fully-fledged IT department due to the challenges emanating from high cost of infrastructure and maintaining an IT expert the study too alternated with SMEs manager or the entrepreneur. Data sought include information on determinants of cloud adoption (TOE), user perception (PU and PEOU) and Adoption of cloud computing.

3.7.2 Data Collection Methods and Instruments

The study used questionnaires with help of trained research assistants. Questionnaires were decided for the study as they are famous for business research and if anything, are not difficult to control and do not require expensive support of infrastructure and equipment (Uebersax, 2006). Kothari (2004) says that questionnaires are imperative when the number of respondents is large.

The research assistants administered the questionnaires to the respondents. The SMEs IT manager (s) or entrepreneurs relying upon the setup of various SMEs read and reacted to the questions at their own time. The questionnaire had two parts; Demographic characteristics that included company category, years in operation, number of employee, responsibility and use of ICT. The questionnaire content included evaluation of predictors. The constructs; relative advantage, complexity, compatibility, top management, firm size, Technology readiness, competitive pressure, trading partner pressure are derived from prior literature reviews and are modified to fit the context of cloud computing. The central construct measures depended on existing instruments. Table 3.1 demonstrates the sources from which the items were adjusted.

Adoption of cloud computing was measured using following services Paas, Iaas and Saas. The questionnaire included content on user perception, perceived usefulness (PU) and perceived ease of use (PEOU). The study variables were based on previous studies and detailed review of existing literature. In line with measurement used in previous studies, a five-point Likert scale was adopted for all item scale ranging from 1=strongly disagree to 5=strongly agree and 1=very low to 5= very high. The researcher opted for this scale to create a ‘neutral’ middle point which is essential in some scales where respondents may simply not have an opinion (Chung Ho Yu, 2008).

The researcher, found it appropriate to use scales with neutral point in order to increase response rate and reduce the possibility of low reliability that could be caused by random guessing and forced answers (Chung Ho Yu, 2008; Jonas, 2007).

The respondents were requested to demonstrate to what degree to which they agreed or disagreed with the different statements. This scale allowed the researcher to quantify opinion-based items. Likert scale questions phrased often as structured questions, where each point on the scale represents one choice and are likely to produce a highly reliable scale. Zikmund (2010) observes that questionnaires prepared carefully are effective in collecting the relevant information.

The research instrument were designed to fit the purpose of the study by reviewing related literature in the field, consulting experts within the field for technical advice and brainstorming amongst peers. This was done to make sure that all the issues are addressed in the research and necessary adjustments were made. Questionnaires were pretested in selected 35 SMEs in Nairobi to test its reliability and validity.

3.8 Measurement of Independent, Dependent and Mediating Variables

The factors measured incorporate; the dependent variable adoption of cloud computing and independent variable TOE context. The TOE context as modelled by Tornatzky and Fleischer (1990) includes the technological context, organizational context, environmental context. The measurement instrument was developed for testing the hypothesis. In order to ensure content validity of instrument, it is advised to largely adapt the items for such construct from prior researches (Luarn and Lin, 2005).

Therefore, in this study, 70 survey items for five constructs in the questionnaire were derived from prior empirical studies. These variables are among the commonly proposed variables to understand critical factors affecting cloud adoption. TAM incorporates the perceived usefulness (PU) and perceived ease of use (PEOU) were also tested to ascertain the mediating effect. With each unit change in the independent variable, there is an increase or decrease in the dependent variable. The variance in the dependent variable is accounted for by the independent variable. In a statistical analysis independent variable is denoted by the symbol (X) while dependent variable is symbolized by (Y). Mediated variable is denoted by symbol (M).

Adoption of cloud computing measured the degree to which the accompanying service models IaaS, SaaS and PaaS have been adopted by SMEs in Nairobi, Kenya. Though the adopted measures were tested before and used in other studies and found to be valid and reliable, they were further tested for reliability and validity to confirm their applicability in this study and in the Kenyan context.

3.8.1 Dependent Variable Adoption of Cloud Computing

A dependent variable is a procedure result that is predicted by other variables. In this review the dependent variable is adoption of cloud computing. Cloud computing was measured in three diverse service models; Infrastructure as a service (IaaS), Platform as a Service (PaaS) and Software as a service (SaaS) (Fox 2009).

3.8.2 Independent Variable–TOE Context

An independent variable is a variable anticipated to impact the dependent variable. In this review, the independent variables are technology, organisational and environmental context. The components of TOE context; which include relative advantage, complexity, compatibility, Top management, Firm size, Technology readiness, competitive pressure and trading partner pressure. The measurement tool of relative preferred standpoint is embraced from Feuerlicht and Goverdhan (2010) and Jain and Bhardwaj (2010). Complexity tool was adopted from Premkumar *et al*. (1994), Gardner and Amoroso (2004) and Diane *et al*. (2001). Compatibility tool was adapted from Wang *et al*. (2010). Top management tool was adopted from Wang *et al*. (2010), Pan and Jang (2008), Zhu *et al*. (2004) and Tan *et al*. (2007). Firm size was adapted from Damanpour (1992). Technology readiness was adopted from Huang

(2004), Yang (2007) and Tan *et al*. (2007). Competitive and trading partner pressure was adapted from Lin and Lin (2008), Pan and Jang (2008) and Zhu *et al*. (2004). The above measures adopted a five-point Likert scale (1=strongly disagree to 5=strongly agree) was used by the above scholars and were modified to suit the Kenyan SMEs context.

3.8.3 Mediating Variable – PU and PEOU

Mediating variable is an intervening variable and impacts the relationship between the independent variable and the dependent variable. The mediator function of a third factor, states to the generative component through which the central independent factor can impact the dependent variable. A given variable is said to work as a mediator to the degree that it represents the connection between the predictor and the criterion (Nobleman and Kenny, 1986). This review tested perceived usefulness and perceived ease of use (TAM) generative instrument through which TOE setting can impact adoption of cloud computing. A framework high in perceived usefulness, thus, is one for which a client has faith in the existence of a positive user performance relationship. The measurement tool of perceived usefulness was adapted from Schillewaert *et al*., (2005) and perceived ease of use was adapted from Wu (2011).

3.8.4 Control Variables

Control variables are included to reduce the possibility of spurious results caused by correlation among the variables and constructs of interest. A large number of extraneous variables (control variables) exist and may affect a given relationship. When examining the relationship between TOE context and adoption of cloud computing the study identified; Industry type and Industry age (number of years in operation) as extraneous variables to control for possibility of variance.

In regard, to type of Industry, different industries may adopt technology depending on their nature of work. Some industries are more technology savvy than others. Age of the firm explains the experience and competencies the firm has acquired over time and thus plays a big role in the SMEs receptiveness to technology as they already know the benefits that come with it. Therefore, the true relationship between the independent and dependent variables was established by controlling the effect of the extraneous variables. Controlling, these variables allowed for accounting of mean differences of cloud computing adoption across the type of industries and age of SMEs.

3.9 Reliability and Validity of the Instruments

Reliability and validity are important confidence measures in any research undertaking. Researcher's goal of reducing measurement errors can follow several paths. In assessing the degree of measurement error present in any measure, researcher must address two characteristics of measure validity and reliability.

3.9.1 Reliability

Reviewed literature demonstrates constructs testing for reliability accomplished by ascertaining the Cronbach's alpha coefficient. Every one of the constructs was found to have a sufficient alpha value (> 0.6) (Hair *et al*., 1998). Every item was measured utilizing the five-point Likert scale. Reliability alludes to the level of which the measuring instrument gives reliable outcomes (Kothari, 2012). Reliability is a pointer of measures' inside consistency among factors of study. A measure is reliable when distinctive endeavours at measuring something meet on a similar outcome (Zikmund, 2010). Before commencement of the main field work, filtering of the measurement scales started with computing reliability coefficient (Cronbach's alphas) in accordance with Du Plessis' (2010) recommendations.

The questionnaires were pretested amongst the respondents in selected SMEs within Nairobi County. These SMEs and managers were considered to possess characteristics similar to the ones in actual survey. However, respondents from the pre-tested SMEs were not part of the study as this would have introduced assessment biases. According to Connelly (2008), a pilot study sample should be 10% of the projected sample for research.

The constructs testing for reliability was accomplished by computing the Cronbach's alpha. In the Cronbach's evaluation, the investigation of Hair *et al*., (2009) demonstrate that values of 0.6-0.7 be considered as the lower limit of acceptability of Cronbach's.

The reliability of information was computed utilizing the Cronbach's Alpha coefficient for all items in the questionnaire and the general evaluation was given. This test empowered the analyst to discard conflicting items from the instrument (Greener, 2008). Reliability test results of measurement scale items were generated. An inspection of Cronbach alpha coefficient values to ascertain whether it met the set thresholds was carried out.

Coded data from 35 responses were entered in the SPSS and a Cronbach alpha coefficient test of reliability was calculated based on a threshold of at least 0.6 as recommended by Hair *et al*. (1998). In this examination, the values of Cronbach's alpha was at the acceptable level (>0.6). The reliability statistics for the questionnaire are presented in Table 4.17. The nearer the Cronbach's alpha is to 1, the higher the internal consistency reliability (Sekaran and Bougie, 2010). The basis for the evaluation is that the individual items in every scale ought to all be measuring a similar construct and consequently be exceptionally inter-correlated. The measure ranges from 0 to 1.

An estimation of 1 shows perfect reliability. A questionnaire with a decent internal consistency ought to have high alpha coefficients (Hair *et al*., 2010). The researcher ensured that ambiguous information was eliminated while deficiencies and weaknesses noted and corrected in the final instruments. The study results indicated that the minimum required alpha values of 0.60 were exceeded in all the cases, signifying that the instrument used was reliable.

3.9.2 Validity of the Instruments

Zikmund *et al*., (2010) noted that validity demonstrates how much instruments measure what they should measure. The study tended to the four ways to deal with setting up validity; face validity, content validity, criterion validity and construct validity (Zikmund *et al*., 2010). Face validity was built up by assessing the ideas being considered for their propriety to consistently seem to reflect what was planned to be measured.

In evaluating fit between the items and their constructs, the majority of the essential element loadings were more noteworthy than 0.5 and had no cross-loadings as stipulated by (Hair *et al*., 1998). The factors were as follows; relative advantage (RA), complexity (CX), compatibility (CM), top management support (TS), firm size (FS), technology readiness (TR), competitive pressure (CP), and trading partner pressure (PA), perceived ease of use (PEOU), perceived usefulness (PU), Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).

Construct validity shows the degree to which the constructs theoretically identify with each other to measure an idea in light of the speculations fundamental within a research (Zikmund, 2000). Straub *et al*. (2004) assert that construct validity is the extent to which a measurement instrument is grounded in theory. This means that the instruments must have existing conceptual or theoretical bases in the literature.

In this study, construct validity was assured by deriving determinants of TOE context on cloud computing adoption from existing literature. A survey of theories was directed that supports this review. Consequently, the questionnaire tool adapted was aligned with the research objectives. Additionally, essential adjustments were made to the questionnaire based on feedback obtained from the pilot study. Similarly, a large sample size was used to boost the accuracy of the results.

Further, to accomplish construct validity, convergent and discriminant validity were set up as postulated by Straub *et al*. (2004). The relationship grid and between construct connection were examined for joined and discriminant validity. Convergent validity exists when ideas that ought to be identified with each other are in reality related and discriminant validity alludes to how a measure or scale is unique (Hair *et al*., 2006).

Hair *et al.* (2006) posit that factor analysis basically involve four stages as follows; First, preparation of correlation matrix which is the number in main distance of matrix called communality. Secondly was factor extraction which is getting the main factor that caused changes in the proposed variable. This may be done through commonly used methods like the Principal Component Analysis (PCA), maximum likelihood, principal axis factoring and least square, among others. Thirdly, was the selection and rotation of factors. Factors loading for each item in the factor matrix which shows the amount of correlation each item has is analysed through PCA, used together with variance maximization (Varimax) rotation and Kaizer normalization. This brings out easy interpretation as only components with Eigen values greater than 1 are extracted and renamed accordingly as recommended by Hair *et al*. (2010).

Finally, a statistical test of sampling adequacy which is by Kaiser-Meyer-Olkin (KMO) is used to indicate the proportion of variance in the variables that might be caused by the underlying factors. The value of 1.0 is regarded as useful for factor analysis. Consequently, Bartlett's tests of Sphericity were used to check the hypothesis which states that the correlation matrix is an identity matrix. If the variables are unrelated then it is an indication that they are unsuitable for structure detection. Values of less than 0.05 indicate that the data is good for factor analysis, according to Hair *et al.* (2010).

To build up content validity of factors measured substance was approved by deciding factors characterized and utilized as a part of past reviews identifying with determinants of cloud computing adoption (Low and Chen, 2011). Content validity refers to the extent to which a research instrument adequately covers the topic under study. The researcher passed on the instruments to experts in the field from Moi University. The expert opinion in this case were the supervisors who assessed the data collection tools meant to determine the mediating effect of user perception on the determinants of cloud computing adoption in selected SMEs in Nairobi, Kenya. They examined the content and advised the researcher on the content validity. Their feedback was used as a basis to revise the instruments and make them adaptable to the study.

Criterion validity is used to predict future or current performance- it correlates test results with another criterion of interest. Criterion validity is built up when the measure separates people on a basis it is required to predict (Sekeran, 2003). That is, it can correspond with other standard measures of comparative constructs or set up criteria (Zikmund, 2010). For this study, this was accomplished by generalizing the results to the population from which the sample was drawn; for this situation the selected SMEs in Nairobi Kenya.

3.10 Data Processing, Analysis and Presentation

Once the data was collected, the research findings were edited, coded, classified, tabulated and verified before analysis was done. Information gathered on demographic variables was handled and detailed in percentage through descriptive analysis.

3.10.1 Analysis and Presentation

Analysis involved the interpretation of survey data. On completion of the study, the researcher analysed data collected from questionnaires using both descriptive and inferential statistics with the aid of Statistical Package for Social Sciences. Descriptive analysis refers to the transformation of raw data into a form that would provide information to describe a set of factors in a manner that will make them easy to understand and interpret (Sekaran, 2000; Zikmund, 2000). Descriptive statistics such as frequencies, percentages, mean and standard deviation was used mainly to summarize the data. Scale reliability and validity were assessed using Cronbach's coefficient alpha and factor analysis.

Further, the study employed inferential statistics in the form of multiple regression and Pearson correlations analyses Pearson Product-Moment Correlation coefficient (PPMCC) is frequently used measure in case of statistics of variables (Vander Stoep, 2007). Pearson Product-Moment Correlations was used to examine the extent of correlation between independent and dependent variables, and also to assess the potential of multicollinearity. Correlation analysis is a prerequisite for multiple regression analysis.

Regression analysis was used to test the degree to which the independent variables predict the dependent variable and correlations was used to test for the statistical relationship between variables.

3.10.2 Multiple Linear Regression Analysis

Inferential statistics are an indication of cause-effect relationships between variables. Multiple linear regressions were conducted to establish whether the relationships are statistically significant. It is an extension of simple regression analysis allowing a metric dependent variable to be predicted by multiple independent variables. Multiple linear regression is appropriate for the study because there is more than one independent variable involved in the analysis and establishing whether relationships between variables are significant by testing hypothesis (Zikmund *et al.*, 2010).

The main objective of the study was to establish the mediating effect of user perception on the determinants of cloud computing adoption in selected SMEs in Nairobi, Kenya. The relationship was predicted using r^2 and adjusted r^2 to determine the amount of variance the independent variables account for the dependent variable and to determine the fitness of the model. The independent variables are technological context, organizational context and environmental context and were tested independently to determine if they are unique predictors of cloud computing adoption.

The generated multiple regression model that cloud computing adoption could be predicted using the following hypothesis.

Regression model 1

$Y = a + \beta_1 c + \varepsilon$ ……….. eqn1

Regression model 2

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$ ……….............................. eqn 2

Where:

Y= – Cloud Computing

x_1 – Technology context

x_2 - organizational context

x_3 – Environmental context

ß is a constant

$ß_1$ - $ß_3$ - the coefficients estimates (the rate of change of y as x changes)

C is control variables (Industry Type, Years)

ε – Error Term (random variation due to other unmeasured factors).

3.10.3 Testing for Mediation

Researchers often conduct mediation analysis in order to indirectly assess the effect of a proposed cause on some outcome through a proposed mediator. The main purpose of mediation analyses is to examine why an association between a predictor and outcome exists. The utility of mediation analysis stems from its ability to go beyond the merely descriptive to more functional understanding of the relationships among variables. A necessary component of mediation is a statistically and practically significant indirect effect. While taking into consideration the recent critique and modifications suggested by Zhao, Lynch and Chen (2010), Baron and Kenny (1986) propose a four-step approach in which several regression analyses are conducted and significance of the coefficients is examined at each step.

Step one Conduct a simple regression analysis with X predicting Y to test for path c alone. This shows that there is a significant relation between the predictor and the outcome. Step two, conduct a simple regression analysis with X predicting M to test for path a, this second step is to show that the predictor is related to the mediator. Step three, conduct a simple regression analysis with M predicting Y to test the significance of path b alone. The third step is to show that the mediator is related to the outcome variable and it is estimated controlling for the effects of the predictor on the outcome.

Step four, conduct a multiple regression analysis with X and M predicting Y path c' This final step is to show that the strength of the relation between the predictor and the outcome is significantly reduced when the mediator is added to the model (compare below Path c in step 3.1 A with Path c' in Figure 3.1 B).

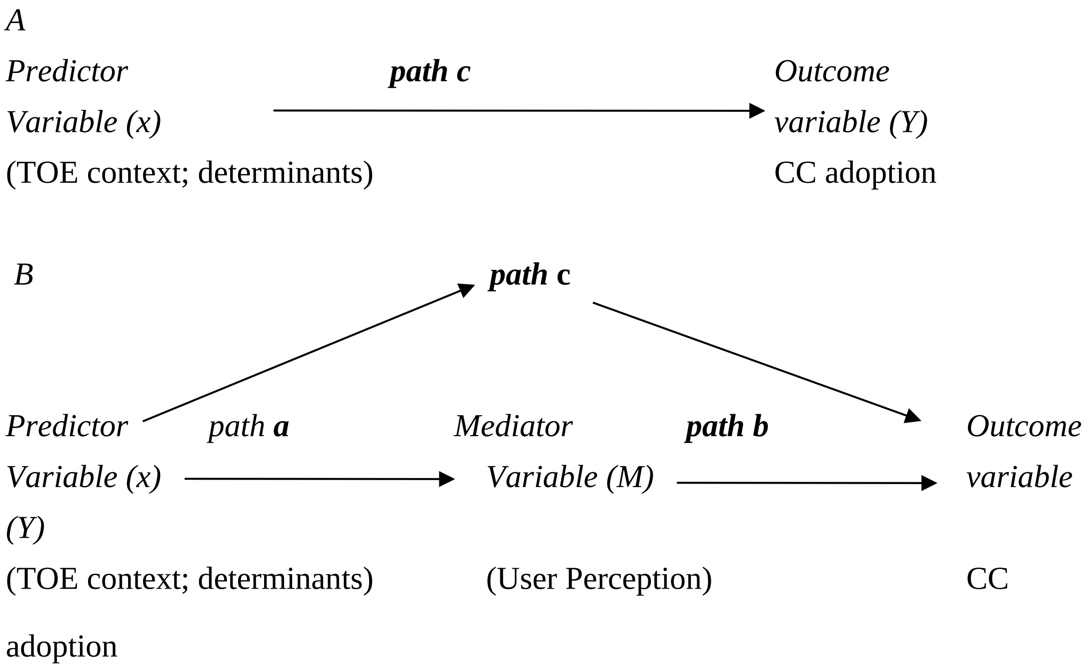


Figure 3.1: Diagram of Path in Mediation Models
Source: Survey (2017)

According to the model popularized by Kenny and colleagues (Baron and Kenny, 1986; Judd and Kenny, 1981; Kenny *et al*., 1998), the first step in the process of testing mediation is to establish that there is a significant relation between the predictor and outcome variable. That is, before one looks for variables that mediate an effect, there should be an effect to mediate. Therefore, in designing a mediation study, one generally should begin with predictor and outcome variables that are known to be significantly associated on the basis of prior research.

However, considering the above in mind that mediation process is a hypothesized causal chain in which one variable affects a second variable and in turn affects a third variable (Newsom, 2001). According to Collins, Graham, and Flaherty (1998), MacKinnon (2000), MacKinnon (2003), MacKinnon *et al*. (2001) and Shrout and Bolger (2002) they have had contrasting views on the requirement that *X*-*Y* be significant. Additionally, it has been found out that the method described by Baron and Kenny (1986) suffers from low statistical power in most situations (MacKinnon *et al*., 2002).

Mediation analysis permits examination of process, allowing the researcher to investigate by what criteria X exerts its effect on Y. Although systems of equations linking X to Y through multiple mediators are possible to specify (MacKinnon, 2000; 2003), this study focused on models in which only a single mediator (M) is posited. We term this three-variable system simple mediation. Simple mediation is illustrated in the path diagram in Figure 3.2.

In the Figure 3.2, a_1 refers to the (unstandardized) slope coefficient of M regressed on X, and b_1 and c' denote the conditional coefficients of Y regressed on M and X, respectively, when both are included as simultaneous predictors of Y. Allowing c represent the effect of X on Y in the absence of M, the indirect effect is traditionally quantified as c-c', which is ordinarily equivalent to $a_1 b_1$ (MacKinnon, Warsi and Dwyer, 1995).

The coefficients previously described are commonly obtained using least squares regression. In this study, the analytical model shown below was used to determine the mediation effect of user perception on cloud computing adoption. Specifically, coefficients a_1 and b_1 may be obtained from the regression equations:

M = $a_0 + a_1$X + r

Y= b_0+ c'X + b_1M + r

Where, a_0 and b_0 are intercept terms and r is a regression residual. The coefficients a_1 and b_1 are then used to assess the presence, strength, and significance of the indirect effect of X on Y via M.

Mediation analysis uses the estimates and standard errors from the following regression equations (MacKinnon, 1994): The independent variable (X) causes the outcome variable (Y), the independent variable (X) causes the mediator variable

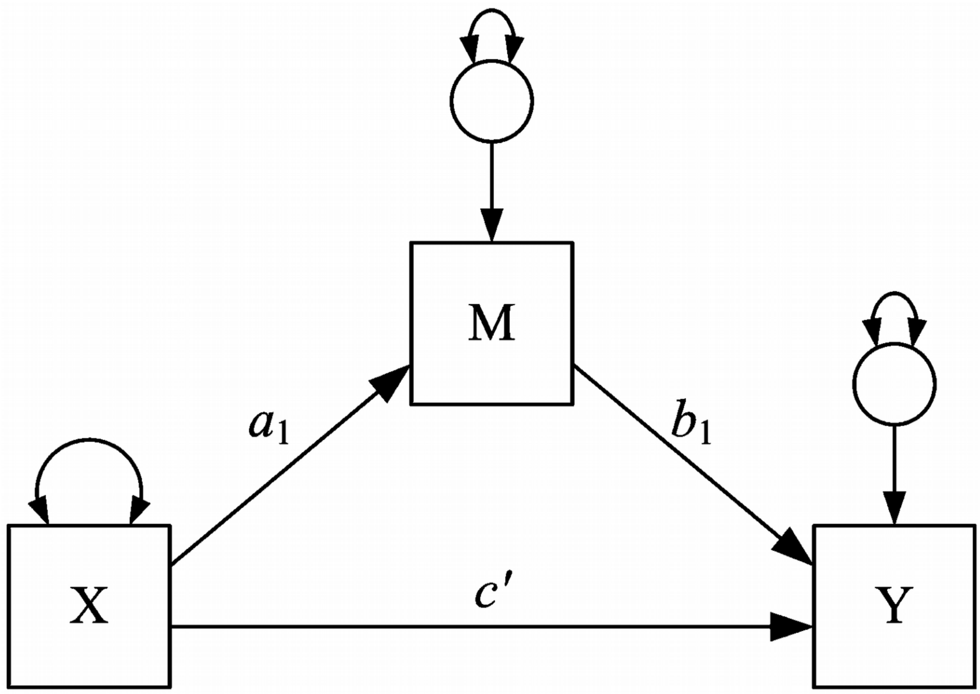


Figure 3.2: Mediation Models

Source: MacKinnon (2000)

According to MacKinnon as shown in the Figure 3.2 above the following are the three mediation steps:

Step one: The independent variable (X) causes the outcome variable (Y).

Step two: The independent variable (X) causes the mediator variable (M).

Step three: The mediator (M) causes the outcome variable (Y) when controlling for the independent variable (X).

If the effect of X on Y is zero when the mediator is included ($c' = 0$), there is evidence for mediation (Judd and Kenny, 1981a, 1981b). This would be *full* mediation. If the effect of X on Y is reduced when the mediator is included ($c' < c$), then the direct effect is said to be *partially* mediated. Using the regression coefficients from the models above, the components of a mediation model are Total effect = $a*b + c'$. The total effect is the sum of direct and indirect effects of the X on the outcome (Y). Direct effect = c'. The direct effect of X on Y while taking the mediator into account. Mediated effect = *a*b t*he mediated effect is also called the indirect effect. This is because it is the part of the model that indirectly affects the outcome through the mediator.

However, Mackinnon suggested that it is not just enough to show that the relation between the predictor and outcome is smaller or no longer significant when the mediator is added to the model. Rather, one of the several methods for testing the significance of the mediated effect should be used for a comparison of several different methods and for an alternative bootstrapping procedure (Mackinnon *et al.*, 2002; Shrout and Bolger, 2002). A summary of the mediation approach is shown in Table 3.3 below.

Table 3.3: A Summary of the Three Step Approach of Testing for Mediation

	Analysis model	
Step 1	A simple regression analysis with X (IV) predicting Y (DV) to test for path c alone	$Y = cX + e_1$
Step 2	A simple regression analysis with X predicting M to test for path 'a'	$M = aX + e_2$
Step 3	A multiple regression analysis with M predicting Y to test the significance of path 'b' and X and M Predicting Y to test effects on Y (paths c')	$Y = c'X + bM + e_3$

Source: MacKinnon (2000)

3.10.4 Underlying Assumptions of the Multiple Linear Regression Model

All regression models have assumptions and violation of these assumptions can result in parameter estimates that are biased, inconsistent and inefficient. A regression is a mathematical representation of what and how exogenous variables are related to the endogenous variables (Baron and Kenny, 1986). The following are the assumptions that the data must meet in order to conduct a linear regression analysis.

(i). **Normality:** It is assumed that the residuals of variables are normally distributed. That is the errors in the prediction of value Y (the dependent variable) are distributed in a way that approaches the normal curve. The normality of distribution was inspected using the degrees of skewness and kurtosis of variables. Histograms or normal probability plots were used to inspect the distribution of variables and their residual values.

Normality is considered to be fundamental assumption in multivariate analysis (Tabachnick and Fidell, 2007; Hair *et al*., 2010). The main assumption in normality is that the data distribution in each item and in all linear combination of items is normally distributed (Tabachnick and Fidell, 2007; Hair *et al.*, 2010). The assumptions of normality can be examined at univariate level (that is, distribution of scores at an item level) and at multivariate level (i.e. distribution of scores within a combination of two or more than two items). Hair *et al*. (2010) argue that if the variable/items satisfies the multivariate normality then it definitely would satisfy the univariate normality, but the reverse is not necessarily correct. In other words, if univariate normality exists there is no guarantee for the assumption of multivariate normality. Similarly, the normality of distribution was also checked by use of Kolmogorov-Smirnov test.

(ii). **Linearity:** It is assumed that the relationship between the independent and dependent variables is linear. Linearity refers to the degree to which the change in the dependent variable is related to change in the independent variables (Hair *et al.*, 2010). Linearity between the dependent variable and independent variable was tested using PPMCC. The objective was to assess the strength of linear relationship among variables. Scatter plots of the variables can help make this determination.

(iii). **Homoscedasticity:** At each level of the predictor variables(s), the variance of the residual terms should be constant. This just means that the residuals at each level of the predictor(s) should have the same variance (homoscedasticity); when the variances are very unequal there is said to be heteroscedastic data hence leading to heteroscedasticity. It is assumed that the variance around the regression line is the same for all values of the independent variables. Therefore, the dependent variable should exhibit similar amounts of variance across the range of values for independent variable around the regression line, meaning they have equal spread.

(iv). **Independence:** It is assumed that the errors in the prediction of the value of Y are all independent of one another, i.e. not correlated (StatSoft, 2011). Linear regression analysis requires that there is little or no auto-correlation in the data. Autocorrelation occurs when the residuals are not independent from each other. This study used Durbin-Watson test to check for autocorrelation.

(v). **Multicollinearity:** Multi-Collinearity refers to the presence of high correlations between independent variables (Williams *et al.,* 2013). There should be no perfect linear relationship between two or more of the predictors. So, the predictor variables should not correlate too highly. In this study, multi-corllinearity was assessed by means of tolerance and Variance Inflation Factor (VIF) values. A tolerance value of below 0.01 or a VIF value greater than 10 reveals serious multi-collinearity problem (Hair *et al.,* 2007; Leech *et al.,* 2011). Tolerance indicates the amount of variability of the particular independent variable not explained by other independent variables, whereas VIF is the inverse of tolerance statistic.

(vi). **Non-zero variance:** The predictors should have some variation in value (i.e. they do not have variances of 0).

3.10.5 Hypothesis Testing

Multiple regression analysis is used to predict the value of dependable variable based on the value of two or more independent variables. The study hypotheses were therefore tested using multiple regression analysis where the significant level was set at 0.05. The null hypotheses were either rejected at $p<0.05$ level, otherwise fail to reject at $p>0.05$ level.

3.11 Limitations of the Study

This study makes significant contributions to academic knowledge research and practices on mediating effect of user perception between TOE context and cloud computing adoption. However, there are limitations that provide opportunities for further research experienced at the empirical stage of study. The limitation of this study is largely related to the methodologies used. The limitations of this research is restricted to only those SME's who have adopted cloud computing to deliver the core product or service of their business hence the data collected is only relevant to this part of the total population. This study, emphasized more of quantitative approach rather than qualitative.

