



UNIVERSITY OF NAIROBI
SCHOOL OF COMPUTING AND INFORMATICS

**THE FACTORS INFLUENCING THE ADOPTION OF SOFTWARE AS A
SERVICE (SAAS) BY SMALL AND MEDIUM SIZE ENTERPRISES
(SMES): A CASE STUDY OF NAIROBI COUNTY IN KENYA.**

BY

ONDIEK COLLINS ODUOR

**THIS THESIS HAS BEEN SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENT OF THE DEGREE OF DOCTORATE OF
PHILOSOPHY IN INFORMATION SYSTEMS,
UNIVERSITY OF NAIROBI.**

NOVEMBER, 2016.

DECLARATION

STUDENT

This thesis is my original work and has not been submitted for any award in any other University.



Sign



Date

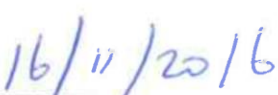
ONDIEK COLLINS ODUOR

P80/85081/2012

SUPERVISORS.



Sign




Date

PROF. WILLIAM OKELO-ODONGO

PROFESSOR OF COMPUTER SCIENCE

SCHOOL OF COMPUTING AND INFORMATICS

THE UNIVERSITY OF NAIROBI



Sign



Date

DR. ELISHA T.O OPIYO

SENIOR LECTURER OF COMPUTER SCIENCE

SCHOOL OF COMPUTING AND INFORMATICS

THE UNIVERSITY OF NAIROBI

DEDICATION

To my wisdom and strength, my Lord and Saviour, Jesus Christ

To my wife Winnie Achieng Oyimba and my Son Emmanuel Ryan Hawih and Daughter Mary Tehila Imani who play a key role in inspiring me in much of what I do and are always a constant source of motivation and their constant support and encouragement during this project.

To my inspiration and motivation, my beloved parents

To my support, my dear sisters and brothers,

To Prof Okello Odongo and Dr. Elisha T.O Opiyo who gave good professional advice for this
PhD Research

“I can do everything through him who gives me strength.” Philippians 4:13

ACKNOWLEDGMENT

I am very grateful to the all mighty God for all the blessings he poured on me throughout the study. I give thanks to God and acknowledge our Creator and Savior support in this course to completion beyond human understanding.

This thesis is a result of more than three years of work during which I have been supported and accompanied by many people, whom I would like to thank for their existence through this long and sometimes difficult journey. I wish to take this opportunity to acknowledge my supervisors. It is demanding to exaggerate my appreciation my supervisor to Prof. William Okello Odongo. His insights and tutorage throughout the years was invaluable in shaping my work into the book that you are holding right now. I learned a great deal from him not only within the academic domain. My sincere gratitudes also go to my second supervisor, Dr Elisha T O Opiyo who followed through my work, by providing for his typical supervision and sustenance without there assistance; this development would not have been accomplished and input in every step. Dr Opiyo believed in me that that really inspired me to work extra hard.

During the years spent at School of Computing, University of Nairobi, I thank the school management for providing a favorable environment for post graduate inquiry. I also take this opportunity to thank the School of Computing and Informatics under the governance of Prof. Okello-Odongo for being very very helpful and always gave me the oppoutunites to teach at the school, participate in grant writing workshop and particptae in professional development activities and It's a great opportunity to know and work with the great SCI Administrative staff whom I am honoured at the to call friends, brothers and sisters among them, Doroty Eseu, Mrs B Marosi ,Mrs Josephine, Mr Paul Rabala, Mr Onditi,Mr Kamau and Ms Anne Mwanja for just being who you are.

I would especially like to thank Mr Muturi, Prof Waiganjo, Prof Waema, Prof Omwenga Dr Mburu, Dr Omboko, Dr Orwa Dr Ngari and Dr Abade for their continuous support, useful advices and comments at various stages of my research. I am extremely thankful for my Prof Christopher and Marijona Bull of Brown University USA for the partial scholarship. I dedicate this thesis to them with gratitude, and wish them life filled with health and happiness.

I give special thanks to the UNESCO-UON BRAIN GAIN Project who indirectly supported my exploratory work from conceptualization to publishing of the book chapter “Trends in distributed computing applications”. From this work, I was able to further build my theoretical foundation. I give thanks to my fellow PhD students who offered support along the way. I had an opportunity to bounce off my ideas and thoughts to a countless number of students and colleagues as I moved from one step to another through the research seminars. Friends cheered me along the way. They encouraged me. I remain thankful. Any my able research assistants.

Special thanks to the staff from the CIT and IODL Africa Nazarene University. I also give thanks tot my parents (Rapahel and Perez Ondiek) and Parents in-law (Paul and CECIAL Oyimba) for their unconditional and incredible support. My brothers, sisters, and entire extended family who not only believed in me and gave the needed assistance, but persisted to be persistent with me as I put many days into this research work I am forever indebted to them for their encouragement and support throughout my entire life.

I appreciate the prayers and support clergy and members of the ACK church of Good Sherpered Langata and those in my Home church ACK Millimani Ugunja. I give thanks to God our Creator and Saviour who sustains us on a daily basis

God bless you all.

ABSTRACT

The output of this research was a framework that informs the adoption of Software as a Service (SaaS) for Small and middle-sized businesses (SMEs). Recent research has shown that there are significant advantages of SaaS when adopted by SMEs. However, there is a knowledge gap as pertains to the understanding of the factors that influence the effective adoption of SaaS in SMEs. More so, specific to Kenya, where firstly, there is a big disconnect between the popular and scholarly discussion about SaaS for SMEs leading to limited and inadequate access to reliable information in this regard. Secondly, existing adoption models are not contextualized for developing countries. The research then proposed a conceptual framework of how SMEs' could adoption SaaS. To better facilitate a reliable and contextualized SaaS adoption model, To develop this framework the researcher employed three approaches; the first approach was to conduct a preliminary empirical study involving 6 Cloud providers and 25 SMEs in Nairobi County. The second approach involved a critical review of literature pertaining to studies on SaaS adoption of SMEs. The final approach was a critical review of an existing framework, Technology Organization and Environmental framework (TOE). These three approaches informed the design of the framework developed by this research. The conceptual framework developed was an extension of TOE, which has fourteen exogenous variables and four moderating variables. The exogenous variables were Awareness, Trust, Cost, Top management support, Trialability, Complexity, Compatibility, Uncertainty, Relative advantage, ICT Services level, Dealer labors and outdoor calculating provision, Competitive pressure, Prior IT experience, Innovativeness and moderating factors which include SME Firm Size I.e. Small Medium, Age of the SME, SME Sector and SME Market Scope ie Local Regional. The exogenous variables were complex constructs that needed to be operationalized using multiple measures. The researcher then developed a criterion that led to SaaS adoption for SMEs for investigation. The research approach used was a cross-sectional approach because there was more emphasis on the impact of each specific construct and variable. Data provided by the Nairobi County Government SME licensing section, enhanced a comprehensive cluster sampling technique. A cluster sampling method was used to inaugurate the identified defendants. The author investigated SMEs in deferent sectors on a weighting proposal. This target was 87% in excess of the required minimum of 200 respondents as required by Structural Equation Modeling (SEM). However 293 respondents were obtained, which was significantly above the minimum requirement. SEM was used to test multifaceted associations amongst unrushed and latent variables. In addition, it tests relationships between two or more latent variables. Data analysis began with data management using SPSS where, the author cleaned the data and guaranteed the quality of data. Hypotheses testing was also done using path coefficients indicated by the P-values and how best the prototypical fits the data. The final stage of investigation was prepared using SPSS Analysis of Moment Structures (AMOS), which focused on modeling, trimming and best fit. The research findings indicated that SaaS adoption status showed that SMEs already using SaaS constitute 30%, those intending to adopt SaaS make up of 56%, while the remaining 14% do not intend to adopt. The findings also indicated that the factors that significantly influence the adoption of SaaS by SMEs include: awareness, trust, prior IT experience, relative advantage, triability, ICT knowledge and skills, top level management support and complexity. It was determined that the relevant moderating variables in this regard were market scope, the specific SME sector, and what the size of the SME was. This study extended the existing body of knowledge by providing better context for SaaS adoption by SMEs in Kenya. On this basis the researcher was able to recommend firstly, that evaluation of the market is critical for SaaS

deployment and finally, that application developers, technological consultants, software vendors, and policy makers that intend to adopt SaaS should consider the Extended TOE model developed from this research. The investigation model in this study can advance their indulgent of why some SMEs take to adopt cloud computing facilities, while apparently comparable ones facing analogous market circumstances do not.

Keywords: ICT Adoption, Small and Medium Enterprises, Software as a Service, Nairobi County

ABBREVIATIONS

AIC	-	Akaike information criterion
AMOS	-	Analysis of Moment Structures
ASP	-	Application Service Provider
BDS	-	Business Development Agencies
CFA	-	Confirmatory Factor Analysis
CFI	-	Comparative Fit Index
EQS	-	<i>Environmental Quality Standard</i>
GDP	-	Gross Domestic Product
GOF	-	Goodness of fit
IaaS	-	Infrastructure as a Service
IBM	-	International Business Machines
ICPAK	-	The Institute of Certified Public Accountants of Kenya
ICT	-	Information and communication technology
ICT	-	Information Communication Technology
IDC	-	International Data Corporation
IT	-	Information Technology
KNBS	-	Kenya National Bureau of Statistics
KRA	-	Kenya Revenue Authority
LISREL	-	linear structural relations
MSME	-	Micro Small and Medium size Enterprises
NIST	-	National Institute of Standards and Technology
OECD	-	Organization for Economic Co-operation and Development
PaaS	-	Platform as a Service
RDP	-	Remote Connection Protocol
RMSEA	-	Root Mean Square Error of Approximation
ROK	-	Republic of Kenya
SaaS	-	Software as a Service
SEM	-	Structured Equation Modelling
SLA	-	Service Level Agreement
SMB	-	Small and Medium Business
SME	-	Small and Medium Enterprise
SMEs	-	Small and Medium Sized Enterprises
SOA	-	Service Oriented Architecture
SPSS	-	Statistical Package for the Social Sciences
SRMR	-	Standardized Root Mean Residual
TAM	-	Technology Acceptance Model
TOE	-	Technological Organization and Environmental
UN	-	United Nations
UNEP	-	United Nations Environment Programme
UNON	-	United Nations Office in Nairobi

GLOSSARY (DEFINITION OF TERMS)

- Cloud Computing “Cloud computing is a ability archetypal in which any and all possessions solicitation software, indulgence power, robbery amenities, material storage, development tools... surely everything-are dispersed as a set of facilities via the Internet”(p. 205). According to Haag and Cumming (2010),
- Software as a service “Software as a Service (SaaS) signifies to a prototypical whereby Software or a submission is introduced in inaccessible servers by a provision provider who then delivers it to consumers as a service across the Internet Bois (2010).”
- SME “SME act 2012 states Micro enterprises employs fewer than ten (10) workers, small enterprises employs less than fifty (50) while medium enterprises employees have less than two hundred fifty people.”
- Adoption “Implementation is the process by which a new-fangled idea or a new product is recognized by the marketplace (Rogers, E. M. (2003).”
- Alertness “Kalish (1985), describes attentiveness as one of the step s towards implementation and consequently describes it as “the stage of being knowledgeable about the produce search attributes” (p. 1569).”
- Cost of Acquisition of SaaS “Tornatzky and Klein (1982) distinct cost as the amount to which the use of an discovery is hypothetical to be rationally costly”
- Trust “Trust is described as a degree of purchasers’ level of reassurance that the provision will be delivered with smallest possible interference according to (Siau & Shen, 2003).”
- ICT skills for SME employees “The capability of a director or possessor in ICT’s information or assistances is certainly increasing the occasion of ICT use among SMEs. Reynolds (1994)”
- Relative Advantage “The grade to which an detection is recognized as better-quality than the

- idea it exceeds rendering to (Rogers, 2003)”
- Uncertainty “The grade to which the consequences of using a discovery are frightened according to (Ostlund, 1974; Fuchs, 2005).”
- Compatibility "The gradation to which an beginning is acknowledged as steady with the dominant viewpoints, past participations, and necessities of apparent implements(Rogers, 2003)”
- Complexity "The degree to which an discovery is acknowledged as honestly stimulating to recognize and usage (Rogers, 2003)”
- Trialability "The degree to which an discovery may be examined with a incomplete basis (Rogers, 2003)”
- Size The scope of the corporation.
- Top management “Bestowing while to the (ICT) package in proportion to its cost and support credible, revising plans, subsequent up on results and simplifying the party problems involved with integrating ICT with the organization procedure of the business rendering to (Young and Jordan, 2008).”
- Innovativeness “The extent to which a customer implements creations previous than other supporters of the similar social circumstantial conferring to (Rogers and Shoemaker, 1971).”
- Prior technology “The degree of a user’s knowledge with prior similar know-hows experience according to (Lippert and Forman, Heide and Weiss, 1995 2005).”
- Competitive pressure “The extent of heaviness felt by the well-founded from contestants within the manufacturing according to, (Martinsand Oliveira, 2010).”
- Industry “The subdivision to which the occupational belongs (Goode and Stevens, 2000Yap, 1990 ;).”
- Market scope “The straight degree of a company's processes according to (Zhu et al., 2003).”
- Supplier computing “The contractor events that can meaningfully inspiration the possibility support that an invention will be employed (Frambach et al., 1998).”

TABLE OF CONTENTS

TITLE.....	i
DECLARATION.....	Error! Bookmark not defined.
DEDICATION.....	iii
ACKNOWLEDGMENT.....	iv
ABSTRACT.....	vi
ABBREVIATIONS.....	viii
GLOSSARY (DEFINITION OF TERMS).....	ix
TABLE OF CONTENTS.....	xi
LIST OF TABLES.....	xix
LIST OF FIGURES.....	xix
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Background of the study.....	1
1.1.1 The world cloud adoption and projection status statistics.....	5
1.1.2 Status and Statistics cloud computing adoption status by businesses in Africa and in Kenya context.....	6
1.1.3 Software as a Service.....	8
1.1.4 The Small and Medium Size Enterprises.....	10
1.1.5 Definition, Classification and Composition of SMEs in Kenya.....	10
1.1.6 Importance of Small and Medium Enterprises to the Economy.....	11
1.1.7 Small and Medium Enterprises in Nairobi County.....	12
1.1.8 Rationale of Choosing Nairobi County as a case study.....	13
1.1.9 The status and initiatives of SaaS Computing adoption for SMEs in Kenya.....	15
1.1.10 SMEs in Nairobi County and Cloud Computing.....	16
1.2 Statement of the Problem.....	17
1.3 Purpose of the study.....	18
1.4 Research Objectives.....	18
1.5 Research Question.....	18
1.6 Research limitation.....	19
1.7 Justification of the Research.....	19
1.8 Organization of thesis structure.....	20

CHAPTER TWO.....	22
LITERATURE REVIEW.....	22
2.1 Chapter introduction.....	22
2.2 Cloud computing concept	22
2.3 Definitions of Cloud Computing	23
2.4 Types of Cloud Computing Services.....	25
2.4.1 Infrastructure as a Service (IaaS).....	25
2.4.2 Platform as a Service (PaaS)	25
2.4.3 Software as a Service (SaaS).....	26
2.5 Deployment models of SaaS computing solutions	28
2.5.1 Public SaaS.....	29
2.5.2 Private SaaS	30
2.5.3 Hybrid SaaS.....	30
2.5.4 Community SaaS.....	31
2.6 Essential Characteristics of SaaS Computing.....	31
2.7 SaaS Advantages and Disadvantages	32
2.8 Migration of SMEs to SaaS.....	34
2.9 Small and Medium Enterprises.....	35
2.9.1 Definition of Small and Medium Enterprises.....	35
2.9.2 Characteristics of SMEs	36
2.10 The Connection of SMES and Cloud computing (SaaS).....	37
2.11 Adoption	39
2.12 Technology Adoption.....	39
2.12.1 Factors Affecting the Adoption of SaaS Computing Technologies to SME	40
2.12.2 Internal Influencing Factors of Adoption of SaaS Computing Technologies to SME:.....	41
2.12.3 External Influencing Factor of Adoption of SaaS Computing Technologies to SME	43
2.13 Adoption Theories and Models.....	44
2.13.1 Adoptions of Innovation Model	44
2.13.2 The Technology-Organization-Environment (TOE) Framework.....	48
2.14 TOE framework construct.....	49
2.14.1 Environmental Context	51
2.14.2 Organizational Context.....	53

2.14.3 Technological Context.....	55
2.15 Justification for selection of TOE theory for model development.....	58
2.16 Studies on Cloud SaaS computing services and adoption for SMES.....	59
2.17 Main factors, variables in adoption of SaaS for SMEs.....	61
2.17.1 Awareness.....	61
2.17.2 Cost associated with SaaS.....	61
2.17.3 ICT skills for SME employees:.....	62
2.17.4 Trust	63
2.17.5 Relative advantage	64
2.17.6 Uncertainty	65
2.17.7 Compatibility.....	66
2.17.8 Complexity	67
2.17.9 Trialability.....	67
2.17.10 Top organization Support.....	68
2.17.11 Innovativeness:.....	69
2.17.12 Prior technology experience	70
2.17.13 Competitive pressure.....	71
2.17.14 Support external computing support:.....	72
2.18. Moderators intervening variables in adoption of SaaS for SMEs.....	73
2.18. 1 Age of the Firm/SME.....	73
2.18.2 SME firm size.....	74
2.18.3 Market scope	74
2.18.4 Industry or SME Sector.....	75
2.19 The knowledge gap on SaaS computing services and adoption for SMES.....	76
2.20 Conceptual Framework.....	76
2.20.1 Development of the conception framework constructs and moderators	77
2.20.2. Review of Literature from exploratory survey.....	79
2.20.2 Constructs developed Literature on SaaS Adoption for SMEs.....	80
2.21 Hypothesis of the study.....	83
2.22 Operationalization of the conceptual framework.....	85
2.22.1 Constructs from adoption of SaaS for SMEs related research.....	85
2.23 Chapter conclusion	89

CHAPTER THREE.....	91
RESEARCH DESIGN AND METHODOLOGY.....	91
3.1 Introduction.....	91
3.2 Research Philosophy	91
3.2.1 Rationale for using Positivism philosophy for research study approach.....	93
3.3 Research Design	93
3.3.1 The Research Design Stages	96
3.3.2 Research design and preparation.....	96
3.3.3 Stage 1: Review of Literature for research design	97
3.3.4 Stage 2: Pilot Study for initial exploratory investigation.....	97
3.3.5 Pre Study - initial Pilot Study for initial exploratory investigation	99
3.3.6 Pre study research population.....	99
3.3.7 Sampling procedure and sample size	100
3.3.8 Pre study data collection approach.....	101
3.3.9 Pre study data analysis.....	102
3.3.10 Pre study Results of findings.....	102
3.3.11 Stage 3: Final study to validate the framework	103
3.4 Modeling of the Framework.....	103
3.4.1 Objective of modeling.....	104
3.4.2 Stages of model development.....	104
3.4.3 Assessment of model and model fit evaluation.....	105
3.4.4 Model modification	106
3.5 Structural Equation Modelling (SEM)	107
3.5.1 The goals in SEM.....	108
3.5.2 The purpose of the model	108
3.5.3 Similarities between Traditional Statistical Methods and SEM.....	109
3.5.4 Differences Between Traditional and SEM Methods	109
3.5.5 Uses of SEM.....	109
3.5.6. SEM Model Assumptions.....	110
3.5.7 Confirmatory Factor Analysis (CFA).....	110
3.6 Research Population.....	113
3.7 Sampling	114

3.8 Sample size	115
3.8.1 Sample size determination formula	116
3.9 Data collection	118
3.9.1 Phase 1: Qualitative data:	118
3.9.2 Phase 2: Quantitative Data.....	119
3.10 Data collection process	119
3.10.1 Questionnaire Design and Structure	119
3.10.2 Questionnaire.....	119
3.10.3 Pre-testing the Questionnaire.....	119
3.11 Data analysis strategy	121
3.11.1 Data Management.....	121
3.11.2 Data Screening	121
3.11.3 Missing values.....	121
3.11.4 Data Coding.....	122
3.11.5 Multivariate Normality.....	123
3.11.6 Multi-co linearity.....	124
3.11.7 Scale reliability testing	124
3.11.8 Outlier analysis.....	125
3.12 Research instrument Triability.....	126
3.12.1 1Trial instruments.....	126
3.12.2 The final instrument.....	127
3.13 Validity	127
3.13.1 Convergent Validity	128
3.13.2 Discriminate validity	128
3.13.3 Nomological validity.....	128
3.14 Structural model evaluation and hypothesis testing	128
3.15 Importance of research assistants.....	129
3.16 Ethical measures	129
3.17 Chapter Summary	130
CHAPTER FOUR.....	131
RESULTS AND DISCUSSIONS.....	131
4.1 Introduction.....	131

4.2 Results and Findings from the Final Study	131
4.3.1. Response Rate and Non-response Bias.....	131
4.3.2 Response rate	131
4.3.3 Non-response bias.....	132
4.3.4 Data Screening.....	132
4.3.5 Missing Data	132
4.3.6 Outliers.....	133
4.4 Reliability, Normality and Validity of the Data Collected	133
4.4.1 Construct validity.....	134
4.4.2 Discriminant validity	134
4.4.3 Multivariate Normality.....	138
4.4.4 Nomological validity.....	140
4.4.5 Multi colinearity test analysis (multi colinearity matrix)	140
4.5 Demographic analysis.....	146
4.5.1 Respondent Descriptive Statistics.....	146
4.5.2 SME descriptive statistics	148
4.5.3 SME SaaS Adoption status for SMEs in Nairobi County.....	149
4.6 Hypothesis Testing analysis	150
4.6.1 Awareness	153
4.6.2 Trust	153
4.6.3 ICT Knowledge and Skills.....	153
4.6.4 Cost	154
4.6.5 Relative advantage	154
4.6.6 Uncertainty	155
4.6.7 Compatibility.....	155
4.6.8 Complexity.....	156
4.6.9 Trial ability	157
4.6.10 Top Management Support	157
4.6.11 Innovativeness	158
4.6.12 Prior IT experience.....	158
4.6.13 Competition pressure	159
4.6.14 External computing support.....	159

4.7 Moderator Effect.....	160
4.7.1 SME Firm Age.....	160
4.7.2 SME Size	160
4.7.5 SME Sector.....	161
4.7.4 SME Market Scope.....	161
4.7.8 Summary of tests of hypothesis.....	162
4.8 Results Overview and Discussion.....	162
4.9 Model validation using SPSS AMOS	164
4.9.1 Original Model fitness.....	164
4.9.2 Model measurements and assessments	166
4.9.3 Model Absolute and incremental fit indices	168
4.10. Standardised estimates and output of the un-modified model in SPSS AMOS Ver 21	170
4.10.1 Fit indices for the un-modified (original) model	172
4.11 Model trimming	174
4.12 Standardized estimates and output for the trimmed-modified model.....	175
4.12.1 Fit indices for the trimmed-modified model	178
4.11.3 Final Structural model extracted from the final measurement model.....	179
4.13 Results discussion addressing the gaps in the previous studies	180
4.14 Overall Data management and quality assurance	180
4.15 Ethical considerations	181
4.16 Summary of the Results.....	181
CHAPTER FIVE.....	183
CONCLUSIONS AND RECOMMENDATIONS.....	183
5.1 Introduction.....	183
5.2 Overview of the research.....	183
5.3 Revisiting the research objectives	185
5.3.1 Objective 1: To Establish relevant influencing and moderating factors and theory for adoption of SaaS for SMEs.....	185
5.3.2 Objective 2: To Develop a framework for technology adoption of SaaS for SMEs.....	186
5.3.3 Objective 3: To empirically validate the conceptual framework qualitatively and ensure its validity.....	187
5.4 Research Achievement	188
5.5 Evaluation of the research study	189

5.6 Research contribution	190
5.7 Theoretical contributions	190
5.8 Contributions to the External Environment for SAAS Adoption.	191
5.8.1 Contribution to SME Management	191
5.8.2 Contribution to Practice.....	192
5.8.3 Research Implications for technology consultants and software vendors	192
5.8.4 Research Implications for government and policy makers.....	194
5.9 Research Study Limitations	194
5.10 Further Research.....	195
5.11 Conclusions	196
REFERENCE.....	197
APPENDIX 1 INITIAL SURVEY SEMI-STRUCTURED INTERVIEW SCRIPT	222
APPENDIX 2 FINAL SURVEY QUESTIONNARE.....	223
APPENDIX 3:- NACOSTI RESEARCH CLEARANCE PERMIT	233
APPENDIX 4:-NACOSTI RESEARCH AUTHORISATION LETTER	234
APPENDIX 5: RELATED AUTHOR ACADEMIC WRITINGS AND PUBLICATIONS	235

LIST OF TABLES

Table 1.1 MSEA definitions according to MSEA act 2012	11
Table 2.1 Definitions of the TOE framework constructs	49
Table 2.2: Mapping of factors from qualitative work to TOE.....	79
Table 2.3: Definitions of Factors that have been researched influencing adoption of SaaS for SMEs with their indicators.....	85
Table 2.4 Summary of constructs and Variable counts.....	89
Table 3.1 Data collection methods and their corresponding Research philosophies.....	92
Table 3.2 Pre - Study population.....	99
Table 3.3 Pre – Study sampling	101
Table 3.4: Mapping of factors from derived from pre study (qualitative work) (Ondiek, Opiyo & Okello, 2014) to TOE	102
Table 3.5: SME Sectors and Population.....	117
Table 3.6: General Selection of sampling frame	117
Table 3.7: SMEs sectors and population	117
Table 4.1 Cronbach’s alpha test using factors.....	134
Table 4.2 Communalities ^a	136
Table 4.3 Rotated Component Matrix.....	137
Table 4.4 Multivariate Normality	138
Table 4.5 Multi co linearity test analysis (multi co linearity matrix)	142
Table 4.6 SME respondent descriptive statistics	146
Table 4.7 SME descriptive statistics	148
Table 4.8 Respondent description of their SME cloud adoption status	150
Table 4.9 Hypothesis test summary results	150
Table 4.10 Summary of Variable counts.....	165
Table 4.11: Absolute and incremental fit indices.....	168
Table 4.12: Standardised estimates and output of the un-modified model	170
Table 4.13 : Fit indices for the un-modified (original) model.....	172
Table 4.14: Standardized estimates and output for the trimmed-modified model	175
Table 4.15: Fit indices for the trimmed-modified model.....	178

LIST OF FIGURES

Figure 2.1: Rogers Adoption and Innovation Curve.....	45
Figure 2.2: TOE Framework for SME adoption of on-demand computing services.....	58
Figure 2.3 Layouts of the constructs'/variable Generation	78
Figure 2.4 Proposed Conceptual of SaaS Adoption Framework.....	82
Figure 3.1 Research philosophy in the 'research onion'.....	92
Figure 3.2 Stages of model development	105
Figure 3.3. SEM Analysis Steps.....	111
Figure 4.1 : Fit indices for the un-modified model.....	172
Figure 4.2 Fit indices for the trimmed-modified model.....	176
Figure 4.3: Final Structural model extracted from the final measurement model.....	179

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The initial part of this introduction chapter provides an introduction, overview of the entire thesis. The chapter included, Background of the study, brief description of software as a service, SMEs in Nairobi County. There after that a problem statement follows, a purpose of the research, the study objectives and important of the study. The chapter ends with the study limitations.