On a geographical dimension, this study was primarily limited to SMEs in Nairobi. The justification of selecting Nairobi is due to its diversity of Industries compared to other areas in Kenya. Therefore, it may not be appropriate to generalize to the whole population of the SMEs in this country or any other country but only to the population from which that sample was taken.

Although the constructs have been defined as precisely as possible by drawing upon relevant literature and validated by practitioners, the measurement used may not perfectly represent all dimensions. Therefore, future studies could use the same hypotheses and regression construction, but implement the study in terms of a longitudinal rather than a cross-sectional design. The longitudinal study would need to correct changes in data relative to the time element. Despite possible limitations of using single-period data, the results of the present study provide valuable insights on the effect of user perception on the relationship between TOE context and adoption of cloud computing.

3.12 Ethical Considerations

Ethical considerations in any study is critical since it involves collecting data from people and about people in relation to moral choices affecting decisions, standards and behaviour (Punch, 2005). Ethical considerations guide researchers in protecting participants, develop trust with them, promote the reliability of research and safeguarding against misconduct and impropriety that might reflect on researcher and university.

The ethical issues considered during the study included giving the participants full information about the purpose of the study and researcher’s status and role, being honest with respondents, gaining informed consent from the respondent to participate in the research study respecting the participant’s right to refuse to take part at any stage of the process and assuring respondents. Further, information from respondents was treated with confidentiality. Giving assurance that useful information of the research findings will be shared with the respondents, using pseudonym, withholding the real identity name from the study. The researcher also maintained objectivity during data collection; analysis and report stages. These ethical considerations are supported by various authors (Richardson and Godfrey, 2003; Saunders *et al*., 2007; Greener, 2008; Zikmund *et al*., 2010).

In addition, the researcher obtained a research permit from National Commission for Science, Technology and Innovation (NACOSTI) to conduct the study. The study findings will be communicated to stakeholders through publications. The researcher took responsibility to only collect and analyse data required to fulfil the objectives of the study.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the main findings of the research. The research results are presented in tables and analysed using a variety of descriptive and inferential statistics. The Chapter opens with a description of the data examination, the response level, the demographic characteristics and personal information of the respondents. These first sections are followed by a presentation of findings based on the empirical objectives of the study and then findings on tests of the research hypotheses. The findings form the basis for discussion on how each independent variable relate to the dependent variable.

4.2 Initial Data Examination, Screening and Preparation

Screening, editing and readiness of initial data are basic research steps conducted before further multivariate analysis. These steps help the researcher to identify any potential infringement on the research presumptions (Hair *et al.*, 2010). Moreover, initial data examination enables the researcher to have a more profound comprehension of the collected data. In this study, the survey data was screened for a number of potential problems, according to guidelines provided by Tabachnick and Fidell (2013). On receipt of the completed questionnaires, the researcher numbered them in readiness for screening. This ensured that every questionnaire was accounted for. Questionnaires that were left blank or had large missing data were discarded and not included in the analysis.

4.3 Response Rate

A total of 398 questionnaires were administered to the respondents but only 322 were used in the analysis and this accounted for a response rate of 81% which was found to be good. According to Orodho (2009), a response rate above 50% is sufficient to provide useful data. The success rate was attributed to the self-administration of the questionnaires applied by the researcher from which the intended respondents were pre-notified prior to the date of data collection from which the researcher agreed on the actual date for the data questionnaire administration. Follow-up calls to clarify queries were made thus enhancing the high response rate. The response rate of 81% was deemed sufficient to examine the mediating effect of user perception on the determinants of cloud computing adoption among SMEs in Nairobi, Kenya.

4.3.1 Analysis of Missing Data

Studies have shown that missing values are a common occurrence in social science research (Hayes, 2012). Missing values is a reflection of occurrences where valid values for some cases in one or more variables are unavailable for analysis. In this study, the researcher utilized a protective technique at the data collection stage to diminish the occurrence of missing values. Each questionnaire was personally delivered to SMEs managers by the research assistants. Thereafter, a time and date to return and collect the questionnaire was agreed upon between the research assistant and the respondents. To ensure that the questionnaire was completed, the researchers (the researcher and research assistants) made follow-up phone calls prior to the second visit. In case the completed questionnaire was still not available, the researchers arranged visits to encourage the participants to fill the questionnaires.

Upon receiving the completed questionnaires, the researcher and research assistants immediately checked them to guarantee that all questions were addressed suitably. Thereafter, missing values were assessed with respect to variables. Hair *et al*., (2013) note that missing values should be replaced using mean when they are less than 5% per item. In this study, missing value with more than 5% was discarded and was not utilized for further analysis. Those within range of 0.2% to 1.5% were deemed useable. Therefore missing data were replaced with mean substitution before further analysis was conducted, in line with the views of Tabachnick and Fidell (2013).

4.3.2 Analysis of Outliers

An outlier is an observation that lies an abnormal distance away from other values in a random sample. It may be a result of abnormal variations in the measurement and can be an indicator of experimental error (Churchill and Iacobucci, 2004). An outlier is sometimes excluded from the data set. There is a high tendency for outliers to appear in any random distribution, but they often indicate either measurement errors or that the population suffers hard-tail distribution. Failure to carry out an initial examination of outliers can distort statistical tests if it happens to be problematic outliers (Hair *et al*., 2010).

In particular, it distorts statistics and may lead to results that do not generalize to certain sample except one with the same type of outliers (Tabachnick and Fidell, 2013). In line with the suggestion of Tabachnick and Fidell (2013), in this study, the Mahalanobis D2 measure was employed to identify and deal with multivariate outliers. Usually, handling multivariate outliers takes care of univariate outliers. However, treating univariate outliers does not necessarily take care of multivariate outliers (Hair *et al*., 2010).

The Mahalanobis D2 was calculated using linear regression methods in IBM SPSS v20, followed by the computation of the Chi-square value. Given that 4 items were used, 3 represented the degree of freedom in the Chi-square table with $p < 0.001$ (Tabachnick and Fidell, 2013). This meant that any case with a probability Mahalanobis D2 value of less than 0.001 was a multivariate outlier and should be removed. Therefore, cases with a value of less than 0.001 were excluded from further analysis.

4.4 Firm Characteristics

The researcher deemed it important to establish the firm characteristics. Based on the research findings, the targeted firms had a minimum of 10 employees and a maximum of 100. On average, there were 73 employees (mean = 73.36, SD = 147.794). Most of the firms had been in existence for an average 16 years (mean = 16.42, SD = 15.296). Generally, the firms had applied ICT for the past 9 years (mean = 9.61). Besides, the entrepreneurs have a tenure of 5 years (mean = 5.45, SD = 3.953). The results were as presented in Table 4.1 below.

Table 4.1: Firm Characteristics

	N	**Min**	**Max**	**M**	**SD**
Firm size	322	10	100	73.36	147.794
Firm age	322	1	70	16.42	15.296
Years in ICT application	322	1	40	9.61	6.209
Job tenure	322	1	19	5.45	3.953

Source: Survey Data (2017)

4.4.1 Firm existence and adoption of cloud computing

During the study the age of the firm was used as the control variable. Most of the firms had been in existence for between one and 70 years as summarized in Table 4.2. The highest mean was obtained at 21years of the firm existence (mean=4.33), followed by 35 years (4.3) and 40 years (mean =4.03). The least mean was in 25 years of existence (mean =2.88). There was a significant difference between the age of existence of firms and level of adoption of cloud computing [$F(32, 289) = 2.044$; $p=0.001$]. Since the effects in level of adoption of cloud computing were found to be significant, it implies that the means differ more than would be expected by chance alone and despite reaching statistical significance, the actual difference in age of existence between the groups was quite small.

Table 4.2: Descriptive of firm age and Level of adoption

Firm Age	Mean	Std. Deviation	Std. Error	F	Sig.
1	3.6667	.	.	2.044	.001
2	3.9029	.76421	.27019		
3	3.6964	.65299	.18850		
4	3.9003	.52967	.10812		
5	3.5846	.33619	.08405		
6	3.6932	.22596	.05184		
7	3.2893	.80135	.26712		
8	3.8573	.43175	.06509		
9	3.6583	.45316	.18500		
10	3.4840	.70084	.14306		
11	3.6250	.41667	.20833		
12	3.7367	.80610	.57000		
13	3.4433	.00000	.00000		
14	3.6567	.41016	.13672		
15	3.6779	.78170	.11525		
16	3.7133	.27339	.10333		
17	3.6804	.55167	.19504		
18	3.1400	.00000	.00000		
19	3.3220	.50506	.22587		
20	3.8367	.83506	.29524		
21	4.3333	.00000	.00000		
24	3.8067	.	.		
25	2.8787	.72001	.32200		
26	3.1400	.00000	.00000		
30	3.5878	.63383	.25876		
35	4.3067	.	.		
40	4.0330	.70491	.22291		
41	3.8067	.00000	.00000		
45	3.5267	.	.		
49	3.1667	.	.		
50	3.3098	.32831	.07738		
60	3.0467	.08083	.04667		
70	3.1310	.12599	.04762		
Total	**3.6381**	**.59384**	**.03309**		

4.5 Category of the Firms in the Sector

The study sought to document the categories of firms in the sector. The findings identified firms in the manufacturing (28.6%), consulting (20.8%), hospitality (18.3%), information technology (17.7%), computer retail (8.4%) and tours and travel (6.2%) sectors as summarized in Table 4.3.

Table 4.3: Category of the Firms in the Sector

	Frequency	**Percent**
Manufacturing	92	28.6
Hospitality	59	18.3
Consulting	67	20.8
Information technology	57	17.7
Computer retail	27	8.4
Tours and travel	20	6.2

Source: Survey Data (2017)

4.5.1 Descriptive on Industry and Level of adoption of cloud computing

This study used industry type and firm age as control variables. The sector with the highest level of adoption of cloud computing was tours and travel firm (mean=4.22), followed by Information and technology sector (mean=3.74) as summarized in Table 4.4. The sector with the lowest level of adoption of cloud computing was computer retail (mean =3.36). There was a significant difference between the Industry and level of adoption of cloud computing [F (6, 315=2.044; p=0.001].

Table 4.4: Descriptive on Industry and Level of adoption of cloud computing

Industry	Mean	Std. Deviation	Std. Error	F	Sig.
Manufacturing	3.4842	.45204	.04713	6.116	.000
Hospitality	3.6682	.69970	.09109		
Consulting	3.6794	.70763	.08645		
Information technology	3.7369	.38691	.05125		
Computer retail	3.3558	.68377	.13159		
Tours & travel	4.2185	.20887	.04670		
Total	**3.6381**	**.59384**	**.03309**		

Since the effects in level of adoption of cloud computing were found to be significant, it implies that the means differ more than would be expected by chance alone and despite reaching statistical significance, the actual difference in sectors between the groups was small.

4.6 Respondents' Characteristics

This section of the analysis highlights the research participants' demographic characteristics. The study began by seeking the respondents' professional responsibilities in their respective SMEs. Based on the findings, 168(52.2%) of the respondents were managers, 143(44.4%) were IT managers and 11(3.4%) were owners. This distribution provided a diversified base of information given the contribution of the different responsibilities played by the respondents.

On the highest level of education, 224(69.6%) of the respondents held degrees, 80(24.8%) of them had Diplomas and 17(5.3%) of them had Master's degrees. It is evident that the respondents possess the requisite skills to perform their duties effectively. As such, the respondents' educational levels constituted a part of the organizations' human capital. The results were as presented in Table 4.5 below.

Table 4.5: Respondent's Characteristics

		Frequency	Percent
Responsibility in the organization	Owner/CEO	11	3.4
	Manager	168	52.2
	IT Manager	143	44.4
	Total	322	100
Highest level of education	Primary/secondary	1	0.3
	Diploma	80	24.8
	Degree	224	69.6
	Masters	17	5.3
	Total	**322**	**100**

Source: Survey Data (2017)

4.7 Descriptive Statistics

In order to summarize the observed data, means and standard deviations were generated. Means represent a summary of the data and standard deviations show how well the means represent the data (Field, 2009). The main purpose of this analysis was to establish whether or not the statistical means comprised a good fit of the observed data (Field, 2009; Saunders *et al*., 2007). The means and standard deviations of each respective variable were as shown below (tables 4.6 to 4.18).

4.8 Technology Context

Technological context under the TOE framework analysed the following sub-constructs: relative advantage, compatibility and complexity.

4.8.1 Relative Advantage

Rogers (2003) defines relative advantage as the degree to which an innovation is perceived as being better than the idea it superseded (other computing paradigms). Cloud computing engenders both technical and economic advantages over traditional IT environments. The study, therefore, deemed it important to establish the relative advantage of cloud computing among the selected SMEs within Nairobi County.

As indicated in the table below, the respondents noted that the use of cloud computing at work was advantageous (M = 4.54, SD = 0.606). This meant that cloud computing made SMEs processes more efficient. As such, cloud computing enhanced SMEs' productivity and performance which eventually contributes to profitability. Moreover, with cloud computing, the respondents only paid for what they used (M= 4.1, SD =

0.87). This finding concurs with the assertion by Feuerlicht and Govardhan (2010) that cloud computing offers rented services on pay-as-you-use basis which leads to adjusting the level of usage according to the current needs of the organization.

The respondents further indicated that cloud computing also helped to scale up their requirement when needed (M =4.16, SD = 0.795). Cloud computing, therefore, provides a wide array of benefits to SMEs with robust coordination features such that they can only pay for what they use and are able to scale up their requirements whenever needed. These findings are in line with the views of Marston *et al*. (2011) that with cloud computing, SMEs have almost instant access to hardware resources and a faster time to market with no upfront capital investment.

In addition, the respondents said cloud computing helped them to access information any time from any place (M= 4.29, SD = 0.84). Most importantly, they said performance did not decrease with growing user base (M = 3.83, SD = 0.961). Therefore, cloud computing improved customer care service and reliable access to information. Besides, the respondents can access and share resources placed on cloud (M = 4.17, SD = 0.748). Individuals can access resources placed on cloud from any location hence saving on time and money. These findings are in agreement with those of Miller (2008) that cloud computing can offer many advantages related to capacity, reliability and flexibility.

However, the study found that it had not been fully established if there was need to maintain the IT infrastructure (M = 3.3, SD = 1.229). On the whole, the results on relative advantage summed up to a mean of 4.0541, standard deviation of 0.52369, skewness -1.519 and kurtosis 5.535. From the foregoing, the relative advantages of cloud computing were self-evident. The findings were as presented in Table 4.6 below.

Table 4.6: Relative Advantage of Technology Context

	M	SD	Kurtosis	Skewness
Is advantageous	4.54	0.606	-1.442	-0.32
We pay only for what I use.	4.1	0.870	2.844	-1.232
We are able to scale up our requirement when required.	4.16	0.795	-0.510	0.639
We can access information any time from any place.	4.29	0.840	-0.787	-0.670
Performance does not de-crease with growing user base.	3.83	0.961	0.891	-2.393
we can access and share re-sources placed on cloud	4.17	0.748	-0.968	0.150
we need not maintain my IT infrastructure	3.30	1.229	-0.920	0.438
Composite Mean	**4.0541**	**0.52369**	**-1.519**	**5.535**

Source: Survey Data (2017)

4.8.2 Compatibility

Rogers (2003) describes compatibility as the extent to which a new innovation fits with existing organizational values, culture and practices. For SMEs, it is essential that the new innovation is consistent with their existing values and needs, since a poor integration of new systems with existing ones could result in low acceptance and application (Akbulut, 2003). The study, therefore, sought to establish the state of compatibility of cloud computing with the organizational cultures of the selected SMEs in Nairobi County.

From the findings, cloud computing was reported to be compatible with existing technological architecture of the different companies (M = 3.89, SD = 0.835). The high compatibility of cloud computing with the technological architecture of the SMEs positively affects the adoption process. However, the respondents reported that whenever there were incompatibility issues with cloud computing, there was use of integrated services (M = 3.95, SD = 1.093). This meant that SMEs had a backup in case of incompatibility issues.

Additionally, the use of cloud computing at work was reported as consistent with existing practices in their company (M = 3.82, SD = 0.912). Customization was also reported to be easy in in cloud-based services (mean = 3.87, SD = 0.916). The respondents further indicated that it was easy to import and export applications/data from cloud services (M = 3.85, SD = 1.021). Further, the use of cloud computing at work was compatible with their firm's existing format, interface and other structural data (M = 3.75, SD = 0.998). This meant that the technical and procedural requirements of cloud computing are consistent with values and the technological requirements of the SMEs. However, in case of non-customizable cloud-based services, the respondents incurred retraining cost (M = 3.54, SD = 1.053).

Finally, the respondents reported that cloud computing was compatible with all aspects of their work (M = 4.03, SD = 0.868). The results on the compatibility of cloud computing were summed up to a mean of 3.8381 standard deviation of 0.57663, Skewness 0.051 and kurtosis -0.624. Therefore, compatibility was one of the significant aspects affecting the adoption of cloud computing among the selected SMEs in Nairobi County. The findings on compatibility were as presented in Table 4.7 below.

Table 4.7: Compatibility

	M	SD	Kurtosis	Skewness
in case of any incompatibility issue, we ask cloud service provider to offer integrated services	3.95	1.093	2.624	-0.915
are compatible with existing technological architecture of my company	3.89	0.835	-1.067	-0.3
Customization in cloud-based services is easy.	3.87	0.916	0.228	0.839
Is consistent with existing practices in my company.	3.82	0.912	0.653	0.857
Is compatible with my firm's existing format, interface, and other structural data	3.75	0.998	1.524	-1.366

We incur re-training cost in case of non-customizable cloud-based services	3.54	1.053	1.833	1.158
Is easy in importing and exporting applications/ data from cloud services.	3.85	1.021	0.629	-1.219
Is compatible with all aspects of my work	4.03	0.868	-0.292	0.603
Composite Mean	**3.8381**	**0.57663**	**0.051**	**-0.624**

Source: Survey Data (2017)

4.8.3 Complexity

Rogers (2003) defines complexity as the degree to which an innovation is perceived as relatively difficult to understand and use. The study, therefore, sought to establish the respondents' experiences of complexity of cloud computing in the selected SMEs in Nairobi County. Table 4.8 summarize the research results. Through personal interaction with cloud computing, the respondents perceived it to be useful when it was easy to use (M = 4.22, SD = 0.797). Besides, the respondents found cloud computing flexible to interact with (M= 4.09, SD = 0.919). Moreover, performing many tasks together did not take up too much of their time (M = 3.7, SD = 0.922).

Additionally, the respondents found it easy to integrate their existing work with the cloud-based services (M = 3.68, SD = 1.125). Therefore, adoption was high since the respondents perceived the use of cloud computing to be useful, flexible to interact with and time saving. Prior scholars, namely Parisot (1995) and Sahin (2006), have similarly espoused that new technologies have to be user-friendly and easy to use in order to increase the adoption rate. To sum up, the use of cloud computing did not expose the respondents to the vulnerability of computer breakdowns and loss of data (M = 3.45, SD = 1.495). As such, the respondents were not prone to security and privacy issues. These findings were as presented in Table 4.8 below.

Table 4.8: Complexity

	M	SD	Kurtosis	Skewness
Perceived to be useful when it is easy to use.	4.22	0.797	0.918	0.169
Flexible to interact with.	4.09	0.919	1.498	-0.601
Does not exposes me to the vulnerability of computer breakdowns and loss of data.	3.45	1.495	-0.671	0.475
I find it easy to integrate my existing work with the cloud based services.	3.68	1.125	-0.414	0.064
Performing many tasks together does not take up too much of my time.	3.7	0.922	2.686	0.166
Composite Mean	**3.8298**	**0.7131**	**-0.376**	**0.048**

Source: Survey Data (2017)

The results on the complexity of cloud computing summed up to a mean of 3.8298, standard deviation of 0.7131, skewness -0.376 and Kurtosis of 0.048. The mean of 3.88298 indicates that the respondents were in agreement with items on complexity. This infers that the respondents had good experiences in their interactions with cloud computing. The standard deviation values of 0.7131 indicate that there was less variation in the responses. The skewness and kurtosis values ranged from -1.96 to +1.96, meaning there was normal distribution of the responses.

4.9 Organization Context

The organization context under the TOE framework analysed the following three sub-constructs: top management support, firm size and technology readiness.

4.9.1 Top Management Support

Top management support is essential to successful adoption of new technology. Therefore, the study sought to establish the level of top management support with regard to cloud computing. From the results, it was found that the top management exhibited a culture of enterprise wide information sharing (mean = 4.02, SD = 0.839). This meant that the SMEs' top management sent positive signals on the significance of cloud computing to all organizational members thus encouraging high adoption rates of cloud computing. On the same note, the companies' top management provided strong leadership and engaged in the process when it came to information systems (mean = 3.75, SD = 0.896).

It was also established that the top management was likely to consider the adoption of cloud computing as Strategically important (M = 3.69, SD = 0.919). In view of this, management support is a key ingredient in the maintenance of the importance of possible change through an articulated strategy for the organization. As such, the respondents stated that cloud computing adoption depended on the top management support (M = 4.03, SD = 0.87).

Furthermore, the respondents indicated that the top management was willing to take risks involved in the adoption of cloud computing (M = 3.57, SD = 0.863). This implied that there was adequate support from the top management which is essential in the adoption of cloud computing. Besides, it was reported that the top management supported the adoption of cloud computing when they perceived it useful to the organization (M= 4.14, SD = 0.748). They also supported adoption of cloud computing when they perceived it easy to use within the organization (M= 4.2, SD = 0.77). It was therefore deduced that the SMEs' top management support was considered crucial in the successful integration of cloud computing in the selected SMEs.

The findings on top management support summed up to a mean of 3.9153, standard deviation of 0.48656, Skewness 0.297 and kurtosis -0.206. On the whole, the respondents agreed with the items on top management support. The standard deviation was indicative of less variation on the responses. On the other hand, the skewness and kurtosis values were within the range of 1.96 to +1.96, meaning there was normal distribution of the responses. These findings were as presented in Table 4.9 below.

Table 4.9: Top Management Support

	M	SD	Kurtosis	Skewness
Our top management exhibits a culture of enterprise wide information sharing.	4.02	0.839	4.466	-1.22
The company's top management provides strong leadership and engages in the process when it comes to information systems company.	3.75	0.896	-0.329	0.405
My top management is likely to consider the adoption of cloud computing as strategically important.	3.69	0.919	9.125	-1.858
My top management is willing to take risks involved in the adoption of cloud computing	3.57	0.863	-0.419	0.663
Cloud computing adoption depends on the top management support.	4.03	0.87	1.945	-1.383
Top management Supports adoption of cloud computing when they	4.14	0.748	-0.322	0.815

perceive it useful to the organization				
Top management supports adoption of cloud computing when they Perceive it easy to use within the organization	4.2	0.77	-0.425	0.06
Composite Mean	**3.9153**	**0.48656**	**0.297**	**-0.206**

Source: Survey Data (2017)

4.9.2 Firm Size

Firm size is among the factors that have an influence on technical innovation. It has been argued that, compared to larger firms, SMEs, because of their size, are more innovative and flexible enough to adapt their actions to the quick changes in their environment compared to large firms (Damanpour, 1992; Jambekar and Pelc, 2002). The study therefore deemed it important to establish the SME firms' sizes.

The study findings revealed that the number of the employees in the studied SMEs had been increasing over time (M = 3.93, SD = 0.906). Moreover, the firms had established branches across other parts of the country (M= 3.65, SD = 1.254). To sum up, the firms had diverse asset accumulation from the start (M = 3.61, SD = 1.142). The results on the firm size summed up to a mean of 3.73, standard deviation of 0.897, Skewness -0.643 and Kurtosis -0.136. From the foregoing, SMEs have been growing in size over time.

This is evidenced by the increase in the number of the employees as well as its branches in other parts of the country. As well, the firms have a diverse asset accumulation. To sum up, the skewness and kurtosis values ranged from -1.96 to +1.96; therefore, there was normal distribution of the responses. The results of firm were as presented in Table 4.10 below:

Table 4.10: Firm Size

	M	SD	Kurtosis	Skewness

The number of our employees have been increasing over time	3.93	0.906	-1.043	-0.003
Our firm has other branches distributed in other parts of the country	3.65	1.254	-1.16	-0.014
My firm has a diverse asset accumulation from the on start	3.61	1.142	1.73	-1.379
Composite Mean	**3.7308**	**0.89653**	**-0.643**	**-0.136**

Source: Survey Data (2017)

4.9.3 Technology Readiness

The research sought to establish the technology readiness of the SMEs with regards to cloud computing. Based on the findings, it emerged that SMEs hired highly specialized or knowledgeable personnel for cloud computing (M = 3.67, SD = 0.909). This indicated that the organizations had knowledgeable personnel with the ability to flexibly interact with cloud computing, making it possible for the organizations to fully exploit the gains of such technology.

The respondents further reported that there were sufficient technological resources to implement cloud computing – unrestricted access to computer (M = 3.68, SD = 1.001). This implied that the SMEs had ensured that there was sufficient resource allocation for unrestricted access to the computer. Nevertheless, the respondents expressed doubt on whether there were sufficient technological resources to implement cloud computing – high bandwidth connectivity to the internet (M= 3.39, SD = 0.84). On the same note, it has not been fully established if the entrepreneurs allocated a percentage of total revenue to cloud computing implementation in their companies (M = 3.21, SD = 1.083).

Furthermore, the entrepreneurs perceived the adoption of cloud computing as useful because they said they were ready for the technology in their work environment (M = 3.84, SD = 0.928). Consequently, adoption of cloud computing was found useful since the respondents were already competent before its adoption. In a nutshell, the results on technological readiness summed up to a mean of 3.589, standard deviation of 0.652, Skewness of -0.15 and Kurtosis of 0.197. These findings meant that the respondents were generally agreeable on the items. Moreover, the skewness and kurtosis values were within the range of -1.96 to +1.96, implying that there was normal distribution of the responses. The results of the findings were as presented below in Table 4.11 below

Table 4.11: Technology Readiness

	M	SD	Kurtosis	Skewness
My company hires highly specialized or knowledgeable personnel for cloud computing.	3.67	0.909	2.312	-0.857
We have sufficient technological resources to implement cloud computing - unrestricted access to computer.	3.68	1.001	2.247	-0.719
We have sufficient technological resources to implement cloud computing - high bandwidth connectivity to the internet	3.39	0.84	0.7	0.729
We allocate a percent of total revenue for cloud computing implementation in the company.	3.21	1.083	8.261	-2.552
I perceived adoption of cloud computing useful because I was ready for the technology in my work environment.	3.84	0.928	7.361	-2.411
I perceived adoption of cloud computing easy to use because I was ready for the technology in my work environment	3.75	0.837	-1.09	-0.088
Composite Mean	**3.589**	**0.652**	**-0.15**	**0.197**

Source: Survey Data (2017)

4.10 Environment Context

Environmental context refers to the external factors that influence the adoption of technology. This study investigated the following factors under the environmental context: competitive pressure and trading partner pressure.

4.10.1 Competitive Pressure

Competitive pressure in the external environment can have a direct effect on the firm's decisions. The competitive pressure faced by a firm is a strong incentive to adopt relevant new technologies (Majumdar *et al.*, 1992). Competitive pressure was measured on a 5-point Likert scale. The findings in Table 4.12 indicate that, with the use of cloud computing, the respondents were aware of implementation in their competitor organizations (M = 3.71, SD = 1.024). Moreover, the respondents understood the competitive advantages offered by the service in their industry (M = 3.88, SD = 0.919). Besides, their competitors had adopted the technology (M= 3.66, SD = 1.006). These findings indicate that competitive pressure was an important determinant of adoption. SMEs search for new alternatives to improve their production as well as increase the market share.

In general, the research results on competitive pressure summed up to a mean of 3.3887, indicating that the respondents were not entirely in agreement. The standard deviation of 0.87805 indicated fewer variations in the responses. The skewness and kurtosis values (Skewness -0.486 and Kurtosis 0.004) were within the range of 1.96 to +1.96, meaning there was normal distribution of the responses. Table 4.12 presents the study results on the competitive pressure.

Table 4.12: Competitive Pressure

	Mean	**Std. Dev**	**Kurtosis**	**Skewness**
We are aware of implementation in our competitor organizations	3.71	1.024	-1.115	0.634
We understand the competitive advantages offered by the service in our industry.	3.88	0.919	2.075	0.214
my competitors have adopted the technology	3.66	1.006	3.352	-1.785
Composite Mean	**3.3887**	**0.87805**	**-0.486**	**0.004**

Source**: Survey Data (2017)4.10.2 Trading Partners' Pressure**

The research sought to establish trading partners' pressure on adoption of cloud computing among SMEs in Nairobi. Trading partners' pressure was measured on a 5-point Likert scale. The study findings established that the respondents' trading partners were at the time using cloud computing services (M= 3.65, SD = 0.871). However, it was unclear whether or not there was pressure from trading partners (M= 3.16, SD = 1.083). In addition, the respondents expressed doubt on whether or not there was pressure from their service provider (M = 3.36, SD = 1.127). The results on trading partners' pressure summed up to a mean of 3.7464, SD of 0.855, Skewness -0.555 and Kurtosis 0.36. From the foregoing findings, the respondents only affirmed that their trading partners made use of cloud services. However, it was unclear whether or not SMEs experienced pressure from trading partners and service providers to adopt cloud computing. Table 4.13 summarizes the findings of the results below.

Table 4.13: Trading Partners Pressure

	Mean	SD	Skewness	Kurtosis
My trading partners are currently using the services.	3.65	0.871	0.574	-0.452
Pressure from my trading partners	3.16	1.083	0.085	-1.441
Pressure from my service provider	3.36	1.127	-0.356	-1.462
Composite Mean	**3.7464**	**0.85513**	**-0.555**	**0.36**

Source: Survey Data (2017)

4.11 User Perception

User perception consists of the following sub-constructs: perceived ease of use and perceived usefulness.

4.11.1 Perceived Ease of Use

Cloud computing is useful for SMEs as a low cost alternative to the company's internal IT costs, as well as for quick prototyping and scalable/flexible novel services. The study therefore sought to establish the perceived ease of use of cloud computing. From the results, with the use of cloud computing, the respondents described the procedure as understandable (M = 4.02, SD = 0.799), easy to learn (mean = 4.02, SD = 0.71) and make use of (mean = 4.03, SD = 0.889). Further, the use of cloud computing was reported to be adoptable if perceived to be easy to use (mean = 4.03, SD = 0.833). Moreover, the respondents agreed that cloud computing was an easy technology for one to become skilled (M = 3.8, SD = 1.164).

Additionally, cloud computing was regarded as flexible to interact with (M = 3.88, SD = 1.003). The research results on perceived ease of use of cloud computing summed up to a mean of 3.96, standard deviation of 0.657, Skewnwess -0.281 and kurtosis -0.136. On average, the respondents agreed that with the use of cloud computing, the procedures were understandable, easy to learn, easy to use, easy to become skilful and flexible to interact with. The skewness and kurtosis values ranged from -1.96 to +1.96, meaning that there was normal distribution of the response in perceived ease of use variable. Table 4.14 below summarizes these results.

Table 4.14: Perceived Ease of Use

Item	**M**	**SD**	**Skewness**	**Kurtosis**
The procedure is understandable.	4.02	0.799	-0.6	-0.8
Is easy to learn.	4.02	0.71	-0.8	0.91
Is easy to make use of.	4.03	0.889	-0.9	1.03
Is adoptable and easy to use	4.03	0.833	-0.3	-1.3
It is an easy technology for one to become skilful	3.8	1.164	0.49	-0.9
Is flexible to interact with.	3.88	1.003	-0.8	1.32
Composite Mean	**3.9643**	**0.65687**	**-0.281**	**-0.136**

Source: Survey Data (2017)

4.11.2 Perceived Usefulness

This section of data analysis highlights the results on perceived usefulness of cloud computing among SMEs in Nairobi city. From the research results, the entrepreneurs reported that cloud computing enabled them to manage their business operations in an efficient way (M = 4.26, SD = 0.766). As such, it had increased their business productivity (M = 4.19, SD = 0.968), the quality of business operations (M = 4.12, SD

= 0.892) and had enhanced their competitiveness (M = 4.18, SD = 0.841). Furthermore, cloud computing had enabled the entrepreneurs to accomplish organizational tasks more quickly (mean = 4.19, SD = 0.778).

On the whole, cloud computing was perceived to be useful to the organization (M = 4, SD = 1.078). The results on perceived usefulness of cloud computing summed up to a mean of 4.1589, indicating that the respondents were agreeable. The standard deviation was 0.673, Skewness -0.596 and the kurtosis 0.115. The Skewness and kurtosis values were indicative of a normal distribution. The results of the research on perceived usefulness were as shown in Table 4.15 below.

Table 4.15: Perceived Usefulness

Item	Mean	SD	Skewness	Kurtosis
Enables me to manage business operation in an efficient way.	4.26	0.766	-0.9	-1.2
enables increase of business productivity	4.19	0.968	0	-1.6
Enables one to accomplish organizational task more quickly.	4.19	0.778	-0.3	-0.9
improves the quality of business operation	4.12	0.892	0.69	-1.4
advances my competitiveness	4.18	0.841	-0.5	-0.5
when perceived useful to the organization	4	1.078	-0.1	-0.5
Composite Mean	**4.1589**	**0.6734**	**-0.596**	**0.115**

Source: Survey Data (2017)

4.12 Adoption of Cloud Computing

4.12.1 Software as a Service (SaaS)

Software as a Service-computing model allows users to access simple desktop applications such as word processing and spreadsheets as a service on the web. From the findings, 75(23.3%) respondents used I-cloud computing in their businesses to a high extent, 78(24.2%) to a very high extent, 130(40.4%) to a moderate extent, 23(7.1%) to a low extent and 16(5%) to a very low extent. The mean value of 3.55

affirmed that SMEs used I-cloud computing to a high extent in their businesses. On the other hand, the standard deviation of 1.085 revealed a high degree of variation in the responses.

The study further sought to establish the extent to which the respondents applied email services in their business. Of the respondents, 99(30.7%) of the respondents noted that they applied email services in their businesses to a high extent, 129(40.1%) indicated to a very high extent, 71(22%) said to a moderate extent, 17(5.3%) used the services to a low extent and only 6(1.9%) used them to a very low extent. This research item realized a mean of 4.02 and standard deviation of 1.001, meaning that the respondents were able to apply email in their business to a high extent.

The study further sought to establish the extent to which the email application service was accessible from anywhere anytime. On this item, 140(43.5%) of the respondents noted that the email application was accessible from anywhere anytime to a high extent, 60(18.6%) said the service was accessible to a very high extent, 93(28.9%) indicated to a moderate extent, 26(8.1%) said to a low extent and only 3(0.9%) stated to a very low extent. These results summed up to a mean of 3.71 and standard deviation of 0.894, an indication that the email application was accessible anywhere anytime. This meant that the entrepreneurs could conveniently and effectively interact with their customers.

The respondents were further asked to indicate the extent to which CRM services had been adopted in their respective SMEs. From their responses, 140(43.5%) of them noted that CRM services had been adapted to a high extent, 60(18.6%) indicated to a very high extent, 93(28.9%) said to a moderate extent and 26(8.1%) said CRM had been adapted to a low extent. These findings summed up to a mean of 3.41 and standard deviation of 1.073. From the foregoing, it was concluded that CRM users could access applications on demand.

The research also sought to find out the extent to which the respondents thought their firms' CRM services were effective. Of the respondents 116(36%) found CRM services to be effective to a high extent, 81(25.2%) to a very high extent, 110(34.2%) to a moderate extent and 15(4.7%) to a low extent. The item realized a mean of 3.82 and a standard deviation of 0.865, indicating that the CRM services were effective. Besides, the standard deviation was indicative of fewer variations in the responses. These study findings were as indicated in Table 4.16 below.

Table 4.16: Software as a Service

Item	M	SD	Skewness	Kurtosis
To what extent do you use I-cloud computing in your business	3.55	1.085	-1	0.08
To what extent do you apply email service in your business	4.02	1.001	-1	0.06
To what extent is your email application service accessible from anywhere anytime	3.71	0.894	-0.4	-1.5
To what extent have you adopted CRM services?	3.41	1.073	-0.5	-1
To what extent do you think your firm's CRM services are effective?	3.82	0.865	-0.3	-1.3
To what extent do you think your firm's CRM services are efficient?	3.67	1.03	-0.4	-1.6
Composite mean for SaaS	**3.6957**	**0.73143**	**-0.768**	**0.397**

Source: Survey Data (2017)

4.12.3 Platform as a Service (PaaS)

In the Platform as a Service approach, cloud providers give the consumer a higher level of abstraction to deploy onto the cloud infrastructure consumer created or acquired applications created using programming languages, operating system, web server, libraries, services, and programming language tools (Mell and Grance, 2010). As such, the study deemed it important to establish the extent of use of the features of Platform as a Service in the selected SMEs.

In regards to the extent of utilization of cloud data storage service, 83(25.8%) of the respondents noted that cloud data storage service was utilized to a high extent, 94(29.2%) said to very high extent, 94(29.2%) to a moderate extent, 40(12.4%) said to a low extent and 11(3.4%) indicated to a very low extent. The results summed up to a mean of 3.65 and standard deviation of 1.126. These results implied that the SMEs utilized cloud data storage services.

The study further asked the respondents to indicate the extent to which cloud data storage service was effective. The results revealed that 127(39.4%) of the respondents thought that the cloud data storage service was effective to a high extent, 64(19.9%)

to a very high extent, 89(27.6%) indicated to a moderate extent, 27(8.4%) said it was effective to a low extent and 15(4.7%) said to a very low extent. The results summed up to a mean of 3.61 and standard deviation of 1.042. On the whole, the respondents found the cloud data storage services effective.

Further, the respondents were also asked to rate the extent to which their firms enjoyed server and network service maintenance offered by their service providers. From the research results, 131(40.7%) of the respondents enjoyed the server and network service maintenance offered by their service providers to a high extent, 33(10.2%) to a very high extent, 141(43.8%) to a moderate extent, 10(3.1%) indicated to a low extent and 7(2.2%) enjoyed the services to a very low extent. The results summed up to a mean of 3.54 and standard deviation of 0.805, meaning a significant number of the SMEs were enjoying server and network service maintenance offered by their service providers. Besides, the standard deviation indicated less variation in the responses.

The respondents were also asked to rate the amount of data they stored in the I-cloud. The results indicated that 138(42.9%) of the respondents stored data in the I-cloud to a high extent, 28(8.7%) said to a very high extent, 133(41.3%) indicated to a moderate extent, 19(5.9%) mentioned to a low extent and only 4(1.2%) said to a very low extent. This research item realized a mean of 3.52 and standard deviation of 0.786. Generally, the results on Platform as a Service summed up to a mean of 3.58, standard deviation of 0.79549, Skewness -0.697 and Kurtosis 0.384. This implied that most of the respondents were agreeable and there was less variation in the responses. Additionally, the skewness and kurtosis values ranged from -1.96 to +1.96, meaning there was normal distribution of the responses. Table 4.17 below summarizes the findings of the study.

Table 4.17: Platform as a Service

Item	M	SD	Skewness	Kurtosis
To what extent do you utilize cloud data storage service	3.65	1.126	-0.7	-0.8
To what extent is your cloud data storage service effective	3.61	1.042	-0.6	1.78
To what extent is your firm enjoying server and network service maintenance offered by your service providers	3.54	0.805	-0.3	-1.3
What amount of data do you store in the cloud	3.52	0.786	0.12	-1.4
Composite Mean for PaaS	**3.58**	**0.79549**	**0.39**	**-1.5**

Source: Survey Data (2017)

4.12.4 Infrastructure as a Service (IaaS)

The basic strategy of IaaS is to set up a fixable environment where consumers are allowed to perform several activities on the server, for instance, starting and stopping it, customizing it by installing software packages, attaching virtual disks to it, and configuring access permissions and firewall rules (Buyya *et al.*, 2011). The respondents were asked to indicate the extent to which the cloud infrastructure was reliable. Of the respondents, 104(32.3%) found the cloud infrastructure reliable to a high extent, 72(22.4%) found it reliable to a very high extent, 98(30.4%) to a moderate extent, 21(6.5%) to a low extent and 27(8.4%) to a very low extent. The mean value was 3.54 and standard deviation 1.155, implying that the cloud infrastructure is reliable hence can be used SMEs to meet their goals.

On the extent to which the respondents thought of server upgrades, the study revealed that 107(33.2%) of the respondents thought of server upgrades to a high extent, 50(15.5%) to a very high extent, 114(35.4%) to a moderate extent, 47(14.6%) to a low extent and only 4(1.2%) said to a very low extent. The results summed up to a mean of 3.47 and standard deviation of 0.964.

The study further set out to establish the extent to which the respondents enjoyed server upgrades by their cloud service provider. Of the total respondents, 125(38.8%) enjoyed server upgrades to a high extent, 34(10.6%) to a very high extent, 144(44.7%) enjoyed the upgrades to a moderate extent, 15(4.7%) to a low extent and 4(1.2%) enjoyed the upgrades to a very low extent. The results summed up to a mean of 3.53 and standard deviation of 0.794, inferring that the respondents enjoyed server upgrades by their cloud service. The standard deviation indicated less variation in the responses.

In their response on the extent to which they felt their infrastructure was the responsibility of the cloud service provider, 134(41.6%) of the respondents felt to a high extent that their infrastructure is the responsibility of the cloud service provider, 85(26.4%) felt it to a very high extent, 94(29.2%) to a moderate extent, 5(1.6%) to a low extent and 4(1.2%) to a very low extent. The results summed up to a mean of 4.01 and standard deviation of 2.186. Table 4.18 summarizes the above research findings.

Table 4.18: Infrastructure as a Service

Item	M	SD	Skewness	Kurtosis
How reliable is your cloud infrastructure	3.54	1.155	-12	137
To what extent do you often think of server upgrades	3.47	0.964	-2.3	7.33
To what extent do you enjoy server upgrades by your cloud service provider	3.53	0.794	-1.5	3.63
To what extent do you feel your infrastructure is the responsibility of the cloud service provider that	4.01	2.186	0.67	-0.6
Composite Mean for IaaS	**3.64**	**0.806**	**1.958**	**2.409**

Source: Survey Data (2017)

4.13 Reliability Tests

The most popular test of inter-item consistency reliability is Cronbach's alpha coefficient. It indicates the extent to which an instrument is error free, consistent and Table across time and also across the various items in the scale (Sekaran and Bougie, 2010). Therefore, the Cronbach alpha coefficient test was employed to measure the internal consistency of the instruments used and the coefficient alpha of these variables were reported.

As shown in Table 4.17, the Cronbach alpha test showed values ranging from as low as 0.693 to as high as 0.838. These findings were in line with the benchmark suggested by Hair *et al*. (2010) that, where coefficient of 0.60 is regarded to have an average reliability while coefficient of 0.70 and above, the instrument has a high reliability standard.

Although most researchers generally consider an alpha value of 0.70 as the acceptable level of reliability coefficient, lower coefficient is also acceptable (Nunnally, 1978; Sekaran and Bougie, 2010). As such, it can be concluded that data collected from the pilot study were reliable and have obtained the acceptable level of internal consistency. Therefore, all items were included in the survey instrument. The findings on reliability were as shown in Table 4.19 below.

Table 4.19: Reliability Test

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Relative Advantage	0.693	0.725	7
Compatibility	0.742	0.746	8
Complexity	0.777	0.665	5
Top Management Support	0.763	0.651	7
firm size	0.733	0.728	3
Technology Readiness	0.792	0.793	6
Trading Partners	0.808	0.805	3
Competitive pressure	0.838	0.840	3
Perceived Ease of Use	0.815	0.819	6
Perceived Usefulness	0.855	0.864	6

SaaS	0.830	0.835	6
PaaS	0.857	0.864	4
IaaS	0.835	0.842	4

Source: Survey Data (2017)

4.14 Factor Analysis

The researcher ran a principal component analysis to identify patterns in data and to express the data in such a way as to highlight their similarities and differences. Besides having data set items reduced to manageable level while retaining as much of the original information it helped in identifying groups or clusters of variables. All scales were subsequently subjected to EFA using Principal Components Method (PCM) and rotated using Varimax rotation with Kaiser normalization method. Only components with Eigenvalues ≥ 1 were extracted and items with loading ≥ 0.5 represented substantive values.

Factor rotation can be done in several ways. In instances where there are theoretical grounds to think that the factors are independent (unrelated), then it is advisable to choose Varimax orthogonal rotations. However, if the theory suggests that factors might correlate, then one of the oblique rotations (direct oblimin or promax) should be selected (Field, 2009). Nevertheless, there are three orthogonal rotation methods such as Varimax, Quartimax and Equamax.

The researcher found Varimax rotation appropriate, arguably because it is the best method of creating more interpretable clusters of factors, besides being commonly used. Additionally, Varimax rotation attempts to maximize the dispersion of loadings between factors as a result; it loads smaller numbers of variables onto each factor (Field, 2012). Varimax is also good for simple factor analysis since it is known to be a good general approach that simplifies the interpretation of factors (Field, 2009). On the basis of this argument, Varimax orthogonal rotation was chosen in this study.

On the basis of the criterion of Kaiser (1960), the researcher retained all factors with Eigen values greater than 1. The criterion was based on the idea that the Eigen values represent the amount of variation explained by a factor and that the Eigen value of 1 represents a substantial amount of variation.

Sampling adequacy was tested using the Kaiser-Meyer-Olkin Measure (KMO measure) of sampling adequacy. KMO of sampling adequacy value was calculated to predict if the data would likely factor well and if the sample was adequate for factor analysis. According to Hair *et al*. (2006), values >0.5 are considered adequate for good factor analysis. As evidenced in the tables below, the results revealed that all scales had values greater than the stipulated of 0.5 and therefore satisfied the KMO threshold. The KMO measure is an index for comparing the magnitude of the observed correlation coefficients to the magnitude of the partial correlation coefficients.

Additionally, Bartlett's test of sphericity was used to test the hypothesis that the value in the correlation matrix is zero, indicating that there existed a correlation between variables. This was done by converting the determinant of the matrix of the sum of products and cross products into a chi square statistic and then testing for significance. According to Hair *et al.* (2007), p-value <0.05 is an indication that there exists a correlation and satisfies the conditions required for factorability. After all the checks and tests were conducted, the extracted factors/items were used in subsequent tests of correlation, mediation and building regression models. Table 4.20 to 4.32 below showed the factor analysis results as described above.

4.14.1 Factor Analysis of Relative Advantage

The measures for relative advantage were subjected to factor analysis and three components were realized. The factor loadings results were above 0.5. This implied that all the factors were retained for further analysis. All the seven items of relative advantage met the criteria of having a factor loading value greater than 0.5. All the seven items of relative advantage items met the criteria of having a factor loading value greater than 0.5. The result in Table 4.20 revealed the first factor loadings of three items, namely 'the use of cloud computing is advantageous' (0.695), 'we pay only for what we use' (0.787), and 'we are able to scale up requirement when required' (0.842). Therefore, factor one can be renamed "*Pay for requirement*" (PFR).

Factor two displayed loadings for three items, notably 'access of information any time from any place' (0.665), 'performance does not decrease with growing user base' (0.769), 'access and shared resources placed on I-cloud' (0.809), hence the second factor can be renamed "*Performance and sharing resources*" (PSR). Factor three displayed loading for one item, namely 'need not maintain the IT infrastructure' (0.939) and the third factor can be renamed "*No IT Maintenance*" (NITM). The inference of the results is that "Pay for requirement" has a higher percentage of variance in relative advantage.

The results of PCA revealed that the three factors had Eigenvalues that exceeded 1.0. The Eigenvalue of a factor represents the amount of variance explained by the factor. To sum up, the first factor accounted for 28.5% of the total variance and had an Eigenvalue of 1.997, second factor accounted for 54.9% of the total variance and had an Eigenvalue of 1.845 and the third factor 71.2% of the total variance and an Eigenvalue of 1.139. Cumulatively, the total variance explained was 71%. The Kaiser-Meyer-Olkin Measure value (0.662) was above 0.5 the acceptable level. In addition, the Bartlett's Test was significant at a value of 518.787. These results were as indicated in Table 4.18 below.

Table 4.20: Factor Analysis of Relative Advantage

Item	Factor		Loadings
	PFR	**PSR**	**NITM**
Is advantageous	0.695		
We pay only for what I use.	0.787		
We are able to scale up our requirement when required.	0.842		
We can access information any time from any place.		0.665	
Performance does not decrease with growing user base.		0.769	
we can access and share resources placed on cloud		0.809	
we need not maintain my IT infrastructure			0.939
Total Variance Explained			
Total	**1.997**	**1.845**	**1.139**
% of Variance	28.535	26.361	16.272
Cumulative %	28.535	54.896	71.169
KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.662		
Bartlett's Test of Sphericity, Approx. Chi-Square	518.787		
Df	21		
Sig.	0.00		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

PFR: Pay for requirement; **PSR:** Performance and sharing resources; **NITM:** No IT Maintenance
Source: Survey Data (2017)

4.14.2 Factor Analysis of Compatibility

Seven items for compatibility were sorted and clustered into two components not all items were retained for further analysis. The original compatibility items (8) were suppressed at 0.5. The suppression provided blank space for one of the loading. The excluded item was ‘using cloud computing at work is compatible with all aspects of my work’. This implies that the omitted item was not relevant in measuring compatibility. However, the results of principle component analysis further indicated that the two factors had Eigenvalues exceeding 1.0. The first and the second factors had eigenvalues of 2.539 and 1.923 respectively. These two factors cumulatively explained 56% of the total variance. The first factor accounted for 31.7% of the total variance and the second factor explained 24.0% of the total variance. Therefore, from the findings, seven items of compatibility had values exceeding 0.5 which is within the threshold of factor loading.

The first factor displayed loadings of four items, namely ‘in case of any incompatibility issue, cloud service provider offers integrated services’ (0.755), ‘the use of I-cloud is compatible with existing technological architecture of the company’ (0.845), ‘customization in cloud-based services is easy’ (0.713), and ‘the use of I-cloud is consistent with existing practices in my company’ (0.655). Factor one can be renamed “*Compatible Customizable Technology*” (CMCT).

The second factor displayed loadings of three items, namely ‘the use of I-cloud is compatible with the firm's existing format, interface and other structural data’ (0.648), ‘we incur re-training cost in case of non-customizable cloud-based services’ (0.764), and ‘it is easy in importing and exporting applications/data from cloud services; (0.784). The second factor can be renamed “*Training Data Integration*” (TDI). The implication of the results is that “Compatible Customizable Technology” (CMCT) explains a higher percentage variability than “Training Data Integration” (TDI). All were retained for further data analysis. Additionally, sampling adequacy was tested using the Kaiser-Meyer-Olkin Measure (KMO measure) of sampling adequacy. As evidenced in Table 4.21, KMO was greater than 0.5, and Bartlett’s Test was significant at a value measure of 669.666.

Table 4.21: Factor Analysis of Compatibility

Item	Factor Loading 1	2
	CMCT	**TDI**
in case of any incompatibility issue, we ask cloud service provider to offer integrated services	0.755	
are compatible with existing technological architecture of my company	0.845	
Customization in cloud-based services is easy.	0.713	
Is consistent with existing practices in my company.	0.655	
is compatible with my firm's existing format, interface, and other structural data		0.648
we incur re-training cost in case of non-customizable cloud-based services		0.764
Is easy in importing and exporting applications/ data from cloud services.		0.784
Total Variance Explained		
Total	2.539	1.923
% of Variance	31.74	24.037
Cumulative %	31.74	55.778
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.693	
Bartlett's Test of Sphericity, Approx. Chi-Square	669.666	
Df	28	
Sig.	0.000	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: Survey Data, (2017)
CMCT: Compatible Customizable Technology
TDI: Training Data Integration

Source: Survey Data (2017)

4.14.3 Factor Analysis of Complexity

Factor analysis for complexity was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. The study requested that all loading less than 0.5 be suppressed in the output, hence providing blank spaces for many of the loadings. Additionally, the first factor accounted for 42.2% of the total variance and the second factor 26.1% of the total variance. The first and the second factors had eigenvalues of 2.111 and 1.308, respectively. These two factors cumulatively explained 68% of the total variance. All items of complexity met the criteria of factor loading value greater than 0.5. The first complexity factor displayed loadings of three items, notably ‘does not exposes one to the vulnerability of computer breakdowns and loss of data' (0.801), 'it is found easy to integrate existing work with the cloud based services' (0.87), and 'performing many tasks together does not take up too much time' (0.723). Factor one can be renamed "*Breakdown Integration Time Saving*" (BITS).The second factor had two items, namely 'cloud computing is perceived to be useful when it's easy to use' (0.91), and 'its flexible to interact with' (0.667). The second factor can be renamed "*Flexible Easy to Use*" (FEU). These items were all retained for further data analysis. Sampling adequacy was tested using the Kaiser-Meyer-Olkin Measure (KMO measure) of sampling adequacy. As evidenced in Table 4.22, KMO was greater than 0.5, and Bartlett's Test was significant at a value of 342.329.

Table 4.22: Factor Analysis of Complexity

Item	**Factor Loading 1**	**2**
	BITS	**FEU**
Perceived to be useful when it is easy to use.		0.91
Flexible to interact with.		0.667
Does not exposes me to the vulnerability of computer breakdowns and loss of data.	0.801	
I find it easy to integrate my existing work with the cloud based services.	0.87	
Performing many tasks together does not take up too much of my time.	0.723	
Total	**2.111**	**1.308**
% of Variance	42.223	26.166
Cumulative %	42.223	68.389
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.635	
Bartlett's Test of Sphericity, Approx. Chi-Square	342.329	
Df	10	
Sig.	0.000	
Rotation Method: Varimax with Kaiser Normalization.		
a Rotation converged in 3 iterations.		

FEU: Flexible Easy to Use, **BITS:** Breakdown Integration Time Saving
Source: Survey Data (2017)

4.14.4 Factor Analysis of Top Management Support

Factor analysis was conducted in order to make sure that the items belong to the same construct (Wibowo, 2008). Table 4.23 illustrates the factor analysis for top management support. As shown in the table, there were no exceptions, as all variables scored above the threshold of 0.5. Additionally, the first factor accounted for 30.4% of the total variance; second factor accounted for 24% and the third factor 16.9%. The first and the second factors had eigen values of 2.125, 1.697 and 1.184, respectively. These three factors cumulatively explained 71.5% of the total variance.

The criterion for communality was fulfilled by top management support items, namely ‘top management is likely to consider the adoption of cloud computing as strategically important’ (0.79), ‘top management is willing to take risks involved in the adoption of cloud computing’ (0.808), ‘cloud computing adoption depends on the top management support’ (0.674), and ‘top management adopt cloud computing when they perceive it useful to the organization’ (0.529). The first factor had three items and can be renamed “*Top Management Risk Strategic Support Useful*” (TMRSSU). The second factor loading comprised ‘top management factor displayed two items’, ‘top management exhibits a culture of enterprise wide information sharing’ (0.874), and ‘the company's top management provides strong leadership and engages in the process when it comes to company’s information systems’ (0.805). These factors can be renamed “*Top Management Culture and Leadership*” (TMCL).

Third factor loading comprised ‘top management supports adoption of cloud computing when they perceive it easy to use within the organization’ (0.9). This factor can be renamed as “*Top Management Perceived Ease of Use*” (TMPEU), and it was retained even though only one variable loaded on the component. It was determined that this was an important factor due to the strength of the item loading on it. The inference of the results was that “top management risk strategic support perceived usefulness” has a higher percentage of variance in top management support. The KMO Measure is an index for comparing the magnitude of the observed correlation coefficients to the magnitude of the partial correlation coefficients. As shown in Table 4.23, KMO was greater than 0.5, and Bartlett’s Test was significant as indicated by the value of 558.767.

Table 4.23: Factor Analysis of Top Management Support

	Factor Loading		
Item	**1**	**2**	**3**
	TMRSSU	**TMCL**	**TMPEU**
Our top management exhibits a culture of enterprise wide information sharing.		0.874	
The company's top management provides strong leadership and engages in the process when it comes to information systems company.		0.805	
My top management is likely to consider the adoption of cloud computing as strategically important.	0.79		
My top management is willing to take risks involved in the adoption of cloud computing	0.808		
Cloud computing adoption depends on the top management support.	0.674		
Top management Supports adoption of cloud computing when they perceive it useful to the organization	0.529		
Top management supports adoption of cloud computing when they Perceive it easy to use within the organization			0.9
Total Variance Explained			
Total	**2.125**	**1.697**	**1.184**
% of Variance	30.356	24.249	16.907
Cumulative %	30.356	54.605	71.512
KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.588		
Bartlett's Test of Sphericity, Approx. Chi-Square	558.767		
Df	21		

Sig.	0.000

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

1. TMRSSU: Top Management Risk Strategic Support Useful**, 2. TMCL:** Top Management Culture and Leadership**, 3. TMPEU:** Top Management Perceived Ease of Use
Source: Survey Data (2017)

4.14.5 Factor Analysis of Firm Size

Factor analysis for firm size was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. From the research findings, the results of principle component analysis indicated that there was only one factor loading with an eigenvalue above 1.957 and retained its name "Firm Size". This factor explained 65% of the total variance. All items for firm size met the criteria of having a factor loading value greater than 0.5 (Table 4.24).

The factors displayed loadings of three items, comprising 'the number of our employees has been increasing over time' (0.686), 'our firm has other branches distributed in other parts of the country' (0.893) and 'the firm has a diverse asset accumulation from the on start' (0.83). The Kaiser-Meyer-Olkin Measure value (0.595) was above 0.5, hence acceptable. Moreover, the Bartlett's Test was significant with value measure of 252.642, as indicated in Table 4.24 below.

Table 4.24: Factor Analysis of Firm Size

Item	**Factor Loading 1**
	Firm Size
The number of our employees have been increasing over time	0.686
Our firm has other branches distributed in other parts of the country	0.893
My firm has a diverse asset accumulation from the on start	0.83
Total Variance Explained	
Total	**1.957**
% of Variance	65.241
Cumulative %	65.241
KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.595
Bartlett's Test of Sphericity, Approx. Chi-Square	252.642
Df	3
Sig.	0

Extraction Method: Principal Component Analysis.
a 1 components extracted.

Source: Survey Data (2017)

4.14.6 Factor Analysis of Technology Readiness

The factor analysis of technology readiness had loadings results above 0.5. This implies that all the factors were retained for further analysis. The first factor accounted for 36% and second factor accounted for 34% of the total variance. These two factors cumulatively explained 69.6%. All the technology readiness first three factors, notably ‘company hires highly specialized or knowledgeable personnel for cloud computing’ (0.815), ‘company has sufficient technological resources to implement cloud computing – unrestricted access to computer’ (0.847), and ‘a percent of total revenue for cloud computing implementation is allocated in the company’ (0.688), were displayed. This factor can be renamed “*Technology Revenue and Resource*” (TRR). Results are indicated in Table 4.25 below.

The second factor displayed loadings on how ‘the company has sufficient technological resources to implement cloud computing – high bandwidth connectivity to the internet’ (0.551), ‘perceived adoption of cloud computing as useful because of the technology readiness at the work environment’ (0.845), and ‘perceived adoption of cloud computing as easy to use because technology readiness is explicit at the work environment’ (0.909). This factor can be renamed “*Technology Resource and Readiness*” (TRR). The Kaiser-Meyer-Olkin Measure value (0.672) was above 0.5 hence acceptable. The Bartlett’s Test was significant with a value measure of 699.835.