1.1 Background of the study

Cloud computing is generally new thought within the computing arena. As Marson et al., (2011) notes, there is developing requirement for the suppliers and customers alike to see extensively the diverse issues that are included as to innovation. Mill operator (2008) fights that few advantages collect from the procedure and the advantages are identified with limit, reliability, and adaptability. These advantages are foreseen to influence them decidedly given that they increase the value of the association to the extent reception of cloud computing is concerned. In like manner, vulnerability is required to have negative effect on the rate of reception of cloud computing. Abdulaziz (2012) takes note of that the pessimism is credited to the worries in regards to security, protection, and lock-in impacts. Having a blend of components prompted issues with respect to similarity. This issues, Schubert (2010) noticed that impeded the achievement of dispersion and also execution of cloud computing in innumerable organization. Furthermore the the concept of cloud computing is a moderately new idea in a few firms and consequently making the greater part of them to have low trust in the cloud computing framework. Inferable from the diverse ideas and observations concerning the idea, most clients have required significant investment to appreciate and actualize the framework. With this sort of negative observation in regards to multifaceted nature of cloud administrations, the rate of dissemination has been comfortable pace and in constrained limit.

As noted by Premkumar and King, 1994 and Low et al., (2011) the convoluted way of any advancement demonstration boundary to actualizing new innovation. Also, leaders may get prior experience by attempting the administrations inside the connection of the associations and even

get experience similarly as the particular utilizations of the associations is concerned. By having trials inside the association, the certainty level increments and the rate of vulnerability lessens. Having this sort of pattern expands the likelihood of receiving cloud computing. Furthermore, through cloud computing, organizations wind up moving their center to concocting best applications for their utilization and henceforth getting genuine worth for their speculation (Staten, 2008). Also, Staten (2008) fights that cloud computing can serve as an imperative change to organizations by being a potential troublesome advancement for the representatives. In any case, the organizations need to mind their utilization of cloud computing including the administrations that give the most appropriate open or private clouds. Staten (2008) takes note of that cloud computing innovation has progressively gotten to be well known idea and administration attributable to the exceptional rivalry that organizations experience in the business sector today.

Most organizations today are making great utilization of cloud computing in couple of ways. To start with, the organizations that make cloud innovation much of the time don't have to make it rather it can be given by a cloud organization infrastructure. A valid example is the point at which each organization in Benchmark's portfolio makes utilization of cloud foundation of Amazon (Zhao, 2009). One basic component for the clients of cloud computing is web without which the clients including organizations can't get esteem and support their profitability levels. In this way, promptly accessible web is no can foresee cloud computing administrations. The distinctive disconnected clients are not in a position to utilize the cloud computing innovation given that the administrations are just offered to online clients Miller (2009). In his work Miller (2009) takes note of that cloud computing works effectively in examples where organizations meet the required criteria as directed by specific needs and assets.

A few organizations pick cloud answers for help in decrease of the in advance expenses and the general spending on IT to help them put more in a few activities like client care as opposed to equipment or programming (Miller, 2009). As noted by Forbes (2003), the cloud appreciates this relative favorable position given that it permits the organizations to reconsider about the region of setup and additionally how to set up their IT spending plan as they advance to concentrate on the issues of awesome concern. Presently, Cloud Computing is not a pattern however it has

continuously turned into a noteworthy device for the majority of the organizations from Vaquero et al., 2009 point of view. The concept of Cloud computing is also indispensable in outsourcing in the IT when contrasted with obtaining it in-house. One report that was archived by IDC (2010) proposes that income accumulated from cloud computing was at \$26 billion.

Another report created by Gartner in 2012 notes that Cloud Computing is a compelling innovation with some important effect (Gartner, 2012). An estimate on worldwide Cloud administrations show that the business sector income will surpass \$68.3 billion in 2010 and in the year 2015 get to \$222.5 billion. Moreover, SMEs are noteworthy components in an economy and as indicated by the observatory of European SMEs caught in European Commission (2005); more than 90% of the considerable number of organizations in Europe are comprised of under 10 representatives. Gallagher (2012) takes note of that "In Africa out of more than one billion people ,140 million people are expected to use internet, while more than 600 million use cellular telephones as indicated by information from the World Bank". Despite the fact that a portion of the known issue that is confronting cloud computing in Africa incorporate security and legitimate issues, there are additionally impossible to miss challenges that face the business sector which should be gone up against to understand the ideal yield from cloud computing. This concept has increasingly been seen as one of the emerging forms of technology given the critical role it plays in offering resources and services to the customers.

One of the reasons why it has been increasingly adopted is the efficiency level and the computing resources that accompany it. The effects mainly because the computing resources and the management of information allows for flexibility in adopting and outsourcing IT operations. Also, the technology is widely thought about because it can adapt to growth or even contraction. In addition, it also allows for reduced cost of IT infrastructure and at the same time responds so fast to the new and emerging market conditions. Further, Iyengar (2011) notes that cloud computing is mobile and at the same time a remote data center through which users can comfortably share information with neighbors and the strangers at the same time. Therefore,

cloud computing ensures that the users can economically access all the available IT resources at any point and time in the manner in which they deem fit.

The computing technology therefore provides the organizations and firms the chance to acquire on-demand various Information Technology facilities through the diverse internet applications that occur using a payment or unrestricted mode tailored on the usage. Through this, organizations can formerly advance their technical and considered quickness according to, (Son et al., 2011) Cloud computing consequently delineates "an ocean change—a profound and lasting movement in how computing force is produced and expended" (McAfee, 2011). The innovation has advanced additional time to end up a top innovation need for associations all-inclusive according to Gartner, 2011, with evaluated figures on cloud administrations in 2013 it was nearly \$44.2bn (according to ENISA,2014). Subsequently Cloud Computing is a normally fresh Information Technology and professional phenomenon, there are still various undiscovered territories of exploration in this ground according to Son et al (2011).

The research studies that have been conducted in the past have majorly concentrated on the usage of the Cloud Computing in organization and the conveyance models, teething troubles related with moving to cloud and cloud selection. The studies have dwelled on Cloud Computing without giving clear references to the organization size while some are just imaginations that they are arranged towards bigger associations. In any case, it ought to be noticed that SMEs which as characterized by the European Commission are any ventures with under 250 workers are innately not the same as substantial endeavors (Street and Meister, 2004). Such recognizing highlights incorporate for instance more restricted monetary assets, more constrained HR by minor intensities of particular aptitudes and fewer prescribed preparing, income producing capacity and accessible spending plans; lower levels of administration and convention in processes/schemes extra prominent reliance on outsiders for administration conveyance and expanded penchant for outsourcing; less difficult charge structures; and more noteworthy deftness and more fast basic leadership forms amongst others (Street and Meister, 2004).

SMEs play a key part in the economy to surety that companies have an considerate of the matters connected with adopting Cloud Computing according to (Samiran .R.S (2013) .The enactment

of the *Cloud Computing* solutions in Kenya at the moment is a trend that the world's most important rating agencies, has awarded Kenya with some investments. Some of the reasons why this study focused in Kenya is because it's major economy that gave the foremost role in Eastern Africa according to (Wyld, 2010).

Workers do not need to worry about the storage and the setting of the information with the conception of cloud computing as all these properties can be retrieved through a mobile or computing means of their choice at any prearranged time and anywhere so long as there is an internet association according to Samiran .R.S (2013). Cloud computing also eliminate the necessity for establishments to structure, preserve and put away exclusive data centers and devote the IT staff, particularly wherever this is not their primary professional according (Yang & Tate, 2009). According to Wyld (2010) remote-based email such as, Yahoo Mail, Gmail, MSN Mail Hotmail, or any comparable service, may be the easiest way to explain the basics of how cloud computing function, since forecasters have jagged to the fact that our thoughtful of how cloud computing works can be best agreed by means of our own particular use of Google's Gmail and GoogleApps according to Samiran .R.S (2013) .

He went ahead to explore that e-mail services like Gmail and Googles, protected user e-mail on a Google server in its place of redeemable on operators on the hard disk computer. By this, Gmail is consequently able to open the opportunity for operators to admission e-mail from any computing device that has an internet connection and an internet browser that is everybody with a web-based communication account which is already taking enhancement of cloud computing with this according Samiran .R.S (2013) .The background information has exposed that they are frequent lessons of cloud computing such as Infrastructure as a service, Software as a service and Platform as a service, below is a short explanation of software as a service as it's the chief type under the investigation.

1.1.1 The world cloud adoption and projection status statistics

A world leading prominent auditing firm Deloitte projected that in 2016 more than 80% of the foremost software firms amid the 100 biggest innovativeness software corporations will have combined their systems to cloud for their products, a 25% growth on the preceding year Louis C (2016). Gartner, who is the found and renowned researcher on cloud services also forecasts the

use of associated things in the initiative will enterprise \$868B in expenditure in 2016 Louis C (2016). He adds that Gartner estimated that the Internet of Things (IoT) will upkeep total services expenditure of \$235B in 2016, up 22 out of a hundred from 2015. Data established from Louis C (2016). Stated that in 2016, expenditure on public cloud Organisation as a Provision hardware and software is estimate to reach \$38B, amounting to \$173B in 2026. SaaS and PaaS portion of cloud hardware and organisation software expenditure are estimated to reach \$12B in 2016, increasing to \$55B in 2026.he also prophesied that Worldwide expenses on public cloud services will produce at a 19.4% composite annual growth rate (CAGR) after nearly \$70B in 2015 to additional than \$141B in 2019.

Conferring to Louis C (2015), The worldwide SaaS market is predictable to cultivate from \$49B in 2015 to \$67B in 2018, attaining a CAGR of 8.14%.Again the International outlay on Infrastructure-as-a-Service (IaaS) is probable to reach \$16.5B this year, an upsurge of 32.8% from 2014. The worldwide SaaS market is anticipated to grow from \$49B in 2015 to \$67B in 2018, reaching a CAGR of 8.14%. , Global expenditure on Infrastructure-as-a-Service (IaaS) is anticipated to reach \$16.5B this year, an upsurge of 32.8% from 2014.Cloud requests will interpretation for 90% of worldwide moveable data traffic by 2019, associated to 81% at the finish of last year Louis C (2015).Worldwide, cloud apps will account for 90% of overall mobile information traffic by 2019, associated to 81% at the end of last year. Moveable cloud traffic determination grow 11-fold from 2014 to 2019, achieving a multiple annual growth rate (CAGR) of 60%. Universal Originalities measured are predicting they will participate an normal of \$2.87M in cloud computing knowledge's in 2016. 90% of enterprises are relying on APIs in their cloud addition strategies for 2016.

1.1.2 Status and Statistics cloud computing adoption status by businesses in Africa and in Kenya context

A research firm businesstech(2014), periodical that was steered amongst a unimportant but illustrative sample of know-how decision-makers in medium-sized and big businesses in Nigeria, Kenya and South Africa about the uptake of cloud services. The most important conclusion from the research was that South Africa presently leads the land in Cloud uptake, it is near to be overtaken – periodically – by Nigeria. In 2015, 50% South African intermediate and great industries were using Cloud services; while a somewhat lower amount – 48% – are using the

Cloud in Kenya. Nigeria lags considerably behind, with only 36% of industries there presently using the Cloud (businessstech (2014)). An important 44% of Nigerian industries say they will encircle the Cloud in the approaching year, transporting the total in that republic to 80% by the end of 2014. This associates to 24% of groups in Kenya and only 16% in South Africa (proverb they will be captivating up Cloud businessstech (2014)). The key to the express acceptance of Cloud calculating in Nigeria and Kenya can be originate in the mounting confidence that computer science decision-makers have in the setting. Even where sureness is not high, disbelief in Cloud has virtually entirely vanished as said by businessstech (2014) the review showed that 57% of decision-makers crossways the three republics had high sureness in the safekeeping of the Cloud, while a further 34% were neutral – connotation they would wait and see, but were not damagingly predisposed towards it. Only 1 in 10 suspect did not trust security in the Cloud (businessstech (2014)).

Drastic change occurred in 2014 as 24% of businesses in Kenya, 44% in Nigeria and just 16% in South Africa said they propose to use cloud calculating services. This revenue that in 2014 South Africa might hit a cloud figuring usage rate of 66% while Kenya might rise to 72% and Nigeria to 80% (Gareth (2015)). Goldstuck credited this possibly sharp rise in Kenya and Nigeria to a high level of confidence in cloud calculating amid lessening other security and privacy worries. Goldstuck additionally stated that 40% of corporations in Kenya have confidence in cloud, 43% in Nigeria and 66% in South Africa. Those corporations that are impartial about cloud figuring number 22% in South Africa, 34% in Kenya and 52% in Nigeria (Gareth(2015)). According to Omusolo M (2015) he ascertain that “Cloud Computing in Kenya Baseline Survey”, whose consequences were unconfined in early 2014, and additional study on the commendations of the survey at the beginning of 2015, were directed by Dr. Tonny Omwansa (the C4DLab’s Coordinator and ICT presenter at the University of Nairobi) and colleagues who included Professors Timothy Waema, and Elijah Omwenga also from UoN (Omusolo M (2015)). Their study found that the cloud uptake in Kenyas was likely to advance a countless deal since cloud calculating robotically results in abridged costs of IT employees, software and hardware, upkeep expenditures; produced by better-quality access and facility delivery (Omusolo M (2015)). These consequences were unrestricted by University of Nairobi with the provision of Microsoft and ICT Authority, has unconfined a baseline survey on cloud calculating and its influence in Kenya.

The aim of this investigation project is to occupy investors in Kenya to comprehend the status of cloud computing and its backup know-hows Omusolo M (2015). The study has recognised that there is moderately low consciousness of cloud calculating policy outline in Kenya by defendants and that administration will need to fast track the performing of key strategies addressing cyber sanctuary, data guard and privacy in order to upsurge sureness in the implementation of cloud services in the republic Omusolo M (2015).

Another study done by Interactive Intelligence Group a world-wide leader of cloud services for purchaser meeting, transportations and collaboration established that a 76 per cent complex annual growth rate in cloud income since it first obtainable a cloud option (CAGR 2009-2015). Underlining this development, the Interactive Intelligence recently reported a 62 percent increase in 2015 income from cloud payments associated to 2014 CIO EA (2016). Cloud computing is improving the IT market residence as a cost actual solution for industries to obtain and use Kim (2015).

1.1.3 Software as a Service

Software as a Service (SaaS) refers to “a prototypical whereby Software an application is held at all or using servers that are provided by the numerous service providers within an internet platform (Bois 2010)”. One such example is Google docs that help the customers to eliminate the hustle of installing and running an application within the local computers of customers (Bois (2010). The application available and reached through different client devices including smart phones, tablets, laptops and desktops that have installed web browsers and can access internet. AS Boit (2010) expounds, Sales force was among the first providers of SaaS with a mandate to supply enterprise resource software like the customer relationship management software (CRM). Additionally, Sales force also provided a cloud platform to facilitate building as well as running of various business apps. Application Service Provider (ASP) and Oracle are some other providers of SaaS. Another approach to SaaS is provided by Chrome browser from Google. This is a modern browser which has the potential to improve the user’s cloud computing experiences (Bois 2010). It ensures that the clients do not have full control on the various platforms through which the applications run. An example of the SaaS provide is the *Demand* (Mell &Grance, 2009). Software as a service (SaaS) is a software suggestion employed over which diverse

provisions are hypothetical to a trader or provision benefactor. This merchants and service providers are left in the hands of the businessperson over a given network that host their presentations.

Normally, the software is the made available to the customers through the internet (Bidgoli, 2010).The providers are such that customers only pay the services that are used (Laplante et al., 2008) even though they do not own or subscribe to the software. In the last decade, the quantities as well as the possibilities of SaaS have greatly improved and they are poised to be of much importance to the IT vendors in the years to come (Petthey, 2006). Initially, SaaS was mainly used in the commercial computerization and the customer relationship domains. However, the trend has changed and at the moment SaaS is applied mainly in computerized billing, in the management of human resource, invoicing, service desk management and the management of sales pipelines and the other critical business processes (Biddick, 2010).

As forecasted by Petthey and Stevens (2009), the world revenue of SaaS will increase by 18 percent every year until 2013. Xu and Brinkkemper (2007) notes that SaaS just like the on-premises software fall in the same category of the software that are designed for a market. Comparing SaaS to the on-premises software, it is evident that SaaS stands out given the very promising features it has for the customers and vendors alike. On-premises software are those that are installed on the hardware of a customer (Armbrust et al., 2009).

The online aspect of SaaS is a good element as it ensures that consumers of the service can conveniently use the software, Convenience in this regards refer to the use of software application anytime and anywhere globally. The use is only facilitated by presence of web browser and internet connection. For SaaS, there exist no complex hardware or software needed and the expensive licenses are not used given that the use of the service is determined by demand. The determination is either through “pay-as-you-go” model or by time subscription. The third party and the merchants can provide the software and hardware storage. The advantage of this type of outsourcing modality is that it helps in cost reduction and reduces the energy consumption levels while the overall level of access and security becomes better (Velte et al., 2010). Having the software servicing different numerous users is good for the business as it can be updated and improved from a definite center which is critical in cutting down on the implementation costs and costs of maintenance. Having these aspects and the ability to support

clients remotely is encouraging as it ensures enormous economies of scale for the SaaS providers during the entire lifetime of the software (Kaplan, 2005). SaaS is best suited and remains to be one of the most attractive export product given the online feature.

1.1.4 The Small and Medium Size Enterprises

1.1.5 Definition, Classification and Composition of SMEs in Kenya

At the moment, there exists no universal and formally recognized definition for the small and medium enterprises (SMEs). Nonetheless, Smit and Watkins (2012) while citing Leopoulos (2006) noted that the definition is largely determined and affected by the legislation in existence in a country and the geographical placement of the SMEs. The process of an initiative traditionally requires the outlay of money and time in generating, increasing, or refining the business' processes according to (Meredith, 2001). SMEs are initiatives with fewer than 250 workforces. In contrast smaller range and average range enterprises, any inventiveness that has got less than 50 employs it is referred to as a small enterprise.

According to Meredith (2001) and Schaper&Volery (2004), these businesses are often referred to as SMEs and are associated with owner proprietors. The business is their primary income source and consumes a major proportion of the possessor's assets and time elements Shahonya (2011). The proprietors view the commerce as an addition of their identity and are intricately bound with family needs and desires. Many policy makers have attempted to define the concept of SMEs within different economies. Out of these attempts, there have been multiple approaches that have come up to expound on the concept of SMEs. The SMEs concept differs depending on a country as each country uses a dissimilar pointer according to (Visser, 1997). The first standard is attached on the number of personnel and describes SMEs as the initiatives that have a quantified number of employees, that is, the personnel that ranges from fewer than 10 to fewer than 50. The next standard clarifies SMEs in respects to the degree of correctness in legal aspects Shahonya (2011). The second criterion is used in differentiating between formal and informal sectors of the economy. Using the second criteria, the micro, small and the medium enterprises (MSMEs) are categorized under those that are unregistered. This category has the enterprises that are

considered not to comply with the legal obligations in regards to safety, taxes, and labor laws Shahonya (2011)

The third standard describes SMEs using the inadequate amount of investment and assistances for each employee. However the descriptions diverges subject on a country, the directing and established construction for Kenya’s SMEs has been recognized on the amount of employees and the yearly income of the business (MSMEs Act, 2011) The micro enterprises is defined as those that engagement less than 10 workforces and have yearly incomings of less than KES 500,000 and capital creation of not more than 5 million for dissimilar services offered and less than KES 10 million for the creativities in the business production. On the other hand, small initiatives denote to initiative with 10 and 50 workers with annual turnover of among KES 500,000 and KES 5 million and a capital formation that collections between KES 5 million and KES 20 million for the services between KES 5 million and KES 50 million for the developed enterprises. Even though the medium enterprises employees are fewer than 250 workers, for the purpose of this research, we will adopt and apply the MSEA Act 2012 as indicated in table 1.1 show below, According to this act, Micro enterprises are those that have fewer than ten (10) workers, the small enterprises are those that have less than fifty (50) while for the medium enterprises the employees are less than two hundred and fifty people (250).

Table 1.1 MSEA definitions according to MSEA act 2012

<i>NO</i>	<i>Size of firm</i>	<i>Number of employees</i>
<i>1</i>	<i>Micro</i>	<i>0-10</i>
<i>2</i>	<i>Small</i>	<i>11-50</i>
<i>3</i>	<i>Medium</i>	<i>51-250</i>
<i>4</i>	<i>Large</i>	<i>Over 250</i>

Source: MSEA Act, 2012

1.1.6 Importance of Small and Medium Enterprises to the Economy

Small and Meduim size business have play significant roles globally. The roles include development, financial growth and workable growth of the budget according (Ariyo, 2005). As

per Raghavan (2005), the SMEs sectors are mainly sole proprietorship and partnership that is also the same case in the Kenyan economy. As noted by Rogerson (2001), the activities of SMEs enterprises in Africa are critical in advancement of financial development, employment creation and decrease of insufficiency. Additionally, Luper and Kwanum (2012) notes that SMEs are critical in the development of an economy given that they have the capacity to create employment, improve local technology, create output diversification, and develop indigenous entrepreneurship and forward integration with large scale industries. According according to Kwanum, 2012 and as it has been noted before, SMEs make up nearly 99 percent of all the enterprise in Singapore, 95 percent to 99 percent of enterprises in Association for Monetary Co-Operation and Extension (AMCE) republics.

Remarkably, in South Africa, the frequency is very great with roughly 90 percent being SMEs hence contributing to 80 percent of employment in the nation. As noted by KRA (2010), the SMEs are critical in their contributions in Kenya and the contributions include increased Productivity of the commodities and the development of skilled and semi-skilled labor force, which is expected to be the ground for industrial growth among others (Kwanum, 2012). Linkages among the socially, economically and geographically sectors of the economy. They increase the participation of the indigenous Kenyans in the various economic activities of the country. The enterprises also serve as an opportunity to develop and nurture entrepreneurial and managerial skills of the country. Azende (2012) has captured that although SMEs may be small or inconsequential, they are in fact the base of any economically stable nation. As noted by Azende (2012), Kenya Vision 2030 has also acknowledged the instrumental role played by SMEs in making Kenya an internationally modest and affluent nation with extraordinary authority of life by vision 2030. One of the serious developed schemes for 2012 was to create an average of 5 small and standard initiatives manufacturing grounds in the nation (Azende 2012).