Table 4.25: Factor Analysis for Technology Readiness

Item	Factor Loading 1	2
	TRR	**TRR**
My company hires highly specialized or knowledgeable personnel for cloud computing.	0.815	
We have sufficient technological resources to implement cloud computing - unrestricted access to computer.	0.847	
We have sufficient technological resources to implement cloud computing - high bandwidth connectivity to the internet		0.551
We allocate a percent of total revenue for cloud computing implementation in the company.	0.688	
I perceived adoption of cloud computing useful because I was ready for the technology in my work environment.		0.845
I perceived adoption of cloud computing easy to use because I was ready for the technology in my work environment		0.909
Total Variance Explained		
Total	2.133	2.041
% of Variance	35.552	34.01
Cumulative %	35.552	69.562
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.672	
Bartlett's Test of Sphericity, Approx. Chi-Square	699.835	
Df	15	
Sig.	0	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

1.TRR: Technology Revenue and Resource, 2.**TRR:** Technology Resource and Readiness
Source: Survey Data (2017)

4.14.7 Factor Analysis for Competitive Pressure

Factor analysis for competitive pressure was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. The study suppressed all loading at 0.5 in the output, hence reflecting the accepted value of factor loading. The results showed that 3 items for competitive pressure were sorted and grouped into one component. All the items of competitive pressure met the criteria of having a factor loading value greater than 0.5. According to the results, the factor displayed loadings of three items.

The factors included 'awareness of cloud implementation in the competitors organizations' (0.856), 'competitive advantages offered by the service in our industry are well understood' (0.886), and 'competitors have adopted the technology' (0.869). Subsequently, this factor retained the title "*Competitive Pressure*" (CP) in further data analysis. Additionally, competitive pressure cumulatively accounted for 75.767% of the total variance. Sampling adequacy was tested using the Kaiser-Meyer-Olkin Measure (KMO measure) of sampling adequacy. As evidenced in Table 4.26, KMO was greater than 0.5, and Bartlett's Test was significant with value measure of 387.65.

Table 4.26: Factor Analysis for Competitive Pressure

Item	**Factor Loading 1**
	CP
We are aware of implementation in our competitor organizations.	0.856
We understand the competitive advantages offered by the service in our industry.	0.886
my competitors have adopted the technology	0.869
Total Variance Explained	
Total	2.273
% of Variance	75.767
Cumulative %	75.767
KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.723
Bartlett's Test of Sphericity, Approx. Chi-Square	387.65
Df	3
Sig.	0.000
Extraction Method: Principal Component Analysis.	
a 1 components extracted.	

1. CP: Competitive Pressure
Source: Survey Data (2017)

4.14.8 Factor Analysis for Trading Partners' Pressure

The factor analysis results for trading partners' pressure were as highlighted in Table 4.27. Factors with factor loadings of above 0.5 were excellent and were retained for further data analysis. According to the research results, the factor displayed loadings of three items. The study, therefore, drew conclusions that trading partners pressure factors, namely 'trading partners are currently using the services' (0.749), 'eminent pressure from trading partners' (0.908), and 'pressure from the service provider' (0.886), be retained for further analysis. The component factor retained the title "*Trading Partners' Pressure*" (TPP). In addition, trading partners' pressure cumulatively accounted for 72.3% of the total variance. Furthermore, KMO was greater than 0.5, and Bartlett's Test was significant with a measure value of 379.858.

Table 4.27: Factor Analysis for Trading Partners Pressure

Item	**Factor Loading 1**
	TPP
My trading partners are currently using the services.	0.749
Pressure from my trading partners	0.908
Pressure from my service provider	0.886
Total Variance Explained	
Total	**2.17**
% of Variance	72.342
Cumulative %	72.342
KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.649
Bartlett's Test of Sphericity, Approx. Chi-Square	379.858
Df	3
Sig.	0.000
Extraction Method: Principal Component Analysis.	
a 1 components extracted.	

1. TPP: Trading Partners Pressure
Source: Survey Data (2017)

4.14.9 Factor Analysis for Perceived Ease of Use

Factor analysis results for perceived ease of use were as presented in Table 4.28. Six items for perceived ease of use were sorted and clustered into two components. All items were retained for further analysis. However, the results of principle component analysis indicate that the values exceed 1.0. The first and the second factors had eigenvalues of 2.303 and 1.831, respectively. These two factors cumulatively explained 69% of the total variance. The first factor accounted for 38.38% of the total variance and the second factor explained 30.52% of the total variance.

The first factor loadings of three items, namely 'is adoptable if perceived easy to use' (0.797), 'it is an easy technology for one to become skilful' (0.850), and 'cloud computing is flexible to interact with' (0.691). The second factor also displayed three items, notably 'the procedure is understandable' (0.903), 'is easy to learn' (0.764), and 'is easy to make use of' (0.503), all of which were retained for further data analysis. The first and second factors both retained the title "*Perceived Ease of Use*" (PEOU). All the items of perceived ease of use met the criteria of factor loading value greater than 0.5. Sampling adequacy was tested using the Kaiser-Meyer-Olkin measure (KMO measure) of sampling adequacy. As evidenced by the results, KMO was greater than 0.5, and Bartlett's Test was significant with a measure value of 689.362.

Table 4.28: Factor Analysis for Perceived Ease of Use

Item	**Factor Loading**	
	1	**2**
	PEOU	**PEOU**
The procedure is understandable.		0.903
Is easy to learn.		0.764
Is easy to make use of.		0.503
Is adoptable if perceived to be easy to use	0.797	
It is an easy technology for one to become skilful	0.850	
Is FLEXIBLE to interact with.	0.691	

Total Variance Explained		
Total	2.303	1.831
% of Variance	38.38	30.521
Cumulative %	38.38	68.901
KMO and Bartlett's Test0		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.775	
Bartlett's Test of Sphericity, Approx. Chi-Square	689.362	
Df	15	
Sig.	0	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

PEOU: Perceived Ease of Use
Source: Survey Data (2017)

4.14.10 Factor Analysis for Perceived Usefulness

Table 4.29 illustrate the factor analysis for perceived usefulness. As shown in the table, there were no exceptions, as all variables scored above the threshold. Six items for perceived usefulness were sorted and clustered into two components. All the items were retained for further analysis. However, the results of principle component analysis indicate that the values exceed 1.0. The first and the second factors had eigenvalues of 2.594 and 2.052, respectively. These two factors cumulatively explained 77% of the total variance. The first factor accounted for 43.23% of the total variance and the second factor explained 34.19% of the total variance.

The first factor loadings of the four items, namely ‘cloud computing enables management of business operation in an efficient way’ (0.707), ‘increases business productivity’ (0.897), ‘enables one to accomplish organizational task more quickly’ (0.798), ‘improves the quality of business operation’ (0.743). The second factor displayed two items, namely ‘cloud computing advances competitiveness’ (0.866) and ‘adoption is inevitable when perceived useful to the organization’ (0.889). All the factors were retained for further analysis and they retained the name perceived useful

(PU). The KMO was greater than 0.5, and Bartlett's Test was significant.at a value of 1056.63.Table 4.29: Factor Analysis for Perceived Usefulness

Item	Factor Loading	
	PU	PU
Enables me to manage business operation in an efficient way.	0.707	
enables increase of business productivity	0.897	
Enables one to accomplish organizational task more quickly.	0.798	
improves the quality of business operation	0.743	
advances my competitiveness		0.866
when perceived useful to the organization		0.889
Total Variance Explained		
Total	**2.594**	**2.052**
% of Variance	43.23	34.193
Cumulative %	43.23	77.423
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.787	
Bartlett's Test of Sphericity, Approx. Chi-Square	1056.639	
Df	15	
Sig.	0	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

PU: Perceived Useful
Source: Survey Data (2017)

4.14.11 Factor Analysis for Software as a Service

Factor analysis for Software as a Service was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. Six items for Software as a Service were sorted and clustered into two components. Table 4.30 showed results of Software as a Service rotated component matrix by using PCA with Varimax rotation. All the six Software as a Service items were suppressed at 0.5 and there were no blank spaces provided hence all the items had values exceeding 0.5 reflecting accepted value of factor loading hence were included for further analysis.

However, the results of principle component analysis further indicated that the two factors had Eigenvalues exceeding 1.0. The first and the second factors had eigenvalues of 2.958 and 1.443, respectively. These two factors cumulatively explained 73.3% of the total variance. The first factor accounted for 49.3% of the total variance and the second factor explained 24.0% of the total variance. The first factor displayed four items as follows: 'is your email application service accessible from anywhere anytime' (0.784), 'to what extent have you adopted CRM services' (0.809), 'to what extent do you think your firm's CRM services are effective' (0.86), and 'to what extent do you think your firm's CRM services are efficient' (0.922). Consequently, factor one can be renamed "Customer Service and Email" (CRME).

The second factor exhibited loadings for two items as follows: 'to what extent do you use i-cloud computing in your business' (0.89), and 'to what extent do you apply email service in your business' (0.648). Thus the second factor can be renamed Email and I-cloud (EI). The results imply that "*Customer Service and Email*" (CRME) had a higher total variance explained in Software as a Service. Sampling adequacy was tested using the Kaiser-Meyer-Olkin Measure (KMO measure) of sampling adequacy. As evidenced in Table 4.30, KMO was greater than 0.5, and Bartlett's Test was significant at a value of 968.894.

Table 4.30: Factor Analysis for Software as a Service

Item	**Factor Loading 1**	**Factor Loading 2**
	CRME	**EI**
To what extent do you use i-cloud computing in your business		0.89
To what extent do you apply email service in your business		0.648
To what extent is your email application service accessible from anywhere anytime	0.784	
To what extent have you adopted CRM services.	0.809	
To what extent do you think your firm's CRM services are effective.	0.86	
To what extent do you think your firm's CRM services are efficient.	0.922	
Total Variance Explained		
Total	**2.958**	**1.443**
% of Variance	49.308	24.044
Cumulative %	49.308	73.352
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.798	
Bartlett's Test of Sphericity, Approx. Chi-Square	968.894	
Df	15	
Sig.	0	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

CRME: Customer Service and Email, 2. **EI:** Email and I-cloud
Source: Survey Data (2017)

4.14.12 Factor Analysis for Platform as a Service

Four items for Platform as a Service were sorted and clustered into two components and the factor analysis results were as highlighted in Table 4.31. The four Platform as a Service items were suppressed at 0.5. Factors with factor loadings of above 0.5 are excellent and are retained for further data analysis. Consequently, principle component analysis further indicated that the two factors had Eigenvalues exceeding 1.0. The first and the second factors had eigenvalues of 2.058 and 1.301, respectively.

These two factors cumulatively explained 83.9% of the total variance. The first factor accounted for 51.4% of the total variance and the second factor explained 32.5% of the total variance. The study, therefore, concluded that PaaS' first factors consisting of three items, namely ' to what extent do you utilize cloud data storage service' (0.796), 'to what extent is your cloud data storage service effective' (0.906), and 'what amount of data do you store in the cloud' (0.719), can be retained and further used for analysis. Therefore, factor one can be renamed "*Data Storage Service*" (DSS).

PaaS' second factor displayed loading for only one item namely; to what extent is your firm enjoying server and network service maintenance offered by your service providers (0.719). This second factor can be renamed, "*Server Network Service*" (SNS). The results implied that "*Data Storage Service*" (DSS) had a higher total variance explained in Platform as a Service. Besides, KMO was greater than 0.5, and Bartlett's Test was significant at a value of 605.76 (See Table 4.31).

Table 4.31: Factor Analysis for Platform as a Service

Item	Factor Loading 1	2
	DSS	**SNS**
To what extent do you utilize cloud data storage service	0.796	
To what extent is your cloud data storage service effective	0.906	
To what extent is your firm enjoying server and network service maintenance offered by your service providers		0.939
What amount of data do you store in the cloud	0.719	
Total	**2.058**	**1.301**
% of Variance	51.46	32.518
Cumulative %	51.46	83.977
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.813	
Bartlett's Test of Sphericity, Approx. Chi-Square	605.76	
Df	6	
Sig.	0	
Extraction Method: Principal Component Analysis.		

DSS: Data Storage service, **SNS:** Server Network Service
Source: Survey Data (2017)

4.14.13 Factor Analysis for Infrastructure as a Service

Table 4.32 illustrates factor analysis results for infrastructure as a service. As evidenced in the table, all the factor loadings were above 0.5. This implies that all the factors were retained for further analysis. Four items for Infrastructure as a Service were sorted and clustered into two components. All the infrastructure as a service items were suppressed at 0.5 and they all met the threshold of values exceeding 0.5, hence no blank spaces provided.

Further, the results of principle component analysis further indicated that the two factors had Eigenvalues exceeding 1.0. These two factors cumulatively explained 71.2% of the total variance. The first factor accounted for 44.8% of the total variance and the second factor explained 26.3% of the total variance. The first and the second factors had eigenvalues of 1,795 and 1.055, respectively. The first factor displayed three items, namely ‘how reliable is your cloud infrastructure’ (0.622), ‘to what extent do you often think of server upgrades’ (0.913), and ‘to what extent do you enjoy server upgrades by your cloud service provider' (0.757). Therefore, factor one can be renamed "*Infrastructure Server Upgrade*" (ISUP).

Table 4.32: Factor Analysis for Infrastructure as a Service

Item	Factor Loading 1	2
	ISUP	**ISRP**
How reliable is your cloud infrastructure	0.622	
To what extent do you often think of server upgrades	0.913	
To what extent do you enjoy server upgrades by your cloud service provider	0.757	
To what extent do you feel your infrastructure is the responsibility of the cloud service provider that		0.89
Total Variance Explained: Rotation Sums of Squared Loadings		
Eigen values	1.795	1.055
% of Variance	44.869	26.375
Cumulative %	44.869	71.244
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.461
Bartlett's Test of Sphericity, Approx. Chi-Square		242.278
Df		6
Sig.		0
Extraction Method: Principal Component Analysis. **Rotation Method: Varimax with Kaiser Normalization.** **a Rotation converged in 3 iterations.**		

ISUP: Infrastructure Server Upgrade, IRSP: Infrastructure Responsibility of Service Provider
Source: Survey Data (2017)

The Second factor rotated only one item, to what extent do you feel your infrastructure is the responsibility of the cloud service provider (0.89). Consequently, this factor can be renamed “Infrastructure Responsibility of Service Provider” (ISRP). The implication of this results, indicates that “*Infrastructure Server Upgrade*” (ISUP) has a higher total variance explained in Infrastructure as a Service. However, the Kaiser-Meyer-Olkin measure value (0.461) was above 0.5 hence acceptable. Additionally, the Bartlett’s Test was significant with a value of 242.278.

4.15 Correlation Analysis

Pearson correlation analysis is conducted to study the level at which two variables move or diverge together from one case to the next, and to assess the significance of the connection. This analysis generates a correlation coefficient which explains the extent to which the two variables move together. The correlation coefficient is coded as (r). The (r) value range is between 0 to ±1. Correlation analysis is recommended by Wei *et al*. (2009) as a preliminary test before running regression or any other sophisticated model. The value of zero (0) indicates that there is no relationship between the two variables. The value of ±1 shows that there is a perfect linear relationship between the two variables. A positive value shows that the two variables move together in the same trend, and when the (r) is a negative value, it shows that the variables move in opposite direction or trend.

The study tested whether or not the prediction or hypotheses was in line with the observed data. According to Wong and Hiew (2005), the correlation coefficient value (r) range of 0.10 to 0.299 is considered weak, 0.30 to 0.49 is considered medium and 0.50 to 1.0 is considered strong. However, Field (2009) suggests that correlation should not go beyond 1.0 to avoid multicollinearity. The highest correlation coefficient in this research was 0.882 which is less than 1.0, indicating there was no multicollinearity problem.

Therefore, Pearson's correlation coefficient analysis was conducted to establish the relationships between predictor variables, mediating variables and criterion variable. From the results of the analysis, all the associated hypothesized relationships developed were found to be statistically significant at level $p \leq 0.01$, suggesting satisfactory external validity of the measures. Specifically, the findings indicated a significant and positive correlation between technology context and cloud computing adoption ($r=0.576$; $p \leq 0.01$). Moreover, the findings of technology context revealed that relative advantage was positively and significantly associated with level of adoption of cloud computing ($r=0.497$;$\rho<0.01$). Compatibility was also positively and significantly correlated to the level of adoption of cloud computing ($r=0.493$; $\rho<0.01$). Likewise, complexity was positively correlated with the level of adoption of cloud computing ($r=0.245$; $\rho<0.01$).

Further, the study established a significant and positive correlation between organization context and cloud computing adoption. The research findings on organizational context revealed that firm size was positively related with the level of adoption of cloud computing ($r =0.551$, $\rho<0.01$). The findings also showed that technology readiness was positively related with the level of adoption of cloud computing ($r=0.430$; $\rho<0.01$), and top management support was positively related with the level of adoption of cloud computing ($r = 0.250$, $\rho<0.01$).

Besides, the Correlation results in Table 4.33 show that environmental context was significant and positively correlated with adoption of cloud computing ($r=0.294$; $p \leq 0.01$). Moreover, the research findings on environmental context revealed that competitive pressure was positively and significantly correlated with the level of adoption of cloud computing (r=0.276; ρ<0.01) and trading partners pressure was positively correlated with the level of adoption of cloud computing (r=0.204; ρ<0.01).Finally, correlation analysis of user perception and cloud computing adoption revealed (r=0.373; p≤0.01), user perception indicated perceived ease of use (r=0.367; p≤0.01), and perceived usefulness (r=0.289; p≤0.01). These imply that relative advantage, compatibility, complexity, top management support, firm size, technology readiness, competitive pressure and partners' pressure, perceived ease of use and perceived usefulness are expected to influence the level of adoption of cloud computing (Table 4.33 below).

Table 4.33: Constructs Correlation Coefficients Results

Pearson Correlation (N=322)

	M	SD	LoA	TC	OC	EC	UP	RA	CM	CX	TMS	FS	TR	CP	PP	PEU	PU
LoA	3.638	0.594	1														
TC	3.805	0.479	.576**	1													
OC	3.736	0.516	.551**	.645**	1												
EC	3.574	0.692	.294**	.364**	.534**	1											
UP	4.061	0.585	.373**	.286**	.508**	.566**	1										
RA	3.863	0.656	.497**	.705**	.490**	.259**	.142*	1									
CM	3.725	0.668	.493**	.784**	.519**	.292**	.252**	.447**	1								
CX	3.824	0.705	.245**	.639**	.368**	.226**	.213**	0.084	.236**	1							
TMS	3.903	0.491	.250**	.538**	.705**	.518**	.505**	.379**	.414**	.351**	1						
FS	3.715	0.889	.505**	.437**	.786**	.182**	.221**	.375**	.335**	.223**	.265**	1					
TR	3.59	0.653	.430**	.532**	.773**	.629**	.524**	.365**	.464**	.305**	.560**	.303**	1				
CP	3.746	0.837	.276**	.374**	.536**	.808**	.599**	.196**	.415**	.188**	.515**	.228**	.574**	1			
PP	3.401	0.863	.204**	.222**	.335**	.820**	.326**	.224**	0.066	.180**	.331**	0.07	.451**	.325**	1		
PEU	3.964	0.657	.367**	.286**	.420**	.411**	.876**	.134*	.115*	.349**	.377**	.236**	.390**	.367**	.304**	1	
PU	4.159	0.673	.289**	.219**	.473**	.581**	.882**	.115*	.326**	0.03	.509**	.154**	.529**	.682**	.269**	.545**	1

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

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

Source: Survey Data (2017)

4.16 Diagnostic Statistics

Test of assumptions of multiple regression are necessary which justify use of multiple regression analysis for the purposes of inferences or prediction. The assumptions tested in this study included normality, linearity, homoscedasticity, multi-collinearity, auto-correlation and independence of errors of the residuals (Tabachnick and Fidell, 2013). Regression analysis was also conducted to test the model fit and to establish the predictive power of the models in the criterion variable.

4.16.1 Test for Normality

To determine the nature of distribution, normality of data was further tested statistically using Kolmogorov-Smirnov and Shapiro Wilk analysis (Shapiro and Wilk, 1965) which were calculated for each variable. If the significance value of Kolmogorov-Smirnov and Shapiro Wilk is $p>0.05$, then the data is normally distributed; if it is below 0.05, the data significantly deviates from normal distribution (Ghasemi and Zahediasl, 2012). The test statistics shown in Table 4.34 reveal that all the variables had values greater than 0.05 satisfies the assumptions of normality. The study therefore concluded that the data came from a normal distribution.

Table 4.34: Normality Analysis Results

	Kolmogorov-Smirnov		
Study Variables	Statistic	N	Sig.
Level of adoption	0.965	322	0.096
Technology context	0.969	322	0.096
Organization context	0.975	322	0.101
Environment context	0.94	322	0.15
User perception	0.958	322	0.095
a Lilliefors Significance Correction			

Source: Survey Data (2017)

4.16.2 Linearity

Linearity means the correlation between variables, which is represented by a straight line. Knowing the level of the relationship among variables is considered an important element in data analysis. Hair *et al*. (2010) argue that linearity is an assumption of all multivariate techniques based on co-relational measures of association, including regression, multiple regression and factor analysis. Therefore, it was crucial to test the relationship of the variables to identify any departure that may impact the correlation. The results in Table 4.35 show that all the variables were linear with each other. The findings indicated that P values for linearity were less than 0.05; this showed that the assumption of linearity was not violated.

Table 4.35: Linearity

		F	Sig.
CCA * TC	Linearity	1254.49	0.00
CCA * OC	Linearity	695.995	0.00
CCA * EC	Linearity	67.913	0.00
CCA * UP	Linearity	83.05	0.00

Source: Survey Data (2017)

4.16.3 Test for Multicollinearity

Multicollinearity means that two or more of the independent variables are highly correlated, and this situation can have damaging effects on the results of multiple regressions. The correlation matrix was the powerful tool for getting a rough idea of the relationship between predictors. Multicollinearity was also tested by running regression models in Variance Inflation Factor (VIF) and tolerance values were generated.

The tests (VIF and Tolerance) indicated that multicollinearity problem among predictor variables did not exist because all the values were below the cut-off value, as per the rule of 10 which advocates for threshold VIF not greater than 10 or tolerance ratio not less than 0.1 (Obrien, 2005; Scott, 2003; Kutner, 2004; Chong Ho Yu, 2008). The VIF values in Table 4.36 were less than ten while tolerance was more than 0.1 meaning that there was no multicollinearity. It is a sign that predictor variables are not highly related and each accounts for variance in adoption of cloud computing. Basing on these results the validity of the regression tests in this study is unquestionable.

Table 4.36: Test for Multicollinearity

Variables	Collinearity Statistics Tolerance	VIF
(Constant)		
Technology context	0.579	1.728
Organization context	0.440	2.272
Environment context	0.596	1.678
user perception	0.616	1.623
a Dependent Variable: level of adoption		

Source: Survey Data (2017)

4.16.4 Autocorrelation Tests

Autocorrelation, also known as serial correlation, refers to the correlation of error components across time periods. It refers to the similarity of data among variables (Wooldridge, 2003). This condition violates the classical assumption of regression analysis but it is a reasonable characteristic of error term in time series analysis. This was identified using Durbin-Watson statistic which is a ratio of the sum of squared differences in successive residuals to the Regression Sum of Squares. From the findings, the Durbin- Watson value was within the thumb rule 1.968 within the acceptable range of 1.5-2.5 (Hayes, 2013). Therefore, for technology context, organization context, environmental context and user perception indicated lack of serial correlation (See Table 4.37).

Table 4.37: Autocorrelation Tests

Variables	Durbin-Watson
Control variables	2.129
TC	1.981
OC	2.001
EC	1.744
US	2.105

Source: Survey Data (2017)

4.16.5 Levene's Test for Homoscedasticity

Homoscedasticity refers to the assumption that the dependent variable exhibits similar amounts of variance across the range of values for an independent variable. The Levene's statistic for equality of variances was used to test for the assumption of homoscedasticity. Non-violation of homoscedasticity of variance was confirmed if the Levene's test statistic was found to be significant (alpha level of 0.05). The results presented in Table 4.38 reveal that none of the Levene statistics was significant. The assumption of homoscedasticity of variance was supported.

Table 4.38: Levene's Test for Homoscedasticity

	Levene Statistic	df1	df2	Sig.
Level of adoption	3.112	2	319	0.056
Technology context	0.919	2	319	0.4
Organization context	0.716	2	319	0.489
Environment context	7.179	2	319	0.101
user perception	1.719	2	319	0.181

Source: Survey Data (2017)

4.17 Effect of Control Variables

The research findings in Table 4.39 indicate that control variables, firm age and firm sector, have an R^2 of .068 and an adjusted of R^2 .062 which implies 6.2% variation of adoption of cloud computing is predicted by firm age and firm sector (R^2 = 0.062).

Firm age had beta coefficient that was significant to affect the level of adoption of cloud computing (β= -0.192; ρ= 0.000<0.05).

Similarly, firm sector had beta coefficient that was significant to affect the level of adoption of cloud computing (β=0.164; ρ= 0.003<0.05). Therefore, control variables firm age and firm sector were found to have an effect on overall cloud computing adoption. Nevertheless, firm age was negatively correlated had a significant effect on cloud computing adoption. However, these are only control variables and they need not be causal, and their coefficients generally do not have a causal interpretation.

Table 4.39: Control Effect Results

	Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	3.585	0.076		46.951	0.000		
firm age	-0.007	0.002	-.192	-3.541	0.000	0.995	1.005
firm sector	0.063	0.021	0.164	3.034	0.003	0.995	1.005
R Square	0.068						
Adjusted R Square	0.062						

a Dependent Variable: level of adoption

Source: Survey Data (2017)

4.17.1 Direct Effect

The technology, organisational and environmental context (TOE) explained 41.8% of variation of cloud computing adoption, with R^2=.418. The F-statistics is a measure of the correlation between variables drawn at different levels of a subdivided population had a value of 47.097 and this indicates that the regression model is significant and has some explanatory value. This is a clear indication that there is a significant relationship between the predictor variables technology context, organizational context, environmental context and overall cloud computing adoption. The significance value is 0.000 which is less than 0.05 (Table 4.40), hence the model is fit meaning that the model is statistically significant in predicting adoption of cloud computing. It further implies that the independent variables combined do influence cloud-computing adoption among Small Medium Enterprises (SMEs).

4.17.1.1 The Results of the Hypothesis H_{01}

H_{01} Stated there is no significant relationship between technology context and cloud computing adoption. However, based on the findings in Table 4.40, the beta coefficient for technology context is 0.414, t=7.349, $\rho<0.05$. Due to low p-value associated with the t-ratio, the null hypothesis was rejected. Therefore, it was concluded that there is a statistically significant effect of technology context on level of adoption of cloud computing. This indicates that there is a change of cloud computing adoption by 0.414 units. The results suggest that focus on technology context leads to high level of cloud adoption among SMEs in Nairobi Kenya.

4.17.1.2 The Results of the Hypothesis H_{02}

H_{02} Suggested there is no significant relationship between organization context and cloud computing adoption. However, the results in Table 4.40 show that the beta coefficient for organisation context was 0.262, t= 4.192, $\rho<0.05$. Therefore, this hypothesis did not hold considering the low p-value associated with the t-ratio. Consequently, the null hypothesis was rejected, indicating the presence of a statistically significant effect of organisation context on level of adoption of cloud computing. Additionally, the results imply that there is a change in the level of adoption of cloud computing by 0.262 units with an increase in organization context. The results suggest that focus on organization context leads to adoption of cloud computing among SMEs in Nairobi Kenya.

4.17.1.3 The Results of the Hypothesis H_{03}

$H_0$3: Postulated, there is no significant relationship between environmental context and cloud computing adoption. Based on the findings in Table 4.40, the beta coefficient for environmental context is -0.033, t= -0.643, $\rho > 0.05$). Due to the high p-value associated with the t-ratio, the researcher failed to reject the null hypothesis. Therefore, it was concluded that there is a statistically non-significant effect of environmental context on level of adoption of cloud computing. There is a change of cloud computing adoption by -0.033 units. This infers that environmental context does not influence adoption of cloud computing among SMEs in Nairobi Kenya.

Table 4.40: Direct Effect

	Unstandardized Coefficients		Standardized Coefficients			Correlations	Collinearity Statistics	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Zero-order**	**Tolerance**	**VIF**
(Constant)	0.604	0.224		2.692	0.007			
Firm age	-0.006	0.002	-0.143	-3.297	0.001	-0.203	0.961	1.04
Firm sector	0.054	0.017	0.14	3.221	0.001	0.178	0.96	1.041
Technology context	0.513	0.07	0.414	7.349	0.000	0.576	0.572	1.748
Organisation context	0.302	0.072	0.262	4.192	0.000	0.551	0.464	2.155
Environment context	-0.028	0.044	-.033	-0.643	0.52	0.294	0.702	1.425
R	*.653*							
R Square	*0.427*							
Adjusted R Square	*0.418*							
Std. Error of the Estimate	*0.45306*							
R Square Change	*0.427*							
F Change	*47.097*							
df1	*5*							
df2	*316*							
Sig. F Change	*0*							
Durbin-Watson	*1.096*							

Source: Survey Data (2017)

4.17.2 Testing for Mediation Effects

The study used Model 4 of the PROCESS macro (Hayes, 2013) of all variables to test for the mediating effects of user perception. The analysis was conducted through bootstrapping (5,000 bootstrap samples) with 95 percent bias-corrected confidence intervals. Mediation tests were conducted to assess the mediating effects of user perception in the relationship between technology context, organisational context and environmental context (TOE) and adoption of cloud computing.

According to MacKinnon *et al.* (2002), the test for mediation effects and significance of indirect pathway is also established in this approach. As mentioned and indicated in Table 3.3, the approach is used for testing the significance of the mediated effect and used for a comparison of several different methods and for an alternative bootstrapping procedure (Mackinnon *et al.*, 2002; Shrout and Bolger, 2002).

In pursuance of the above, the following hypotheses were tested: H_{04}a, user perception does not mediates the relationship between Technology Context and cloud computing adoption; H_{04b}, user perception does not mediates the relationship between organisational context and cloud computing adoption, and H_{04c}, user perception does not mediates the relationship between environmental context and cloud computing adoption.