1.1.7 Small and Medium Enterprises in Nairobi County

According to SMEs Entrepreneurial Resource Centre website, SMEs constitute 80% of all firms in Kenya which account for 60% of GDP. The Kenya National Bureau of Statistics baseline survey (KNBS, 2014) identified that almost two-thirds of the SMEs operate in the rural areas through single one-third functioning in town areas. The survey also revealed that about 16% of Kenyan SMEs operate in Nairobi County which is the capital city of Kenya and Mombasa

County which is the second largest city. Data collected from Nairobi city county SME registry 2015 indicate that they exist in eight categories and as indicate below SMEs in General Trade, Wholesale, Retail stores composed 164722 rated at 57%, SMEs in Informal Sector composed of 9388 rated at 3%, SMEs in Transport Storage and Communications composed of 18599 rated at 6%, SMEs in Agricultural, Forestry and Natural Resources compose of 3930 rated 1%, SMEs in Accommodation and Catering compose of 23040 rated at 8% , SMES in Professional and Technical Services compose of 40707 rated at 14%, SMEs in Private Education ,Health and Entertainment composed of 8690 rated at 3% and finally Industrial Plants, Factories, Workshops rated at 6% .Overally the total number of SMEs in Nairobi County are 287,781. According to ken invest 2015, Nairobi County is the regional hub in economic, social and political activities of East Africa (KNBS, 2012; The World Fact Book, CIA, 2013).

1.1.8 Rationale of Choosing Nairobi County as a case study

Nairobi as a county comprises of the city and the surrounding areas. It remains as the greatest overcrowded municipal in East Africa with present estimated populace of 3 mountain. The Nairobi County was selected for the study because it is anticipated to be home for innovative digital business and boasts of majority of companies are SMEs. According to the 2009 census, the administrative area of Nairobi County has 3,138, 295 inhabitants within an area of 696 km². In Africa, Nairobi is the 12 largest city in terms of population hence making it a prominent city in Africa politically and financially (KNBS, 2009).

The city remains as home to thousands of Kenyan businesses and many other international companies and organizations (100) including the United Nations Environment Programme (UNEP). Nairobi stands out as the major coordinating headquarters for the United Nations in Africa and Middle East. This is evidenced by presence of The United Nations Office in Nairobi (UNON) as well as being an established city for business.

Nairobi has made headlines as the fastest growing property markets globally. It stands out as an investment, trade transport and financial center in the greater East African community region. The city has recorded an increment of 5.4 % in SMEs as documented by RoK (2012). “Kenya and Nairobi – dubbed the “Silicon Savannah” - has boomed in recent years through international partnerships and home-grown products, the most famous being M-PESA which is a mobile

money transfer service that has revolutionized financial transactions for hundreds of millions worldwide” Governor Evans Kidero. 2015, Key note speech during the iHub June 2015. According to Ken Invest 2015 report among the profiles for Nairobi county a suitability for the development and growth of SMEs are:-

- Economic center of the East Africa Community constituting a GDP of \$41.117 billion
- A deep pool of educated and skilled manpower that makes Kenya the manufacturing, commercial and financial hub in eastern and central Africa.
- A fully liberalized economy with no exchange or price controls. Absence of restrictions on domestic and foreign borrowing by residents and nonresidents.
- International air and sea gateway to the region. Excellent connectivity to major worldwide hubs.
- Home to a large number of highly educated and innovative talent - known for innovation as demonstrated by our very well-known MPesa and Softwares for some of the best banks in the world that is suitable for SMEs.
- Has instituted business friendly regulatory reforms – Kenya are repealing and continue to repeal laws and regulations that impede investment through the Investment Promotion Act (2004) that is well design for SMEs.
- Strategic location as a regional financial, communications and transport hub – Kenya’s strategic location and well developed business infrastructure has made it a usual option for the locality as a base for the various regional headquarters and processes that is viable for startup SMEs.

These factors plus friendly business environment and an innovative culture have made Nairobi a premier outsourcing destination and facilitated the formation of strong domestic BPO/ITES companies like Kencall, Horizon Contact Centres, Direct Channel, Techno Brain (former Kentech data), Adept Systems and Craft Silicon which is a leading software development house, there is also notable interest from different international outsourcing ongoing at various levels of feasibility studies (CFO Kenya, 2015). The city also serves as a host to regional offices for some of the world’s biggest technology companies like Microsoft, Sevenses, Safaricom, Google, Cisco, Oracle, IBM and SAP (CFO Kenya, 2015).

1.1.9 The status and initiatives of SaaS Computing adoption for SMEs in Kenya

As talked about some time recently, Kenya's populace is as of now a little more than 40 million, making it the second biggest nation in the East Africa. Ward (2011) notes that the potential business sector for SaaS in Kenya is enormous and it is not developing quickly. A reduction in the outcome of the 2008 monetary world alternative permitted the Latin American industry sector to become financially stable and fund the IT business until nowadays. Georgios et al., (2001) notes that outside direct speculation stays more than adequate to cover the present record deficiency, which has drifted around 2.2% of GDP. Kenya encounters compelling local contrasts, particularly in social markers, for example, wellbeing, newborn child mortality and sustenance. Expense and accessibility are observed to be the main boundaries for adoption among numerous SMEs (Georgios et al., 2001). To get advantage of the SaaS Computing, inculcating the workforce is critical. According to, (Murgasan, 2011) implementing SaaS is categorically not an issue in Kenya, but its user-friendliness). All these need to be done among the nation's telecoms organizations to keep enhancing web associations past the nation's significant urban communities. Be that as it may, this will just change as more SaaS particular organizations move into the Brazilian business sector to take advantage of its six million SMEs (IDC, 2013). According to (Ward, 2011). The solicitation of SaaS will continue to progress and its response for some establishments preferably rather than later and it doesn't make a transformation if the solicitations are located in Kenya or outside In five years, the utmost domineering solicitations will be instituted on Public SaaS though it is extremely conceivable that in ten years server farms won't be a piece of the advantages of the organizations as, likely, everyone will be situated in the Public SaaS (IDC, 2013). Be that as it may, there are few difficulties should be tended to viably, as notice in the past passage, poor broadband availability is the significant worry to get to the applications from remote areas, as SaaS administrations requests better broadband network to run their applications. The greater part of businesses in Kenya are still indeterminate with regards to moving their business procedures to the SaaS in light of the fact that their IT divisions are questionable to leave the legacy worldview of their present foundation (Murgasan, 2011) To effectively utilize and profit by SaaS Computing, a

SME must set themselves up deliberately, socially, and authoritatively, taking an imminent perspective of SaaS Computing (Boguslavsky, 2011).

1.1.10 SMEs in Nairobi County and Cloud Computing

In Nairobi County, SMEs employ more than 4.6 million people and this represent approximately a third of all the employment opportunities and is liable for three-quarters of all the businesses. Additionally, the sector also contributes to approximately 18.4% of the GDP and is responsible for 87% of the jobs newly created (Kiva, 2013). Hence, the SME sector remains as the driver of economic growth given its immense contribution to employment, supply services and goods in the market. SMEs are also responsible for provision of competition in the market and enables industrialization and drives innovation as well. Nonetheless, the sizes and the accompanying limitations of SMEs in Kenya has remain to be a stumbling block hence making it difficult to impede their competitiveness and growth. As noted by Shahonya (2011), ICT adoption remains a critical challenge in the industry. According to Benioff (2010) adoption of cloud computing services is instrumental in organizations as all the logistical challenges are sorted out. This implies that at micro level, the diffusion of cloud is of much advantage to the SMEs while at the macro level, the benefits go to the economy and the environment (Shahonya, 2011). Back in the 2011, Safaricom Ltd, partnered with Seven Seas Technologies, EMC and Cisco to make an entry into the cloud computing service with a total amount of Sh 3.5 billion capital which is the largest in East and Central Africa (Shahonya, 2011).Safaricom Limited targets SMEs and large companies since it offers a large range of cloud computing services like hosting, storage and backup services. Other companies that also provides cloud services like SaaS, PaaS, and data recovery in include Kenya Data Network (KDN), Crimson Technologies (Kenya) Ltd, Soften through its product Temenos T24, info Connect (a division of local firm Dimension Data Ltd) (Shahonya, 2011).

Cloud computing services have helped SMEs in Nairobi County improve, protect and grow business as users are able to carry out their duties with minimum capital. Deloitte East Africa's (2011) survey pointed out cost and tax advantages as some of the main reasons for increase in cloud computing service uptake by Kenyan SMEs besides other advantages derived from the cloud services Kituku (2012). However, it reported that the resistance to migration is linked to

security, legislation issues, and absence of IT knowledge, privacy of data, and internal factors within the organizations. In addition, Kituku (2012) also observed that major concerns for cloud computing adoption in Kenya are security, privacy and reliability Kituku (2012).

1.2 Statement of the Problem

Recent research has shown that there are significant advantages of SaaS when adopted by SMEs. Buyya, et al., (2011), note that some of the cost that is eliminated include; system upgrade, data storage, incising, hardware purchases and maintenance. It is also used to encourage close collaborations. However, there is a knowledge gap as pertains to the understanding of the factors that influence the effective adoption of SaaS in SMEs according Sabwa (2013). Kenya Government efforts that are intended to increase the competitive level of SMEs are facilitated more through improvement of infrastructure, low cost but the adoption has still been on the decline. The Kenya Vision 2030 recognizes SMEs as a quintessential channel in stimulating growth, fighting unemployment and creating, even more, employment all these will be achieved by creating enabling factors for the SMEs to adopt ICT Kituku (2012). However, information on SaaS about Kenya is also limited and not readily available (Abdulaziz, 2012). Up to now, there has not been existing much-committed study on SaaS concerns in Kenya. According to the study that was done by Kituku in 2012 discovered that there is inadequate information on fruitful case studies and indicators on SaaS implementation. In addition the mushrooming SaaS implementation in Kenya across sectors is infrequently referenced in the educational works; hence drawing thoughtfulness to gap that exists between the productiveness and literature works. Another problem this study will address is the issue of delusion (thinking by some SMEs that they are doing great without technology, yet they are missing a lot) as explained by Nabeel (2016), This research will also cover the gaps in previous studies, as reported in Sabwa (2013), which report that there's a big disconnect between the popular and scholarly discussion about SaaS for SMEs leading to limited and inadequate access to relatable information in this regard. The study will also review existing adoption models are not contextualized for developing countries pertaining to SaaS adoption factors by SMEs. The review will belonging at the deficiencies for the models more specifically for SMEs in a developing county context, more emphasis will be in constructs and moderators that play an important role and those that will not

be necessary. Therefore this study will formulate an acceptable framework for adoption of SaaS in cloud computing for SMEs in Kenya.

1.3 Purpose of the study

The study brings more understanding of the Cloud Computing Software as used as a service adoption for SMEs. The research tends to fill the knowledge gap that exists between cloud SaaS computing for the SMEs. This paper, consequently, should be able to function as a instrument for an SME that is uncertain on what cloud computing particularly Software as a service is adopted.

1.4 Research Objectives

As earlier noted in 1.3 the overall objective of the study is to develop a framework that will be a background that will guide SMEs in adopting SaaS. It will also ensure that the software as service platforms that will be chosen will improve the value and the benefits that come along with it. In light of the concerns addressed in the research background, this study proposes two research objectives that cover an empirical study of 293 SMEs in Nairobi County in Kenya; Specific objectives are as follows:-

- 1. Establish relevant influencing and moderating factors and theory for adoption of SaaS for SMEs**
- 2. To develop a conceptual framework for technology adoption of SaaS for SMEs.**
- 3. To empirically validate the conceptual framework as adoption model of SaaS for SMEs.**

1.5 Research Question

The research study considered elements that impact on the judgement of SMEs concerning cloud computing (and the Software as a Service -SaaS) adoption and answered following research question from the objectives:

“What is the technology adoption model that will have the power to explain adoption and usage of SaaS for SMEs?”

By answering this question through the development and validation of an appropriate adoption model, the researcher’s aim was to contribute to the creation of a workable framework that can used for adoption of SaaS by SMEs

1.6 Research limitation

The restrictions of the study are enormous owing to the approaches used. It may not be credible to execute the pilot framework for more than thirty-five SME firms with respect to the usage and assessment of the provided ground.

This is for the most part because of the cost limitations of usage and the way that very few groups are quick to relocate some of their everyday IT functionalities to a pilot arrangement can force the danger of administration interruption of the security and secrecy of their information. Despite the fact that most extreme exertion is given to choose three SMEs from the various divisions with various sizes and IT necessities, the input from those associations may not reveal the expectations about the cloud know-how. Furthermore, the type of cloud executives under assessment and the choice of the cloud supplier could touch the understanding of the customers

1.7 Justification of the Research

The impartial of this investigation is to contribute to the predictable the whole thing and the SME productiveness. The chief purposes of the research, consequently, are to discovery out the current technologies SMEs are have adopted and how best the new SAAS software as a service platform can be taken to improve the value and the benefits that come along with it. The findings in regards to the information will be useful in enhancing of adoption rate and the benefits that come along with it for the development of the SMEs. It should also enable SMEs to plan their products and service offerings strategically. The finding of this study will also enlighten the following people:-

ICT utilized by their SMEs independently as opposed to an integrated manner. In most cases, SMEs are not able to take advantage of methodologies developed for large firms. Currently, SMEs are not taking advantage of Enterprise Solicitations, purchaser association organization presentations and Supply chain management. Furthermore, a good number of SMEs are not using knowledge management Techniques such as cloud. Secondly, the Academic and/or Learning Institutions. The learning institutions will gain a literature of different angles of performance in regards implementation of cloud computing architecture-Software. For development of small and middle enterprise (SMEs) A Service (SAAS) will be utilized. (SMEs) businesses in Kenyan context. Thirdly the Professional Bodies: Professional organizations such as MSEA Authority, Computer Society of Kenya, ICT Board of Kenya and Kenya Association

of Entrepreneurs and the Kenya consumer federation would be interested in the findings of this study as an advisory organ for SAAs and adoption. By understanding the extent of adoption of Software as a Service as they will be to offer professional guidance and counseling related to SAAS adoption in SMEs. Fourthly the Kenya government and regulatory institutions: The Government of Kenya –Ministry of Trade has regulatory authority of the SMEs sector in Kenya. By knowing the factors that affect SAAS adoption, the government will use the knowledge gained on the Cloud Computing so as to formulate policies promote adoption rate and they will have experience of conducting business. The findings will give direction on prioritizing the expenditure of the donors and decision makers. This will be in consideration to areas where the strategies should be focused to promote MSME development effectively. Using Information systems’ the donor agencies the findings will be of great help and significance to the donors as they will be able to engage suitable Business Development Agencies (BDS) to help MSEM improve their technological capabilities, and become innovative to expand the excellence of their produces to survive. Lastly, the Entrepreneurs: Information that will be obtained from this research will be useful to both practicing and potential entrepreneurs to realize their weaknesses/shortcomings and rectify them to maximize beneficial effects for their businesses.

1.8 Organization of thesis structure

The remainder of this research project is composed of five more chapters and the supporting information found in the appendices and is organized as follows:

Chapter-1 Introduction

The thesis starts with this introductory chapter setting the stage for the rest of the work. In this chapter, there is the introduction and an overview of objectives, motivation, and research problem. The thesis starts with this introductory chapter setting the stage for the rest of the work

Chapter-2 Literature Review

This section introduces cloud computing. It considers definition in details and explain the numerous features, service representations, and placement models upsurges the expected .presented an introduction and background of SMEs, reasons for choosing this topic, and an

outline of every chapter. Cloud Computing, SMEs, Adoption the operationalization of the key constructs, the pilot study are discussed too.

Chapter-3 Research Methodology

This section of the episode deals with the approaches of data gathering and endeavor in answering the study question. It also emphasizes on the explanations for selecting this technique considering the study design. It also includes a short-lived exploration viewpoint and an explanation of the method used in this study. The important features of the study policy such as the study design and the details of the study's sample are presented in more details in addition to giving the outline of the analysis undertaken.

Chapter-4 Data Analysis and Findings

The study results were offered and analyzed. Data is collection and analyzed in the light of the revision appraisal prose offered in the second chapter and testing of the research prototypical to respond to the study investigation. In this chapter there is taxing of the conceptual framework that is done prior to conducting the quantitative study. In addition, there is focus on the effects of technical, administrative and ecological factors impelling cloud computing acceptance. The factors are then used as the predictive logic model to test whether the firm is able to adopt the

Chapter-5 Conclusions and recommendations

The purpose of this last chapter is to sum up the study apart from giving the study overview, how the objectives were achieved, with emphasis is laid on SaaS adoption model and a focus on the theoretical, methodological and practical implications. Also explored are the study recommendations, limitations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter introduction

In section different theoretical perspectives and theory of software as a package and other theory that considers Cloud Computing are assembled. There is enough evidence on the development of technology over decades. It has gone ahead to give a detailed instantaneous of the definition of Cloud computing and a comprehensive explanation of the Software as a Service (SaaS), the various areas where it is applied and it's significant in the market place. The chapter goes ahead to discuss the concept of deployment models, Hybrid Cloud, Public Cloud and community cloud. It also summarizes by giving the advantages of cloud computing and their possible solutions in details. The chapter ended with a detailed summary of describing Cloud Computing Software as a service by Kenyan SMEs, in addition adoption the operationalization of the key constructs, the pilot study is discussed too.

2.2 Cloud computing concept

Cloud computing is described as the facility that is easy to get to by means of the internet, usually named Software-as-a-service (SaaS). The existent files they services are usually defended by the hardware system. These hardware and the systems are situated at data centers that are referred as "cloud". A recent study was conducted by Rackspace (2009), a cloud computation provider, it came to their realization that that 60% of persons were not well conversant with the term cloud computation, the remaining percentage had a shallow knowledge and knew its main use is on internet memory or application. They had several definitions and all their ideas summed up came with a serious concept regarding cloud computation. Many had a belief that it will be effective if its costs and services were scalable while others based their thought on a stable price as long as there is maintenance of the hardware or application of the cloud in data centers (Armbrust et. Al. 2009 p. 4-5). Cloud-based uses such as office applications or e-mail are increasingly used into the day-to-day business venture. This creates new skills and opportunities thus equals to imposing new encounters for stakeholders. IDC forecasts the global expenditure of cloud services to rise between the years 2009 and 2014; this significant rise will be from \$16.5 billion to \$55 billion respectively (Gens, 2010). It is after mark would be a more

flexible and affordable computing services within businesses that mainly depend on IT solutions. A research conducted by a CIO survey on cloud services came up positive; cloud computation was ranked second amidst the ten popular technological priorities in the year 2010 (Misra and Mondal, 2011).

Moreover, authors exploration on the cloud computation occurrence is attempted to be established on connections between virtualization concepts and this technology (Barrie Sosisnsky, 2010) thought that (Bohm et al, 200) cloud computation services concepts were important and true in disregard to the internet. The abstraction concepts aids in privacy of implementation details from users, meaning that data location, physical systems are not indicated, this has thus does not impose effects on the final users (Sosisnsky, 2010). The other side of virtualization imposes significant importance in that the cloud computation servers allows adjustment of resources and data scaling centers thus rendering the hardware to be more efficient and on request according to according to Bohm et al ,2009. The importance and impression of virtualization it is discussed more on this section of this chapter. Its discussion will be based on Arrangement of (IaaS) as a service that is one category of cloud computing. Majoring in the deployment and service models of cloud computing, their division is much related to their strategic location of its cloud hardware facilitating easy provision of cloud computing services (NIST, 2011). Hybrid Cloud, Public Cloud, Private Cloud and Community Cloud are the most applicable deployment models (NIST, 2011). All these will be discussed deeply later in this chapter. The concept of virtualization is broken down into three core lessons: These are (Infrastructure as a Service), Software as a Service (SaaS) and Platform as a Service (Paas) and this chapter those services will be expounded further in their chapters

2.3 Definitions of Cloud Computing

Cloud computing can either be an application that provides over web services or the hardware and the software systems responsible for service provision. Hardware and the software systems are what are termed as cloud while software as a service is an application service. Cloud computing has two significant features; pay per use and experience unlimited resources. Cloud offers a service that is known as utility computing, this has relations to use of resources like water or electricity. Availability of a cloud in the public is known as public cloud. A cloud not accessible to the public is a private cloud. A cloud should offer pay per use and un-limited

supply, without the two it will not be providing cloud computing. According to Wang et al (2010), Cloud Computing is “a collection of network empowered facilities, providing accessible, usually modified QoS, reasonable computing platforms on intention, which could be repossessed in an unescapable and modest way”. (IASA, 2009) Cloud computing should to embrace software as a package and usefulness computing .From Buyya et al (2008) point of view, cloud computing can be defined as; “a category of disseminated and corresponding classification comprising of a collection of virtualized and consistent processors that are dynamically offered and measured as one or more mutual computing income well-known on service-level preparations recognized over enterprise between provision provider and consumer”. Plummer et el. (2008) description is applied for this exertion. The description of cloud computing is given as; “a stylishness of totaling somewhere immensely mountable IT-associated aptitudes are given as a capability by incomes of Internet technologies to numerous outdoor consumers”. This is since it for a diminutive time captures the vivacious kinds of cloud calculation. Both the technical perspective and the end-user technical perspective are concisely explained.

According to Cumming and Haag 2010, " cloud computing is defined as an invention model in which any resources application programming, preparing power, improvement apparatuses, reinforcement offices, information stockpiling ... truly everything-are carried as a plan of governments by through of the Internet"(p. 205) “Armbrust et al 2009, gave a detailed definition that characterize cloud as the "server farm equipment and programming that give services" (Armbrust et al., 2009). As needs be, Cloud is a word that describes the IT usage as it is carried on an organization as a service supplier farm according to (Soto mayor et al..., 2009).Customers of this invention can get to the usage on the Internet without any prior past working familiarity. The National institute of Standards and Technology gave the official description that is measured is said to be the most important among other definitions of cloud computing. “Cloud” is a terminology that for most part indicate to the IT base that is carried on an infrastructure as a Service supplier server farm this is according to Sotomayor et al, (2009) "cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or

service provider interaction”, according to the National Institute of Standards and Technology (NIST) according NIST (2016).

2.4 Types of Cloud Computing Services

According to (Buyya et al 2008) Cloud computing as a Service can be classified into three major groups

2.4.1 Infrastructure as a Service (IaaS)

This is the most vital kind of SaaS computing service model. This refers to this model as the one that offers a virtualized asset (Computing and stock keeping on interest). The SaaS Client is the one who is in charge of keeping and fixing and keeping up the working frameworks and application programming in this model. In order for the cost to mirror the assets allocated and consumed SaaS suppliers frequently charge IaaS on a utility computing.

IaaS licence companies in order to licence their locality servers and farm servers.

This permits the corporations to change all their data, programs and applications into the IaaS according to (Barcomb 2011). Finally the IaaS seller's leases ICT equipment and executive needs to store and run in the SaaS (Bakishi 2011). Clients are charged for what they utilize when they require it (Bhardwaj, 2010). This forms the position point for IaaS.

In light to CAPEX to be a competitive IaaS Supplier (Barnatt 2010) this makes a lot of problems for little entrants to compete in the administration model (Barnatt 2010).

For this foundation the server which deduces a few high prices, the server itself, consistent and reliable force supply, cost with the cooling framework and solid rapid web association (Bhardwaj, 2010) are important. Furthermore the cost is the most important vital circumstances of getting the IaaS merchant. This means that the organization do not need to put a lot of cash in their own in the harmonizing costs or server such as specific, security, specific cooling framework representative or solid interest in the force framework (Bhardwaj, 2010).

2.4.2 Platform as a Service (PaaS)

There are different SaaS computing since the SaaS supplier offers a computing platform that frequently includes working framework or programming improvements (Lin et al., 2009). This option is considered to PaaS and is especially attractive for designers. PaaS gives more raised

amount as compared to IaaS for SaaS reflection. For PaaS, notices can be made to GoogleAPP Engine that gives versatile situation in creating and enabling internet application created using programming dialects. This is considered to be one of the important services for PaaS.

From the above clarification given from above the service, in utmost cases, it does not permit the consumers to create their own applications. From (Barnnat 2010) perspective, its explanation is a “take-it –or –abandon its alternative” that could have been used to address the requirements of a few people and companies. The PaaS will permit the clients to have admittance to product situation by this it could have satisfied their needs and also make, test and convey their own particular. According to (Bernstein et al 2010).For PaaS somebody with programming learning can make an application and convey it around the world (Boniface et al 2010), this is the main standpoint for PaaS.Before the invention of PaaS the inner framework was the only way to make an application this was costly and troublesome (Lawton,2008).He further argue that the other preferred stand point is identified with the relocation of technique where the request is made in the similar stage where the end users will apply it.according to (Sosinsky 2011) there are disparities, where the client does not have straight regulations over the phase they are exploiting to make their solicitations.

According to (Sosinsky 2011) view point, the merchant is in charge of all the operational and upkeep. This means that if the end user is utilizing the PaaS that acknowledges a Programming dialect ,Java application should be unruffled in this kind of programming language (Taft,2011).According to (Lawton,2008) PaaS is identified with the Merchant lock-in since it will be completely subject to PaaS sellers. All this are important because they enable the organization or the users to understand is usefulness in making an application faster and less challenging (Barnatt, 2010).

2.4.3 Software as a Service (SaaS)

The SaaS suppliers and clients are introduced in this model, giving entrance to application programming using their SaaS customer. Therefore the SaaS clients should not worry the platform or footing on which their solicitation is running. In this prototypical, solicitation software design is familiarized by the SaaS providers and consumers are prearranged the

appearance to the submission software design applying their SaaS customer programming. This will unravel the upkeep, renovating and supporting the product application for the terminal workers. From Lin et al (2009), the Information Technology customers are the fundamental focus of the SaaS service. As per (Gartsthaugen 2012) Google Docs can further be a decent SaaS services. IaaS has the most astonishing infiltration and adoption in the market this is from the technology point of view (Buyya et al., (2011). As per the European Parliament SaaS computing it is normal that more applications will be moved to SaaS. Figure 2.5 demonstrates the evaluated estimated estimation of various classes of SaaS service over the European Union (EU) from 2009-2015. From here we get the climaxes of the Concept of software as service (SaaS) and its greatest essential favorable conditions compared to the habitual programming. In addition, it breaks down the SaaS market esteem and also its most important supplier and applications. To enhance the business operations around the world (Robinson, 2011) programming as a service (SaaS) is viewed as the most noticeable SaaS computing (Barnatt 2010).

This will essentially disentangle the upkeep, overhauling and support of the product applications for the end clients. Google Docs can further be said as a decent case of SaaS services (Garsthaugen, 2012). From a technology stance, Buyya et al., (2011) as such, IaaS has the most astounding infiltration and adoption in the market. According to European Parliament SaaS computing Study, 2012. It is common that more software design solicitations will be merged to SaaS in the years to come. This emphasizes the idea of Software as a Service (SaaS) and its favorable circumstances compared to the customary introduced programming. In addition, it breaks down the SaaS' market esteem and also its most significant suppliers and applications. Programming Software as a Service (SaaS) is viewed as noticeable and surely understood type of SaaS computing (Barnatt, 2010). It enhances the business operations around the world as indicated by Robinson, 2011. SaaS as a product can be gotten through web at the same time facilitated at a remote area, not secretly introduced in the client gadget or service (Haag and Cummings, 2010). Therefore its services are nearly observed by the SaaS sellers (Wu et al, 2011). This sort of programming has been regularly on membership or use based (sun et al, 2008). This implies that most of the times SaaS are more sensible and valuable (Ma, 2007).

According to Neves et al, (2011) he went ahead to state that SaaS is more easy to understand and less difficult than introducing programming according to (Barnatt, 2010).

(Jene and Mahanti 2011) discovered that this sort of programming is constantly gotten to the web and implies that it is gotten to by any gadget as a PC, a cell telephone or tablet. Furthermore ,the updates of the product is much simpler and speedier than the straight confidentially introduced programming (Miller,2008) and compatibility issues .The same application needs to utilize cooperation device (Tumer,2010) which could increase and inspire advancement. SaaS allows the clients to make their own particular application through API –application programming interface(Liu et al ,2010) which has helped in solving customization as a drawback (sun et al,2008) .SaaS Force which is one of the major SaaS has forcefully put on setup and customization abilities in their application(sun et al 2008). Programming as a service (SaaS) is positioned around letting applications to clients that utilize it over a subscribed time. The application is not demanded by the client, it is processed by the suppliers that makes the clients pay for the portion of time they need to be capable utilizing it. The SaaS as a service enables a company to pay more often than not a month to month charge to acquire .Adoption process for SMEs as per Mell and Grance (2009) in NISTs SaaS computing definition SaaS is the leasing of both foundation and application which are completely managed by the supplier through a web customer, the instance an online email.

2.5 Deployment models of SaaS computing solutions

SaaS computing solution from multiple point of view includes Private SaaS otherwise called hybrid model (Buyya et al., 2011).Some different terms that can likewise be utilized to depict deployment models include (Buyya et al, 2011). Some different terms that can likewise be utilized to depict deployment model include “service boundary”, “SaaS mode” respectively (Qian et al 2009 & Rimal and Choi, 2009). 1) There are four characteristics for classifying SaaS, ii) The owner of the SaaS infrastructure iii) Who accesses the SaaS Services iv) The location of SaaS infrastructure and v) Who is in charge of the SaaS infrastructure. This is according to (Bardin et al...2009). The major models that are considered to be relevant in deployment include; hybrid, the private cloud, public cloud and community cloud (NIST, 2011). The users have contractual agreement to the SaaS Provider. Through the network access permission the windows can always be customized.

2.5.1 Public SaaS

In their view, Armbrust et al., (2009) considers a public SaaS to be one which is available to the public in form of utility billing. According to this model, the owner is normally the provider and the manager of the infrastructures (Zhang et al., 2010). In light of this, the users are frequently entrusted and, therefore, the SaaS provider has no any contractual agreement with its users. In most cases, the Amazon Elastic Compute SaaS (Amazon EC2) has been mentioned as one of the examples of public SaaS. Amazon Elastic Compute SaaS is a perfect example that is best known for the provision of the web service interfaces. The services provided by AECS are very vital in the enabling of the launch of various virtual machines that have the operating system of user's choice. An example to this is the Microsoft Windows. Network access authorization enable the windows to be customized. This occurs in bound or outbound connection authentication and also regarding an application environment. In various occasions, the o services that are offered by the windows are normally done publicly with the help of public IP addresses. The public SaaS that is also known as the SaaS Hosting is normally the opposite of the private SaaS, in this case, the customer normally rents the servers (instances) on what is known as according to (Sosinky ,2011) a pure demand crisis. During the actions, the clientele usually share the occasions with other clientele deprived of knowledge about the exact locality of the data. From Barnatt 2010 perspective, this type has been seen in most occurrences as one of the less safe possibilities of the distribution computing.

They are considered less safe because in various occasions customers only rent the virtual services and also share them with other customers. Barcomb, (2011) notes that despite being less safe, it was discovered to be one that benefits from the SaaS computing benefits. It is measured to be the inexpensive kind among the four categories. As such it is preferred by companies because it enables to save more money on the IT cost. Also, it offers the most from both scalability and the flexibility advantages. The public SaaS is always accessible to the people of the community. At many instances it is usually free and also with some payable options. The services are normally provided by many, for example, business, unions and the governments. A perfect example could be the provider of the free online storage also known as the drop box. (Mell & Grance 2009 p. 2-3).

2.5.2 Private SaaS

According to (Armbrust et al,2009) private SaaS can be defined as an inside center of information for business association that is not accessible to the people of the community. Furthermore the physical infrastructure in private SaaS may be Owned by or may be located in the organization data that are available on the premise. It can also be made of a designated service provider (off-premise) in this case; it will comprise of an extension of security control planes and that of the management (Bardinet al. 2009), In Contrast to the public SaaS, in private SaaS, users are normally considered and trusted. An example of a private SaaS is the Nebula. The scientific data and web-base applications utilize private SaaS.as the National Aeronautics and Space Administration (NASA). NASA is primarily used in addressing the gap that is there between various workstations and NASA supercomputers. This is accomplished through resource aggregation as shown by Williams, 2009.

Presently, Nebula is providing IaaS only but in the imminent it is anticipated that it will also be able to offer PaaS.Today, Nebula is known for offering network and storage over private SaaS. According to (Liao and Su, 2011) private SaaS means that the infrastructures are normally operated on by the private and the exclusive use of the specific organization and SaaS is usually separated from its hardware by customers. According to (Sosinsky 2011), it suggest that there is a part of an actual physical fragments of the information hubs that is entirely visible to the customers who pay for its service. According to (Zheng et al, 2011 as such it is normally dignified to be the wildest procedure of arrangement model.

The type of SaaS Structure is normally used mainly by organizations and managed by them as well. The infrastructure involved can be managed by the third parties or the establishment themselves depending on the agreement on the services. The private SaaS Could be ranging from an internet or email that is used within an organization (Mell and Grance 2009 p. 2-3).

2.5.3 Hybrid SaaS

According to Mell and Grance (2009b), hybrid SaaSs can be considered to be an amalgamation of both secretive and civic SaaSs.For this reason, the hybrid SaaS is capable of benefiting from the capabilities derived by both the SaaSs. The users of the hybrid SaaS can fall into the category

of both trusted and untrusted users. In many cases, the untrusted users are frequently denied from using and accessing the services of both the hybrid and the private SaaS. An example of a hybrid SaaS is the VMware SaaS service that uses SaaS Director to allow automation of workloads. The workloads include the provisioning of the virtual machines or sometimes it comprises of a merging of the virtual offside machines with onsite SaaS. An example of SaaS service that is morally offered in the general format of a hybrid SaaS is the salesforce.com. The hybrid SaaS is an amalgamation of two different types of rent options according to (Makris et al ..., 2011), There exists customer rent that is dedicated to physical servers as the private SaaS but at the same time also rents the virtual servers (Zhan et al .., 2010).

Consequently, is usually believed that each deployment model can be either used internally or externally (Choubey et al., 2011). In light of this, organizations can, therefore, save more money as compared to the private SaaSAs per (Barnatt,2010) the saving of the money is possible because it uses some instances servers that are not considered cheaper than the physical servers (Barnatt,2010). Hybrid SaaS is, therefore, a mixture of public-private and the community SaaS. They are commonly bound together but still exist as a deployment model. For example, a SaaS that is exists in a company to be used by all the employees, but within the same SaaS, there could be a Private SaaS that is only accessible by the managers (Mell and Grance 2009 p. 2-3)

2.5.4 Community SaaS

This model can be easily managed by organizations or a third party. When there are several organization that share the same goals, rules and same infrastructure the SaaS community happen (Choubey et al 2011).A very good option when forming partnerships (Mell and Grance 2009 p. 2-3).The service model that is applicable determines the involvement of the service provider.

2.6 Essential Characteristics of SaaS Computing

Some of the most important characteristic of SaaS computing that differentiate them from traditional computing include:

On demand –self-service: in this type, customers have the authority to their provision of the services or not when required minus any interaction by human beings.

Broad Network Access: This has the capability over most networks and can be accessed through standard Mechanisms.

Resource pooling: This is where the resource provider are frequently pulled to serve some customers.

Rapid elasticity; in this type services can usually be elastically or rapidly provisioned.

Service Measure: This is a computing system that automatically optimize and controls the usage of resources by a provision of mattering capability to a given type of service for example bandwidth, active use of accounts, storage and processing according to SaaS Security Alliance, (2009, p15). Resource aggregation: this SaaS provider allows for the computing resources to share amongst the computer users regardless of the actual location (Mell and Grance 2009). In other words, SaaS end may not need to know the location of the resources that are being used (Mell and Grance 2009).

Self-service computerized contact: It comprises the dependable progression of information that tends to necessitate the operations of the IT infrastructures and various data centers. It is recommended that the future SaaS should be able to remove or minimize any form of human interaction from the operating cycle. As such is cable of providing stability and a good way to reduce the cost.

Resource elasticity: SaaS resources should always be varied by the users demand. In other words, it could be substantial for the SaaS to provide a framework that will match the instantaneous demand and the available resources. When over provisioning f resources occur, it is possible that they could be an increased demand cost and affect utilization of resources.

The NIST view of regular service can be said to be a “SaaS systems that are automatically controlled and optimize resource use (for example, dispensation, bandwidth, loading and lively user accounts). In this case, supply usage can be measured, observed, and informed, consequently, providing transparency for both the benefactor and customer.”

2.7 SaaS Advantages and Disadvantages

Currently, SaaS computing is considered to be different than any other computing. SaaS computing is today used in some ways. To some, it's viewed as virtualized computing.

Furthermore, it is seen as a dynamic development of software fragments by others. It supports user-facing application like web application and interactive since it is the same as any other procedure of computing. Some of the web-based submissions are typically retrieved finished browsers have a taste of the desktop programs and use the applications. Developers of SaaS computing consider it very easy and they retrieve the application fragments as pointed out by Weinhardt et al., 2009. SaaS being a new technology has both benefits and drawbacks just like any other technology. Currently, SaaS computing is considered very crucial tool for business. For instance, a business can lower the costs of its computers to the users. In this case, the operator at any point in time during the operation will not need a high power-driven processor so as to run SaaS computing web-based solicitation.

This could be attributed to the fact that the application normally runs on the SaaS and not on the desktop of the PC. The use of SaaS has enabled many organizations to lower their cost of IT infrastructure. In light of this, the organization does not have to invest in so many servers, by applying the SaaS, the IT department can then use various computing powers of the SaaS to help in internal computing resources. The other benefit attributed to SaaS computing is that it helps in lowering the software costs. Through TV commercials and various print advertisements, there has been a massive effort to sell the idea that with the use of SaaS computing, employees can still work remotely and remain effective. This is because SaaS computing has the ability of providing access to documents to the user from where he or she is.

In spite of the benefits that can be derived from using SaaS computing, it has some challenges. These include; constant use and reliable internet connection which is very strong and fast, it has limited features in applications especially when one is performing Google presentation. In this case, it is normally different from doing the presentation in Microsoft PowerPoint. When used in SaaS, some of its features might be lacking. Thirdly, the users could find it difficult to store their documents and the data that is stored in SaaS is prone to a security threat. When the SaaS goes down, and the user is not having any backup, it is possible that they can lose vital information or the entire document. Also, the system can be hacked by an authorized person (Miller, 2009).

2.8 Migration of SMEs to SaaS

For long, Information Technology has turned into a significantly imperative Part of the businesses carried out nowadays affecting all commercial ventures and areas. SMEs are measured as important element of the international low-cost according to (Abdulaziz, 2012). Since the specific fundamentals and features of slighter relations, (for example, number of representatives and spending plan) contrasted with bigger enterprises, the state of mind of the SMEs are more preservative in comparison to their greater partners. This section defines SME and reveals the features that make them distinct from expansive ventures Caldeira and Ward (2013). At that opinion prevailing inspection deliberates about treatment to the fundamentals that impression assortment of new-fangled IT knowledges by SMEs are evaluated. In this means, the segment distillates on SaaS knowledge, besides audits current inspection deliberates approximately that have been predominantly conversation about the modification of SaaS computing by SMEs. SME have put resources into embracing technology gives aggressiveness and encourages development to new markets according Caldeira and Ward (2013). Likewise, they have a point of confinement on human cash-flow to keep up and take care of the technology. There are inside and outer components affecting the reception of technology by SMEs, these impacting variables are authoritative conduct and characteristics, clients, supplier and outside IT expert and merchants Abdulaziz (2012). SMEs likewise rely on upon the characteristics of executing variables, including sort, process similarity, client actualized IT, nature of programming accessible in business sector, the expenses and saw effects and advantages of IS/ITs on association. Tan, et al. (2009) endeavor to contend the adequacy in deciding SME Markets, further repurchase goal breaking down and looking at mitigating variable.

In connection to business prerequisites, exchanging the information to the SaaS may altogether disentangle the product updates, and also, including new Programming applications and permits a simpler, quicker extension for the business assets. As noted by Caldeira and Ward (2003) it is less demanding to administrate and keep up and it permits the association to have worldwide get to paying little respect to their physical area as examined already. Then again, there are additionally dangers to be viewed as, for example, security and protection worries, as notice prior availability and execution, dissatisfaction of the system background may quick unapproachability of each solitary ward management and submissions. Abdulaziz (2012)

contends that loss of control and reliance is another detriment when SMEs, choose to move to *SaaS*.

2.9 Small and Medium Enterprises

2.9.1 Definition of Small and Medium Enterprises

Small and Medium Enterprise (SME), also recognized as Small and Medium Business (SMB), is a description used to represent the civilizations with the amount of workers underneath a specific limit (Georgios et al., 2001). The abbreviation SME is mostly used in European Unions, the World Bank and United Nations while SMB is mostly used in the United States. There are different definitions of SME among. According (Georgios et al., 2001) European countries; for example in Belgium or Greece any organization with fewer than 100 individuals is considered as a SME will in Germany 255 (Georgios et al., 2001).

In the year 2011, the European Commission grouped SMEs into three groups organizations with under 10 employees are small organizations with up to 50 employees and for the medium-sized organizations they are viewed as those which below 250 perpetual representatives.

SME can be reproduced as implementation with the income of €10-50 million from the economic term. Rendering Georgios et al, (2001). A small scale undertaking is a business venture that utilizes somewhere around ten and forty-nine individuals, while a medium scale endeavor utilizes somewhere around fifty and two hundred and forty-nine individuals (EuroCon 2013). The definition of SMEs is, however assorted. Though some allude to the quantity of representatives as the particular criteria for SMEs, others use contributed capital, and some others, a mix of the quantity of workers, contributed capital, deals, and industry sort. Further, SMEs in creating countries including sub-Saharan Africa are typically proprietor oversaw, and described independent from anyone else or family financing, and absence of an innovative work unit (EuroCon 2013).

SMEs typically have small ICT offices, assuming any, and are in this manner not prone to have entry to talented IT work force nor complex IT foundation and related administration apparatuses. Besides, SMEs regularly don't have innovative work units to bolster the execution of statistical surveying. These hidden conditions make *SaaS* computing a potential significant

cost lessening instrument for SMEs since notwithstanding giving the very much characterized standard administrations, SaaS benefits naturally log and give other auxiliary information like administration reaction times, crest business periods, downtimes, and mistake rates which can be utilized to bolster business basic leadership (EuroCon 2013). For this exploration Small and Medium ventures (SMEs) are the gathering surveyed. SMEs are a surely understood contraction in a large portion of the world and are recognized by many .SMBs (Small and medium businesses) is an archetypal pronunciation of the word in USA. Small and Medium Enterprises suggest to the small, medium additionally the reduced scale relations that occur. To understand what connotations that can be restrained a SME everywhere are three norms' that must be considered. The operate headcount, monetary record and the yearly turnover of an association considers while evaluating whether it is a SME or not (EU-Commission 2003 p. 22). SMEs give a major part of the worldwide economy, in Europe SMEs speak to 99 % of all endeavors. Thusly, there are numerous employments inside the territory. The definition of SMEs and what speaks to it is very much depicted in the European Commission manual for SMEs (EU-Commission p. 35).

2.9.2 Characteristics of SMEs

The expected perspective of Minor and Average Initiatives was considered that they are the similar as the superior administrations but they diverge in size. Nevertheless, it is accurate now a confirmable certainty that the tremendously estimation essentials of the SMEs brand them specific from their bigger associates" (Welsh and White, 1981). The understanding of such features and credentials are predominantly indispensable while discerning of it as collection organizations. According to (Welsh and White, 1981) the difference between an expansive undertaking SME and an SME is the level of accessible assets for the SME, ". A wide range of components enhance to the advantage hardship of SMEs. For example, SMEs are regularly bunched in intensely separated profitable undertakings, for example, transaction and organizations where nearby exist frequent candidates" (Welsh and White, 1981). A great helping of these nominees send powerful value sharing measures so as to accumulate revenue and to continue. Furthermore, superficial atmosphere nonconformities an additional important consequence on the SMEs connected with their greater associates" (Welsh and White, 1981). For example, variations in the responsibility commandments or finance fees are responsible and have an importance on the mutual expenditures of a SME contrasted with a bigger suggestion. Every

one of these variables outcome in a short-run management point of interpretation where liquidity is a main goal. Therefore, SMEs might be tremendously conservationist in reception new IT provisions predominantly amid its preliminary days" (Welsh and White, 1981).

2.10 The Connection of SMES and Cloud computing (SaaS)

As talked about before, impediments in the accessibility of money related and HR may postpone SMEs in embracing new innovations, particularly its initial stages. This is particularly genuine considering less unpredictable IT prerequisites of SMEs contrasted with their partners. Then again, the investigations of Bose and Vijeikis uncover that SMEs are ordinarily keen on outsourcing their IT necessities so as to have the capacity to concentrate more all alone center business space. This could make SaaS computing a better alternative for SMEs. In like manner, the points of interest can be recorded takes after Cost lessening; Depending on the kind of SaaS administrations being conveyed, critical cost decrease can be accomplished in equipment and programming provisioning. What's more, the general administration and upkeep expenses may likewise be diminished. As it were, Armbrust et al., (2010) while SaaS computing is typically imagined as a method for changing over capital consumption (CAPEX) to operational use (OPEX), an effective movement system may likewise lessen the OPEX. Monetary benefits can be principle factors for relocation of an association to SaaS preparations which are provocatively more important when SMEs are distinguished. This is recognized by the IDC education 2009 which exposed that the prominent explanation for the implementation of SaaS calculating is cost-sparing.

One of the greatest focal points is dispensing with the need to purchase excessive IT framework, for example, a costly server. SaaS computing administrations likewise oversee and keep up IT frameworks, so that an individual need not to. At the end of the day, one can lease a scope of administrations from email frameworks to advanced storage room to office programming programs as opposed to purchasing them up front E-Business Toolkit (2013). According to Cisco, 512 SMEs who have deliberated relocating to SaaS or who are now utilizing SaaS administrations are studied. Curiously, by and large, they evaluated their level of achievement as 7.8 (out of 10), with under 10 for each penny of defendants rating their contentment as 5 or less according to (Taylor et al., 2010). The greatest wellsprings of SaaS administrations originate from speculation, following their concentration on their business as opposed to on technology.

As a case of a contextual investigation assessing the monetary benefits of relocating to SaaS, According to (Khajeh Hosseini et al.).When moving from an in-house server farm to a SaaS framework a 37% price distribution consequence more than 5 years after moving after an in-house. As designated by Ambrust et al.2009, the choice of moving to SaaS ought to be done if the normal expense of framework which is significantly below utilizing as a part of house arrangements and that relocation procedure does not suggest an extensive weight on the general return of venture (Ambrust et al., 2009). The last is extraordinary significance for SMEs. Adaptability: One can increment or decline the measure of capacity you require. This is particularly beneficial to new companies needing to abstain from purchasing servers that might be under-used right off the bat and after that overburdened when the business extends. Not just do you spare cash by paying for just what you utilize, however you take out the potential downtime sitting tight for gear and framework overhauls according to Business Toolkit E-Business Toolkit (2013).

Selective outsourcing: With all the SaaS choices that are accessible, small and medium-sized businesses do not need to relocate their whole IT needs on the double yet rather can pick and pick what administrations they need to outsource. It's not a win big or bust business decision according to Business Toolkit E-Business Toolkit (2013). Better security: Many small business proprietors refer to security as a top concern when considering moving to SaaS computing, in any case, humorously, great SaaS administration suppliers keep up better information protection and security rehearses than most small businesses have inside. Notwithstanding robotized strategy authorization that ensures delicate information, great suppliers have all day, every day technicians observing their services according to Business Toolkit Business Toolkit (2013). Debacle recovery: Data put away in a SaaS is not prone to endure fire harm or burglary. SaaS computing permits you and your representatives to work off-site or at home if there should arise an occurrence of calamity, rearranging fiasco recuperation ought to your premises get to be unusable according to Business Toolkit E-Business Toolkit (2013).Access to prevalent technology. Effective, cutting edge applications and computing framework that small businesses couldn't bear the cost of generally are accessible through the SaaS (e.g. bookkeeping and client relationship administration bundles). This entrance helps you to react all the more rapidly to

changes in the commercial center, enter new markets, and change thoughts into new items and administrations at a much quicker pace according to Business Toolkit book (2013).

Enhanced profitability: Using SaaS computing offloads the cerebral pains of running and keeping up certain IT administrations, guaranteeing that you and your workers can center time on more beneficial assignments. What's more, since applications, including legacy ones, tend to run all the more productively in the SaaS, your staff can work quicker and encounter no intemperate downtime E-Business Toolkit (2013). Representative collaboration: SaaS computing makes life simpler for staff, particularly on the off chance that you have versatile laborers or various workplaces as it permits access to information through an association with the web. What's more, with administrations like web conferencing, workers can right away hold inner gatherings or make customer presentations. Web get to likewise makes it simple to utilize cell phones like advanced cells and tablets to their full advantage E-Business Toolkit (2013).

2.11 Adoption

This area starts by incorporating the writing for notable this area starts by incorporating the writing for notable factors that determine selection, appropriate technology and SMEs technology reception. It's also the acknowledgement preceded by utilization of an item, administration or thought while selection implies taking something new and customizing it. SaaS computing is therefore portrayed as a key player in an organization's foundation. A player in an organization's foundation. Rogers and Shoemaker (1971) notes that reception could be characterized as a procedure where customers experience a procedure of learning, influence and affirmation, before they are prepared to embrace an item or administration. As far as SaaS computing and for this paper , reception is shown when an association not having SaaS computing makes it a player in an organization's framework.