In the PROCESS macro approach, according to Preacher and Hayes (2013), the mediation process is silent on the first step and it has the capability to test for the significance of the indirect path way of mediation. Baron and Kenny (1986) point out that the independent variable in the first two models is expected to show a statistical significance, the requirement that both the (*a)* and (*b)* coefficients be statistically significant, while the third model is expected to show a statistical significance of the mediator variable and the insignificance of the independent variable. If either of these parameters failed to meet the Baron and Kenny criteria even though they are in fact nonzero in the population, the investigator cannot claim mediation.

Moreover, this study found that environmental context did not to have a significant effect on the direct relationship IV to DV with the coefficient ($\beta3= -0.033$, $\rho>0.05$). This would have been a perfect reason not to proceed with mediation test, according to the four steps criteria by Baron and Kenny (1986) hence halting the study.

According to MacKinnon *et al*. (2002), the causal steps strategy suffers from low statistical power and does not directly address the hypothesis of interest. The most crucial is quantification of a_1b_1 the indirect effect and the distribution of the product strategy the most accurate analytic method available for determining the significance of, and confidence intervals (CIs) for a_1b_1.

Therefore, this study justifies the use of PROCESS macro (Preacher and Hayes, 2013) mediation tests to assess the mediating effects of user perception in the relationship between technological, organizational, environmental context (TOE) and cloud computing adoption among SMEs in Nairobi Kenya. The significance test of the indirect pathway of mediation was tested hence providing estimation of the indirect effect with a normal theory approach and a bootstrap approach obtaining the confidence intervals. The results of Regression Coefficients of the different paths are reported in tables 4.41, 4.42; 4.43 below.

4.17.3 Mediating Effect of User Perception on the Relationship between Technology Context and Cloud Computing Adoption

In order to test hypothesis H_{04}a, which predicted that user perception does not mediate the relationship between technology context and cloud computing adoption, regression models, as suggested by Preacher and Hayes, were run as indicated in Table 4.41 below. The explanation of the models are as follows: Model 1 is the regression of mediating variable, user perception on technology context; model 2 is the regression of the criterion variable, level of adoption of cloud computing on both technology context (predictor variable) and user perception (mediator) respectively, when both are included as simultaneous predictors of Y.

Furthermore, Table 4.41 indicates that the two conditions for mediation have been met (MacKinnon, 2000). As shown in PATH 1, denoted as (a) technology context accounts for a significant proportion of variance in the mediating variable user perception (β=0.3492, ρ<0.01), and in PATH 2, denoted as (c') and (b), technology context and user perception, respectively accounts for a significant proportion of variance in adoption of cloud computing (β=0.633, ρ<0.01); (β=0.23, ρ<0.01).

The correlation of technology context (IV) to user perception (MV) is denoted as path *a* (0.3492) and the correlation of user perception (MV) to cloud computing adoption (DV) is denoted as path *b* (0.2304). To establish the mediation effect, there was need to get a product of (a) and (b) (Mackinnon, 2000). Path *a* (0.3492)* *b* (0.2304) = (0.0805) and it is significant. Therefore, the null hypothesis H_{o4a} was rejected and it was concluded that user perception mediates the relationship between technology context and adoption of cloud computing.

Table 4.41: Regression Coefficients of the Different Paths for Technology Context

	PATH 1 (a) UP B(S.E)	T	PATH 2(b; c') LoA B(S.E)	t
(Constant)	2.7328(0.251)*	10.9088	0.294 (.246)*	1.1981
Technology context	0.3492(0.065)*	5.3447	0.633 (.057) *	11.0922
User perception			0.230 (0.047)*	4.9253
R	0.2863		0.6155	
R Square	*0.0820*		*0.3788*	
F	*28.5661*		*97.258*	
Sig.	*0.000*		*.000*	

Source: Survey Data (2017)

Furthermore, to test significance of mediation effect, normal theory tests (Sobel) for indirect effect was generated using PROCESS macro. The Z-value was 3.5881 and yielded a p-value of 0.0003. Due to the low p-value associated with Z-value it was further concluded that a significant mediation has occurred. The results were as presented in Table 4.42. The association between technology context (IV) and cloud computing adoption (DV) has been significantly increased by the inclusion of the mediating variable, user perception.

The direct effect *c'* (.6330) is the size of the correlation between technology contexts (IV) on cloud computing adoption (DV) inclusive of user perception (MV) in the regression. The total effect *c* (0.7134) is the total sum of Indirect effect *a**b* (0.0805) added to direct effect *c'* (0.6330). It is evident from Table 4.42 below that the total effect 0.7134 (c) and the direct effect 0.6330 (c') shows an increase of 0.0805 with the inclusion of indirect effect. Therefore, the increase from the direct effect to the total effect signifies a complimentary type of partial mediation.

The total ratio index was computed by dividing the indirect effect (0.0805) by the total effect (0.7134) giving a total percent of 11.28%. This implies that 11.28% of the total effect of technology context on adoption of cloud computing went through the mediating variable; user perception and about 88.72% of the total effect was either direct or mediated by other variables not included in the model. However, this is an indication that mediation has taken effect and has an effect on adoption of cloud computing. Furthermore, confidence interval of the lower limit 0.0470 and upper limit of 0.1231 did not include zero, hence mediation had occurred as shown in Table 4.42.

Table 4.42: Results for Mediating Effect of User Perception on the Relationship Between technology Context and Cloud Computing Adoption

Significance of Mediation			**Significance**
Z-value		3.5881	*p* = 0.0003
95% Symmetrical Confidence Interval			
Lower		0.0470	
Upper		0.1231	
Standardized indirect effect			
a*b		0.0805	
Se		0.0224	
Effect size Measures			
Standardized Coefficients			
Total:	0.7134 c		
Direct:	0.6330 c'		
Indirect:	0.0805		
Indirect to Total Ratio	0.1128		

Source: Survey Data (2017)

Therefore, it was conclusive enough to state that user perception increased the strength of the relationship between technology context and adoption of cloud computing among SMEs in Nairobi Kenya, as shown below in Figure 4.1.

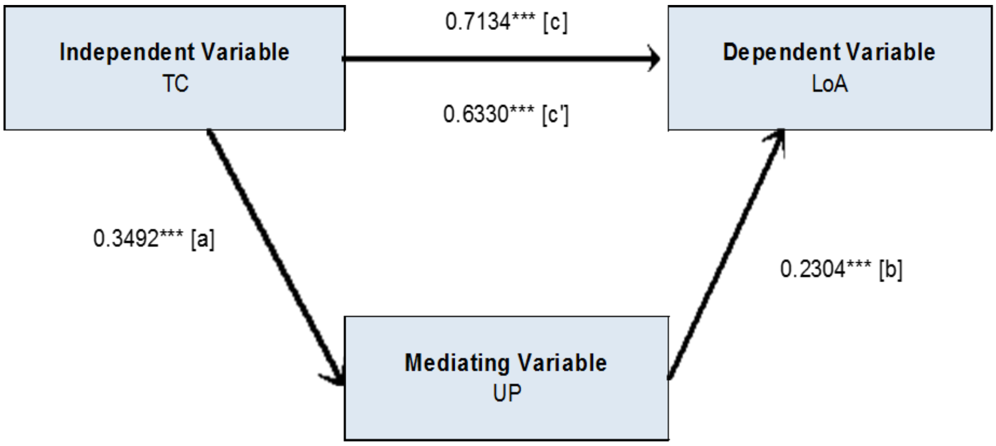


Figure 4.1: Predicting the Mediating Effect of User Perception on the Relationship between Technology Context and Cloud Computing
Source: Survey Data (2017)

4.17.4 Mediating Effect of User Perception on the Relationship between Organizational Context and Level of Adoption

The regression models as suggested by Preacher and Hayes were run as indicated in Table 4.43 below. Hypothesis H_{o4b} predicted that user perception does not mediate the relationship between organization context and cloud computing adoption was tested. The explanation of the models are as follows: Model 1 is the regression of mediating variable, user perception on organization context, and model 2 is the regression of the criterion variable, level of adoption of cloud computing on both organization context (predictor variable) and user perception (mediator), respectively, when both are included as simultaneous predictors of Y.

Furthermore, Table 4.43 indicates that the two conditions for mediation, according to MacKinnon (2000), have been met. As shown in PATH 1, denoted as (a), organization context accounts for a significant proportion of variance in the mediating variable user perception (β=0.576, ρ<0.01) and in PATH 2, denoted as (c') and (b), organization context and user perception, respectively, account for a significant proportion of variance in adoption of cloud computing (β=0.561, ρ<0.01); (β=0.127, ρ<0.01). The study findings in Table 4.43 indicate that organization context had significant effect of cloud computing adoption.

The correlation of organization context (IV) to user perception (MV) is denoted as path a (0.5761), and the correlation of user perception (MV) to cloud computing adoption (DV) is denoted as path b (0. 1274). To establish the mediation effect, there was need to get a product of (a) and (b) (Mackinnon, 2000). Path a (0.5761)* b (0.1274) = (0.0734) and it is significant. Therefore, the null hypothesis H_{o4b} was rejected and it was concluded that user perception mediates the relationship between organisation context and adoption of cloud computing.

Table 4.43: Regression Coefficients of the Different Paths for Organizational Context

	PATH 1 (a) UP B(S.E)	T	PATH 2 (b; c') LoA B (S.E)	T
(Constant)	1.909 (0.206)*	9.281	1.026 (0.227)*	4.527
Organization context	0.576 (0.055)*	10.560	0.561 (0.062)*	9.053
use perception			0.127 (0.055)*	2..332
R	0.508		0.561	
R Square	0.258		0.315	
F	111.517		73.398	
Sig.	.000		.000	

Source: Survey Data (2017)

Furthermore, to test the significance of mediation effect, Normal theory tests (Sobel) for indirect effect was generated using PROCESS macro. The Z-value is 2.267 yielded a p-value of 0.0234, due to the low p-value associated with Z-value. It was further concluded that a significant mediation had occurred. The results were as presented in Table 4.44. The association between organisation context (IV) and cloud computing adoption (DV) had been significantly increased by the inclusion of the mediating variable, user perception. The direct effect c' (.5607) is the size of the correlation between organisation context (IV) on cloud computing adoption (DV), inclusive of user perception (MV) in the regression. The total effect c (0.6341) is the total sum of Indirect effect *a*b* (0.0734) added to direct effect *c'* (0.5607). A partial mediation was evident with an increasing effect, hence a complimentary relationship.

The total ratio index was computed, as shown below in Table 4.44, by dividing the indirect effect (0.0734) by the total effect (0.6341) giving a total percent of 11.57%. This implied that 11.57% of the total effect of organisation context on adoption of cloud computing goes through the mediating variable, user perception, and about 88.4% of the total effect was either direct or mediated by other variables not included in the model. Therefore, it is evident in Table 4.44 below that the confidence interval of the lower limit 0.0115 and upper limit of 0.1323 does not include zero, a clear indication that mediation has occurred.

Table 4.44: Results for Mediation Effect of User Perception on the Relationship between Organization Context and Cloud Computing

Significance of Mediation			**Significance**
Z-value		2.267	*p* = 0.0234
95% Symmetrical Confidence Interval			
Lower		.0115	
Upper		.1323	
Standardized indirect effect			
a*b		.0734	
Se		0.0324	
Effect size Measures			
Standardized Coefficients			
Total:	.6341		
Direct: c'	.5607		
Indirect:	.0734		
Indirect to Total Ratio	.1157		

Source: Survey Data (2017)

Basing on the above explanation, it was concluded that user perception increases the strength of the relationship between organisation context and adoption of cloud computing among SMEs in Nairobi Kenya, as shown below in Figure 4.2.

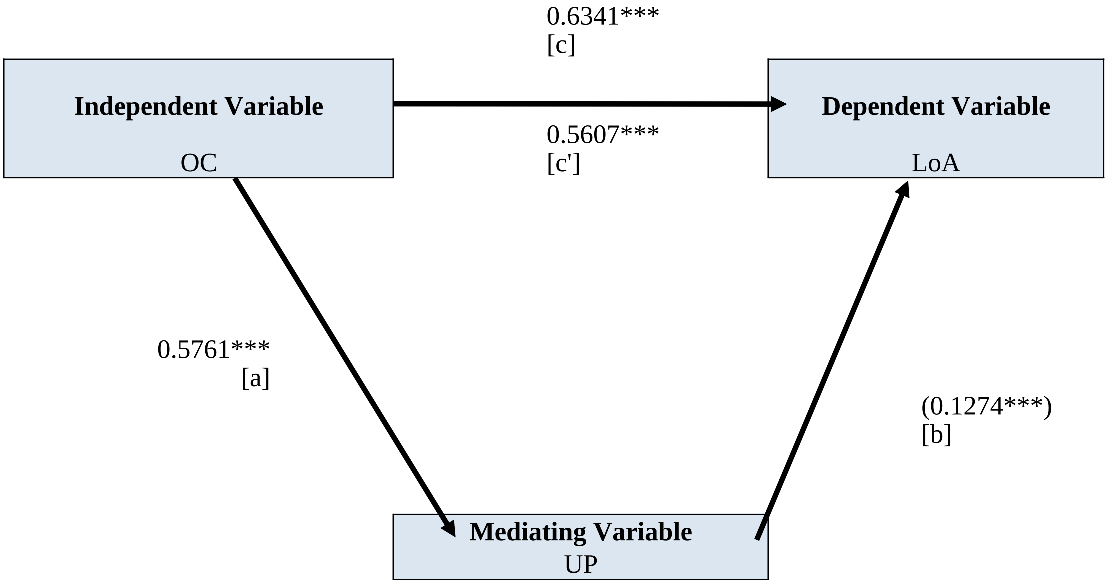


Figure 4.2: Predicting the Mediation Effect of User Perception on the Relationship between Organization Context and Cloud Computing.

Source: Survey Data (2017)

4.17.5 Mediating Effect of User Perception on the Relationship between Environment Context and Level of Adoption

Hypothesis H_{o4c} predicted that user perception does not mediates the relationship between environmental context and cloud computing adoption. In order to test the hypothesis, the regression models were run as indicated in Table 4.45 below. The explanation of the models are as follows: Model 1 is the regression of mediating variable, user perception on environmental context, and model 2 is the regression of the criterion variable, level of adoption of cloud computing on both environmental context (predictor variable) and user perception (mediator) respectively, when both are included as simultaneous predictors of Y.

From the findings in PATH 1, denoted as (a), environmental context accounts for a significant proportion of variance in the mediating variable user perception ($\beta=0.478$, $p<0.01$). In Path 2, denoted as (c') and (b), it was revealed that environmental context and user perception, respectively, account for a significant proportion of variance in adoption of cloud computing (β=0.1050, p<0.01); (β=0.309, p<0.01).

Table 4.45: Regression Coefficients of the Different Paths for Environmental Context

	PATH 1 (a); UP B(S.E)	T	PATH 2(b;c'); LoA B (S.E)	T
(Constant)	2.353 (0.142)*	16.5948	2.009 (0.22)*	9.1296
Environment Context	0.478 (0.039)*	12.2696	0.105 (0.054)*	4.8535
User Perception			0.309 (0.064)*	1.9529
R Square	*0.5656*		*0.3865*	
R Square	*0.3199*		*0.1494*	
F	*150.542*		*28.007*	
Sig.	*.000*		*.000*	

Source: Survey Data (2017)

The correlation of environmental context (IV) to user perception (MV) is denoted as path *a* (0.478) and the correlation of user perception (MV) to cloud computing adoption (DV) is denoted as path *b* (0.309). To establish the mediation effect there was need to get a product of (a) and (b) (Mackinnon, 2000). Path *a* (0.478)**b* (0. 0.309) = (0.1476); the result was significant. Therefore, the null hypothesis H_{o4c} was rejected and it was concluded that user perception mediates the relationship between environmental context and adoption of cloud computing.

Furthermore, to test significance of mediation effect, Normal theory tests (Sobel) for indirect effect were generated using PROCESS macro. The Z-value was 4.5003 and yielded a p-value of 0.0000. Due to the low p-value associated with Z-value, it was further concluded that a significant mediation has occurred. The results were as presented in Table 4.46. The association between environmental context (IV) and cloud computing adoption (DV) has been significantly increased by the inclusion of the mediating variable, user perception. The direct effect *c'* (.1050) is the size of the correlation between environmental context (IV) on cloud computing adoption (DV) inclusive of user perception (MV) in the regression. The total effect *c* (0.2525) is the total sum of Indirect effect *a**b* (0.1476) added to direct effect *c'* (0.1050). A partial mediation is evident with an increasing effect, hence a complimentary relationship.

The total ratio index was computed, as shown below in Table 4.46, by dividing the indirect effect (0.1476) by the total effect (0.2525) giving a total percent of 58.45%. This implies that 58.457% of the total effect of environmental context on adoption of cloud computing goes through the mediating variable; user perception and about 41.55% of the total effect is either direct or mediated by other variables not included in the model. Additionally, it is evident in Table 4.46 below that the 95% confidence interval conclusively shows that significant mediation has occurred. The confidence interval for *a**b* does not include zero hence a clear indication of mediation. Confidence interval of the lower limit is 0.0849 and upper limit is 0.2284.

Table 4.46: Results for Mediation Effect of User Perception on the Relationship between Environment Context and Adoption Cloud Computing

Significance of Mediation			Significance
Z-value		4.5003	$p = 0.0000$
95% Symmetrical Confidence Interval			
Lower		0.0849	
Upper		0.2284	
standardized indirect effect			
a*b		0.148	
Se		0.033	
Effect size Measures			
Standardized Coefficients			
Total:	0.2525		
Direct:	0.1050		
Indirect:	0.1476		
Indirect to Total Ratio:	0.5845		

Source: Survey Data (2017)

Basing on the above explanation, it is safe enough to conclude that user perception increases the strength of the relationship between environmental context and adoption of cloud computing among SMEs in Nairobi Kenya, as shown below in Figure 4.3.

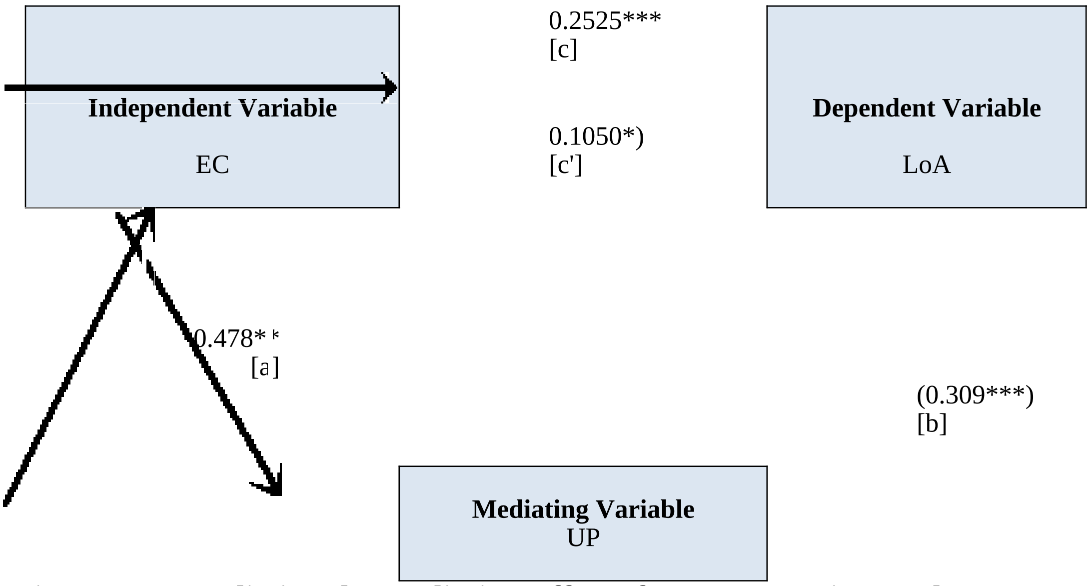


Figure 4.3: Predicting the Mediation Effect of User Perception on the Relationship between Environmental Context and Cloud Computing
Source: Survey Data (2017)

4.18 Summary of Hypotheses

The study hypotheses H_{O1}, H_{O2}, H_{O4a}, H_{O4b} and H_{O4c} were rejected, while H_{O3} was accepted, as summarized below in Table 4.47.

Table 4.47: Summary of Hypotheses Test Results

Hypothesis	Beta	p – Values	Conclusion
H_{O1}: Technology context (relative advantage, compatibility, complexity) has no significant relationship with cloud computing adoption.	0.414	0.000	**Reject**
H_{O2}: Organisation context (top management support, firm size, technology readiness) has no significant relationship with cloud computing adoption.	0.262	0.000	**Reject**
H_{O3}: Environmental context	-0.033	0.52	**Fail to Reject**

(competitive pressure, trading partner's pressure) has no significant relationship with cloud computing adoption.			
H$_{O4a}$: User Perception has no mediating effect on the relationship between technology context and cloud computing adoption	z- =3.588	0.000	**Reject**
H$_{O4b}$: User Perception has no mediating effect on the relationship between organizational context and cloud computing adoption	z- =2.265	0.023	**Reject**
H$_{O4c}$: User Perception has no mediating effect on the relationship between environment context and cloud computing adoption	z- = 4.500	0.000	**Reject**

Source: Survey Data (2017)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the research findings and indicates how the results relate to both the theoretical underpinnings and empirical findings in the existing literature. The chapter also presents conclusion, implications, recommendations, limitations and areas for further research. The summary covers what the study sought to do and the main findings of the study based on the quantitative analysis centred on both objectives of the study and tested hypothesis. The summary of results, conclusion and recommendations are presented in line with the objectives of the study.

5.2 Summary of Findings

The summary discusses the findings of both literature and empirical study derived from both objectives of the study and tested hypothesis. It provides some possible explanations as to why hypotheses were supported or unsupported. To validate the conceptual model, the study examined the mediating effect of user perception on the determinants of cloud computing adoption in selected SMEs in Nairobi, Kenya. The study was conducted using a sample of SMEs in Nairobi Kenya. To understand the relationship between the determinants and cloud computing adoption the following theories were used: Innovation Diffusion Theory, Theory of planned Behaviour, TOE Framework and TAM.

It was postulated that technological, organizational, environmental context (TOE) is a determinant of cloud computing adoption and this relationship is mediated by user perception (PU and PEOU). The results of this study advance knowledge that is important for SMEs in Kenya. This study expands our knowledge on the determinants of cloud computing adoption in selected SMEs in Nairobi, Kenya. The findings filled the knowledge gap and will help both SMEs and service providers to understand the main factors that determine adoption of technology and more specifically cloud computing.

5.2.1 Relationship between Technology Context and Cloud Computing Adoption

The first objective of this study was to establish the relationship between technology context and cloud computing adoption. It was further hypothesized that there is no significant relationship between technology context and cloud computing adoption. In support of the expectations of the study, the research findings indicated that technology context had a significant effect on adoption of cloud computing ($\beta1=0.414$, $\rho<0.05$). The results on Ho_1 showed there is a significant relationship between technology context and adoption of cloud computing in the priority order of the greater to less co-efficient value respectively relative advantage, compatibility and complexity.

The findings of this study however indicated that technology context positively and significantly affected adoption of cloud computing. Therefore, in this study, hypothesis Ho_1 was rejected. Based on the above observations it can be inferred that the findings validate the conceptual framework developed in this study as they shed light on the link between technological context and adoption of cloud computing among SMEs. This finding also supports the postulations of the Innovation Diffusion Theory (IDT), Theory of Planned behaviour, TOE Framework and TAM, which stipulates that technology with a relative advantage, compatible with existing technology, and not complex to use has an effect on cloud computing adoption. The IDT Theory argues that “potential user make decisions to adopt or reject an innovation based on beliefs that they form about the innovation” (Agarwal, 2000).

In the context of this study, it can be inferred that for SMEs to successfully adopt new technology, they must be easy to use and have a relative advantage. It should be a technology that benefits the small businesses and must be compatible with the already existing technology in use. The technology should be one which can easily be integrated with the existing technology in place. Cloud computing provides a service that shares resources, offering SMEs the advantage of being able to access resources placed on cloud from any location and thus it saves businesses time and money.

The study has indicated that cloud computing promises a variety of gains to small companies. Entrepreneurs are aware of the benefits of cloud computing. They justified their interest in cloud services, stating that they can access information any time from any place and can share resources placed on the cloud. Overall, cloud computing provides them with more control over their operations.

Further, when relative advantage was regressed with the level of adoption of cloud computing, the significance value produced was 0.000. The significance value of 0.000 was lesser than 0.05 meaning that relative advantage has a positive and significant effect on the level of adoption of cloud computing. Cognate to the results, Lee (2004) posits that when firms perceive that an innovation offers a relative advantage, then it is more likely that they will adopt that innovation.

Moreover, the research findings coincided with the views by many other scholars, that when businesses perceive a relative advantage in an innovation, then the probability of adoption will increase (Gibbs and Kraemer, 2004; Lee, 2004; Ramdani and Kawalek, 2008; Lee, 2004). This might relate to the fact that cloud computing promises a variety of gains to companies adopting it on capacity, reliability and flexibility (Miller, 2008). Cloud computing can also offer many advantages to the firm. Adopting cloud computing is equally likely to add relative advantage to the firm by lowering the cost of entry for SMEs to access a vast pool of computing resources for relatively short amount of time (Marston *et al*., 2011). With almost instant access to hardware resources, small businesses would have faster time to market with no upfront capital investment (Marston *et al*., 2011).

Based on study findings, whenever cloud computing is recognized as compatible with the work application system, there is a higher likelihood of adoption of the technology by SMEs. In the event that it is incompatible, cloud service providers' offer integrated services. In line with the results, the extant literature has indicated that compatibility is an essential factor for innovation adoption (Wang *et al*., 2010). Increase of cloud computing due to increase in compatibility is supported by Rogers (2003) argument that rapid adoption rate for technology usually occurs if organizations recognize that it is compatible with their needs and existing practice. Similarly, in a study, Zhu *et al*. (2006a) compatibility is considered one of the most significant drivers in the post-adoption stages of innovation diffusion.

The findings of this research also reiterate those of Thong (1999) that compatibility of the innovation had a strong influence on the adoption of technology in business. Business owners are concerned that the adopted innovation is consistent with values and the technology needs of their organizations (Lee, 2004). From the developer side, there is an increasing interest in compatibility, which is focused on achieving a high level of integration for the new technologies (Kamal, 2006).

The study further identified a significant effect between complexity and the adoption of cloud computing. This means that when innovation becomes less challenging to use it is likely to be adopted. New technology may confront SMEs with challenges in terms of changing the processes in which they interact with their business systems. New technologies have to be user-friendly and easy to use in order to increase the adoption rate (Sahin, 2006). The research findings are also consistent with those of Grover (1993) and Thong (1999), which suggest that businesses may be less likely to adopt an innovation or technology, if it requires a high level of new skills by members of the organization. However, contrary to the findings, various studies indicate that complexity had a significantly negative effect on the intention to use a system (Shih, 2007; Lee, 2007). In a similar vein, Premkumar *et al*. (1994) posit that complexity of an innovation can act as a barrier to implementation of new technology.

5.2.2 Relationship between Organisation Context and Cloud Computing Adoption

The second objective of this study was to determine the relationship between organisation context and adoption of cloud computing. Hypothesis Ho_2 postulated that there was no significant relationship between organisation context and cloud computing adoption. The null hypothesis was rejected implying that there is a significant relationship between organisation context and adoption of cloud computing. From the regression analysis, it was found that firm size, technology readiness had the greatest effect on cloud computing adoption followed by top management support.

As evidenced in the previous chapter, top management support is key to the successful integration of cloud computing in SMEs. The findings concur with the argument that top management support ensures the sufficient resources are allocated for adopting the new technologies in question (Annukka, 2008). Therefore, top management support is essential to maintain the importance of possible change through an articulated vision for the organization, and by sending significant signals of the new technology to other members of the firm (Thong *et al*., 1999; Low *et al*., 2011).

The results are in line with prior findings indicating that top management support is critical for creating a supportive climate and for providing adequate resources for the adoption of new technologies (Lin and Lee, 2005; Wang *et al*., 2010). The extant literature also indicates that top management can provide a vision and commitment to create a positive environment for innovation (Lee and Kim, 2007; Pyke, 2009). Moreover, some empirical studies have indicated that there is a positive relationship between top management support and adoption of new technology (Pan and Jang, 2008; Zhu *et al*., 2004). Jeyaraj *et al*. (2006) have found that top management support is considered the main link between individual and organizational ICT innovation adoption.

Eder and Igbaria (2001) and Daylami *et al*. (2005) observe that technology innovation adoption can be influenced by top management support and attitudes towards change. In their review of the predictors and biases in IT, Jeyaraj *et al*. (2006) has found that top management support is considered as the main link between individual and organizational ICT innovation adoption. Consequently, top management support is considered to have an impact on ICT innovation adoption (Daylami *et al*., 2005; Wilson *et al*., 2008).

As evidenced by the findings of this study, top management support is key to the successful integration of cloud computing among SMEs. If top management exhibits a culture of enterprise wide information sharing, the company's top management provides strong leadership and engages in the process when it comes to information systems then they are most likely to consider the adoption of cloud computing as strategically important. Moreover, when top managers perceive the technology easy and useful and with minimal risk then SMEs are bound to benefit through adoption. The results of this study are in line with prior findings indicating that top management support is critical for creating a supportive climate hence there is a positive relationship between top management support and cloud computing adoption among SMEs in Nairobi Kenya.

Firm size was also found to contribute significantly to the adoption of cloud computing. This infers that the bigger the size of SME the more the adoption of cloud computing. Thus SME size is rendered as a major factor in adopting cloud computing in many previous studies. Start-ups and small businesses were found to be inclined to adopt cloud services. This is because small size of SMEs enables them to change direction quickly and to be more flexible if needed and have higher controlling destiny and it is easy for them to do whatever they want with ease due to less bureaucratic set up as it may be the case with larger firms. However, it is often argued that larger firms have more resources, skills, experience and ability to survive failures than smaller firms who are usually faced with set up capital challenges and cash flow for maintenance.