2.12 Technology Adoption

Technology selection has a wide range of perspectives. The vast majority partner technology as the web and PCs while numerous others consider cameras or different gadgets in. Apart from that, customers cuddle technologies under various circumstances, particularly in the mobile commanded world we dwell in these days. There are 5-stage process according to (Bridges to Technology Corp, 2005).

1. **Awareness:** “Forthcoming clientele study nearby the information and its profits to select if they famine to absorb more nearby it”
2. **Assessment:** “Forthcoming customers measure the abilities and usability of the know-how and the simplicity of instigating it”
3. **Reception:** “Forthcoming operators indicate to become and use the knowledge, or choose to not implement it at wholly”
4. **Learning:** “Consumers advance the abilities and information required to practice it”
5. **Usage:** “Consumers validate good and operative use of it.”

The application can be measured tenderly as a procedure which the clientele information, that instigates with mindfulness and finishes with suitable process of the outline (Bridges to Technology Corp, 2005). This process depends on the philosophy of "The broadcast procedure" rendering to (Bohlen and Beal, 1957). On top of this, the expertise of adoption is considered as the use of Evidence and Statement Knowledges devices plus PC equipment, networks required for interfacing with the , and software design, networks required for interfacing with the web. In this sense, this study endeavor of *SaaS* Computing Solutions by SME's through a model created by adjusting from TEO system logic ways to deal with look at their SME. The adoption can be characterized gently as a procedure which the clients experience, that begins with mindfulness and closures with suitable utilization of the framework. It ought to be said that clients experience these stages in an unexpected way. Some can experience the phases in one "compass" and others require some serious energy in the middle of each stage. It depends much on what technology and to what reason the IT will be utilized and in addition the value (Bridges to technology Corp 2005 p. 1). There are numerous variables influencing the technology adoption of SMEs as talked about underneath:-

2.12.1 Factors Affecting the Adoption of SaaS Computing Technologies to SME

Because of the difficulties of procuring computing technology, SMEs consider the issue of outsourcing SaaS computing technologies to acquire from outsourced administrations contrasted with vast associations. –Concentrated in fields, for example, top administration, organizations' assets and government, the procedure of IT adoption inside the association spins around of a bunch of components touching on benevolence (Caldeira and Ward, 2003). As prior talked about, SMEs much of the time do not have the assets to put resources into know-hows because

of their magnitude and as a result of this, they fight to pick up concentration and productivity in the business sector according to (Caldeira and Ward, 2003). As pointed out by (Abdulaziz, 2012), associations are moving to the internet to expand their business opportunities potential. SaaS computing might be an appealing chance to new companies to reduce the expenditure on the responsibility for facilitated arrangements. In addition, SaaS administrations can spare organizations cash on equipment costs alongside the quantity of workers they ought to contract and this is at last gainful for the new small firms (Abdulaziz, 2012). SaaS computing contributes to reduced costs, increased benefits, technical progresses and strengthen their commercial relationships (Babcock, 2009). SaaS administrations can be utilized by all businesses and be more perfect for SMEs including their adoption will help associations pick up an upper hand over their rivals (Barney, 2000), which can thus expand business quality, for example, dependability, execution, adaptability, development and decrease an ideal opportunity to Market.

2.12.2 Internal Influencing Factors of Adoption of SaaS Computing Technologies to SME:

Top Management Support: In SMEs, IT implementation technique is precisely predisposed by highest organization where all acceptances from daily procedures to future expectations are organized top management. This likewise alludes to the IT adoption choice from arranging stage to the execution. These choices are mostly taking into account their experiential information got from a blend of existing abilities of learning, individual experience, judgment, and their relational abilities. Caldeira and Ward (2003) notes that the apparent advantage of IT by the business owner can be considered as a central element for regardless of whether to convey a given IT arrangement.

Availability of resources: SME are for the most part being recognized by the short accessibility of assets, and particularly money related capital, is critical while considering the achievement of a given IT arrangement/item adjustment in a SME association (Nguyen, 2009). As execution of new IT framework and its segments requires long haul venture a loose IT speculation choice can force extraordinary resources related outcomes for SMEs and in amazing circumstances it might prompt indebtedness. Tan et al. (2009) states that as a consequence of the restricted monetary

resource accessible to most SMEs, it might be also more hard to acquire vital outside mastery or extra preparing from sellers or IT suppliers.

End Users/Employees support : These are different valuable assets of SME, and exists as huge resources, and again as the framework IT. Representatives might be hesitant to adopt another IT technology because of different reasons, for example, the impact on their standard work and their absence of self-esteem as far as abilities to Learn and adopt that new framework as pointed out by Caldeira and Ward, 2003. They have an extraordinary impact over adoption and fruitful usage of new IT. Cooperation and inclusion in adoption procedure could also affect the acknowledgement (Abdulaziz, 2012).Attention to divert will equally have an influence on the process of these knowledges acceptance while this mentality could be enhanced through preparation and instruction (Caldeira and Ward, 2003). Authoritative Characteristics: There are various hierarchical features that influence the adoption procedure in SMEs such as business' size, sort of industry, information power, association and the technological development. These affect the industry changes, patterns and open the doors for development of SMEs. Also, authoritative society, is another key perspective to deciding technology adoption. In SMEs, society is profoundly influenced by top administration's demeanor, observations and characteristics (Tan, et al., 2009). Also a technology strife with authoritative society can bring about client imperviousness to IT adoption (Caldeira and Ward, 2003);

IT Solution for SMEs : The implementation on the other hand relies upon the features of the preparation , that involve gathering perspectives including category, procedure similarity, ease of use and fame of executed arrangement, the nature of the technology accessible in business sector, the expenses of IT, and saw effects and advantages of the arrangement on association (Erdogmus, 2009). Likewise, straightforward, and generally since quite a while ago experienced undertaking solicitations are more commanding in SME furthermore, the atmosphere of the technology available in the salable sector and its sort influence be an important features influencing its enactment and usage. Likewise, consequent hierarchical effect and advantages of an IT arrangement could impact the arrangement adoption choice is SMEs. As expressed already, saw advantages, dangers, expenses, and convenience of IT influence the acknowledgment of and fulfillment with the arrangement.

2.12.3 External Influencing Factor of Adoption of SaaS Computing Technologies to SME

Competitive pressure: The SME environment is exceptionally aggressive, weights to stay aware of the opposition, giving a way to improve development, overseeing changes, elevating administrations to clients, staying aggressive and upgrading advancement capacities have constrained SMEs to adopt technologies. The expression upper hand is a standout amongst the most enduring subjects in the business procedure and key administration writing and its hypotheses according to (Barney, 2000) has been very much established . The new know-hows can modify the procedures of conflict through changing the corporate construction, conveying better approaches to businesses to surpass the rivals and making the business technology doable. SMEs in dynamic commercial ventures have a high rate of development and serious aggressive test. They are plausible to see IT devices as a key change than those in different businesses (Caldeira and Ward, 2003).

The link between the suppliers and the customers: Most of the SMEs are experiencing absence of IT specialists and the procuring experts whose expertise could have positive effects upon IT adoption process. The advisors and sellers and the principle variables influencing their upper hand as an immediate outcome of the techniques actualized by a firm proposed for increasing the value of clients (Porter, 1986) wellsprings of outside information frameworks aptitude with respect to its execution. There are a few points of interest to contracting a specialist set up of utilizing an inner IS representative. There will be no need to pay for costly workers when the framework arrangement is finished. Costly preparing for framework investigators and upkeep is maintained a strategic distance from (Caldeira and Ward, 2003). From the other side, merchants are concentrating on vast organizations and for the most part don't comprehend SMEs one of a kind needs (Nguyen, 2009). By utilizing outer assets, SMEs are procuring outside experts to go about as middle people to make up for the nonappearance of IT learning in their associations and decrease the information boundary to fruitful and viable framework usage.

Government regulations :As talked about already, because of the restriction of budgetary and HR, SMEs are for the most part more reliant than different organizations on outer assets and backings, for example, the legislature, keeping in mind the end goal to convey a framework arrangement. Government activities and strategies could specifically and/or in a roundabout way

invigorate the improvement of IT framework and procurement of information to goad technology dissemination (Caldeira and Ward, 2003). SMEs are presented to a few related dangers inside the adoption and advancement of IT arrangements. It is critical to have a superior comprehension of its impacts and at last understand their requirement for it and proportionate favorable circumstances of the framework for their business.

2.13 Adoption Theories and Models

There are numerous speculations utilized as a part of technology adoption ponders. The most utilized ones seem, by all accounts, to be the technology acknowledgment model (TAM) Venkatesh and Davis (2000). Venkatesh and Bala (2008) carried collected proposition of response and utilization of knowledge (UTAUT), spreading of advancement (DOI) then the TOE assembly (Tornatzky and Fleischer 1990); DOI and TOE are the foremost ones that viewpoint at the categorized near. At the final goal of comprehension the study, it is imperative to utilize hypotheses and models that illustrate "ability inside a client gathering to utilize Information Technology for the errands it is intended to bolster". Client acknowledgment and adoption models and speculations examined technology highlights and their impact on clients' conduct (Baraghani S.N (2007). There are a few client acknowledgment hypotheses and models, for example, Invention Dispersion Philosophy, knowledge salutation model (TAM) and TOE system.

2.13.1 Adoptions of Innovation Model

Adoption and dissemination procedure of the technology itself has been a way of explaining development of new information and correspondence ICTs. These ideas are regularly examined together, albeit thoughtfully they are very diverse. The adoption procedure model was initially presented by Rogers (1962), in light of the way that an individual experiences a progression of steps which are: learning, influence, choice, usage, affirmation. Rogers characterizes dissemination as a procedure through which advancement is imparted through specific channels after some period among the individuals from a framework (Khasawneh, 2008). It is essential to utilize the Adoptions of Innovation model to clarify the communications amongst environment and vital decision association by means of systems to control the asset reliance condition (Rogers, 2003). There are both positive and negative results when an individual or association

adopts a specific advancement. Rogers (2003) watches this is a range that necessities further research in view of the one-sided inspirational state of mind that is connected with the adoption of another development. He contends that Adoption is like dispersion aside from that it manages the mental procedures an individual experiences, instead of a total business sector process (Rogers, 2003). Dispersion is the procedure by which another thought or another item is acknowledged by the business sector (Rogers, 2003). In this way diffusion research center was on five components: the characteristics of a development which may impact its adoption; the basic leadership handle that happens when people think about adopting as another thought, item or preparation; the appearances of individuals that variety them disposed to approve an expansion; the consequences for persons and civilization of accepting an advancement; and correspondence diverts utilized as a part of the adoption procedure.

Innovation Adoption Curve Diagram as shown in Figure one below

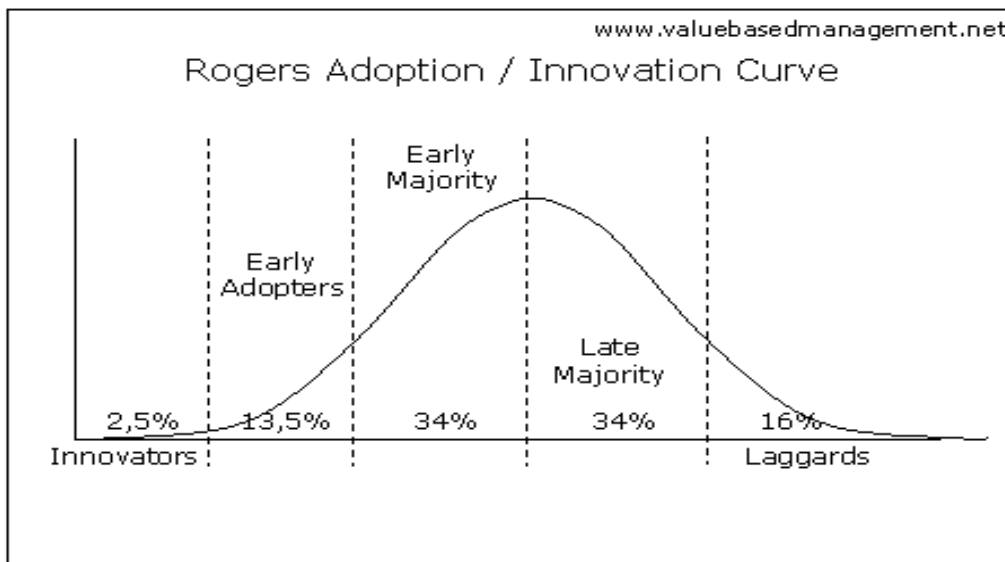


Figure 2.1:

Rogers Adoption and Innovation Curve

Source: www.valuebasedmanagement.net/methods_rogers_innovation_adoption_curve.html

Refer to Rogers, E. M. (2003).

Innovation diffusion theory is supportive when it comes to examining the aspects that simplify or deter technology implementation and dispersion. Dispersion is a societal process in which personally perceived data about a new idea is transferred. An invention is an idea, repetition or

object that is professed as new by a different or other unit of implementation. Nevertheless, it is not unblemished to what degree this new substitute may be greater to the present practice, below is a descriptions of the adopter categories:-

Adoption Categories

There are five adopter classes, or groupings of the members of a communal system on the basis on their innovativeness as shown in Figure 8.1. The classes are as illustrated: **a) Innovators** are the first 2.5% of the category of people in a social system to accept an invention. This attention in new ideas primes them out of a local circle of peer systems and into more cosmopolite social associations. Communication designs and relationships among a clique of modernizers are common, even though the topographical distance between the modernizers may be substantial. Being a modernizer has several rudiments. Control of considerable monetary incomes is helpful to fascinate the conceivable loss from a lossmaking invention. The ability to comprehend and apply multifaceted technical information is also desirable. The modernizer must be talented to cope with a high degree of indecision about an invention at the interval of implementation. Though a modernizer may not be appreciated by the former memberships of a communal system, the reformer plays a significant role in the dissemination progression.

Early adopters are the subsequent 13.5% of the persons in a system to accept an invention. Early adopters are a more united part of the local scheme than are reformers. Whereas modernizers have urban contacts (cosmopolitanism), early adopters live indoors the local societies. This adopter group, more than any other, has the highest degree of estimation management in most systems. Possible adopters look to primary adopters for guidance and evidence about the invention. This adopter type is generally sought by modification agents as a local minister for speeding the dispersion process. Since early adopters are not too far ahead of the average separate in innovativeness, they serve as a role-model for numerous other memberships of a social system. The early adopter is appreciated by his or her aristocracies and is the personification of positive, discrete use of new ideas. The early adopter knows that to remain to earn this reverence of generations and to preserve a central position in the message networks of the system; he or she must make thoughtful innovation-decisions. The early adopter decreases uncertainty about a new idea by adopting it, and then conveying a subjective estimation of the invention to near peers finished relational systems.

c) **Early majority** is the next 34% of the persons in a system to adopt an invention. The early mainstream adopt new thoughts just before the regular member of a system. The initial majority interrelates regularly with their peers, but infrequently holds locations of opinion management in a system. The early preponderance's unique location between the actual early and the comparatively late to approve, makes them an imperative link in the dispersion process. They deliver interconnectedness in the scheme's personal networks. The early mainstream are one of the two most abundant adopter classes, making up one third of the followers of a system. The early mutual may thoughtful for roughly while previously entirely approving a new idea. They follow with deliberate willingness in adopting innovations, but seldom lead.

d) **Late majority** is the next 34% of the persons in a system to implement an invention. The late mainstream accept new ideas just after the normal member of a system. Like the early majority, the late common make up one-third of the members of a system. Adoption may be the result of increasing network pressures from peers. Inventions are advanced with a cynical and watchful air, and the late-night mainstream do not assume until most others in their organization have done so. The heaviness of organization norms must absolutely favor an invention before the late majority is influenced. The heaviness of aristocracies is needed to motivate adoption. Their moderately scarce possessions mean that most of the indecision about a new idea must be removed before the late mainstream texture that it is safe to approve. The late majority are not concerned with to their communal system.

They are isolates, traditional bound and do not encourage any adoption. Their participation in community social systems or organizations and activities is very low. They are low in their education, change agent contact and media exposures.

e) **Laggards** are the latest 16% of the persons in a system to implement an invention. They own almost no view management. Laggards are the most outdated minded of all adopter categories; many are near inaccessible in the social systems of their system. Comparable to the late majority, the laggards' contribution in community social systems or governments and activities is very low. They are low in their teaching, change agent contact and media exposures. The point of orientation for the laggard is the past. Conclusions are often made in terms of what has been done beforehand. Laggards tend to be distrustful of inventions and modification agents. Confrontation to inventions on the part of laggards may be completely rational from the laggard's

viewpoint, as their possessions are limited and they must be convinced that a new idea will not fail before they can implement. They are the last to adopt or may not ever adopt the invention.

Implications of Diffusion of Innovation

The readiness to implement an invention differs among persons in an assumed society. Convinced social physiognomies have been experimental to inspiration why approximately persons adopt invention early, while others are delay Rogers' dissemination of technical invention prototypical recommends that vast amounts of staff are selfsame restrained in assuming technological invention in their training. Rogers' prototypical discriminates five lessons of technical innovation adopters. Smearing his model to labor force, we can imagine that on any assumed grounds around 2.5% will be adventurous "pioneers" of instructional knowledge. We can imagine that additional 13.5% will be reputable "early adopters" who commendably approve instructional knowledge and turn into that assembly to whom whatsoever is left of the staff guidance for material and appeal in this field. Of the rest of the employees, the classical predicts that 34% will assume the knowledge merely after a time of thoughtful in which they look at the early adopters' outcomes, hitherto through a lot of hesitation and just if prejudiced by need. Ronkowski (2000) mentions to these two meetings as "typical" labor force. Expecting consequential 100% implementation of knowledge, the remaining 16% are "slow pokes" who intensely mistrustful of the invention, lean toward customary methodologies, and will adopt just in the event that they can be sure it won't fall flat Ronkowski (2000).

2.13.2 The Technology-Organization-Environment (TOE) Framework

The (TOE) is an organization level, produced by, Edith Wiarda, Mitchell Fleischer and Rocco DePietro (1990).TOE speaks to one portion of the innovation procedure, that is, the means by which the firm connection impacts the adoption and execution of innovations. In light of this structure, the technology innovation adoption procedure is affected by three parts of a venture connection. The technological setting speaks to the inner and outside technologies identified with the association, both technologies that are now being used at the firm, and those that are accessible in the commercial center however not as of now being used and those that are accessible in the commercial center however not as of now being used According to(Baker,2011). These terms may include either the training or gear.

The authoritative connection is identified with the assest and features of the firm such as the administrative structure, while at long last the ecological setting indicates the field on which a firm directs its business .This can be identified with the encompassing components such as the industry, contenders and closeness of technology administration suppliers. These promote the connection present both limitations and open doors for technological innovation (Tornatzky and Fleischer 1990).

Iacovou et al. (1995) analyzed the TOE modeling seven contextual investigations; uncovering the primary components for EDI adoption (saw advantages, hierarchical availability and outside weight). Additionally, Kuan and Chau 2001, assessed a discernment based TOE system utilizing information gathered from the study done on the 577 firms in Hong Kong it confirms the helplessness of the TOE structure for examining the adoption of IS innovations. Recent lessons on the implementation of the e –trade like Wongpinnuwatana and Lertwongstein 2003 have created an observation that can be used to assess the TOE system utilizing 386 firms as part of the Thailand , Scupola 2003 analysed Depetro’s model in seven negligible businesses positioned in the southern Italy and witnessed the prototypical to be exceptionally helpful for discovering the drivers of internet trade implementation in SMEs Ramdani andKwalck (2008) also analyzed the TOE structure in nine SMEs, State below is a description of definitions of the constructs in the TOE framework.

2.14 TOE framework construct

The table below gives a description of definitions of the TOE Framework

Table 2.1 Definitions of the TOE framework constructs

Technological	Relative Advantage	According to (Rogers, 2003) it denotes the degree to which an encounter is declared as being recovering than the idea it displaces.
	Trial ability	Is the degree to which an discovery may be explored with an insufficient basis according to (Rogers, 2003)
	Top management	Consecrating time to the (ICT) podium in proportion

	support	to its price and probable, rereading plans, subsequent up on outcomes and helping the administration problems complicated with incorporating ICT with the organization progression of the commerce, according to (Young and Jordan, 2008).
	Complexity	This denotes to the extent to which an origination is professed as moderately inspiring to understand and use rendering to (Rogers, 2003)
	Uncertainty	Is the degree to which the significances of using a unearthing are apprehensive, rendering to (Ostlund, 1974; Fuchs, 2005)?
Organizational	Size	The possibility of the establishment or association.
	Compatibility	The degree to which detection is approved as immovable through the primary values, previous donations, and needs of credible implementers, (Rogers, 2003)
	Innovativeness	The degree to which a customer accepts inventions prior than other supporters of the equivalent social background according to (Rogers and Shoemaker, 1971).
	Prior technology experience	The degree of a operator's contribution with previous analogous understandings (Heide and Weiss, 1995; Lippert and Forman, 2005).
Environmental	Competitive pressure	The degree of heaviness felt by the stable after contestants inside the commerce (Oliveira and Martins, 2010).
	Supplier computing	The dealer happenings that can expressively impact the likelihood that an invention will be implemented,

	support	(Frambach et al., 1998).
	Market scope	The horizontal degree of a business's processes according to (Zhu et al., 2003).
	Industry	The district to which the occupational fits according to (Yap, 1990; Goode and Stevens, 2000).

Source: Author data 2015 from Literature Review

2.14.1 Environmental Context

Some of the critical factors that are identified within the environmental scope include competitive pressure, the kind of industry, market scope and the efforts of the supplier as well as external computing support. Every of these factors are explored in the sections below. First, competitive pressure: the external environment ultimately affects the decision made by a firm in a direct manner. Normally, the competitive pressure under which a firm is subjected is strong indicator that a new technology can be implemented that is related to its process. The several research studies including Crook and Kumar (1998) that were done showed that there is growing significance of competitive pressure hence making it an adoption driver. On one hand, Leibenstein (1976) noted that competition exerts a lot of pressure on organizations given that each organization opts to look at alternatives to have improvement in their production level. In reference to the minor transactions, according to Premkumar and Roberts in (1999) they discovered that when implementing a new technology competitive pressure is a significant consideration to put in mind. This consideration was also recommended in many subcontracting literature where many organization according to (Lacity and Willcocks, 1998) subcontracted their IT groundwork in order to improve the level of competence. It was noted further that having a better select of new inventions ensures that a business can offer minor prices hence making them increase their stake in the marketplace this was according to Majumdar et al (1992). Another scholar by the name Forman (2005) he suggested that the organization where a business function affect the capacity of the firm to embrace an innovative ICT invention. Also it was noted that the nature of the organization sector where a business functions has consequences

on the process of making pronouncement given that the firm has got linkage externalities according to Forman (2005). According to Yap 1990 and Levenburg et al (2006) they notes that the needs of firms are different and at times largely dictated by their industries, it is undoubtedly that some businesses in some sectors will adopt new ICT technologies faster. Notably, the industry where a firm belongs largely affect the business information processing requirements that ultimately might have outcome on the implementation ability and promptness of the new expertise according to (Goode and Stevens, 2000).

Also, there are couple of studies which suggest that the sector of an industry has less effect on IS innovation adoption. In regards to cloud computing, most of the studies that have been done lately as well as most of the recent global surveys that are used as determinant for adoption have illustrated the manner in which some sectors adopt cloud computing services in comparison to the others. According to (Zhu et al., 2003) the market space suggests the degree to which the operations of a company can be done an also Introduces the way of the firm's inventions according to (Pflugheoft et al, 2003). SMEs function both in the vicinity, as well as largely and collectively. The SMEs are expected to have a convincing operational tradeoffs organizations, that enables them to refrain from remaining behind in the modern progressively globalized world according to (Wilson, 2011), this factor enables somebody to circumnavigate the topographically speckled components of relationship. The more conspicuous the market scope, the more prominent the interest for data innovation. (Dewan et al., 1998; Hitt, 1999, Dewan et al., 1998). A study that was done by Zhu et al (2006b) discovered that firms with bigger worldwide coverage are more propelled to begin and actualize e-business. Firms with a more widespread range of action have a major like hood to have a multifaceted system of relation with external consumers and sellers. The problem of the correspondence and synchronization of exercises is increased with the correspondence of a more prominent system of shoppers and suppliers. This requires handling a more notable measure of data according to (Kettinger et al., 1994; Pflugheoft et al., 2003). Physical nearness in scattered areas is required with organization with a more widespread scope of operation. An extended level of coordination and reconciliation of exercises are responsible for a more remarkable smattering. Within this area, the approachability of IS modernization can be applied by a few organization to achieve the unbiased. According to Chopra and Meindl (2001) they discovered that when organizations outspread their market, they acquire stock property costs and imaginably seek costs (for

example, shooting down shoppers, replacing accomplices, and sellers). To conclude with, the efforts of supplies and external computing are the user-friendliness of support for accomplishing and applying a data background according to (Premkumar and Roberts, 1999).

According to (Premkumar and Roberts, 1999) they discovered that relationships might be all largely prepared to attempt another modernization on the offhand that they feel there is enough to strengthen. Furthermore the Marketing exercises that sellers carryout can primarily impact on SMEs implementation selection. This can influence the propagation procedures of a specific modernization. Past study has commenced to the enticement approval between vender's advertising efforts and the customer's implementation select, according to (Frambach et al., 1998; Hultink et al., 1997 and woodside and Biemans, 2005). According to (Kwon and Zmud, 1987; Weigelt and Sarkar, 2009), they revealed that exploration has been revealed ratification of a relationship between supplier marketing struggles and the customer's implementation. According to (weigelt and Sarkar ,2009) or support as per (Frambach and Schillewaert;2002). Relationship might be all the more excited to attempt another invention on the off chance that they feel there is enough support according to (Premkumar and Roberts,1999). There are other evidences from (Raymond ,1985;DeLone,1988),that shows a large invention for implementation. There is also a case in point according to Weight and Sarkar (2009) that recommended that a customer organization may have the capability to create invention-related abilities by taking advantage of the investigational learning of its dealer, which by commendation is possibly serious fountain of capacities for the consumer organization.

2.14.2 Organizational Context

Just like most of the other contexts like environmental, organizational context is critical in regards to addressing the issues concerning adoption of innovation as noted by previous studies (Ramdani, 2008). The four critical issues that are addressed as far as organizational context is concerned include firm size, the level of innovation, the experience earlier acquired in regards to IT and the support got from the top management. As noted by Rogers (2003), size remains a critical determinant in regards to the profile of any innovator. Also, organizational size has for a long time been at the center of most studies that make inquiry into the adoption of IT and to date, it remains as one of the causes of ICT invention implementation(Levenburg et al., 2006;

Buonanno et al., 2005). Additionally, the empirical results that concern the correlation are mixed (Lee and Xia, 2006). As noted by Annukka (2008), there are studies that have been taking note of an affirmative relationship according to (Aguila-Obra and Padilla-Meléndez, 2006; Mahler and Rogers, 1999; Ramdani and Kawaiek, 2007; Kamal, 2006; Belso-Martinez, 2010). However, there are some that have been recording negative relationship according to (Goode and Stevens, 2000 and Utter back, 1974 ;). It is maintained that due to the smaller size of the firm, they are prospected to be advanced, this is because they are elastic enough and effortlessly adjust to their activities to allow for quick and fast changes happen in comparison to moderately more firms. The bigger organizations may contain many stages of establishment which often slow down their need to make decisions fast enough (Premkumar, 2003). Finally, adoption of IT requires that there be coordination, a process that may often be easier to achieve in small firms. Additionally, there is aspect of support from top management, which is critical in making successful integration of new technological innovation in most organizations given that it can pass and communicate the significance of innovation in the organization for all the stakeholders at the same time and ensure that there are required resources.

Jeyaraj et al., (2006) recognized that the funding from top administration is considered and treated the main connotation amongst the individual and organizational ICT invention implementation. Majorly support from upper organization is critical for the upkeep of any change that may happen through expressed vision for the association, or over sending indications of the importance of the new know-how to other followers of the association. According to (Annukka, 2008 Premkumar and Potter, 1995 ;) the owner participation confirms that there is enough provision of means to permit for knowledge implementation Top administration is constantly measured to have consequence on the ICT invention implementation according to (Stuart, and 2000 Wilson et al., 2008; Daylami et al., 2005). The other variable is innovativeness, which alludes to being open to new products. As noted by Rogers and Shoemaker, (1971) and Lin and Jeffres (1998) the element is critical in the adoption of ICT innovation as well as the diffusion, the receptiveness of any organization towards the inception of new ideas play critical role in the implementation practice. According to (Damanpour, 1991; Marcati et al., 2008), the antiquity of invention encourages the probabilities for future positive implementation results once it concerns the new technical inventions according to (Damanpour, 1991; Marcati et al.,

2008). This feature can certainly be connected to the several human features that influence the process decision-making, such as the concerns that govern the perceptive styles of individuals as utmost of the minor creations. Notably, invention denotes to the means in which individuals or organizations go for the new ways and methods to help in processing clients' information, take verdicts and solve difficulties. In respects to earlier know-how knowledge, numerous studies that have been prepared are life-threatening in the technological implementation of choices. Furthermore, the user's knowledge on similar know-hows can be projected to play a key role in simplifying the implementation of the pronouncement.

According to Bandura (1977), there is a strong relation between the worker's prior knowledge and their understanding of the new framework or state. The implementation of user's compoment is likely to be exaggerated by their total involvement in respects to use of the inventions. In some instances of cloud computing, being conversant with know-hows like cluster computing, virtualization, or even utility computing can have a direct effect in the perceptions of users in regards to cloud computing services (Rogers 2003).

2.14.3 Technological Context

In initial TOE organization, the technological setting defined both the outside and internal know-hows relevant to the organization. According to Premkumar 2003, he argues that insufficient studies have discovered the effect of technological characteristics. When taking after TOE, this examination will utilize the innovation done by Roger in disseminating hypothesis as the beginning stage from which to contemplate the effects of the technological elements.

Comparative benefit is considered as a focal indicator for acceptance of another IS invention. Therefore the greater the apparent requirement for innovation by association the greater the probability that it will approve the invention (Roger 2003; Lee 2004).The effect of relative improvement preferred viewpoint on know-how implementation has been generally discovered in past studies. It has remained recognized that when businesses see a comparative talented position in an invention, then the probability of the employment will calculation. Cloud computing initiates an assortment of its employment by the managements.According to Miller (2008), cloud computing can proposition numerous preferences acknowledged with limit,

steadiness, and flexibility. It extensively brings down the outlay of passage for SMEs to get to an enormous pool of computing assets within a short time (Marston et al., 2011).

Uncertainty: According to Erumban and de Jong (2006) it connotes to the danger and uncertainty. Vulnerability refers to amount to which the consequences of applying and invention can be guaranteed according (Ostand 1974; Fuchs, 2005). The security threat has been supposed as the key constituent thwarting the operation of some ICT knowledges from the point of view of (Kalakota and Whinston, 1996). The small lifetime of another invention may mean that absence of data around an exact innovation can quick less predictable results.

Compatibility: There is a situation for the practical and technical rudiments of the invention to be faultless and reliable with the potentials and the scientific necessities of the accepting connotation according to Lertwongsatien and Wongpinunwatana (2003). In that size, the external of high resemblance of the invention with a connotation as of now transported know-hows could categorically influence the implementation process (Tornatzky and Fleischer, 1990). There exist massive capacity of dispersed lessons showing the part of similarity, which is regarded as a crucial element of IT invention implementation. In 166 minor Singaporean businesses, Thong (1999) discovered that the similarity of the modernization influenced the implementation of IS in these dealings. Thus, in the Zhu et al. (Zhu et al., 2006a) study, resemblance was watched as a standout midst the hugest drivers in the post-adoption stages of revolution distribution. Commercial administrators are concerned that the espoused development is dependable with the potentials and the knowledge requirements of their relations (Jungwoo, 2004). From the wangle side, there is an escalating eagerness for similarity, which is addressed on completing an irregular state of mix of the new knowledges according (Kamal, 2006). Thus, it is enthusiastic for SMEs that the origination is trustworthy with their present principles and necessities, since meagre assembly of new backgrounds with remaining ones could bring around the contradictory complaint conferring to (Akbulut, 2003).

Complexity: Designates to the gradation to which an development is professed as normally hard to comprehend and apply rendering Rogers 2003 marked that application will be more questionable if the invention is viewed as all the more difficult to apply. Accepting extra knowledge may confront SMEs with problems as far as altering the actions in which they border

with their occupational agendas. New know-hows must be relaxed to comprehend and humble to use keeping in mind the end goal to increase the implementation degree according (Parisot, 1995; Sahin, 2006). Many present lessons show that difficulty has been experimental to be a remarkable element in the implementation optimal. As opposite to other invention features, this constituent is disobediently associated to the implementation possibility.

Trialability: Is the degree to which an invention may can investigated on an inadequate groundwork. This adjustable has been accounted for as a standout between the most critical sections during the time consumed accepting additional knowledge (Kendall, 2001; Rogers, 2003). For illustration, the conclusions of Hsbollah et al. (2009) recommend that trialability is the highest vital constituent that inspirations the performing of Internet and new-fangled functioning information in learning. Inversely, there put away similarly been intellects of this component not existence notable for modernization employment. Dedrick and West (2003) concentrated on the impress of impressive decisions to adventure Linux on employment variabilities for these relations. As designated by Sahin (2006), all concluded the process of the implementation choice, reassessment may occur amid the provisional of the new information. This furthermore may impact implementation charges and speeds among productions definitely. Aimed at unhurried pokes there is less susceptibility, since they distinguish after the primary trend-setters in what way feasible the invention. According to Rogers (1995) early implementors and innovators, trialability is huger with esteems to examining new inventions.

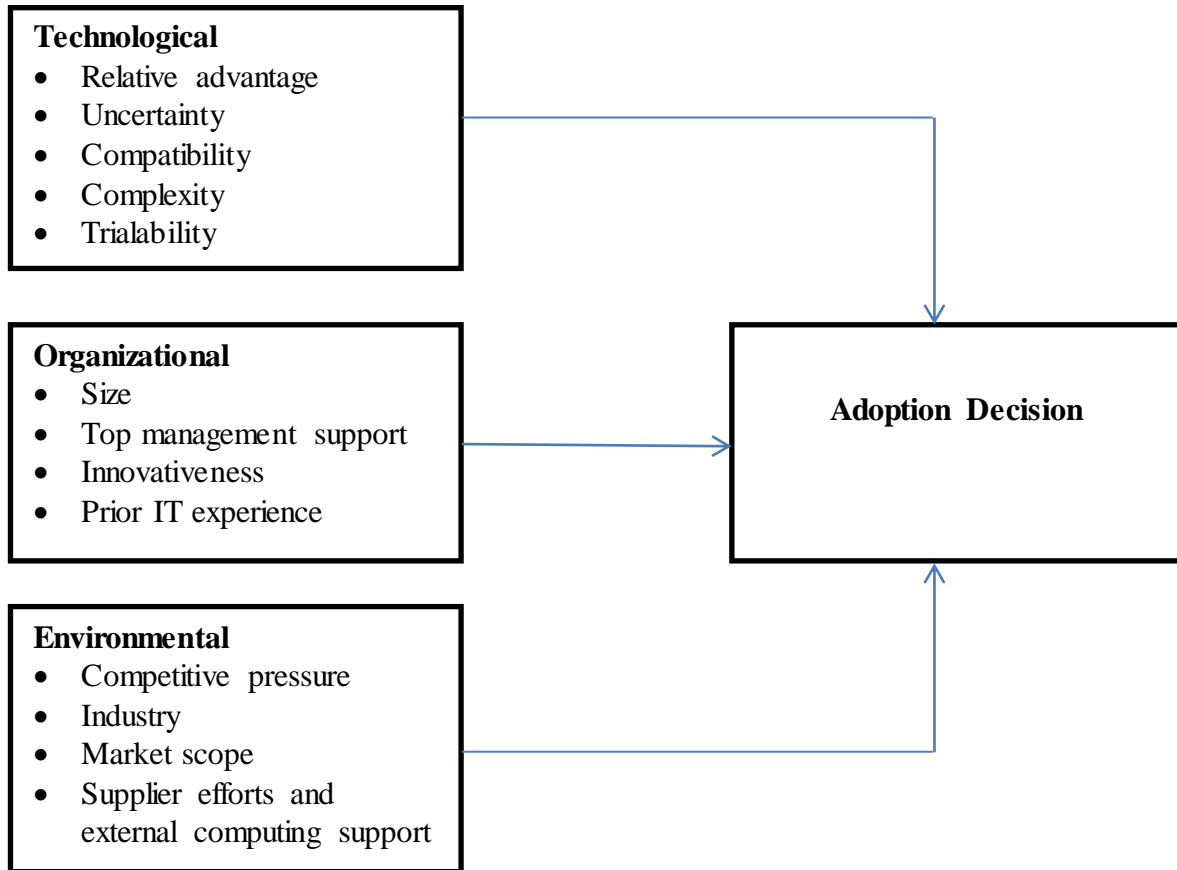


Figure 2.2: TOE Framework for SME adoption of on-demand computing services

Source Author derived 2015 from (Tornatzky and Fleischer 1990)'s about TOE framework model adapted by (Low, Chen and Wu 2011)

2.15 Justification for selection of TOE theory for model development

For a long time, several studies have examined the TOE framework and most of them are empirical in nature. Most of the studies including that of Lederer et al., 2000; Chau and Hu, 2002; and Lau and Woods 2008 that have explored the framework have been on the innovation from TAM which has widely been applied in several contexts and study areas while finding out the acceptance by the user on the information technology and even the web. Nevertheless, According to (Yu et al 2003, Porter & Donthu 2006) they reported that the researchers have observed the various facets of the perceived ease of use and helpfulness, in regards to the various association that are suggested by TAM. Remarkably, most of the technology reception representations are established and reformed predominantly in Western countries especially in

South America and Europe. There exist diverse forms of technology implement and use criteria in instances where the cultural modifications are measured, according to studies carried by Yu, Liu & Yao (2003). According to ,Iacovou et al(1995) observed the TOE model revealing the main influences that disturb the implementation of technology.

Some of these factors are, the observed benefits, the readiness level of the organization and outward pressure that springs from the process. Furthermore, Kuan and Chau (2001) too assessed the TOE background that is grounded on discernment and collected data from 575 different firms in Hong Kong. The study were done was helpfulness of the TOE background when studying the need to adopt IS innovations. Also the studies that were carried out revealed on implementation of e-commerce. Another case study that was carried out by Lertwongstain and Wongpinunwatan (2003) advanced and assessed the TOE framework using 386 organization in Thailand. From all these case studies there were several features that were create to affect the implement e-commerce. Another scholar Scupola (2003) assessed DE Pietro's model by means of business that functioned in Southern Italy. From her research ,she got the model to be perfect in regard to examining the drivers of the commerce implementation in SMEs. According to (Thong ,1999 and Fink 1998) the empirical upkeep in regards to the acceptance of TOE framework are the other studies of IS inventions.

2.16 Studies on Cloud SaaS computing services and adoption for SMES

SaaS is today world's leading technological shift I on focus because on how it has scaled IT services the ICT services to its customers over the web. There are several authors who have SaaS adoption among the SMEs, stating with Sultan (2015) who discuss how SaaS exist in deferent platforms, like virtualization and internet. His research also contrasted on how organizations face some challenges in the adoption of SaaS for their organizations/ business despite its importance such as pay as you use, cost saving, and its flexibility in business operations. This according him increases SMEs competitiveness and ability to change the economic situation.

Rath et al. (2014, 688-691) another researchers conducted a study on how Indian SMEs adopt the SaaS applications, his findings indicated that majorities of organizations tend to focus a lot

on the core business operation rather construction in ICT application in their business. Rath et al. (2014, 688-691) further explains that most firms in India have firm's adopt SaaS because of the business operations rather than the need of the customer. He also suggested that SaaS for SMEs will only be beneficial if SaaS technologies could incorporate simulation, data mining and modeling. Another study conducted by Abdollahzadehgan et al. (2013, 67-74) looked at how SaaS Computing can be used to motivate organization that intent to adopt it, he also state some of the demerits of SaaS, Again his studies was also based on the TOE Model and one of his findings indicated that SMEs can't fully benefit from SaaS because the human capital and financial capital is little for the projected market.

Others researchers like Alshamaila, Papagiannidis, and Li (2013, 250-275) also looked at adoption studies of SaaS for SMEs, in their findings that found out that technological tie SaaS that support scalability will enable SMEs to compete favorably with large business to deliver new business models, They also deed an a qualitatively explorative research based on the TOE framework for the research and findings indicated some of the factors that play a big role in SaaS Adoption for SMEs are prior Similar IT Experience, external computing support while moderating factors include Age of the Firms and Market Scope according to them there are very little significance on competition pressure. A research conducted by El-Gazzar (2015, 214-242) looked at the major concerns related to SaaS Adoption by presenting an orderly literature on the topic , he managed to reviewed 51 academic articles on SaaS Adoptions on major journals. His finds indicated that supplier support and Age of the SMEs play important role in technological adoption of SaaS. Pundit (2015) in his book the grounded theory ,categories articles into eight forms and the process and factors SMEs use for SaaS adoption , his findings indicated that there are critical issues facing Saas Adoption for SMEs such as prior technology similar experience and market scope, he also stated that its important to se IS to further study adoption and factors that affected adoption.

The other authors Gupta, Seetharaman and Raj (2013, 861-874) argumentatively study on the SMEs factors that look at adoption factors that will enhance SMEs adoption of SaaS, their benefits and comparative advantage to the large organizations. they identify five major factors

such as security, Supplier support, Age of the firm, privacy, and cost as factors that affected SMEs adoption. A research study which was conducted by Adam and Musah (2015, 115-139) to examine the need of SaaS computing in SMEs operating in developing countries. An exploratory approach was adopted to conduct a qualitative study in which they reviewed 95 research articles on SaaS computing and categorize these articles by developing a framework. This studies concentrated on the adoption factors rather than barriers , the other research gaps concentrated on the key gaps on factors involving the development of the conceptual framework.

2.17 Main factors, variables in adoption of SaaS for SMEs

2.17.1 Awareness: As noted in the study done by Rogers and Shoemaker (1971), the consumers often undergo a lot while striving to get a new product. The process is hectic and entails acquisition of knowledge, conviction, process of making decision and ideally confirming the decision before proceeding to approve the artefact or even the facility. Frequently, the procedure of adoption or rejection of any kind of innovation starts when the consumer acknowledges and knows the innovation. On the other hand, Howard and Moore (1982) emphasized that for one to comfortably adopt, they have to know the new brands that get into the market. By being unaware of the new brand, the adoption of IT is affected negatively (Sathye, 1999). In accordance to the conceptual framework of this study the factor generated the following research hypothesis as given:

H1₀: Increased awareness of SaaS increases SMEs' propensity to adopt SaaS services

H1₁: Increased awareness of SaaS don't increases SMEs' propensity to adopt SaaS services

To the hypotheses and measure the variables and factors in the conceptual framework the author looked 5 items adapted from (Sathye, 1999) namely AWR 1 Issues related to using SaaS are easily evident, AWR 2 I'm not aware of cloud computing strategies for SMEs, AWR 3 I'm aware the benefits of cloud SaaS adoption are evident and AWR 4Am aware of the drawbacks (constraints) regarding adopting SaaS benched marked with Reliability (Cronbach's alpha) as 0.729

2.17.2 Cost associated with SaaS: According to Tornatzky and Klein (1982) they described cost as the amount to which the usage of a development is acknowledged to be comparatively exclusive. According to (Faasen et al., 2013), the application of evidence systems (IS) such as

ERP is measured a safe approach for SMEs in terms of as long as together a substance for transaction-based innovativeness and as a foundation of cost savings and practical development (Khamis 2015). In specific, cloud ERP correspondences that are on condition that SaaS, basis have developed with unaffected different to instigating in-house ERP systems (Khamis 2015). The distribution of ERP based on cloud computing knowledge minimizes the possession cost, upfront cost and conservation cost. In accordance to the conceptual framework this study the factor generated the following research hypothesis as given:

H3₀: SaaS Computing Service delivers developed per user twelve-monthly cost than outdated ERP system.

H3₁: SaaS Computing Provision doesn't offer advanced per user twelve-monthly cost than outdated ERP organization.

H4₀: Low or basic ICT Skill levels decreases SMEs' propensity to SaaS cloud computing services.

H4₁: Low or basic ICT Skill levels increases SMEs' propensity to SaaS cloud computing services.

To test the hypotheses and measure the variables and factors in the conceptual framework the author looked, 5 items adapted from 3 items adapted from (Ondiek et al, 2013) namely:

Cost 1 Cloud computing- SaaS eliminates the cost of licensing new software

Cost 2 Cloud computing- SaaS eliminates the cost of upgrading the system and of system maintenance

Cost 3 Cloud computing - SaaS increases our IT costs (such as IT personnel)

Cost 4 Cloud computing- SaaS has high training Costs and

Cost 5-The general cost of utilizing cloud computing - SaaS is few than the amount of mounting or increasing a technology in house benched marked with Reliability defined by Cronbach's alpha as 0.866.

2.17.3 ICT skills for SME employees: The absence of IT abilities and the absence of suitable progressive IT products for SMEs are obstacles, which double the asset specific contract costs related to proprietary setting and raised customization according to (Bhat 2013).

The SMEs IT firms can be used to provide the skills required by SMEs. According to (Bhat 2013) there is an urgent to advance the SME IT sector that can emphasis on domestic market.

With regard to the suggestions and measurement of the variables and factors, the features generated the following study hypothesis were given as a conceptual framework as:-

H4₀: Low or basic ICT Skill levels decreases SMEs' propensity to SaaS cloud computing services.

H4₁: SMEs 's predisposition of SaaS Cloud computing services have been increased due to Low or straightforward ICT skills levels.

The following are the factors

IKS 5: I do n't hve any abilities in no basic skills in in ICT to benefit with SaaS.

IKS 4: I have the required knowledge in in ICT to help with SaaS

IKS 3: I have required skills in ICT to help with SaaS and

IKS 1: My ICT knowledge and skills will help using cloud computing, SaaS, benched marked with Steadfastness with Cronbach's alpha as categorical.

2.17.4 Trust: Trust is regarded as a measure of buyers' level of accreditation that the service will be well-furnished with least conceivable anticipation according to (Siau and Shen, 2003). Amongst the signs of the goal to use SaaS, dependence has been perceived to be a standout amongst the most indispensable fundamentals that influence a person to use the invention according (Md nor and Pearson, 2007).

Trust is equally an important portion in imagining out if an individual buys produce or services by means of the Web according to (Quelch and Klein, 1996).

As discovered by Spekman (1988), trust is the base of the vital association between an industry and its Internet consumer. According to, Ridings, et al. (2002) struggle that trust is urgent in virtual groups where the absenteeism of workable philosophies makes dependence on others carrying on in a socially adequate way.

As discovered by Gefen (2000) and Jarvenpaa, et al. (2000), a customer's ability to utilize from an Internet store which is affected by his or her state of mind and impression of danger. The outlook and view of vulnerability are confidently predisposed by faith, which thus is influenced by a consumer's impression of the size and disrepute of the accumulation.

The person's willingness to take part in online trades of cash and individual delicate data according to (Wang, et al., 2003), trust is one of the professed effect.

Trust tends to influence a person's general procuring choices. As designated by Enders, et al. (2006), non-Internet supporters require wide effort of influence before they begin participating in

e-keeping money and make an e-propensity. A study carried out by Poon (2008) reveals that approximately 70% of the respondents correspond that trust is influencing them to use Internet saving money. In another investigational study in Singapore by Fock and Koh (2006). In line with the exploration destinations this study, the element produced the accompanying hypothes given below as:-

H20: Trust on SaaS Services will have huge impact towards selection of SaaS Applications

H21: Trust on SaaS Services will not have huge impact towards reception of SaaS Applications

To test the hypotheses and measure the variables and components in the calculated system the author looked four things adjusted from (Sathye, 1999) in particular the advantages of the choice of Cloud computing – TR 1 SaaS destinations are trustable, Cloud computing – TR 2 SaaS stages locales stays faithful to its obligations and responsibilities and TR3 Cloud computing SaaS stages remembers clients best advantage sidelined set apart with Reliability characterized by Cronbach's alpha as 0.862

2.17.5 Relative advantage: This suggests: "the extent to which an invention is witnessed as being enhanced than the suspected" according to (Rogers, 2003, p. 229). It is taken as an essential needle for the new IS inauguration. The result of relative improvement on employment occupation has been systematically observed in aforementioned scholarships that were accepted out by professors such as (Thong, 1999; Gibbs and Kraemer, 2004; Premkumar and King, 1994; Lee, 2004). When dealings have a qualified improvement of invention then the chances of implementation will spontaneously increase. Cloud computing notably presents several benefits upon its adoption According to (Lee, 2004; Thong et al., 1994 and Thong, 1999. A case in point is the study by Miller (2008) that noted that cloud computing can offer several advantages that can be linked to issues of capacity, reliability, as well as flexibility. Having this ensures that there is immense reduction in cost of entry for the SMEs and thus the businesses can access several resources within a short time span. Taking instant admittance to hardware belongings, many small industries would effortlessly have a faster time to convey on through their marketing without having any form of capital investments. From the vantage point of ICT capability, the

relative advantages that accrue from cloud computing are many. As required in the research objectives the study factor came up with the research objectives outlined below:

H5₀: SMEs' predisposition to implement SaaS is raised by increased relative gain.

H5₁: SMEs' predisposition to implement SaaS is not raised by increased relative gain.