The results agree with prior research indicating that the size of a firm is one of the major determinants of IT innovation (Dholakia and Kshetri, 2004; Hong and Zhu, 2006; Pan and Jang, 2008). Furthermore, the extant literature has indicated that large firms tend to adopt more innovations, largely due to their greater flexibility and ability to take risk (Pan and Jang, 2008; Zhu *et al*., 2004). On the other hand, because of their size, small firms can be more innovative, they are flexible enough to adapt their actions to the quick changes in their environment (Jambekar and Pelc, 2002), compared to larger firms, which have multiple levels of bureaucracy and this can slow down decision-making processes (Oliveira and Martins, 2011). However, other prior studies (Damanpour, 1992; Jambekar and Pelc, 2002) indicate that small firms can be more innovative, they are flexible enough to adapt their actions to the quick changes in their environment compared to large firms. In a similar vein, Premkumar (2003) opines that IT adoption often needs coordination that may be relatively easier to achieve in small firms.

The study findings also concur with Rogers (2003) that size is one of the most critical determinants of the innovator profile. Organizational size has long been at the heart of studies looking at IT innovation adoption and is considered to be an important predictor of ICT innovation adoption (Jeyaraj *et al*., 2006; Lee and Xia, 2006). Similarly, various scholars have reported a positive correlation between firm size and ICT adoption (Aguila-Obra and Padilla-Mele´ndez, 2006; Kamal, 2006; Ramdani and Kawalek, 2007, 2008; Annukka, 2008; Belso-Martinez, 2010). However, the finding contradicts the views of Goode and Stevens (2000) that there is a negative correlation between firm size and ICT adoption.

Therefore, the findings of this study indicate that firm size has a significant relationship with cloud computing adoption. Additionally, the study has shown that technology readiness has a significant effect on cloud computing adoption. Specifically, the company has hired highly specialized or knowledgeable personnel for cloud computing and has sufficient technological resources to implement cloud computing – unrestricted access to computer. However, technological resources to realize high bandwidth connectivity to the internet are not sufficient. Besides, there is doubt whether the entrepreneurs allocate a percentage of total revenue for cloud computing implementation in the company. For adoption of any technology the employees should be ready to accept the technology.

5.2.3 Relationship between Environmental Context and Cloud Computing Adoption

The third objective of this study was to determine the relationship between environmental context and cloud computing adoption. It was postulated by (H_{o3}). Competitive pressure did not have any significance on cloud computing adoption. Also elucidated that trading partner's pressure has no significant effect on the level of adoption of cloud computing. The null hypothesis, that there is no significant relationship between environmental context and cloud computing adoption was, therefore accepted.

The study has established that competitive pressure had insignificant effect on adoption of cloud computing. This findings is consistent with those of Ramdani *et al.* (2009), Wn and Chen (2010) and Premkumar and Roberts (1999), but it is inconsistent with those of Kamien and Schwartz (1982) and Low *et al.* (2011), Oliveira and Martins (2010). The results of this study did not show that competitive pressure was significant factor for adoption. This might simply be related to the low rate of diffusion of cloud computing among SMEs till now. Cloud service providers could encourage small businesses in many ways. For instance, they can allow them to try the product or service before committing to it, offering their customers the opportunity to determine the level of compatibility and complexity of the product.

Similarly, trading partners pressure had insignificant effect on adoption of cloud computing. The findings disagree with those of Premkumar and Roberts (1999) who argue that competitive pressure is an important determinant of adoption. Moreover, empirical studies have suggested that trading partner pressure is an important determinant for IT adoption and use (Chong and Ooi, 2008; Lai *et al*., 2007; Lin and Lin, 2008; Pan and Jang, 2008; Zhu *et al*., 2004).

The results on trading partners' pressure had no significant effect on cloud computing adoption. Findings disagreed on some studies that trading partners' pressure positively effect on adoption intentions (Teo *et al*., 2009; Power and Sohal, 2002; Lin and Lin, 2008, Oliveira and Martins, 2010; Wang *et al*., 2010; Low *et al*., 2011). The findings also contradict with the view by Gutierrez *et al*. (2015) that trading partner can have an effect on the decision of whether to adopt a new information technology innovation or not. The findings show that trading partner power is neither convincing nor compulsory.

5.2.4 Mediating Effect of User Perception on the Relationship between Technology Context and Cloud Computing Adoption

The effect of technology context on cloud computing adoption is mediated by user perception. Further mediation analysis using PROCESS macro indicates that the effect of technology context on cloud computing adoption is significant in the analysis indicating that user perception mediates on the relationship between technology context and cloud computing adoption. In conformity with the findings, prior studies have indicated that when employees perceived systems as being easier to use they tended to be more useful and easier to use (Huang, 2004; Yang, 2007).

Moreover, new technologies have to be user-friendly and easy to use in order to increase the adoption rate (Sahin, 2006). Besides, by adopting cloud computing, firms benefit greatly from better understanding of market visibility, greater operation efficiency, and more accurate data collection (Misra and Mondal, 2010).

The study found that inclusion of user perception enhances the effect of technology context on cloud computing adoption among SME. This indicates that enabling cloud computing to manage business operation in an efficient way, increase of business productivity and to accomplish organizational task more quickly, improves the quality of business operation and advances competitiveness when perceived useful to the organisation. People in general tend to use or not to use an application to the extent that they believe it will help them perform their jobs better.

According to Das *et al.* (2011), perceived usefulness of technology was found to have a positive effect on the demand and adoption of ICT, which supports the findings of many earlier studies. Though the participants in the study did not have adequate technology context to adopt cloud-computing, need for more convenient cloud computing was found to contribute towards high-perceived benefits of cloud computing as expressed by the participants based on the concept of cloud computing explained to them.

5.2.5 Mediating Effect of User Perception on the Relationship between Organizational Context and Cloud Computing Adoption

The effect of organizational context on cloud computing adoption is mediated by user perception. Further analysis indicated a significant partial mediation of user perception on the relationship between organization context and cloud computing adoption. This infers that individual’s perception of cloud computing adoption as easy to operate will lead to automatic adoption. However, if customers perceive cloud computing adoption to be complex, then adoption rate will be very slow. The complexity of cloud computing may be troublesome to use and impair the usability of cloud computing adoption. Some SMEs consider use of E-mails and other e communication strategies to be difficult and time consuming as the device enables only a limited amount of information processing (Laukkanen, 2007).

The entrepreneurs perceive the use of cloud computing as understandable. To them, it is easy to learn and make use of cloud computing. Moreover, the ease of use of cloud computing heightens the chances of its adoption. In addition, the entrepreneurs confirmed that cloud computing is an easy technology for them to be skilful. Its flexibility is also an added advantage to the SMEs. The findings infer that although an individual may believe that an application is useful, he or she might also find that the system is difficult to use thus, PEOU has been considered as an important determinant in adoption of cloud computing According to Rogers (1995), complexity of one particular system will become the inhibitor that discourages the adoption of an innovation. For example, someone may find using cloud computing tedious and complex due to the constraints of physical features.

5.2.6 Mediating Effect of User Perception on the Relationship between Environmental Context and Cloud Computing Adoption

Based on the analysis of findings in chapter four, it was found that user perception mediated on the relationship between environment context and cloud computing adoption. Further mediation analysis using the process macro revealed that there was an increasing mediation effect comparing the pathways of the total effect and direct effect hence signifying a complimentary relationship.

The findings of this study concur with those of Wei *et al*. (2009) that perceived usefulness has a strong correlation to user acceptance of information technology. Moreover, Viehland and Leong (2007) have found that user perception is the most significant determinant to predict intention to use technology in Malaysia. Moreover, this study coincided with prior studies that show perceived ease of use and perceived usefulness to have had a significant effect on usage intention, either directly or indirectly (Venkatesh, 2000; Venkatesh and Davis, 1996). A system perceived to be easier to use will facilitate more system use and is more likely to be accepted by users (Venkatesh and Morris, 2000).

To support the above argument this study clearly shows from the regression of the direct effect environmental context did not have any significant effect towards adoption of cloud computing. It was noted that, with the inclusion of user perception, 58.45% of the total effect of environmental context on adoption to cloud computing goes through the mediating variable; user perception.

This implies that as much as competitive pressure and trading partners pressure may be construed as a major determinant of adoption it may not be that effective on their own but while mediated by user perception. According to this study there is clear indication that SMEs may not just decide to adopt a technology because their competitors and trading partners have adopted but may purely depend on their perception and that is within the parameters of perceived ease of use and perceived usefulness. If the technology seems easy to use and useful and promises to bring benefits, then SMEs are most likely to embrace. Therefore, the findings reveal that the effect of environment context on adoption level of cloud computing is increased through user perception.

Based on the findings, the study concludes that making cloud computing procedure understandable, easy to learn, easy to make use of adoptable, perceived easy to use increases the adoption of cloud computing. The importance of ease of use is supported by Bandura (1982) extensive research on self-efficacy, which he defined as ‘judgments of how well one can execute courses of action required to deal with prospective situations. Self-efficacy is therefore similar to perceived ease of use. According to Davis (1989), self-efficacy beliefs are theorized to function as proximal determinants of behaviour. Bandura’s theory distinguishes self-efficacy judgments from outcome judgments, the latter being with the extent to which behaviour, once successfully executed, is believed to be linked to valued outcomes. Bandura's "outcome judgment' variable is similar to perceived usefulness (Davis, 1989).

Research on the adoption of innovations also suggests a prominent role for perceived ease of use. In their meta-analysis of the relationship between the characteristics of an innovation and its adoption, Tornatzky and Klein (1982) have found that compatibility, relative advantage, and complexity have the most consistent significant relationships across a broad range of innovation types. Complexity is defined by Rogers and Shoemaker (1971) as the degree to which an innovation is perceived to be relatively difficult to understand and use, parallels perceived ease of use quite closely. As Tornatzky and Klein (1982) point out, however, compatibility and relative advantage have both been dealt with so broadly and inconsistently in the literature as to be difficult to interpret.

5.3 Conclusion of the Study

This study was motivated by the quest for solution to enable SMEs to be competitive and operate in an equal playing field with the blue chip firms. SMEs are the drivers of the economy and technology being the avenue into achieving an edge therefore, the study sought to find out how SMEs can harness their resources by embracing cloud computing. The research results found that technology context (relative advantage, compatibility and complexity) significantly influence cloud computing. Specifically, relative advantage as a component of the technology context exhibited a positive and significant effect on the adoption level of cloud computing among the SMEs. Likewise, compatibility is an essential component of cloud computing adoption and SMEs will be more likely to adopt if cloud computing is compatible with the existing systems in the organization. Additionally, in order to enhance the adoption of cloud computing, SMEs require new skills and expertise to manage cloud solutions.

Top management support is considered crucial in the adoption of cloud computing by SMEs. Support from the top management sends signals of the importance of cloud computing to the other members of the organization hence enhancing its adoption. It is worth noting that, given that in small businesses the CEO is often the owner-manager, sales pitches should not just be targeted to IT staff, and also to the top management, for the reason that support and commitment from the top management team makes the company more likely to adopt new technologies, and also to avoid the cases where IT managers feel that cloud computing might threaten their position.

Further, on the organization context, the study revealed that the firm size has a significant effect on the adoption of cloud computing. In terms of a firms' size, the extant literature has indicated that larger firms are more likely to adopt because of their vast resources, which makes it easier for them to take risks. Smaller firms also boast of greater flexibility and coordination, which makes it relatively easier to adopt new technology. Additionally, technology readiness is of essence in the adoption of cloud computing. Existence of knowledgeable personnel and sufficient technological resources are added advantages in the adoption of cloud computing in SMEs.

Competitive pressure and trading partners' pressure as elements of the environment context exert strong pressure on SMEs to adopt cloud computing so that they can improve on their production. It allows SMEs to have quick retrieval of information and have an edge over competitors. In this study, environmental context impacts on cloud computing adoption only when perception aspect is in place. Otherwise, without the perceived notion of ease of use and usefulness of the technology competitors and trading partner's pressure on their own do not play a significant role in adoption. In light of this, it can be inferred that environmental context is an important determinant of adoption of cloud computing with the inclusion of user perception.

5.4 Implications of the Study

The results of this study suggest a series of implications that need to be considered. These are theoretical, practical, policy and social implications. These implications are discussed in the sections hereunder.

5.4.1 Theoretical Implications

This study confirms that technological and organizational factors derived from the IDT and TOE theories are significant predictors of cloud computing adoption levels among SMEs in Nairobi Kenya. However, environmental factors under the TOE framework did not seem to have an effect on cloud adoption and this was explicit from the direct research results showing insignificant results of environmental context on adoption of cloud computing.

However, when environmental context was mediated by user perception there was a significant effect shown. This implies, that there must be an inclusion of user perception to the environmental factors to facilitate a significant effect on adoption levels of cloud computing. This finding was novel considering no other scholar has reported a similar finding according to reviewed literature. Nevertheless, to confirm this empirical phenomenon, the researcher suggests that additional studies in the future to explore further relationships between determinant factors and cloud computing adoption.

Therefore, the study provides an insight on the magnitude of the TOE factors and user perception critical role on cloud computing adoption among SMEs in Nairobi county Kenya. The study also advances existing literature on adoption of cloud computing, TOE context and user perception which provides a reference point for academic dialogue and future research.

5.4.2 Policy and Practice Implications

From the results of this study, a number of issues call to attention practitioners and researchers alike. It is worth noting that prudent interpretation of the results of the study variables can be appreciated if an initiative is taken to assess the roles played by the variables studied. Therefore, the model addressing the direct and the mediation effects gives an insight on adoption of cloud computing among SMEs in Nairobi Kenya.

With the inclusion of user perception in the relationship between TOE context and cloud adoption, service providers, business managers and entrepreneurs can develop their strategies and deployment roadmaps for cloud adoption with higher confidence on the main determinants and expected value.

Furthermore, the cloud service providers can allocate the right level of resources and set proper priority to enhance their cloud service capacities hence cultivating and accelerating adoption level services through improved values and reducing adoption barriers. Government policy makers will greatly benefit from the results of this study regarding the adoption of ICT technology in small business firms. The main implication to industry is that service providers will create effective public awareness and enhance insight for training and support in addressing the low cloud adoption situation among SMEs in Kenya.

5.4.3 Social Implications

The findings of this study play an important social change with higher and faster cloud service adoption among SMEs in Kenya. The positive social change implication with adoption of cloud computing among SMEs, its main benefit in reducing IT investment, scalable pay-as-you-go cost structure, high service reliability and from anywhere anytime information accessibility can reflect quickly on better quality and lower cost services for customers from various industry sectors.

SMEs are capable of offering better services since their accessibility is not limited, they can access services from remote servers from anywhere and wherever. Cloud computing enhances instant response time to customers as long as there is an internet connection hence improving the level of business. In the long run when SMEs have flexible business solutions, they are not bogged down with an on premise service but a cloud environment based solution that enhances overall business efficiency and effectiveness. Therefore, with cloud computing, SMEs are not restricted on a brick and mortar business model but can do their businesses from the comfort of their houses, vehicle and from anywhere using their mobile phones. Additionally, they are also able to interlink and enhance business networks with ease.

5.5 Recommendations

From the findings of the study, under the technological context relative advantage has a positive and significant effect on the level of adoption of cloud computing, it is important for SMEs to perceive cloud computing as a new computing model that could increase their profitability before they take a positive adoption decision.

Furthermore, in order to enhance the adoption of cloud computing, it is important for SMEs to ensure that cloud services are compatible with the organization's systems. Also, there is need for the cloud computing services to be compatible with statutory regulation. In addition, there is need for the technical and procedural requirements of the innovation to be compatible and consistent with values and the technological requirements of the adopting organization. This is evident from reviewed literature and the findings of this study which reveals that beyond different findings relative advantage and complexity are critical technological factors. It is worth noting that perceived ease of use is the exact reverse measurement for complexity.

Consequently, it is essential for SMEs to note that the new innovation is consistent with their existing values and needs. On the organisational context, the study has indicated that top management support is key to the successful integration of cloud computing among SMEs. Top management support is therefore utmost necessary since it ensures that sufficient resources are allocated for adopting cloud computing. Moreover, the results of the study have indicated that technology readiness has a significant effect on cloud computing adoption. It is therefore necessary for SMEs to hire highly specialized or knowledgeable personnel for cloud computing. Also, there is need to allocate sufficient technological resources to implement cloud computing.

The environmental context plays a role in the adoption of cloud computing. Specifically it is mediated by user perception. According to the study competitive pressure and trading partners pressure were not significant on their own but when user perception is included there was a significant change this implies that it is not all about whether a competitor has adopted or pressure from the trading partners but the most important thing is the perception that goes along with the innovation adoption. Therefore, it can be concluded that perception drives SMEs to adopt cloud computing so that they can have the ability to access internal, external, and previously encountered information. It is imperative for entrepreneurs to understand the competitive advantages offered by cloud computing in their industry.

5.6 Recommendations for Further Research

This study expands existing knowledge on the determinants of cloud computing adoption in selected SMEs in Nairobi, Kenya. Though this study has fulfilled its aim and objectives, there are a number of areas for additional studies and empirical research, given the limitations of the research.

On a geographical dimension, this study was primarily limited to SMEs in Nairobi. Therefore, it may not be appropriate to generalize to the whole population of the SMEs in this country or any other country. For this reason, further empirical investigations in different regions and countries are needed.

The methodology that has been chosen to achieve the research objectives was limited to questionnaires. As such, future research could build on this study by examining cloud computing adoption in different sectors and industries in both a qualitative and quantitative way. Future studies could use the same survey instrument and method to provide better global generalization from the research findings.

To implement the study in terms of a longitudinal rather than a cross- sectional design can provide the trending perspectives on the changes of the influential factor effects over time with cloud service adoption. Finally, only a single research methodological approach was employed and future research through interviews could be undertaken to triangulate.

Given that SMEs are pervasive in all economies this will call for a careful selection of samples that can help provide a representative picture of cloud computing. Also a replication of this research on different industries in different geographical regions would provide data for comparison.

REFERENCES

Agarwal B. and Barnes, M. (2010). *The case for cloud CRM in India.* White Paper, Springboard Research.

Agarwal, R. (2000). Individual acceptance of Information Technologies. *Educational Technology Research and Development*, *40*, 90-102.

Agarwal, R., Sambamurthy, V., and Stair, R. (2000). The evolving relationship between general and specific computer efficacy: An empirical assessment. *Information Systems Research*, *11*(4), 18-430.

Aguila-Obra, A. R. & Padilla-Meléndez, A. (2006). Organizational factors affecting Internet technology adoption. *Internet Research: Electronic Networking Applications and Policy*, 16(1), 94-110.

Ajzen, I. (1991). The theory of planned behavior. *Organ Behavior of Human*, *50*(2), 121-79.

Aljabre, A. (2012). Cloud computing for increased business value. *International Journal of Business and Social Science*, *3*(1), 234-239.

Annukka, V. (2008). *Organisational factors affecting IT innovation adoption in the Finnish early childhood education*. Paper No. 133, ECIS 2008 Proceedings, 16th European Conference on Information Systems, ECIS, Galway, Ireland, 9-11 June.

Armbrust, M., Fox, A., Griffith, R., Joseph, A., Katz, R., Konwinski, A., *et al.* (2010). A view of cloud computing, *Communications of the ACM*, *53*, 50-8.

Baker, J. (2011). *The technology-organization-environment framework, Information Systems Theory: Explaining and Predicting Our Digital Society*. New York, NY: Springer.

Bamiah, M., Brohi, S., Chuprat, S., and AbManan, J. (2012). A study on significance of adopting cloud computing paradigm in healthcare sector. In *Cloud Computing Technologies, Applications and Management, International Conference* (pp. 65-68).

Bandiera, O., and Rasul, I., (2006). Social networks and technology adoption in Northern Mozambique. *The Economic Journal*, *116*(514), 869-902.

Bandura, A. (1982). The assessment and predictive generality of self-percepts of efficacy. *Journal of Behaviour Therapy and Experimental Psychiatry*, 13, 195-199.

Bandyopadhyay, S., Marston, R. Li, Z., and Ghalsasi, A. (2009). *Cloud computing: The business perspective*. Amsterdam: Elseviewer.

Barron, R., and Kenny, D. (1986). The moderator-mediator variables distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182.

Bayo-Moriones, A., and Lera-Lo´pez, F. (2007). A firm-level analysis of determinants of ICT adoption in Spain, *Technovation*, *27*(6-7), 352-366.

Beckinsale M., and Ram, M. (2006). Delivering ICT to ethnic minority businesses: an action-research approach, environment and planning. *Government and Policy, 24*(6), 847-867.

Belso-Martinez, J. A. (2010). Outsourcing decisions, product innovation and the spatial dimension: Evidence from the Spanish footwear industry. *Urban Studies*, 47(14), 3057-3077.

Bhardwaj, S., and Jain, S. (2010). Cloud computing: A study of infrastructure as a service, *International Journal of Engineering and Information Technology*, *2*, 60-63.

Boniface M., Nasser B., Papay J., Phillips, S., Servin, A., and Zlatev, K. (2010). *Platform-as-a-service architecture for real-time quality of service management in clouds.* Fifth International Conference on Internet and Web Applications and Services, pp. 155-160.

Buyya, R., Yeo, C., Venugopa, S., Broberg, J., and Brandic, I. (2009). Cloud computing and emerging it platforms: vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*, *25*, 599-616.

Carroll, M., Van der Merwe A., and Kotze P. (2010). Secure cloud computing: Benefits, risks and controls. *Information Security for South Africa Conference, 8*(1-9), 15-17.

Carter, L., and Be´langer, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal*, *15*(1), 5-25.

Chan, D., Wang, S., and Ke, Y. (2010). Developing A risk assessment model for PPP projects in China; A fuzzy synthetic evaluation approach. *Automation in Construction*, 929-943.

Chang, I., Hwang, H., and Lian, J. (2006). Critical factors for adopting PACS in Taiwan: Views of radiology department directors. *Decision Support Systems*, *42*(2), 1042-1053.

Chatman, C. (2010). How cloud computing is changing the face of health care information technology. *Journal of Health Care Compliance*, *12*(3), 37-70.

Chau, P. and Tam, K. (1997). Factors affecting the adoption of open systems: an exploratory study, *MIS Quarterly, 21*, 1-24.

Chau, Y., and Hu, J. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences*, *32*(4), 669-719.

Chen, L., Gillenson, M., and Sherrell, D. (2002). Enticing online consumers: An extended technology acceptance perspective. *Information and Management*, *39*(8), 705-719.

Chinyao, L., and Yahsueh, C. (2011). Understanding the determinants of cloud computing adoption. Industrial Management and Data Systems, 111(7).

Chong, A., and Ooi, K. (2008). Adoption of inter organizational system standards in supply chains: an empirical analysis of RosettaNet standards. *Industrial Management and Data Systems, 198*, 529-47.

Chowhan, S., and Saxena, R. (2011). Customer relationship management from the business strategy perspective with the application of cloud computing. *Proc. DYNAA, 2*(1).

Churchill Jr., G. A., and Iacobucci, D. (2004). *Marketing research - Methodological foundations* (9th ed.). Mason, OH: Thomson.

Collins, L. M., Graham, J. W., and Flaherty, B. P. (1998). An alternative framework for defining mediation. *Multivariate Behavioral Research, 33,* 295–312.

Conway, G., and Curry, E. (2012). *Managing cloud computing: a life cycle approach, in Proc*. 2nd International Conference on Cloud Computing and Services Science, Porto, 2012 C4D LAB.

Cooper, R., and Zmud, R. (1990). Information technology implementation research: A technological diffusion approach. *Management Science*, *36*, 123-39.

Connelly, L. M. (2008). Pilot studies. Medsurg Nursing, 17(6), 411-2.

Dai, W. (2009). The impact of emerging technologies on small and. medium enterprises. *Journal of Business Systems, Governance and Ethics*, *4*, 54-60.

Damanpour, F. (1992). Organizational size and innovation. *Organization Studies, 13*(3), 375-402.

David, W. (2010). *Cloud Computing Key Initiative Overview for CIOs*. Stamford: Gartner Research.

Davis, F. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319-340.

Davis, F., Bagozzi, R., and Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical model. *Management Science, 35*(8), 982-1003.

Daylami, N., Ryan, T., Olfman, L., and Shayo, C. (2005). System sciences, HICSS ’05. *Proceedings of the 38th Annual Hawaii International Conference*, Island of Hawaii, 3-6 January.

Dholakia, R., and Kshetri, N. (2004). Factors impacting the adoption of the internet among SMEs. *Small Business Economics*, *23*, 311-22

DTI (2004). *Business in the Information Age: International Benchmarking Study 2004*. Retrieved July 15 2015 from: http://www2.bah.com/dti2004

Ebiringa, O. T. (2011). Synthesis of literature on small and medium enterprises start-up financing. *Int. J. Eco. Res., 2*(1), 85-95.

Eder, L., and Igbaria, M. (2001). Determinants of intranet diffusion and infusion. *Omega*, *29*(3), 233-242.

Ekufu, T. (2012). *Predicting cloud computing technology adoption by organizations: An empirical integration of technology acceptance model and theory of planned behavior* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. 3544047)

Ellison, J. (2010). *Oracle's Ellison nails cloud computing*. Retrieved April 7 2016 from http://news.cnel.com/8301-13953 10052188-80.html.

Erdogmus, H. (2009). Cloud computing: does nirvana hide behind the nebula? *IEEE Software*, *26*, 4-6.

European Commission (2005). *The New SME definition: User Guide and Model Declaration*. Accessed on Aug 16, 2015 from https://ec.europa.eu/digital-single-market/en/news/new-sme-definition-user-guide-and-model-declaration

Feuerlicht, G., and Govardhan, S. (2010). Impact of Cloud Computing: Beyond a Technology Trend, Systems Integration. *Prague Oeconomica*, 1–8.

Field, A. (2009). *Discovering statistics using SPSS*. London: Sage.

Finan, E. (2012). *Cloud computing: Risks, benefits, and mission enhancement for the Intelligence Community*. Arlington, VA: Intelligence and National Security Alliance.

Fluid Survey Solutions (2015). *Sample Size Methodology*. Retrieved April 4, 2015 from Fluid Survey Research Solutions online

Fox, R. (2009). Digital Libraries: The systems analysis perspective. *Library in the Clouds*, *25*(3), 156-161.

Frankfort-Nachmias, C., and Nachmias, D. (2008). *Research Methods in the Social Sciences* (7th ed.). New York: Worth.

Gardner, C., and Amoroso, D. (2004). Development of an instrument to measure the acceptance of internet technology by consumers. *System Science*, 1-10.

Gartner (2009). Cloud computing inquiries at Gartner. Retrieved September 16, 2010 from http://blogs.gartner.comthomas_bittman/2009/10/29/cloud-computing-inquiries at-gartner

Gee-Woo, B., Zmud, R., Young-Gul, K., and Jae-Nam, L. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate, *MIS Quarterly*, *29*(1).

Gefen, D. (2004). What makes an ERP implementation relationship worthwhile: Linking trust mechanisms and ERP usefulness. *Journal of Management Information*, *21*(1), 263-288.

Ghasemi, A., and Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *Int J Endocrinol Metab*., 10(2), 486-9.

Gibbs S., Sequeira, J., and White, M. (2007). Social networks and technology adoption in small business. *International Journal of Globalisation and Small Business*, *2*(1), 66-87.

Giovanni, F., and Mario, A. (2003). Small company attitude towards ICT based solutions: some key-elements to improve it. *Educational Technology and Society*, *6*(1).

Golding, P., Donaldson, O., Tennant, V., and Black, K. (2008). *An analysis of factors affecting the adoption of ICT by SMEs in rural and urban Jamaica*. Paper Presented at the 16th European Conference on Information Systems, Cork, Ireland.

Good, S. (2013). Why healthcare must embrace cloud computing? Retrieved June 23, 2016 from http://www.forbes.com/sites/centurylink/2013/05/02

Goode, S., and Stevens, K. (2000). An analysis of the business characteristics of adopters and non-adopters of World Wide Web technology. *Information Technology and Management*, 1(1-2), 129-154.

Goscinski, A., and Brock, M. (2010). Toward dynamic and attribute based publication, discovery and selection for cloud computing. *Future Generation Computer Systems*, *26*, 947-70.

Government of Kenya (2005). Sessional Paper No. 2 of 2005 on Development of Micro and Small Enterprises for Wealth and Employment Creation for poverty reduction. Nairobi: Government printer.

Gray, C. (2006). *Growth-orientation, experience and the development of entrepreneurial absorptive capacity*. 51st International Council for Small Business Conference, Melbourne.

Gray, C. (2006). *Stage Models of ICT Adoption in Small Firms, Impact of e-Commerce on Consumers and Small Firms*. London: Ashgate.

Greener, S. (2008). *Business Research Methods*. Ventus Publishing Copenhagen Bookboon.com

Grossman, R. L. (2009). The Case for Cloud Computing. IT Professional, 11(2), 23-27.

Grover, V. (1993). An empirically derived model for the adoption of customer-based interorganizational systems. *Decision Sciences*, 24(3), 603-640.

Gutierrez, A., Boukrami, E. and Lumsden, R. (2015). Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of Enterprise Information Management*, 28(6), 788-807.

Hair, J. F. (2010). *Multivariate Data Analysis* (7th ed.). New Jersey: Pearson Prentice Hall.

Hair, J. F., Anderson, R. E., Tatham, R. L., and Black, W. C. (1998). *Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice-Hall.

Hair, J., Black, B., Babin, B., Anderson, R., and Tatham, R. (2006). *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Hair, J., Black, W., Babin, B., and Anderson, R. (2009). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hardgrave, B., Davis, F., and Riemenschneider, C. (2003). Investigating determinants of software developers; Intentions to follow methodologies. *Journal of Management Information Systems*, *20*(1), 123-151.

Hartigan, P. (2005). El emprendedor social como modelo para el futuro. *Iniciativa Emprendedora Y Empresa Familiar*, *46*, 19-25.

Hayes, A. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modelling { White paper}.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.

Hayes, B. (2008). Cloud computing. *Communications of the ACM, 51,* 9-11.