To test the hypotheses and measure the variables and factors in the conceptual framework, the author looked into five items adapted from (Moore and Berbast, 1991) namely:

RA 1: To accomplish tasks more quickly and give us greater control over our work, we will use SaaS Cloud computing.

RA 2: A firm's productivity is increased by using SaaS computing.

RA 3: We can access material from any place at any time using SaaS cloud computing

RA 4: We do not essential to administer any ICT substructure Using SaaS Cloud Computing

RA 5: Cloud service, performance does not reduction with a growing user baser.

Benched marked with the Reliability of Cronbach's alpha as. 838

2.17.6 Uncertainty: "According to (Fuchs, 2005; Ostlund, 1974), it denotes to the degree to which the consequences of using an development are uncertain the minor lifetime of a new invention may repeatedly lead to some extent of disinclination (Jalonen and Lehtonen, 2011)." Hesitation at times can be a symbol of absence of technological *uncertainty related to data privacy* in the cloud is negated by the lack of concerns related to information security by the SMEs. (Bhat 2013). *It too denotes* to the degree of discrepancy in the organization's needs, and in the instance of IT can be measured as the difficulty of the IT creation or facility. Impulsiveness of the technology trends, service eminence parameters like safety and secrecy, scalability and elasticity, service-continuity, reliability and liability according (Armbrust et al, 2009, Jaeger et al. 2008, Sarkar and Young, 2011) increase uncertainty which increase the ex-ante costs of drafting, negotiating and framing the cloud contracts. Reputation and fate sharing with other customers of the cloud is a unique aspect of uncertainty in cloud computing (Armbrust et al, 2009). The blacklisting of the IP address of the CSP by spam-prevention services due to inappropriate behavior of one of the CSP customers will impact all other users. There are currently no legal, contractual arrangements which can safeguard customers against this (Bhat 2013). In accordance to the research objectives this study the factor generated the following research hypothesis as given:

H6₀: Declined perceived hesitation of SaaS rises SMEs' predisposition to implement SaaS services.

H6₁: Declined perceived hesitation of SaaS rises SMEs' predisposition to implement SaaS services

To test the hypotheses and measure the variables and factors in the conceptual framework the author looked 5 items adapted from (Feather man et al, 2003) namely UNC 1: Cloud computing services may not be able to implement it very nice and generate problems with our IT processes.

UNC 2: Cloud computing attendants may not achieve well and might not provision our IT methods efficiently benched marked with Reliability as Cronbach's alpha as .632

2.17.7 Compatibility:”Allowing to (Rogers, 2003, p. 240) mentions to: “the progression to which and development is ostensible as composed with the remaining standards, necessities and past involvements of prospective implementers” .With regard to the research objectives, this study produced the following suggestion as given

H7₀: SMEs' predisposition to implement SaaS services is increased by the perceived compatibility of SaaS

H7₁: SMEs' predisposition to implement SaaS services is not increased by the perceived compatibility.

To test the hypotheses and measure the variables and factors in the conceptual framework, the author looked at five items adapted from (Moore and Berbast, 1991) namely:

COM 1: when using SaaS, it makes the cloud computing to fit well into our business's work style,

COM 2: when using SaaS, it makes the cloud computing services to fit well with the manner in which we like to work,

COM 3: when using SaaS, it makes the cloud computing services to be compatible with all characteristics of our work,

COM 4: SaaS, Cloud facilities are well-matched with the existing technical architecture of my enterprise.

COM 5: There is no any scuffle in distributing requests data to SaaS, cloud facilities benched noticeable with the Dependability of Cronbach's alpha as.812

2.17.8 Complexity Denotes to: “the degree to which an invention is apparent as comparatively difficult to appreciate and use” “representation will be fewer probable if the detection is careful as actuality more inspirational to use.

SMEs might be antagonized with trials when commissioning a new knowledge in footings of changing the departments in which they intermingle with their work-related systems.”Conferring to Rogers, (2003, p. 230) performing will be fewer likely if the expansion is watchful as being more thrilling to use.

SMEs may be endangered by the encounters when accepting a new experience in rappings of moving the performances in which they interrelate with their commerce systems.”

According to, (Sahin Parisot, 1995, 2006) in order to increase occupation rate, the new know-hows have to be user friendly. From the modern studies (convolution has been found to be important in the enactment decision as portrayed by Chaudhury and Bharati, 2008, Tiwana Bush, 2007, and Harindranath et al., 2008).This factor is more disadvantageous to the adoption probability unlike other innovation characteristics and it leads to the following research hypothesis which is in accordance with the research Hypothesis;

H8₀: SMEs’ predisposition to implement SaaS services is increased by the decreased complexity of SaaS.

H8₁: SMEs’ predisposition to implement SaaS services is increased by the decreased complexity of SaaS. To test the assumptions and measure the characteristics and factors in the theoretical framework, the author looked at 5 items adapted from (Moore and Berbast, 1991) namely:

CPXT 1 it is difficult to comprehend what is going on when working with cloud computing,

CPXT 2 It takes a moderately long time to acquire in pardon way to usage the SaaS cloud calculating to brand it prosperity with the exertion,

CPXT 3 Discovering how to use the SaaS cloud computing system is easy for me,

CPXT 4 In broad-spectrum SaaS cloud computing is very multipart to use

CPXT 5 We find it stimulating to incorporate the current work with the cloud-based services when we use SaaS cloud computing, benched marked with Reliability with Cronbach’s alpha as .862

2.17.9 Trialability Rendering to, (Rogers, 2003, p. 258) it references to: “The amount to which conversion may be discovered on an imperfect substance” Trialability: Has been found as one of the most significant mechanisms in the process of implementing a new knowledge according

to (; Martins et al., 2004; Rogers, 2003; Kendall, 2001 Ramdani and Kawalek, 2007, 2008). “ This is also expected to impede with the implementation amounts and speeds between productions in an expectant way. For foot-draggers there is less improbability, since they know after the early modernizers how operative the invention is. For early implementers and improvers, experimental capability is more significant once it originates to discriminating new creations rendering to (Rogers, 2003)”.

The study generated the following hypothesis:

H9₀: SMEs’ predisposition to implement SaaS services increases Trialing Cloud computing before implementation.

H9₁: SMEs’ predisposition to implement SaaS services is not increased before implementation by trialing cloud services.

To test the hypotheses and measure the variables and factors in the conceptual framework, the writer considered the four things that were considered as important according to (Berbast and Moore, 1991) namely:

TRI 1 I SaaS cloud computing exhibitions have an uncountable deal of chance to try numerous kinds.

TRI 2 SaaS Cloud computing is obtainable to me to sufficiently examination run various submissions,

TRI 3 I would try SaaS Cloud computing services before deciding to use them out.

TRI 4 for SaaS cloud computing i am legitimate on an experimental base long enough to see what it could do

Benchmarked with the Reliability with Cronbach’s alpha as .910

2.17.10 Top organization Support: According to Young and Jordan (2008), it mentions to Promising time to the (ICT) program to a convinced grade its cost, probable, infectious up on consequences, measuring plans and hopeful the regulatory matters obligatory with organizing ICT with the organization technique of the business.

It has been revealed that know-how expansion performing can be prejudiced by top group support and methods towards change. Rendering to (Eder and Igbaria, 2001Premkumar and Michael, 1995;; Daylami et al., 2005).

Cloud computing implementation management maintenance is considered as the chief connection amongst individual and hierarchical ICT development in their audit of the indicators and biases in IT.

According to Thong, (1999) and Low et al., (2011) the topmost administration maintenance key to possess the reputation of conceivable change over an pronounced deliberation for the reminder, and by directing signs of the importance of the new information to different personalities from the organization.

According to (Premkumar and Potter, 1995; Annukka, 2008), manager affiliation guarantees the enough assests to be disseminated so as to cuddle the new know-how.

According to (Daylami et al., 2005; Wilson et al., 2008) best organization sustenance is deliberated to affect ICT development implementation.

From the research purposes, of this education the subsequent suggestion were produced

H10₀: The higher the top management support rises SMEs' predisposition to adopt SaaS services.

H10₁: The higher the top management support doesn't increases SMEs' predisposition to adopt SaaS services.

To test the assumptions and measure the characteristics and factors in the theoretical framework, the writer looked at four matters improved from according to (Yap et al, 1994) namely:

TMS 1: The process SaaS implementation in the SME requires the involvement of the top management upkeep.

TMS 2: The implementation of SaaS Cloud computing is strategically important when considered from the organization top management.

TMS 3: The implementation of SaaS Cloud computing, involves the top management to take risks

TMS 4: The top administration team should not be part of reviewing cloud computing endorsements of an advisor.

TMS 5: Cloud computing implementation project has nothing to do with the top management

2.17.11 Innovativeness:

According to Shoemaker and Rogers (1971) gave the definition of innovativeness as the extent to which a consumer embraces expansion earlier, as opposed to different individuals from the

comparable social connotation. On the organization level, the accessibility of a connotation regarding the new decisions assumes a key part in the performing of development in SMEs. Midgley and Dowling (1978), Hirschman (1980) and Rogers (2003) observed this earlier. They further, established that it encompasses being fascinated in new items. This constituent can be connected to the human capabilities of the (psychological style). As a regulation, initiativeness recognized with the directness to take after new techniques, and the policies by which consumers take care of issues, take choices and process data according to (Kirton, 2003; Marcati et al., 2008).

It is obvious from discovering past researches that a background marked by invention progresses the likelihood for further positive application implementations for new technical improvements confidential the firm according (Marcati et al., 2008, Damanpour, 1991). This study created the accompanying exploration speculation as per the examination targets. H11₀: SaaS is more likely to be implemented by a firm that is more innovative H11₁: SaaS is less likely to be adopted by a firm that is more innovative. The author looked into looked into 5 items adapted from (Agarwal and Prasad, 1998) namely INN 1 we are frequently the original to try out a new evidence knowledge amongst our memberships, and INN 2 we would look for ways to experimentation through it if we heard about information know-how, benchmarked with reliability. This are the characteristics and factors to consider in the conceptual framework.

2.17.12 Prior technology experience

According to (Lippert and Forman, 2005 and Heide and Weiss, 1995 ;) it mentions to the to the degree of a user's knowledge with the previous comparable data

Prior knowledge experience: these mentions to the users' indebtedness of previous comparable facts can be watched on an assortment that designates the quantity of dealings amongst current repetition and past knowledge rendering to (Lippert and Forman, 2005)".

As per (Bandura, 1977) "An association exists amongst a user's previous material and their understanding of a ground-breaking setting or state".

Rendering to Roger the operator's receipt conduct can be disposed by the mutual information by income of new detections.

Familiarity with the innovative knowledges such as Virtualization, utility computing cluster computing or can have forthright impact on user discernments concerning cloud computing or utility computing services

From the research objectives, the study generated the following assumptions that are given below:

H12₀: SME predisposition to implement SaaS services is increased by increased prior same IT experience.

H12₁: SME predisposition to implement SaaS services is not increased by increased prior same IT experience.

In order to quantify the variables and features and in the test the propositions conceptual framework the writer looked into 5 items that are adapted from (Lippert and Forman, 2005) namely:

PIE 1: All my workers have basic skills about SaaS Cloud computing,

PIE 2: All my workers have already used cloud computing (individual use / trade purposes),

PIE 3: I have adequate assets to adopt SaaS cloud computing including unhindered access to the computer

PIE 5: Generally, my organization has widespread technological know-how, same to SaaS cloud computing

PIE 4: I have enough technological abilities and means to adopt SaaS, cloud computing i.e. increased bandwidth connectivity to the internet benchmarked with the Reliability of Cronbach's alpha as.887

2.17.13 Competitive pressure

This according to Oliveira and Martins (2010) shows that modest pressure is the degree to which weight acknowledged by the connotation from participants classified the firm's businesses.

Competitive pressure: The outside environment can straight affect the relationship's choice.

Majumdar et al., (1992) noted the following that the competitive pressure professed by a firm is an encouraging influence to embrace important novel inventions. From the studies done by

Leibenstein (1976) reported that competitiveness applies solid pressures on relationship to hunt down new contrasting opportunities to enhance their generation. With regards to little organizations, according to Roberts and Premkumar (1999) discovered that competitive pressure was a domineering element of implementation.

Lacity and Willcocks (1998) notes this variable was additionally proposed in the outsourcing writing, where numerous organizations outsourced their IT framework to enhance adequacy. Better decision of new technologies may help organizations to offer lower costs, accordingly having the capacity to build their piece of the overall industry. In understanding to the examination goals this study the element produced the accompanying exploration theory as given:

H13₀: SME predisposition to adopt SaaS services increases with competitive pressure.

H13₁: SME predisposition to adopt SaaS services does not increase with competitive pressure.

To test the hypotheses and measure the variables and factors in the conceptual framework, the author looked into five items adapted from (Sathye, 1999) namely:

CP 1 using SaaS Cloud applications it makes it informal for our clientele to switch to additional corporation.

CP 2 The competition among corporations in the industry which my firm is operating in is very powerful hence I have to use SaaS as the rest,

CP 3 There are many of goods that are dissimilar from our produce but do the identical purpose similar to SaaS

CP 4: We are aware of SaaS cloud computing implementation in our competitors' organizations

CP 5 We understand the competitive advantage offered by SaaS cloud computing in the industry benched marked with reliability with Cronbach's alpha as categorical

2.17.14 Support external computing support:

By definition according to (Frambach et al., 1998). This refers to what the seller exercises that can essentially influence the probability that a development will be incorporated. Supplier computing maintenance help in promotion and affect the propagation practice of a specific advancement. The actions that sellers can execute and can essentially influence SMEs application selections. Past exploration has endeavored to draw relationship between seller

upholding actions and the consumer's application choice from researches of (Woodside and Biemans, 2005).

Frambach et al., 1998; from the research purposes the research created the following assumptions:

H14₀: SME predisposition to implement SaaS services increases external computing support.

To the hypotheses and measure the variables and factors in the conceptual framework, the author looked at four items adapted from (Yap et al, 1994) namely:

H14₁: SME predisposition to implement SaaS services does not increase the external computing support.

SCS 1: It is important for our company to receive training from SaaS cloud providers,

SCS 2: We trust that a good connection with other groups will be essential,

SCS 3: It is indispensable to have sufficient technical upkeep after SaaS, cloud computing services implementation and

SCS 4: It is compulsory to have sufficient technical upkeep before SaaS cloud computing implementation

Benched marked with the Reliability as Cronbach's alpha as .742

2.18. Moderators intervening variables in adoption of SaaS for SMEs

2.18. 1 Age of the Firm/SME

In accordance to the research objectives this study the factor generated the following research hypothesis as given

H6b₀: The Higher the age of the SME the more likely to decrease the uncertainties associated with cloud adoption

H6b₁: The Higher the age of the SME the more likely not to increase the uncertainties associated with cloud adoption

H14b₀: The probability of implementing SaaS solutions the age of the SME has minute significance with sellers' effort.

H14b₁: The age of the SME has great consequence with the Seller efforts and external computing support, thereby falling the opportunity of adopting SaaS solutions.

To test the hypotheses and measure the variables and factors in the conceptual framework the author looked into five items adapted from (Sathye, 1999) namely those firms less than one year, those one to five years, those six to ten years, those eleven to twenty years and those over twenty years benched marked with Reliability of Cronbach's alpha as categorical

2.18.2 SME firm size

The size is an exceptional between the elements of the outline of any innovator. According to Jeyaraj et al., (2006), Rogers (2003), and Lee and Xia, (2006).

As a importance of the amount of the strong, smaller companies can be supplementary ground-breaking, they are acceptably bendable to control their actions to the wicked vacillations in their surroundings according to, (Jambekar and Pelc, 2002, Damanpour, 1992 ;), IT implementation normally needs organization, which may be discreetly humbler to complete in slight firms (Premkumar, 2003)

It is frequently opposed that bigger companies consume more possessions, knowledge and size, abilities, to endure displeasures than littler firms.

H10b₁: High top management support is associated towards adoption of SaaS and it is not prejudiced by the extent of the fixed.

To test the hypotheses and measure the variables and factors in the conceptual framework the author looked into 5 items adapted from (BIS, 2010) namely minor firms, Middle and Great firms benched manifest with the Reliability of Cronbach's alpha as categorical.

2.18.3 Market scope

According to Zhu et al (2003) he discovered that the market room is the extent of the joint events of the association. Market scope has supplementary been renowned as the level of amount of an organization's processes according to, (Zhu et al., 2003). SMEs purpose near, as well as

universally and even consistently. The convenience of IS progression can be industrialized by slight companies to prosper this autonomous.

(Chopra and Meindl, 2001). SMEs receiving cloud administrations are relied upon to abatement outside costs and make them less area subordinate. In understanding to the exploration destinations this study the component produced the accompanying examination hypothesis as given:

H1b₀: Market Scope increases awareness of SMEs towards SaaS adoption

H1b₁ Market Scope doesn't increase awareness of SMEs towards SaaS adoption

H13b₀: The market scope of the SME will have significant on the competitive pressure

H13b₁: The market scope of the SME will not have significant on the competitive pressure

To test the hypotheses and measure the variables and factors in the conceptual framework, the author looked at four items adapted from (Buonanno et al, 2005) namely locally, regionally but also nationally and even internationally benched marked with the Reliability of Cronbach's alpha as categorical.

2.18.4 Industry or SME Sector,

According to Yap (1990) and Goode and Stevens (2000) an industry denotes the region to which the business had a spot with respect to cloud computing, various late experiences used industry as a pointer for adoption, representing how some sections are receiving cloud computing establishments further than others. Consequently, the business separation could be a vast constituent in new knowledge implementation in consent to the investigation destinations this study the component delivered the accompanying examination theory as given: H2b₀: The SME Sector is likely significantly influence towards Trust in adoption of SaaS. H2b₁: The SME Sector is not likely to have significant influence towards Trust in adoption of SaaS. To test the hypotheses and measure the variables and factors in the conceptual framework the author looked into categorical data in sectors adapted from (Goode and Stevens, 2000) namely a) General Trade, Wholesale, Retail stores b) Informal Sector c) Transport, Storage and Communications d) Unindustrialized, Forestry and Natural Resources e) Somewhere to live and Catering f) Specialized and Technical Services g) Sequestered Education, Health and Entertainment lastly h) Engineering Plants, Sweatshops, Factories benched marked with Reliability (Cronbach's alpha) as categorical.

2.19 The knowledge gap on SaaS computing services and adoption for SMEs

Reviewed literature on previous studies cloud SaaS Computing left some unaddressed knowledge gaps that this study will address. The previous research failed to come with the most significant factors that are the most significant and in significant factor that influence SaaS adoption for SMEs based on the TOE frameworks. In this regards they might constructs and moderating variables that play vital roles than others this was not differentiated. The research also indicated SMEs benefits from SaaS Adoption but failed to address the issue of delusion by the same SMEs, lastly there was little reference on SaaS Adoption for SMEs from developing countries context especially Kenya as the study county this was evidenced from the work referenced in the Google scholar.

2.20 Conceptual Framework

According to (Hussey and Hussey, 1997) a hypothetical structure is categorized as a growth of suggestions and models from which provisions a positivistic examination study. The rational system scrutinizes the interrelationships amongst the variables that are regarded as precarious to the reading. The scientist continued to build an adjusted TOE, included three essential sorts of develops: exogenous, endogenous and mediator variables. These builds are portrayed The eleven center develops (free variables) are Trust, Cost of Acquisition of SaaS, ICT aptitudes for SME workers, Prior Similar IT Experience, External computing bolster, Trail capacity, Complexity, Compatibility, Uncertainty, Relative favorable position, Top level administration backing and Innovativeness. These center develops are relied upon to impact adoption of SaaS in SMEs. Four directing components: Age of the Firms, Market Scope, Industry (SME Sector) and Size of the SME. every one of the arbitrators are relied upon to impact of center develops adoption of SaaS. Its expands on the theoretical establishments built up in the past part. Its motivation is to build up the reasonable system and related speculations in light of the past writing. These will be utilized as a reasonable premise for contemplating the elements that impact SMEs' adoption of cloud SaaS computing. It will first clarify the reconciliation of the Technology-Organization-Environment (TOE) utilized as a part of this exploration venture. It will then go ahead to

highlight the applied and experimental investigations of the variables that can be incorporated inside the calculated structure. Toward the end, the created theories will be introduced.

2.20.1 Development of the conception framework constructs and moderators

The advancement of the model is focused on the current model of TOE which educates the premise for building up the hypothetical system for this study. The specialist likewise took a gander at other adoption hypotheses/models that been utilized by numerous analysts over the drawn out stretch of time, particularly in the region of Information Systems which has been utilized as a part of other pertinent regions where these adoption models have been utilized incorporate e-business, e-horticulture and e-Learning . Notwithstanding the TOE models the specialist additionally took a gander at other Exploratory subjective work by the examination to build up the new develops which have been presented that have been contemplated in connection to SaaS adoption in SMEs adoption. Further, the discoveries a model that could add to a viable application and an expectation together with a comprehension about the marvel. Every one of these develops and directing variables were assembled in diagrammatic structure appeared in Figure 2.3.

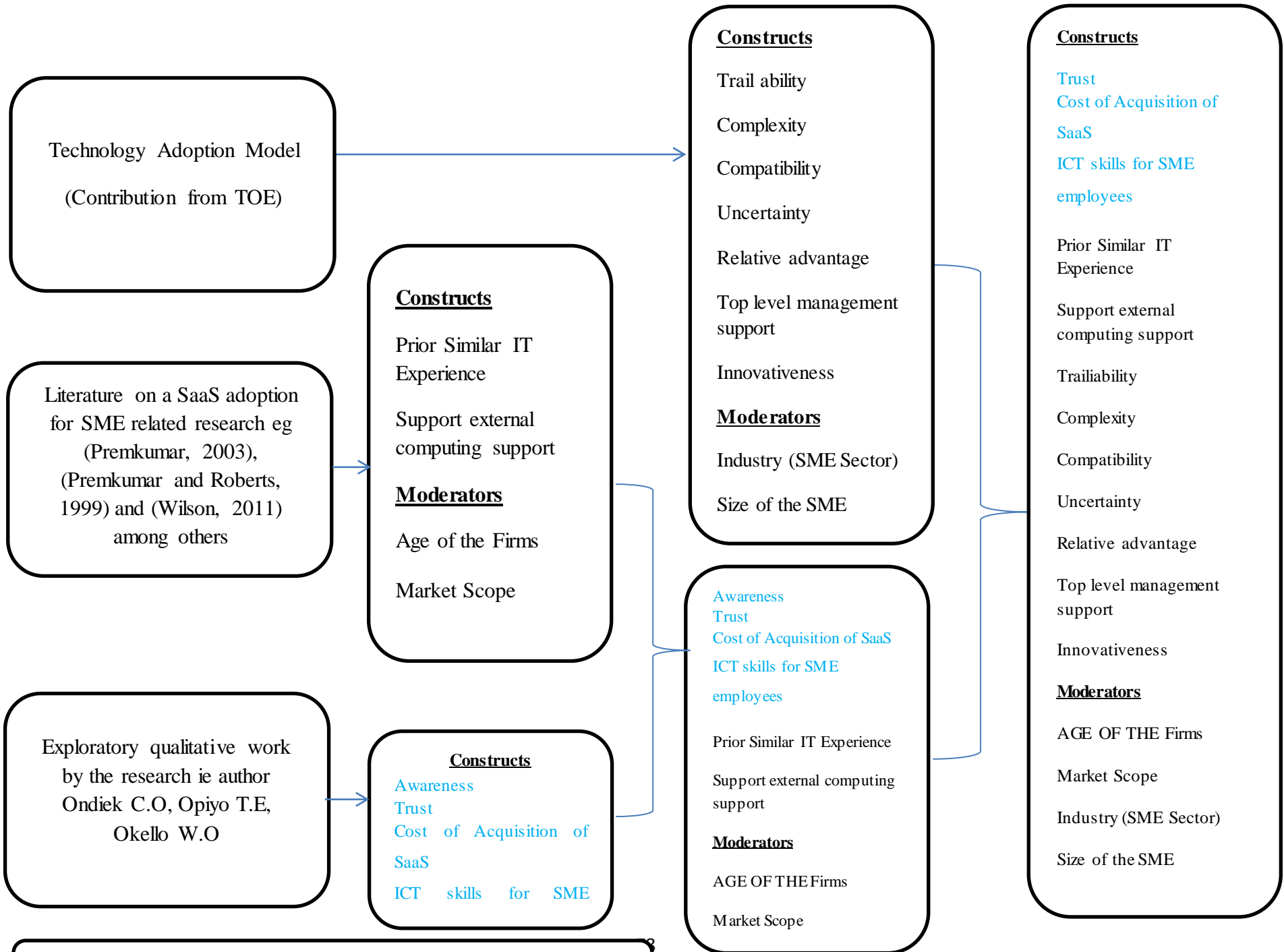


Figure 2.3 Lavouts of the constructs' /variable

Source author Derived 2015

2.20.2. Review of Literature from exploratory survey

Starting with this list of five constructs generated in the previous section, the researcher had to decide on which constructs to consider for this study over and above the primary constructs from TOE. The researcher used qualitative exploratory analysis to determine the constructs that would be investigated. The researcher showed a whole of 6 in-depth qualitative conferences from a variability of defendants amid June 2013 and September 2013. A number of factors were identified as influencers of adoption. Though the cloud providers we specific to the SMEs, these factors were consistent with what a group of investigators who have endeavored to consider in associated areas (Alshamaileh, 2013); (Ondiek et all); (Sathye et al, 1999). These factors were also consistent with constructs in technology adoption models. Using the qualitative work, the researcher extracted the top fourteen factors determining adoption and then proceeded to map these factors to the original TOE framework. The researcher then proceeded to assess the constructs as per Table 2-5 in relation to constructs identified during the exploratory qualitative study. Out of the five constructs identified in section namely Awareness. Trust, Cost of Acquisition of SaaS and ICT skills for four were identified during qualitative work (Ondiek, Opiyo & Okello, 2014) namely Awareness. Trust, Cost of Acquisition of SaaS and ICT skills as shown in Table 2-6. The researcher therefore decided to proceed with these three constructs which appeared significantly in previous literature as well as in the exploratory study. Below the researcher discusses further the new constructs (Ondiek, Opiyo & Okello, 2014).