Hillesley, R. (2008) Sunny future for cloud computing. September 15, 2013 http://www.itpro.co.uk/604230/sunnyfuture-for-cloud-computing/2

Hemlata G., Date, H., and Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management, 28*(1), 107-130.

Hong, W., and Zhu, K. (2006). Migrating to internet-based e-commerce: factors affecting e-commerce adoption and migration at the firm level. *Information and Management, 43*, 204-21.

Huang, L. (2004). *A study about the key factors affecting users to accept Chunghwa Telecom's multimedia on demand* (Unpublished Master's Thesis). National Sun Yat-Sen University.

Iacovou, C., Benbasat, I., and Dexter, A. (1995). Electronic data interchange and small organizations: adoption and impact of technology. *Management Information Systems Quarterly*, *19*(4), 465-485.

Jain, L., and Bhardwaj, S. (2010). Enterprise cloud computing: key considerations for adoption. *International Journal of Engineering and Information Technology*, *2*(2), 113-117.

Jambekar, A., and Pelc, K. (2002). Managing a manufacturing company in a wired world. *International Journal of Information Technology and Management*, *1*(1), 131-141.

Japan-NE (2012). Fujitsu roll out cloud computing services for hospitals. *Telecom paper Africa/Asia.* Retrieved Dec 18 2016 from http://www.accessmylibrary.com/article

Jeyaraj, A., Rottman, J., and Lacity, W. (2006). A review of the predictors, linkages, and biases in IT innovation adoption research. *Journal of Information Technology*, *21*(1), 1-23.

Judd, C. M., Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. Evaluation Review, 5, 602-619.

Kambil, A. (2009). A head in the clouds. *Journal of Business Strategy,* 30(4), 58-59.

Kamien, M., and Schwartz, N. L. (1982). *Market structure and innovation.* Cambridge: Cambridge University Press.

Karahanna, E., Straub, D., and Chervany, N. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, *23*, 183-213.

Kerlinger, F., and Lee, H. (1986). *Foundations of Behavioral Research* (4th ed.). Stamford, CT: Thomson Learning.

Kiiru, W. (2011). *A review of the institutional lending to the jua kali and small enterprise sector in Kenya*. Geneva: International Labour Organisation.

Kituku, K. M. (2012). *Adoption of cloud computing in Kenya by firms listed in the NSE*. MBA Project, University of Nairobi, 40-76.

Kothari C. R. (2012). *Research Methodology* (2nd ed.). New Delhi: New Age International Publishers.

Kothari, C. (2004). *Research Methodology –Methods and Techniques* (2nd ed.). New Delhi: New Age International (P) Ltd.

Kuan, K., and Chau, P. (2001). A perception based model for EDI adoption in small business using a technology-organization-environment framework. *Information and Management*, *38*, 507-12.

Kuo, A. (2011). Opportunities and challenges of cloud computing to improve health care services. *Journal of Medical Internet Research*, *13*(3), e67.

Kutner, N. N. (2004). *Applied regression models* (4th ed.). Maidenhead: McGraw-Hill.

Lai, F., Wang, J., Hsieh, C., and Chen, J. (2007). On network externalities, e-business adoption and information asymmetry. *Industrial Management and Data Systems*, *107*, 728-46.

Laukkanen, T. (2007). Internet vs mobile banking: Comparing customer value perceptions. *Business Process Management Journal*, 13(6), 788-797.

Lee, J. (2004). Discriminant analysis of technology adoption behavior: a case of internet technologies in small businesses. *Journal of Computer Information Systems*, *44*(4), 57-66.

Lee, S., and Kim, K. (2007). Factors affecting the implementation success of internet based information systems. *Computers in Human Behavior*, *23*, 1853-80.

Lee, S., and Kim, K. J. (2007). Factors affecting the implementation success of Internet-based information systems. *Computers in Human Behavior*, 23(4):1853–80.

Legris, P., Ingham, J. and Collerette, P. (2003). Why people use information technology? A critical review of technology acceptance model. *Information and Management*, *40*, 191-204.

Leimeister, S., Christoph, R., Markus, B., and Helmut, K. (2010). The Business Perspective of Cloud Computing: Actors, Roles and Value Networks. In *European Conference on Information Systems*.

Lin, A. (2006). The acceptance and use of a business-to-business information system. *International Journal of Information Management*, *26*(5), 386-400.

Lin, A., and Chen, N. (2012). Cloud computing as an innovation: Perception, attitude, and adoption. *International Journal of Information Management*, *32*(6), 533–540.

Lin, H., and Lee, G. (2005). Impact of organizational learning and knowledge management factors on e-business adoption, *Management Decision*, *43*, 171-88.

Lin, H., and Lin, S. (2008). Determinants of e-business diffusion: a test of the technology diffusion perspective, *Technovation*, *28*, 135-45.

Lisa, B. A. (2011). *Hospital uses cloud computing to improve patient care and reduce costs.* Accessed March 24, 2016 from http://www.microsofteu/cloudcomputing/casestudies/hospitalusescloudcomputingtoimprovepatientcareandreducecosts.aspx

Low, C., Chen, Y., and Wu, M. (2011). Understanding the determinants of cloud computing adoption, *Industrial Management and Data Systems*, *111*(7), 1006-1023.

MacKinnon, D. P (2000). Contrasts in multiple mediator models. in J. S. Riose, L. Chassin, C. C. Presson, and S. J. Sherman (Eds.), *Multivariate applications in substance use research: New methods for new questions* (pp. 141-160). Mahwah, NJ: Erlbaum.

MacKinnon, D. P., Lockwood, C. M., C. M., and Hoffman, J.M Weat, S G., and Sheests, V. (2002). A comparison of methods to test mediation and other intervening variables effects. *Psychological Methods*, 7, 83-104

MacKinnon, D., Fairchild, A., and Fritz, M. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593-614.

MacKinnon, D. (2003). *Mediation*. Retrieved November 10, 2015, from http://www.public.asu.edu/_davidpm/ripl/mediate.htm

MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review, 17,* 144–158.

MacKinnon, D. P., Goldberg, L., Clarke, G. N., Elliot, D. L., Cheong, J., Lapin, A., *et al*. (2001). Mediating mechanisms in a program to reduce intentions to use anabolic steroids and improve exercise self-efficacy and dietary behavior. *Prevention Science, 2,* 15–27.

MacKinnon, D. P., Krull, J. L., & Lockwood, C. (2000). Mediation, confounding, and suppression: Different names for the same effect. *Prevention Science, 1,* 173–181.

Majumdar, R., Mukhatjee, A., Roy, N., Sarkar, K., and Das, S. (1992). *Groundwater studies on South Sagar lsland region, South 24-Parganas, West Bengal. Analysis and practice in water resources engineering for disaster mitigation*. v 1., Indian Association of Hydrologist, West Bengal Regional Center, 175- 183

Makena J. N (2013). Factors that affect cloud computing adoption by small and

medium enterprises in Kenya . *International Journal of Computer Applications Technology and Research Volume 2– Issue 5, 517 - 521, 2013, ISSN: 2319–8656*

Manueli, K., Latu, S., and Koh, D. (2007). ICT Adoption Models. In S. Mann, and N. Bridgeman, (Eds.), *20th Annual Conference of the National Advisory Committee on Computing Qualifications (NACCQ)*. Nelson, New Zealand.

Marchewka, J., Liu, C., and Kostiwa, K. (2007). An application of the Utaut Model for understanding student perceptions using course management soft-ware. *Communications of the IIMA*, *7*, 93-104.

Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., & Ghalsasi, A. (2011). Cloud Computing - The Business Perspective. *Decision Support Systems, 51*(1), 176-189.

McFedries, P. (2008). The Cloud is The Computer. (Technically Speaking). IEEE Spectrum, 45(8), 20

Mell, P., and Grance, T. (2011). The NIST definition of cloud computing. *NIST Special Publication*, 145-800.

Miller, M. (2008). Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online. Indianapolis: Que Publishing Ltd

Misra, S., and Mondal, A. (2010). Identification of a company's suitability for the adoption of cloud computing and modelling its corresponding return on investment. *Mathematical and Computer Modelling*, *53*, 504-21.

Mutula, S., and Brakel, P. (2006). E-readiness of SMEs in the ICT sector in Botswana with respect to information. *The Electronic Library*, *24*(3), 402-417.

Mutula, S., and Van Brakel, P. (2007). ICT skills readiness for the emerging global digital economy among small businesses in developing countries: case study of Botswana, *Library Hi Tech*, *24*, 231-245.

Nairobi County (2015). *Ministry of Trade Records*. Nairobi County.

Newsom, J. (2001). *Testing mediation with regression analysis*. Retrieved September 23 2016 from http://www.ioa.pdx.edu/newson/usp534/ho_mediation.doc.

Njama, G. J. (2013). *Effects of venture capital financing on the growth of small and medium enterprises in Kenya*. Unpublished MBA Thesis, University of Nairobi.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw Hill Book Company.

O'Brien, M. G. (2005). MANOVA method for analyzing repeated-measures designs: An extensive primer. *Psychological Bullentin*, 97(2), 316-33.

Oliveira, T., and Martins, M. (2011). Literature review of information technology adoption models at firm level. *The Electronic Journal Information Systems Evaluation*, *14*(1), 110-121.

Oliveira, T., and Martins, M. F. (2010). Understanding e-business adoption across industries in European countries. *Industrial Management and Data Systems*, 110, 1337-54.

Ongori, H. (2009). Role of information communication technologies adoption in SMES: evidence from Botswana. *Research Journal of Information Technology*, *1*(2), 79-85.

Orodho, J. A. (2009). Techniques of analyzing data using Statistical Package for Social Sciences (SPSS) Computer programme. Nairobi: Masola Publishers.

Osterman, M. (2012). Digital literacy: Definition, theoretical framework, and competencies. *Proceedings of the 11th Annual College of Education and GSN Research Conference* (pp. 135-141). Miami: Florida International University.

Pan, M., and Jang, W. (2008). Determinants of the adoption of enterprise resource planning within the technology-organization-environment framework: Taiwan's communications industry. *Journal of Computer Information Systems*, *48*, 94-102.

Parikh, T. S. (2009). Engineering Rural Development. Communications of the ACM, 52(1), 54-63.

Parisot, A. (1995). *Technology and Teaching: The Adoption and Diffusion of Technological Innovations by a Community College Faculty*. Montana State University, Bo-zeman, MT.

Pauly, M. (2011). *T-Systems Cloud-Based Solutions for Business Applications, Cloud Computing: Principles and Paradigms* (Eds R. Buyya, J. Broberg and A.Goscinski). Hoboken, NJ, USA: John Wiley and Sons, Inc.

Pedersen, S., and Liu, M. (2003). Teachers' beliefs about issues in the implementation of a student-centered learning environment. *Educational Technology Research and Development, 51*(2), 57-76.

Pfeffer, J. (1982). *Organizations and Organization Theory*. Boston, MA: Pitman.

Popli, G., and Rao, D. (2009). *An Empirical Study of SMEs in Electronics Industry in India: Retrospect and Prospects in Post WTO Era*. Available at SSRN 1459809.

Preacher, K. J., and Hayes, A. F. (2013). Conditional process modelling: Using structural equation modelling to examine contingent causal processes. In G. R. Hancock & R. O. Mueller (Eds.) Structural equation modelling: A second course (2nd ed). Greenwich, CT: Information Age Publishing.

Preacher, K. J., Curran, P. J., and Bauer, D. J. (2003, September). Probing interactions in multiple linear regression, latent curve analysis, and hierarchical linear modeling: Interactive calculation tools for establishing simple intercepts, simple slopes, and regions of significance [Computer software]. Available from http://www.quantpsy.org/

Preacher, K. J., Curran, P. J., and Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, 31, 437–448.

Preacher, K. J., and Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computer*s, 36, 717–731.

Preacher, K. J., & Hayes, A. F. (2006). Asymptotic and resampling strategies for assessing and comparing indirect effects in simple and multiple mediator models. Manuscript submitted for publication.

Premkumar, G., and Potter, M. (1995). Adoption of computer aided software engineering technology: An Innovation adoption perspective. *ACM SIGMIS Database*, *26*(2-3), 105-124.

Premkumar, G., and Roberts, M. (1999). Adoption of new information technologies in rural small businesses. *Omega, 27*(4), 467-484.

Premkumar, G., Ramamurthy, K., and Sree, N. (1994). Implementation of electronic data interchange: an innovation diffusion perspective. *Journal of Management Information Systems, 11*, 157-86.

Premkumar, P. (2003). Meta-analysis of research on information technology implementation in small business. *Journal of Organizational Computing and Electronic Commerce, 13*(2), 91-121.

Punch, K. (2005). *Introduction to Social Research–Quantitative and Qualitative Approaches*. London.

Pyke, J. (2009). *Now is the time to take the cloud seriously, White Paper*. Retrieved May 11, 2015 from www.cordys.com/

Qureshi, S., & Kamal, M. (2011). Role of cloud computing interventions for micro-enterprise growth: implications for global development. In *Proceedings of the Fourth Annual SIG Global Development Workshop*. Shanghai, China.

Radner, R., and Rothschild, M. (1975). On the allocation of effort. *Journal of Economic Theory*, (10), 358-376.

Ramdani, B., and Kawalek, P. (2008). SMEs and IS innovations adoption: a review and assessment of previous research. *Academia Revista Latinoamericana de Administration*, *39*, 47-70.

Ramgovind, S., Ellof, M., and Smith, E. (2010). The management of security in cloud computing. *Information Security for South Asia*, 1-7 Retrieved from http://www.afhayes.com/public/process2012.pdf

Richardson, J., and Godfrey, B. (2003). Towards ethical practice in the use of archived transcripted interviews. *International Journal of Social Research Methodology*, *6*, 347-355.

Robey, D. (1979). User attitudes and management information system use. *Academy of Management Journal*, *22*(3), 527-538.

Rogers, E. (2003). *Diffusion of Innovations* (5th ed.). New York, NY: Free Press.

Rogers, E. M. (1983). *Diffusion of Innovation*. New York, NY: The Free Press.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York, NY: Free Press.

Rui, G. (2007). *Information Systems Innovation Adoption among Organizations a Match Based Framework and Empirical Studies*. National University of Singapore, Singapore.

Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *The Turkish Online Journal of Educational Technology*, *5*(2), 14-23.

Saunders, M., Lewis, P., and Thornhill, A. (2007). *Research Methods for Business Students*. Financial Times/Prentice Hall, Essex.

Saunders, M., Lewis, P., and Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). Pearson Education Limited.

Saunders, M., Lewis, P., and Thornhill, A. (2011). *Research Methods for Business Students*. India: Dorlington Kindersley India Pvt. Ltd.

Schein, E. (1980). *Organizational Psychology* (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Scott, W. R. (2003). *Organisations: Rational, natural and open systems*. EnglewoodCliffs, NJ: Prentice-Hall.

Schillewaert, N., Ahearne, M., Frambach, R., and Moenaert, R. (2005). The adoption of information technology in the sales force. *Industrial Marketing Management*, *34*(4), 323-336.

Schultz, R., and Slevin, D. (1975). *Implementation and Organizational Validity: An Empirical Investigation*. New York, NY: American Elsevier, pp. 153-182.

Scupola, A. (2003). The adoption of internet commerce by SMEs in the south of Italy: an environmental, technological and organizational perspective. *Journal of Global Information Technology Management*, *6*(1), 52-71.

Scupola, A. (2006). Factors affecting e-commerce adoption in Danish and Australian SMEs. *The Social Studies of Information Systems Journal*, *1*, 7-20.

Segars, A., and Grover, V. (1993). Re-examining PEU and usefulness: a confirmatory factor analysis. *MIS Quarterly*, *17*(4), 517-525.

Sekaran, U. (2000). *Research Methods for Business* (3rd ed.). New York, NY: Wiley Publications.

Sekaran, U., and Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach* (5th ed.). New Jersey: John Wiley and Sons.

Seyal, A., and Rahman, M. (2003). A preliminary investigation of e- commerce adoption in small and medium enterprises in Brunei. *Journal of Global Information Technology Management*, *6*(2), 6-25.

Seyal, A., Awais, M., Shamail, S., and Abbas, A. (2004). Determinants of electronic commerce in Pakistan: preliminary evidence from small and medium enterprises. *Electronic Markets*, *14*(4), 372-387.

Shapiro, S. S., and Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3/4), 591-611.

Sharif A. (2009). *It's Written in the Cloud: The Hype and Promise of Cloud Computing.* Uxbridge, UK: Brunel Business School, Brunel University.

Shih, C. (2007). *Integrating Innovation Diffusion Theory and UTAUT to Explore the Influencing Factors on Teacher Adopt E-learning System – With MOODLE as an Example* (Unpublished Master's Thesis). Dayeh University.

Shirish, C., and Teo, T. (2010). E-government, e-business, and national economic performance. *Communications of the Association for Information Systems*, *26*, 267-86.

Shrout, P.E., and Bolger, N. (2002). Mediation in experimental and noneperimental studies: New procedures and recommendations. Psychological Methods, 7, 422-445.

Sokolov, I. (2009). *Cloud Computing: Overview, Concepts and Business Deployment Scenarios.* Vienna University of Economics and Business, Vienna.

StatSoft (2011). Online Electronic Statistics Textbook. Retrieved November 13, 2013 from http://www.statsoft.com/textbook/basic-statistics/#Crosstabulation

Sultan, N. (2010). Cloud computing for education: a new dawn? *International Journal of Information Management, 30*, 109-16.

Sultan, N. (2011). Reaching for the cloud: How SMEs can manage. *International Journal of Information Management, 31*(3), 272-278.

Swash, G. (1998). UK business information on the internet. *New Library World, 99*(1144), 238-242.

Tabachnick, B. and Fidell, L. (2013). *Using Multivariate Statistics* (6th Ed.). Boston: Allyn and Bacon.

Tan, M., and Teo, T. (1998). Factors influencing the adoption of the internet. *International Journal of Electronic Commerce*, *2*(3), 5-18.

Tan, S., Chong, S., Lin, B., and Eze, U. (2008). Internet-based ICT adoption: evidence from Malaysian SMEs. *Industrial Management and Data Systems, 109*, 224-44.

Taylor, S., and Todd, P. (1995). Assessing IT usage: The role of prior experience. *Management Information Systems Quarterly*, *19*(4), 561-570.

Taylor, S., and Todd, P. (1995). Understanding information technology usage: a test of competing models. *Information Systems Research*, *6*(1), 144-176.

Thinkstrategies (2002). Solving the IT challenges of small and mid-size organizations via utility computing. Retrieved April 5, 2013 from www.thinkstrategies.com/ images/CBE_Whitepaper_110602.pdf

Thong, J. (1999). An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems, 15*(4), 187-214.

Thong, J., Yap, C., and Raman, K. (1994). Engagement of external expertise in information systems implementation. *Journal of Management Information Systems*, *11*(2), 209-231.

To, M., and Ngai, E. (2006). Predicting the organizational adoption of B2C e-commerce: an empirical study. *Industrial Management and Data Systems, 6*, 1133-47.

Tornatzky, L., and Fleischer, M. (1990). *The Processes of Technological Innovation*. Lexington, MA: Lexington Books.

Uebersax, J. (2006). *Likert Scales: Dispelling the confusion. Statistical Methods for rater Agreement*. Retrieved October 11, 2014 from http://ourworld.compuserve. com/homepages/jsuebersax/likert.htm

Van Akkeren, J., and Cavaye, A. (1999). Baby S to Little S: Small business IT market readiness and overcoming their fear factor. *Proceedings of the 10th Australasian Conference on Information Systems* (pp. 1071-1083). Wellington, New Zealand.

Vander Stoep, G. (2007). *Identifying Motherhood and its Effect on Female Labour Force Participation in South Africa: An Analysis of Survey Data*, *School of Economics and Finance.* The University of KwaZulu-Natal, Durban.

VanderStoep, S., and Deirdre, D. (2007). *Research Methods for Everyday Life: Blending Qualitative and Qualitative Approaches*. Jossey-Bass Publishers. San Francisco.

Venkatesh, V., and Morris, M. G. (2000). Age differences in technology adoption decisions: Implications for a changing work force. *Personnel Psychology*, 53(2), 375-403.

Venkatesh, V., Morris, M., Davis, G., and Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Viehland, D and Leong, R. S. Y. (2007). *Acceptance and use of mobile payments*. Proceedings of the 18th Australasian Conference on Information Systems, Toowoomba.

Vroom, V. (1964). *Work and Motivation.* New York, NY: Wiley.

Wang, Y., Wang, Y., and Yang, Y. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. *Technological Forecasting and Social Change*, *77*, 803-15.

Wei, T.T., Marthandan, G., Ching, A.Y.L., Oi, K.B. and Arumugam, S. (2009). What drives Malaysian m-Commerce adoption? An empirical analysis. *Industrial Management & Data Systems*, 109 (3), 370-388.

Williams M., Gomez C., and Kurkiewiez D. (2013). Assumptions of multiple regression: correcting two misconceptions. Practica Assessment, Research and Evaluation, 18(11)

Wilson, H., Daniel, E., and Davies, I. (2008). The diffusion of e-commerce in UK SMEs, *Journal of Marketing Management*, *24*(5-6), 489-516.

Windrum, P., and Berranger, P (2002). *The Adoption of e-Business Technology by SMEs*. Presented at MERIT - Infonomics Research Memorandum Series, 1-32.

Wong, C. and Hiew, P. (2005). Mobile Entertainment: Review and Redifine. Paper presented at the IEEE 4th International conference on Mobile Busines, Sydney, Australia.

Wooldridge, J. M. (2003). *Cluster-Sample methods in applied econometrics: An extended analysis*. Michigan: Michigan State University.

Wu, J., and Wang, S. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information Management*, *42*, 719-729.

Wu, W. (2011). Developing an explorative model for SaaS adoption. *Expert Systems with Applications*, *38*(12), 15057-15064.

Yang, K., and Miller, G. (2007). *Handbook of Research Methods in Public Administration* (2nd ed.). Florida: Auerbach Publications.

Yates, D., Moore, D., and Starnes, D. (2008). *The Practice of Statistics* (3rd ed.). New York: W. H. Freeman and Company.

Zappala S., and Gray, C. (Eds.). (2006). *Impact of E-Commerce on Consumers and Small Firms*. London: Ashgate.

Zhao, X., Lynch, J. G., and Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. Journal of Consumer Research, 37(2), 197-206.

Zhu, K., Dong, S., Xu, S., and Kraemer, K. (2006). Innovation diffusion in global contexts: determinants of post-adoption digital transformation of European companies. *European Journal of Information Systems*, *15*, 601-16.

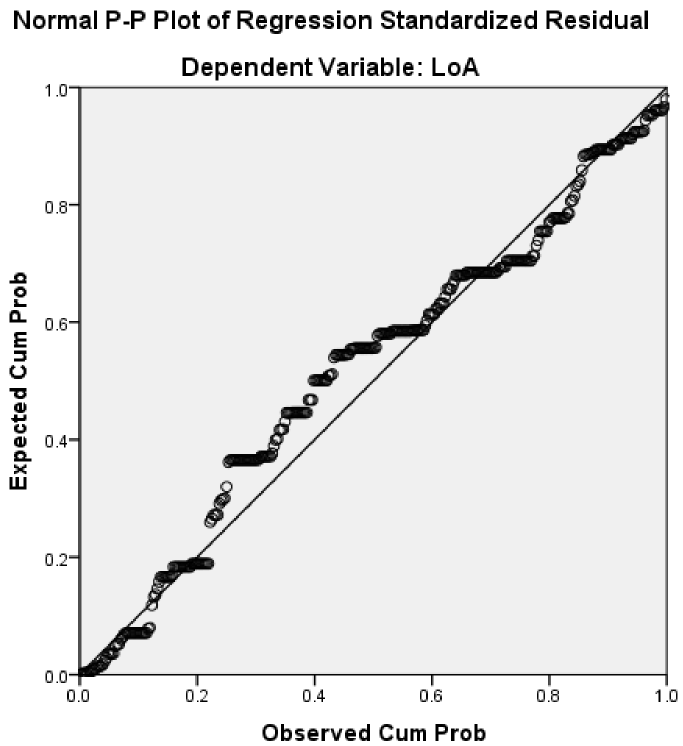
Zhu, K., Kraemer, K., Xu, S., and Dedrick, J. (2004). Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial services industry. *Journal of Management Information Systems*, *21*, 17-54.

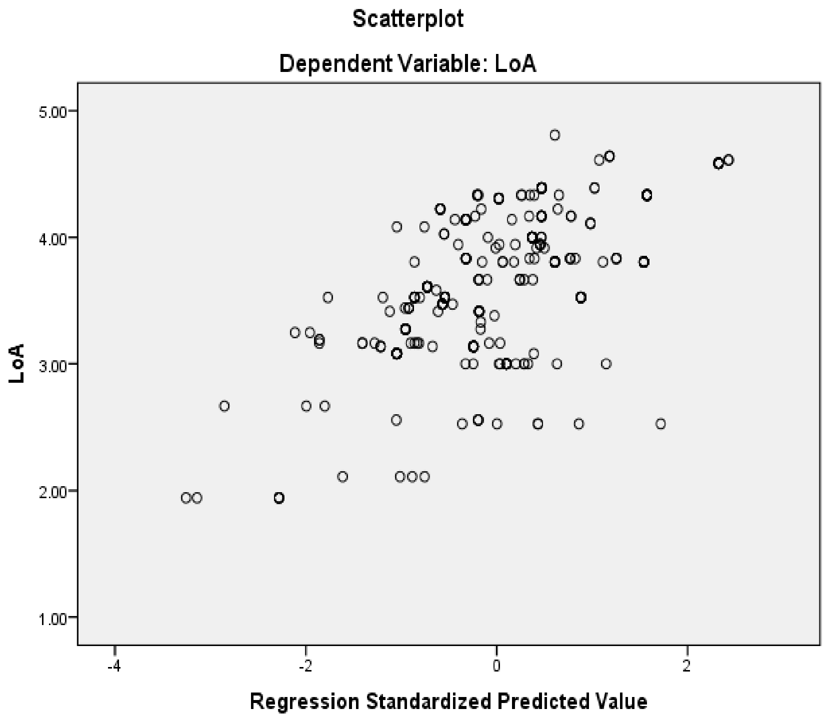
Zikmund, W. G. (2000). *Business Research Methods* (6th ed.). Orlando: The Dryden Press, Florida,

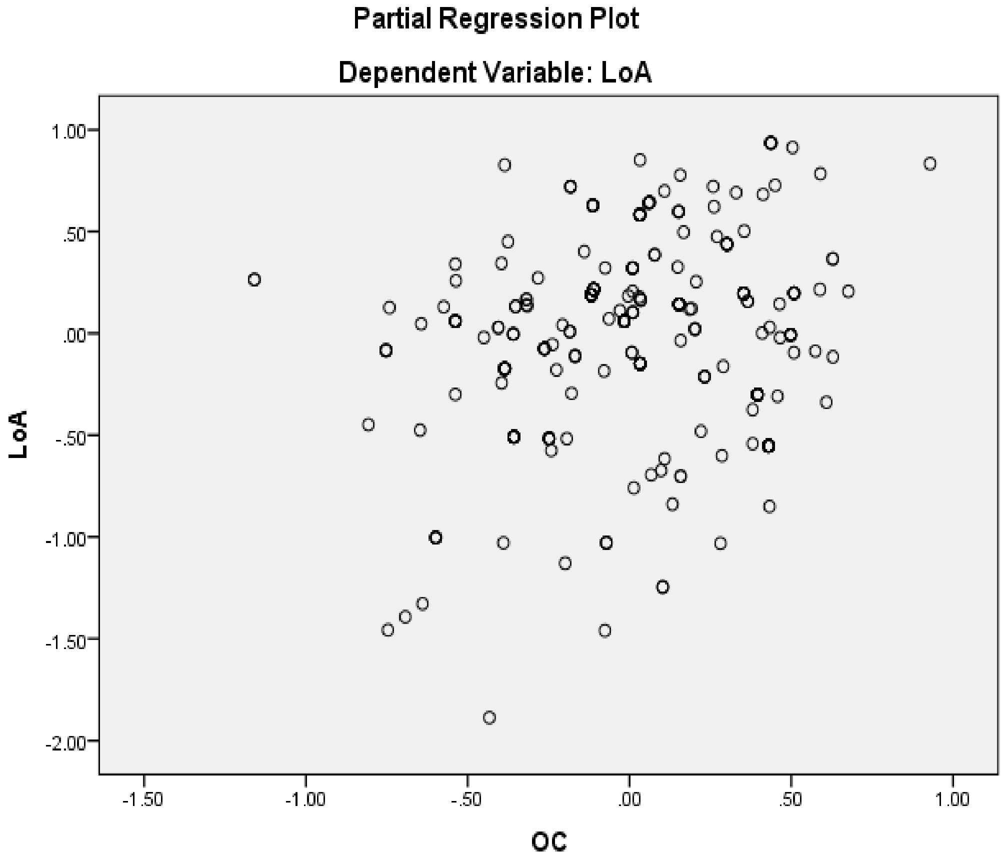
Zikmund, W. G., Babin, B. J., Carr, J. C., and Griffin, M. (2010). *Business Research Methods* (8th ed.). South-Western, Cengage Learning, Canad.

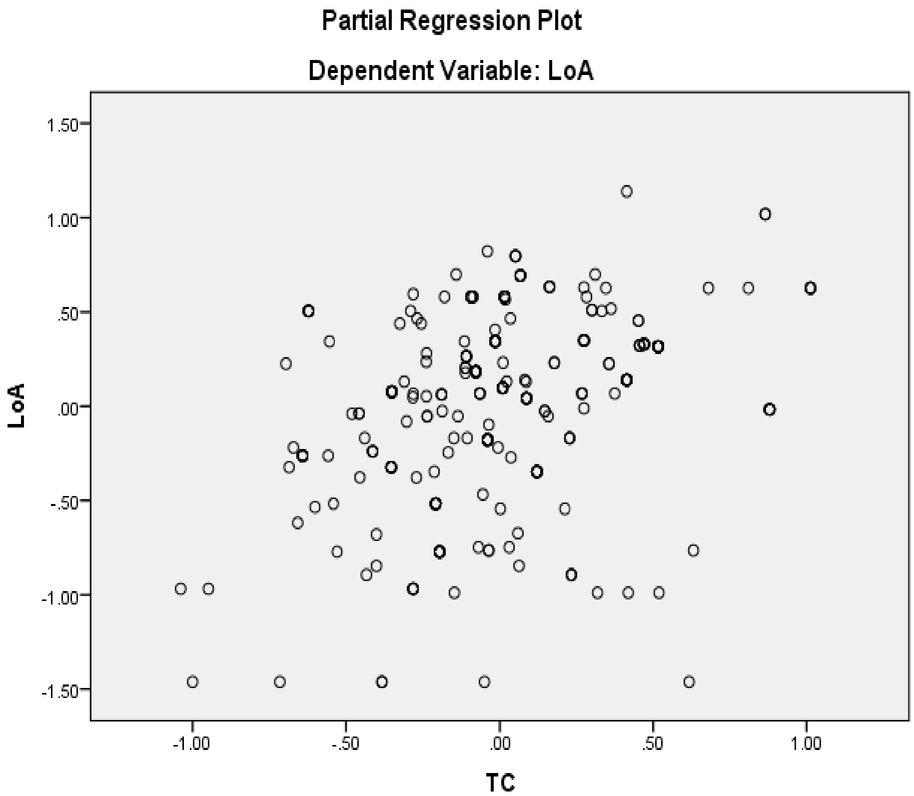
APPENDICES

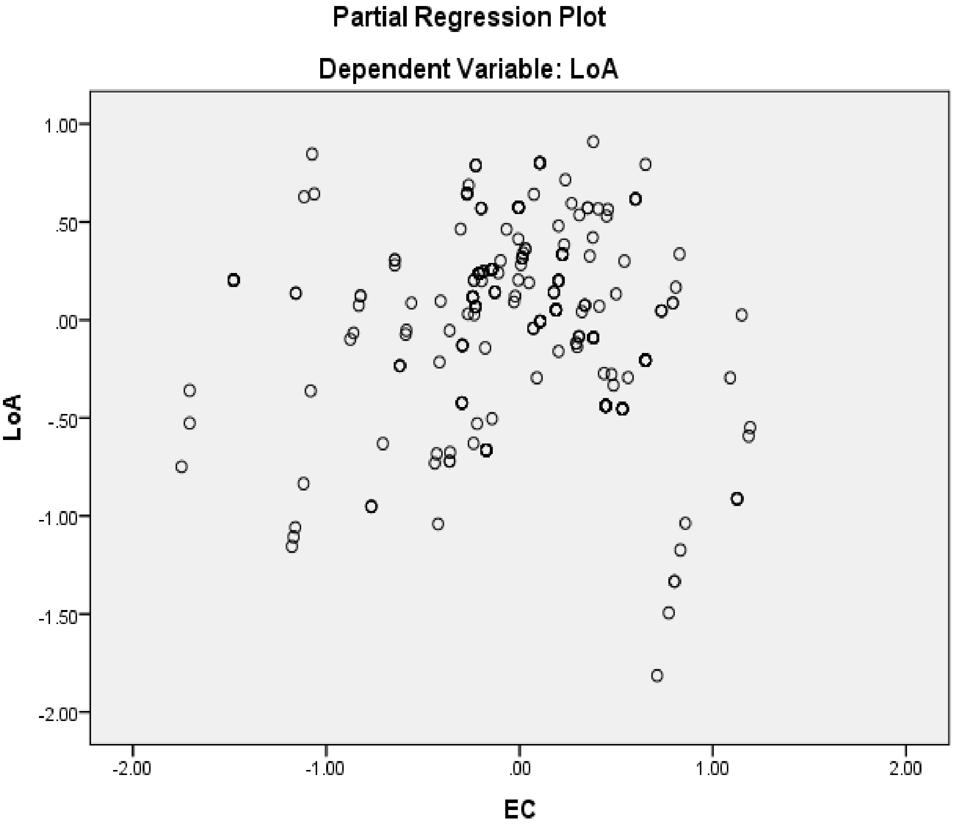
APPENDIX I: NORMALITY P-P PLOT

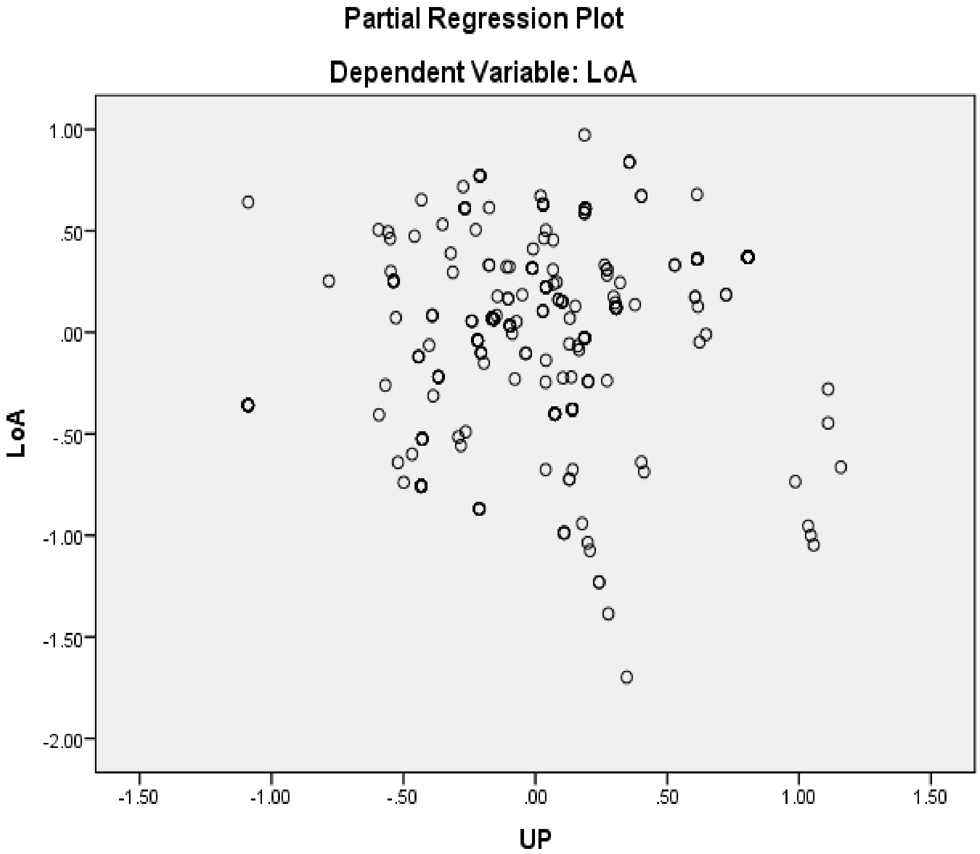


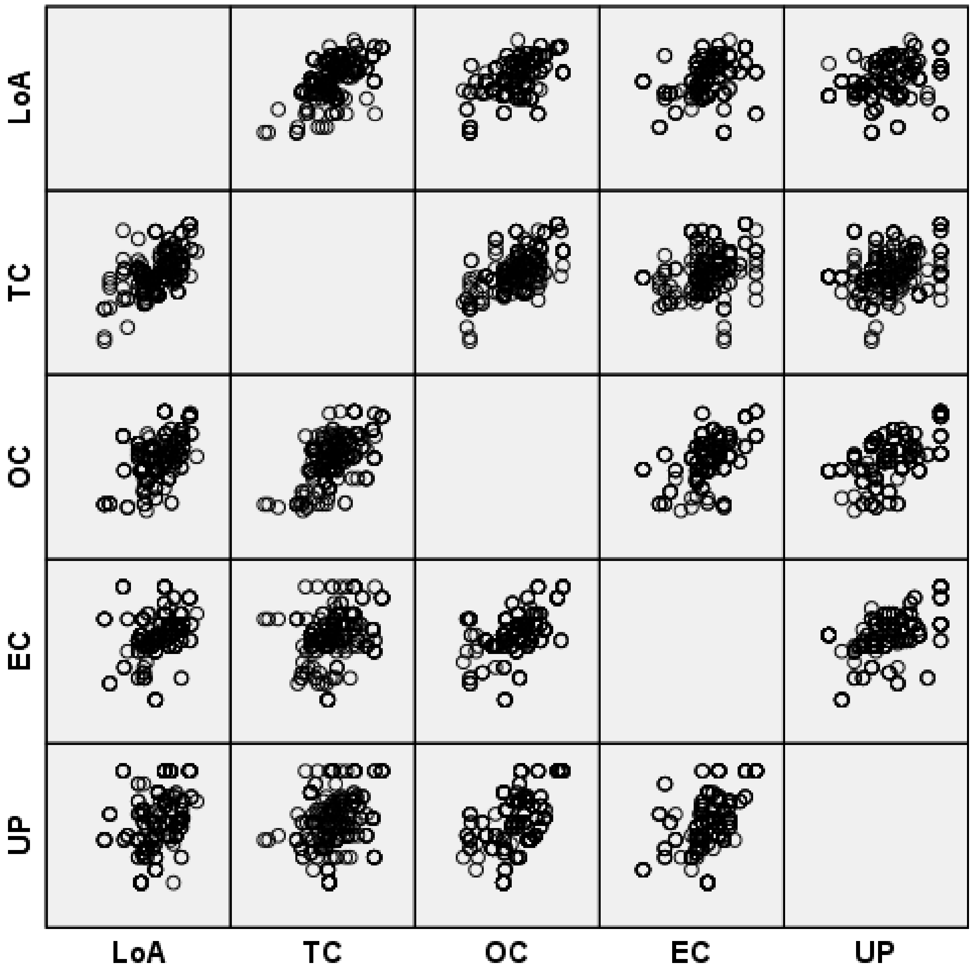



Partial Regression Plot
Dependent Variable: LoA
LoA
OC
1.00
.50
.00
-.50
-1.00
-1.50
-2.00
-1.50
-1.00
-.50
.00
.50
1.00


Partial Regression Plot
Dependent Variable: LoA
LoA
TC
1.50
1.00
.50
.00
-.50
-1.00
-1.50
-1.00
-.50
.00
.50
1.00


Partial Regression Plot
Dependent Variable: LoA
LoA
1.00
.50
.00
-.50
-1.00
-1.50
-2.00
-2.00
-1.00
.00
1.00
2.00
EC


Partial Regression Plot
Dependent Variable: LoA
LoA
UP
1.00
.50
.00
-.50
-1.00
-1.50
-2.00
-1.50
-1.00
-.50
.00
.50
1.00
1.50


LoA
TC
OC
EC
UP
LoA
TC
OC
EC
UP

APPENDIX II: INTRODUCTORY LETTER

Dear Respondent

I am, a student of Moi University pursuing PHD in the School of Business and Economics. I am required to carry out a research as a requirement of the course. My research Study is to assess the ***"Context, User Perception and Adoption*** Level ***of Cloud Computing among Small and Medium Enterprises in Nairobi County, Kenya."***

You have been selected as one of the respondents for this study. Your honest and accurate answers will be very useful in accomplishing the identified objectives. Remember you are one of the few chosen respondents in this study and the information you give will be treated as confidential and solely for academic purpose. Your participation is entirely voluntary and the questionnaire is completely anonymous. Your contribution in facilitating this study will be appreciated.

Yours faithfully

Emily Chemjor

APPENDIX III: QUESTIONNAIRE

Instructions

a) Please indicate the extent to which you agree or disagree with the following statements on Perception of Determinants of Cloud Computing Adoption in your organisation. Please use the following scale to indicate your response. Circle the best response. **1= Strongly Disagree (SD)2= Disagree (D)3= Neutral (N)4= Agree (A)5= Strongly Agree (SA)**

A1: TECHNOLOGY CONTEXT

No	Item: Relative Advantage Using cloud computing at work…	SA	A	N	D	SD
1	Is advantageous	5	4	3	2	1
2	We pay only for what I use.	5	4	3	2	1
3	We are able to scale up our requirement when required.	5	4	3	2	1
4	We can access information any time from any place.	5	4	3	2	1
6	Performance does not decrease with growing user base.	5	4	3	2	1
7	we can access and share resources placed on cloud	5	4	3	2	1
8	we need not maintain my IT infrastructure	5	4	3	2	1

No	Item	SA	A	N	D	SD
	Compatibility Using cloud computing at work…	5	4	3	2	1
1	in case of any incompatibility issue, we ask cloud service provider to offer integrated services	5	4	3	2	1
2	are compatible with existing technological architecture of my company	5	4	3	2	1
3	Customization in cloud-based services is easy.	5	4	3	2	1
4	Is consistent with existing practices in my company.	5	4	3	2	1
5	is compatible with my firm's existing format, interface, and other structural data	5	4	3	2	1
6	we incur re-training cost in case of non-customizable cloud-based services	5	4	3	2	1
7	Is easy in importing and exporting applications/ data from cloud services.	5	4	3	2	1
8	is compatible with all aspects of my work	5	4	3	2	1
No	**Item**	**SA**	**A**	**N**	**D**	**SD**
	Complexity :My personal interaction with cloud computing…					
1	Perceived to be useful when it's easy to use .	5	4	3	2	1
2	Flexible to interact with.	5	4	3	2	1
3	Does not expose me to the vulnerability of computer breakdowns and loss of data.	5	4	3	2	1
4	I find it easy to integrate my existing work with the cloud based services.	5	4	3	2	1
5	Performing many tasks together does not take up too much of my time.	5	4	3	2	1

A2: ORGANISATIONAL CONTEXT

No	Item	SA	A	N	D	SD

	Top Management Support of	5	4	3	2	1
1	Our top management exhibits a culture of enterprise wide information sharing.	5	4	3	2	1
2	The company's top management provides strong leadership and engages in the process when it comes to information systems company.	5	4	3	2	1
3	My top management is likely to consider the adoption of cloud computing as strategically important.	5	4	3	2	1
4	My top management is willing to take risks involved in the adoption of cloud computing	5	4	3	2	1
5	Cloud computing adoption depends on the top management support.	5	4	3	2	1
6	Top management Supports adoption of cloud computing when they perceive it useful to the organisation	5	4	3	2	1
7	Top management supports adoption of cloud computing when they Perceive it easy to use within the organisation	5	4	3	2	1
No	**Item**	**SA**	**A**	**N**	**D**	**SD**
	Firm Size					
1	The number of our employees have been increasing over time	5	4	3	2	1
2	Our firm has other branches distributed in other parts of the country	5	4	3	2	1
3	My firm has a diverse asset accumulation from the on start	5	4	3	2	1
No	**Item**	**SA**	**A**	**N**	**D**	**SD**
	Technology Readiness					
1	My company hires highly specialized or knowledgeable personnel for cloud computing.	5	4	3	2	1
2	We have sufficient technological resources to implement cloud computing - unrestricted access to computer.	5	4	3	2	1
3	We have sufficient technological resources to implement cloud computing - high bandwidth connectivity to the internet	5	4	3	2	1
4	We allocate a percent of total revenue for cloud computing implementation in the company.	5	4	3	2	1
6	I perceived adoption of cloud computing useful because I was ready for the technology in my work environment.	5	4	3	2	1
7	I perceived adoption of cloud computing easy to use because I was ready for the technology in my work environment.	5	4	3	2	1

A3: ENVIRONMENTAL CONTEXT

No	Item	SA	A	N	D	SD
	Competitive Pressure Using cloud computing…					
1	We are aware of implementation in our competitor organisations.	5	4	3	2	1

2	We understand the competitive advantages offered by the service in our industry.	**5**	**4**	**3**	**2**	**1**
3	my competitors have adopted the technology	**5**	**4**	**3**	**2**	**1**
No	**Item**	**5**	**4**	**3**	**2**	**1**
	Trading Partners Pressure Using cloud computing	**5**	**4**	**3**	**2**	**1**
1	My trading partners are currently using the services.	**5**	**4**	**3**	**2**	**1**
2	Pressure from my trading partners	**5**	**4**	**3**	**2**	**1**
3	Pressure from my service provider	**5**	**4**	**3**	**2**	**1**

B: USER PERCEPTION

No	**Item**	**SA**	**A**	**N**	**D**	**SD**
	Perceived ease of use Using cloud computing…					
1	The procedure is understandable.	**5**	**4**	**3**	**2**	**1**
2	Is easy to learn..	**5**	**4**	**3**	**2**	**1**
3	Is easy to make use of.	**5**	**4**	**3**	**2**	**1**
4	Is adoptable if perceived it to be easy to use?	**5**	**4**	**3**	**2**	**1**
5	It is an easy technology for one to become skillful	**5**	**4**	**3**	**2**	**1**
6	Is FLEXIBLE to interact with.	**5**	**4**	**3**	**2**	**1**
No	***Item***	**SA**	**A**	**N**	**D**	**SD**
	Perceived usefulness Using cloud computing…					
1	Enables me to manage business operation in an efficient way.	**5**	**4**	**3**	**2**	**1**
2	enables increase of business productivity	**5**	**4**	**3**	**2**	**1**
3	Enables one to accomplish organizational task more quickly.	**5**	**4**	**3**	**2**	**1**
4	improves the quality of business operation	**5**	**4**	**3**	**2**	**1**
5	advances my competitiveness	**5**	**4**	**3**	**2**	**1**
6	when perceived useful to the organisation	**5**	**4**	**3**	**2**	**1**

SECTION C: ADOPTION OF CLOUD COMPUTING

To what extent has your Organisation adopted the following Cloud Computing Services. Please, use the following scale to indicate your response. Circle the best response.

1. Very Low (V/L) 2.Low (L) 3. Moderate (M) 4.High (H) 5.Very High (V/H)

No	**Item: SaaS (Software as a Service)**	**V/H**	**H**	**M**	**L**	**V/L**
1	To what extent do you use i-cloud computing in your business	**5**	**4**	**3**	**2**	**1**
2	To what extent do you apply email service in your business	**5**	**4**	**3**	**2**	**1**
3	To what extent is your email application service	**5**	**4**	**3**	**2**	**1**

	accessible from anywhere anytime					
	To what extent have you adopted CRM services?	**5**	**4**	**3**	**2**	**1**
5	To what extent do you think your firm's CRM services are effective?	**5**	**4**	**3**	**2**	**1**
6	To what extent do you think your firm's CRM services are efficient?	**5**	**4**	**3**	**2**	**1**
	Item: Paas (Platform as a Service)	**V/H**	**H**	**M**	**L**	**V/L**
1	To what extent do you utilize cloud data storage service	**5**	**4**	**3**	**2**	**1**
2	To what extent is your cloud data storage service effective	**5**	**4**	**3**	**2**	**1**
3	To what extent is your firm enjoying server and network service maintenance offered by your service providers	**5**	**4**	**3**	**2**	**1**
4	What amount of data do you store in the cloud	**5**	**4**	**3**	**2**	**1**
	Item: Iaas (Infrastructure as a Service)	**5**	**4**	**3**	**2**	**1**
1	How reliable is your cloud infrastructure	**5**	**4**	**3**	**2**	**1**
2	To what extent do you often think of server upgrades	**5**	**4**	**3**	**2**	**1**
3	To what extent do you enjoy server upgrades by your cloud service provider	**5**	**4**	**3**	**2**	**1**
4	To what extent do you feel your infrastructure is the responsibility of the cloud service provider that	**5**	**4**	**3**	**2**	**1**

SECTION E: GENERAL AND DEMOGRAPHIC INFORMATION

Please answer all questions to the best of your ability and knowledge

Please tell us about your firm's background

(1) What is the number of employees? ………….…………….

(2) How many years in operation?..

(3) In which sector is your business operating. **(Circle one response)**

Manufacturing ( ) Hospitality ( )

Consulting ( ) Information Technology ( )

Computer retail ( ) Travel &Accommodation ( )

(4) How long has your company been using ICT application?......................................

(4) How many years have you worked with the firm/organization?..................................

(5) What's your responsibility in the organisation? **(Circle one response)**

Owner/CEO ( ) Manager ( ) IT Manager ( )

(6) What is your highest level of education? **(Circle one response)**

Primary/Secondary ( ) Diploma ( ) Degree ( ) Masters ( )

Thank You for your participation.

Kindly check that you have answered every question and no more than one option per question has been marked.

APPENDIX IV: SAMPLING FRAME

Industry	**No of SMEs**	**sample size**
Manufacturing	11392	55
Hospitality	18759	90
Consulting	9267	45
Information technology	13157	63
Computer retail	13627	65
Tours & travel	16619	80
Total	**82821**	**398**

APPENDIX V: RESEARCH APPROVAL LETTER

MOI UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS

Tel: (053) 43287
Fax No: (053) 43360
Telex No. 35047 MOIVARSITY

Box 3900
Eldoret
KENYA

REF: SBE/DPHIL/BM/001/13 **Date:** 15th April, 2016

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: EMILY MWORIA CHEMJOR - SBE/DPHIL/BM/001/13

The above named is a bonafide student of Moi University, School of Business and Economics pursuing a Doctor of Philosophy Degree in Business Management; specializing in Strategic Management.

She has completed course work, defended proposal and is proceeding to the field to collect data for her research titled: *"User Perception and determinants of cloud computing Adoption in Small and Medium Enterprises in Kenya".*

Please accord her the necessary assistance and support.

Yours faithfully,

DEAN
School Of Business and Economics
MOI UNIVERSITY

PROF. THOMAS CHERUIYOT
DEAN SCHOOL OF BUSINESS AND ECONOMICS

APPENDIX VI: RESEARCH AUTHORIZATION

NATIONAL COMMISSION FORSCIENCE, TECHNOLOGY ANDINNOVATION

Telephone:+254-20-2213471, 2241349,3310571,2219420
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/17/16604/18268**

Date: **18th July, 2017**

Emily Mworia Chemjor
Moi University
P.O. Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"User perception and determinants of cloud computing adoption in Small and Medium Enterprises in Nairobi County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **18th July, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

APPENDIX VII: RESEARCH PERMIT

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 14954

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MS. EMILY MWORIA CHEMJOR
of MOI UNIVERSITY, 3900-30100 Eldoret,has been permitted to conduct research in *Nairobi County*

on the topic: *USER PERCEPTION AND DETERMINANTS OF CLOUD COMPUTING ADOPTION IN SMALL AND MEDIUM ENTERPRISES IN NAIROBI COUNTY, KENYA.*

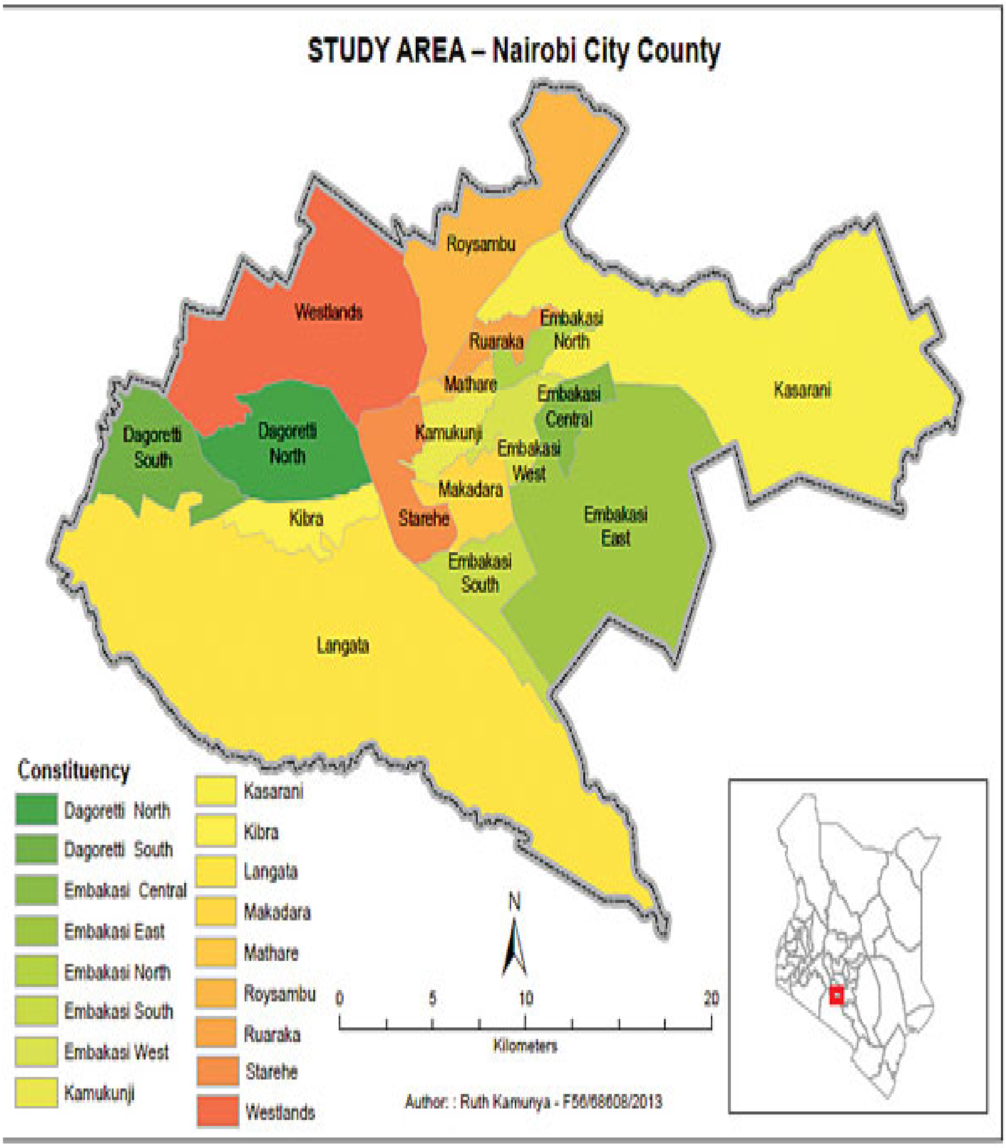
for the period ending:
18th July,2018

Permit No : NACOSTI/P/17/16604/18268
Date Of Issue : 18th July,2017
Fee Recieved :Ksh 1000

....
Applicant's Signature

....
Director General
National Commission for Science, Technology & Innovation

APPENDIX VIII: MAP SHOWING STUDY AREA



************* PROCESS Procedure for SPSS Release 2.16.1 ******************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2013). www.guilford.com/p/hayes3

TECHNOLOGY CONTEXT MEDIATION
Model = 4
Y = levelofa
X = Technolo
M = useperce

Sample size
322

****
Outcome: useperce

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2863	.0820	.3147	28.5661	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.7328	.2505	10.9088	.0000	2.2399	3.2257
Technolo	.3492	.0653	5.3447	.0000	.2206	.4777

****
Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6155	.3788	.2204	97.2582	2.0000	319.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.2942	.2456	1.1981	.2318	-.1889	.7773
useperce	.2304	.0468	4.9253	.0000	.1384	.3225
Technolo	.6330	.0571	11.0922	.0000	.5207	.7452

************************** TOTAL EFFECT MODEL ****************************
Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5758	.3316	.2365	158.7219	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.9239	.2171	4.2549	.0000	.4967	1.3511
Technolo	.7134	.0566	12.5985	.0000	.6020	.8248

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.7134	.0566	12.5985	.0000	.6020	.8248

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.6330	.0571	11.0922	.0000	.5207	.7452

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
useperce	.0805	.0193	.0470	.1231

Normal theory tests for indirect effect

Effect	se	Z	p
.0805	.0224	3.5881	.0003

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
5000

Level of confidence for all confidence intervals in output:
95.00

------ END MATRIX -----

ORGANISATION CONTEXT MEDIATION

Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.1 ******************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2013). www.guilford.com/p/hayes3

****

Model = 4
Y = levelofa
X = Organisa
M = useperce

Sample size
322

****

Outcome: useperce

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5084	.2584	.2542	111.5171	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.9093	.2057	9.2812	.0000	1.5045	2.3140
Organisa	.5761	.0545	10.5602	.0000	.4687	.6834

****

Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5614	.3152	.2430	73.3981	2.0000	319.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.0259	.2266	4.5279	.0000	.5802	1.4717
useperce	.1274	.0547	2.3318	.0203	.0199	.2350
Organisa	.5607	.0619	9.0532	.0000	.4388	.6825

************************** TOTAL EFFECT MODEL ****************************

Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5509	.3035	.2464	139.4257	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI

constant	1.2693	.2025	6.2675	.0000	.8708	1.6677
Organisa	.6341	.0537	11.8079	.0000	.5284	.7398

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.6341	.0537	11.8079	.0000	.5284	.7398

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.5607	.0619	9.0532	.0000	.4388	.6825

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
useperce	.0734	.0312	.0115	.1323

Normal theory tests for indirect effect

Effect	se	Z	p
.0734	.0324	2.2673	.0234

******************* ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
5000

Level of confidence for all confidence intervals in output:
95.00

------ END MATRIX -----

ENVIRONMENTAL CONTEXT MEDIATION

Model = 4
Y = levelofa
X = Environm
M = useperce

Sample size
322

****
Outcome: useperce

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5656	.3199	.2332	150.5422	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.3531	.1418	16.5948	.0000	2.0741	2.6321
Environm	.4780	.0390	12.2696	.0000	.4014	.5547

****
Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3865	.1494	.3019	28.0070	2.0000	319.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0092	.2201	9.1296	.0000	1.5762	2.4422
useperce	.3087	.0636	4.8535	.0000	.1836	.4339
Environm	.1050	.0538	1.9529	.0517	-.0008	.2107

************************** TOTAL EFFECT MODEL ****************************
Outcome: levelofa

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2942	.0865	.3231	30.3200	1.0000	320.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.7356	.1669	16.3879	.0000	2.4072	3.0641
Environm	.2525	.0459	5.5064	.0000	.1623	.3428

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.2525	.0459	5.5064	.0000	.1623	.3428

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.1050	.0538	1.9529	.0517	-.0008	.2107

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
useperce	.1476	.0365	.0849	.2284

Normal theory tests for indirect effect

Effect	se	Z	p
.1476	.0328	4.5003	.0000

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
5000

Level of confidence for all confidence intervals in output:
95.00

------ END MATRIX -----