Table 2.2: Mapping of factors from qualitative work to TOE

No	Factor	Mapping to TOE framework
1	Security	Exist as it sorted by External computing support
2	Awareness	Doesn't exist
3	Privacy	Exist as it can be corrected by Top level management support
4	Ability to Try before use	Exist –Triability
5	Trust	Doesn't exist

6	Digital Divide causing uncertainty about cloud	Exist –Uncertainty
7	Cost of Acquisition of SaaS	Doesn't exist
8	SME Infrastructure	Exist as ICT Infrastructure is informed by Cost of acquisition
9	ICT skills for SME	Doesn't exist
10	Government Regulatory	Will be informed by Relative advantage to SMEs,Cloud providers, customers

Source author data 2015 derived from (Ondiek, Opiyo & Okello, 2014).

2.20.2 Constructs developed Literature on SaaS Adoption for SMEs

Prior similar it experience

According to Roger (2003) the buyer's assumption behavior can be predisposed by the collected knowledge applying new developments. On justification of cloud computing, harmony with know-hows, for example, virtualization, gathering regard to cloud computing facilities ,computing or utility computing can have an instantaneous influence upon users by investigators who contend that users' salutation .According to (Lippert and Froman, 2005) skills can be measured to portray the level of connections amongst current performs and past involvement. A link occurs between a client's former indication and their thoughtful of another backdrop or state according to (Bandura, 1977). As directed by Roger the client's reception conduct can be prejudiced by the combined understanding utilizing new progresses. On account of cloud computing, nature with know-hows, for example, virtualization, bunch manipulative or helpfulness totaling can have an immediate impression on consumer judgments in reposes to cloud figuring services.

External computing support

According to Woodside and Biemans, 2000;Hultink et al., 1997; Frambach et al., 1998; Woodside and Biemans, 2005.they have observed studies on the prominence of contractor sustenance showcasing happenings and the client's collection choice have showed that the

convenience of supplier activities and outside assistance are definitely recognized as an significant aspect in knowledge acceptance. Again some studies by Premkumar and Roberts, 1999 strained on the position of accessibility of provision for applying and using a materials .They are specified that organizations are keen on uptake if they are guaranteed on abundant support.

Age of the firm

There are numerous studies that have established that observational studies have discerned the importance of SME age as assortment driver for SaaS adoption according to (Sathye 1999) and that this may affect its adoption status

Market scope

An investigation by Chopra and Meindl (2001) , they established that when establishments growth for commercial sector achieve, which bring about standard portion expenditures and perhaps pursue costs, though some findings by Thong (1999), which confirmed an immaterial association amongst industry part and IT development assumption as a factor of technical implementation for SaaS in SMEs.

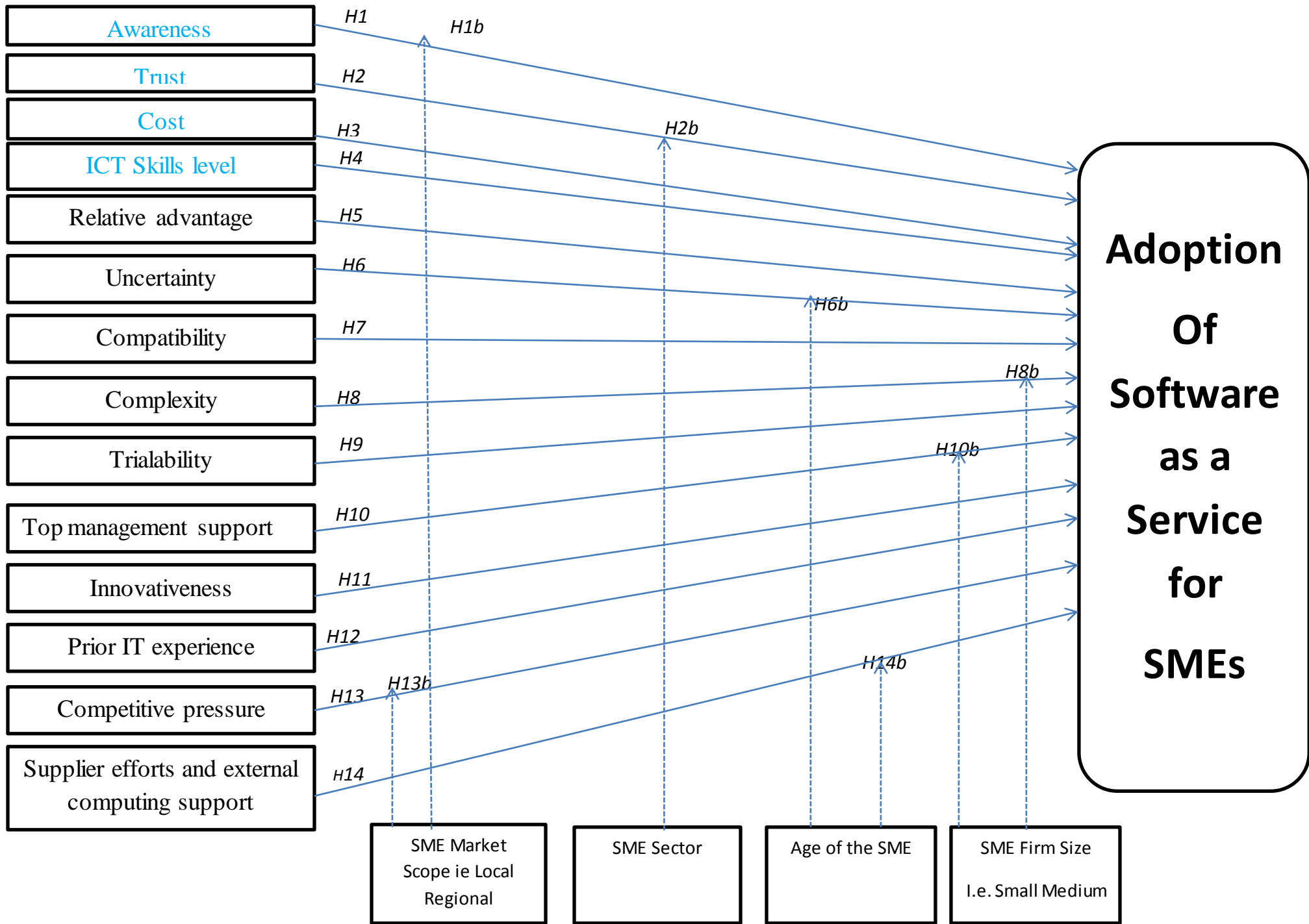


Figure 2.4 Proposed Conceptual of SaaS Adoption Framework

2.21 Hypothesis of the study

H1₀: Increased awareness of SaaS increases SMEs' propensity to adopt SaaS services

H1₁: Increased awareness of SaaS don't increases SMEs' propensity to adopt SaaS services

H1b₀: Market Scope increases awareness of SMEs towards SaaS adoption

H1b₁ Market Scope doesn't increase awareness of SMEs towards SaaS adoption

H2₀: Trust on SaaS Services will have significant influence towards adoption of SaaS

Applications

H2₁: Trust on SaaS Services will not have significant influence towards adoption of SaaS

Applications

H2b₀: The SME Sector is likely significantly influence towards Trust in adoption of SaaS.

H2b₁: The SME Sector is not likely to have significant influence towards Trust in adoption of SaaS.

H3₀: SaaS Computing Service delivers developed per user twelve-monthly cost than outdated ERP system.

H3₁: SaaS Calculating Service doesn't deliver advanced per user twelve-monthly cost than old-fashioned ERP system.

H4₀: Low or basic ICT Skill levels decreases SMEs' propensity to SaaS cloud computing services.

H4₁: SMEs 's predisposition of SaaS Cloud computing services have been increased due to Low or straightforward ICT skills levels.

H5₀: SMEs's predisposition to implement SaaS services is vied as the improved advantage.

H5₁: SMEs's predisposition to implement SaaS services does not increase the relative advantage of SaaS.

H6₀: The lower the alleged uncertainty of SaaS rises SMEs' inclination to implement SaaS services.

H6₁: SMEs' predisposition to adopt SaaS services decreases with decreased perceived uncertainty.

H6b₀: The Higher the age of the SME the more likely to decrease the uncertainties associated with cloud adoption

H6b₁: The Higher the age of the SME the more likely not to increase the uncertainties associated with cloud adoption

H7₀: The Higher the professed compatibility of SaaS rises SMEs' predisposition to implement SaaS services.

H7₁: The Higher the professed compatibility of SaaS doesn't not rises SMEs' predisposition to implement SaaS services.

H8₀: The lower the professed complexity of SaaS rises SMEs' propensity to adopt SaaS services.

H8₁: Decreased complexity of SaaS doesn't increases SMEs' propensity to adopt SaaS services.

H8b₀: The extent of the firm will have important influence in the complexities attached with implementation of SaaS.

H8b₁: The extent of the firm will not have major impact in the intricacies associated with implementation of SaaS.

H9₀: SMEs' predisposition to implemented to adopt SaaS services increases before Trialing cloud examination.

H9₁: SMEs' predisposition to implemented to accept SaaS is not increased before implementation of Trialing cloud services.

H10₀: SMEs' predisposition to implement SaaS services increases with High top management.

H10₁: SMEs' propensity to adopt SaaS services is not increased by High top management support

H10b₀: The extent of the firm will have important inspiration in High top management support related near implementation of SaaS

H10b₁: The extent of the firm will not have important inspiration in High top management support related near implementation of SaaS.

H11₀: The more inventive a firm is, the more probable it is to implement SaaS.

H11₁: The more inventive a firm is, the less probable it is to implement SaaS.

H12₀: SME predisposition to implement SaaS services increases with the increased prior like IT

H12₁: SME predisposition to implement SaaS services will not increases with the increased prior like IT

H13₀: SME's predisposition to implement SaaS services raises with improved competitive pressure

H13₁: SME's predisposition to implement SaaS services does not raises with improved competitive pressure

H13b₀: The marketplace space of the SME will have important on the modest pressure

H13b₁: The marketplace space of the SME will not have important on the modest pressure

H14₀: SME predisposition to implement SaaS services improved exterior computing support

H14₁: SME predisposition to implement SaaS services does not proved exterior computing support

H14c₀: The SME Market space of the SME have pronounced importance with the Dealer efforts and exterior computing support, thereby raising the probability of implementing SaaS solutions.

H14c₁: The SME Market space of the SME will not have pronounced importance with the Dealer efforts and exterior computing support, thereby raising the probability of implementing SaaS solutions.

2.22 Operationalization of the conceptual framework

2.22.1 Constructs from adoption of SaaS for SMEs related research

In their effort to summarize the factors that influence adoption of all forms of SaaS adoption for SMEs, the Table 2-4 below showing a list of what they termed as dimensions and their definitions obtained from publications that investigated these dimensions.

Table 2.3: Definitions of Factors that have been researched influencing adoption of SaaS for SMEs with their indicators

No	Dimension	Definition	Indicator(s)
1	ICT skills for SME employees	The capacity of a leader or possessor in ICT's awareness or abilities is definitely rising the Opportunity of ICT use amongst SMEs. According to Reynolds (1994).	<ul style="list-style-type: none"> • no basic skills in in ICT • basic ICT skills • advanced skills in ICT • Relevance of Knowledge and skills
2	Cost of	According to Tornatzky and Klein	<ul style="list-style-type: none"> • Cost elimination of new

	Acquisition of SaaS	(1982) gave a definition of cost as the extent to which the use of an invention is supposed to be comparatively expensive	licenses <ul style="list-style-type: none"> • Cost elimination of softer upgrade • Training cost • Opportunity cost
3	Trust	Trust is demarcated as a degree of buyers' level of guarantee that the provision will be delivered with lowest probable burden (Siau & Shen, 2003).	<ul style="list-style-type: none"> • sites are trustable • sites keeps its promises • customers best interest
4	Awareness	According to Kalish (1985), symbolizes alertness as one of the stepladders towards enactment and afterwards describes it as "the phase of being knowledgeable about the invention investigation characteristics" (p. 1569).	<ul style="list-style-type: none"> • ease evident • strategies • benefits of SaaS • drawbacks (constraints) of SaaS
5	Relative Advantage	<i>"The gradation to which an detection is observed as attendance better-quality than the idea it prospers"</i> according to (Rogers, 2003)	<ul style="list-style-type: none"> • Speed of task accomplishing • Firm Productivity • Information access • User base growth
6	Complexity	<i>"The degree to which an development is understood as comparatively problematic to understand and spending "rendering,</i> (Rogers, 2003)	<ul style="list-style-type: none"> • Level of understandability of cloud • Time it takes to learning SaaS • Ease of use • Ease of Integration
7	Compatibility	<i>"The degree to which an</i>	<ul style="list-style-type: none"> • Fitness of company's

		<i>development is understood as trustworthy with the prevailing standards, previous envelopments, and requirements of possible adopters" according (Rogers, 2003)</i>	<p>work style</p> <ul style="list-style-type: none"> • Fitness with existing technological architecture • Ease of exporting data
8	Uncertainty	The movement to which the significances of by incomes of a development are hesitant according to, (Ostlund, 1974; Fuchs, 2005).	<ul style="list-style-type: none"> • Level of firm performance • Effectiveness of IT operation.
9	Top management support	Conferring to, (Young and Jordan, 2008).”Donating period to the (ICT) package time in relative to its cost and possible, studying measures subsequent up on consequences serving the management difficulties complicated with including ICT with the supervisory process of the business	<ul style="list-style-type: none"> • various applications • Permission to use SaaS on try version • Level of mgmt. support • Strategic decision making • Wiliness to take risk •
10	Size	The size of the company.	<ul style="list-style-type: none"> • Size of the firm ie micros, small, medium and large
11	Trialability	<i>"The degree to which an creation may be examined on a insufficient foundation rendering (Rogers, 2003)"</i>	<ul style="list-style-type: none"> • Level of Opportunities y to try IT software’s • Adequacy to test run
12	Innovativeness	“The grade to which a purchaser apparatuses creations previous than other members of the identical social atmosphere conferring to	<ul style="list-style-type: none"> • Rate of innovativeness among peers • Rate of experiment f new

		(Rogers and Shoemaker, 1971).”	IT
13	Prior technology experience	According to, (Heide and Weiss, 1995; Lippert and Forman, 2005).” It is the amount of a user’s involvement with previous related knowledges.	<ul style="list-style-type: none"> • Sufficiency in technological resources • Level of technological knowledge in simmer SaaS • Past usage of SaaS
14	Market scope	According to, (Zhu <i>et al.</i> , 2003). “It refers to the horizontal extent of a firm’s processes.	<ul style="list-style-type: none"> • Ease of switch to similar applications • Level of virally • Market differ action • Competitor IT Strategy awareness
15	Industry	According to, (Yap, 1990; Goode and Stevens, 2000).” It is defined as the segment to which the business fits.	<ul style="list-style-type: none"> • Nature of Firm sector i.e. Education, Health
16	Competitive pressure	According to (Oliveira and Martins, 2010).”The extent of weight fingered by the civilization after contributors inside the business.	<ul style="list-style-type: none"> • Firm operations level i.e. locally, nationally, internationally
17	Supplier computing support	According to, (Frambach <i>et al.</i> , 1998).”the seller actions that can understandingly inspiration the prospect that an revolution will be accepted	<ul style="list-style-type: none"> • Number of trainings from provider • Level of relationships with parties • Technical support after and before

Source author: Derived 2015 from Literature Review

The table 2.5 below shows the type of construct and the variables that built them.

Table 2.4 Summary of constructs and Variable counts

Count	Construct	Variables
1	Awareness	Awr1, Awr2, Awr3, and Awr4
2	Trust	Trs1, Trs2, Trs3, Trs4
3	Knowledge and skills	LKS1, LKS2, LKS3, LKS4
4	Cost	Cst1, CST2, Cst3, Cst4, Cst5
5	Relative advantage	RA1,RA2, RA3, RA4, RA5
6	Uncertainty	UNC1, UNC2
7	Compatibility	COM1 COM2, COM3, COM4
8	Complexity	CPXT1, CPXT2, CPXT3, CPXT4, CPXT5
9	Trialability	TRI1, TRI2, TRI3, TRI4
10	Top management	TMS1, TMS2, TMS3, TMS4, TMS5
11	Innovativeness	INN1, INN2, INN3
12	Prior IT experience	PIE1, PIE2, PIE3, PIE4, PIE5
13	Competitive pressure	CP1, CP2, CP3, CP4, CP5
14	Supplier efforts	SCS1, SCS2, SCS3, SCS4

Source :Author data 2015 derived from SPSS AMOS Vr 21

2.23 Chapter conclusion

This part has examined the literature that concerns to the essential components for SME connotations in the implementation of new IT know-hows as an instruction. Accordingly, various key components have been distinguished as normally said in various examination considers.

Such calculations have been arranged two classifications, to be specific inside and outer elements. The section then centered on SaaS computing specifically and assessed research ponders that have tended to different parts of SaaS computing technology in creating and created nations. This section gave a basic foundation to the process of SaaS computing. This integrates a recognized description of SaaS computing and a representation of the essential features of the technology. In addition to this, the growth of the expertise. In this section it has been examined the development of the idea of SaaS Computing during the time and also some of the Organization Models and Provision Models know-hows unquestionably PaaS IaaS, and SaaS. Every management category and the networks amongst them are in details examined considering their fairly estimated worth and fundamental suppliers. The Deployment Models have additionally been painstakingly investigated in their four important categories: such as the Public, the Private, Community and Hybrid. The section concentrated on depicting the definitions and characteristics of SME associations and give a diagram of the current exploration tending to powerful figures the implementation of IT know-hows and especially in connection to SaaS computing. The writing audit additionally addresses the accompanying SaaS computing has various advantages. Albeit, similar to all technology, SaaS computing administrations have numerous downsides also, it can be noticed that the advantages of SaaS computing surpass its deleterious angles.

Also, it has been too investigated, SaaS Computing primary focal points and potential dangers, as indicated by the writing of SaaS Computing. In addition, and considering diagram of the truth of the Kenya SMEs and the idea of SaaS Computing has been displayed the knowledge and knowledge of our pool of authorities on this worldview, Notwithstanding recognize the elements affecting the choice to adopt it SaaS technology, this paper moves the center from a select technological point of view to a more extensive comprehension of business opportunities and business esteem. I trust the discoveries of this study will affirm that elements influencing the adoption of SaaS administration in SME will be assembled into two classes, which are builds and mediator elements. The following section clarifies the strides required in the configuration and usage of the pilot framework, and also, the basis behind the study questions.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Research design deals with the approach taken in actualizing this particular study. Some of the topics highlighted include research design, population under study, sample and sampling techniques, procedures used to collect and analyze data. The previous chapter reviewed related literature and elaborated how the TOE framework was extended to generate a new framework to be used for this study. It also describes how the way the actual study was conducted besides elaborating how the data was prepared for analysis. Firstly, the researcher provides an elaboration on how the data analysis was anticipated, by giving a discussion of the SEM technique and a summarized review of the stages for SEM analysis. Secondly, he expounds on how the TOE was transformed into instruments and the data was collection methods used. Lastly, it discusses specific sampling issues, data collection, reliability, and validity of the research methods used in data analysis of this research work.

3.2 Research Philosophy

As discussed by Galiliers (1991), “A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analyzed and used”. There are practical implications on the choice of a research philosophy the most common selection criteria is is data collection method and the research design, as indicated in the figure below the various philosophical approaches in a research onion:-

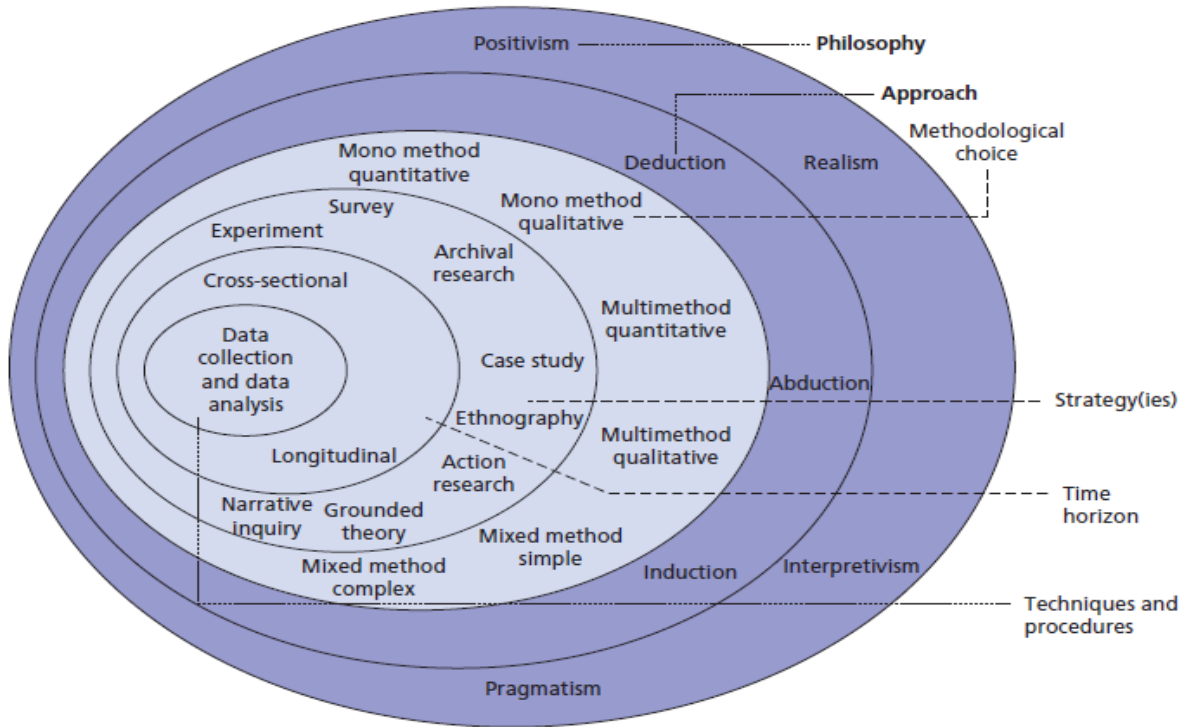


Figure 3.1 Research philosophy in the ‘research onion’

Source: Saunders, M., Lewis, P. & Thornhill, A. (2012) “Research Methods for Business Students” 6th edition, Pearson Education Limited

Table 3.1 Data collection methods and their corresponding Research philosophies

	<i>Realism</i>	<i>Interpretivist</i>	<i>Pragmatism</i>	<i>Positivism</i>
<i>Most common data collection method(s)</i>	quantitative or qualitative, Methods chosen must fit the subject matter	investigations, qualitative, Small samples, in-depth	quantitative and qualitative , method designs, Mixed or multiple	large samples, quantitative, but can use qualitative, measurement, Highly structured,

Source: Saunders, M., Lewis, P. & Thornhill, A. (2012) ‘Research Methods for Business Students’ 6th edition, Pearson Education Limited

3.2.1 Rationale for using Positivism philosophy for research study approach

There is a believe by positivists, that a research under study must in solid constant and can be look at with objectivity (Levin, 1988), i.e. this would happen without any changes or interruptions to the concept under study. The study used positivism approach because Positivism often involves the use of existing theory to develop hypotheses to be tested during the research process as suggested Wilson (2010) as in this case the author extended TOE model. Among the other principles of positivism, the research aim was to explain and predict the factors/construction that develop an appropriate adoption model, the data collected was basically judged using the best fit statistics rather than human judgement, and again there was hypothesis developed and tested is again supported by Wilson (2010) and again the used mainly quantitative research approach for the data collection which is a common data collection approach for positivism.

3.3 Research Design

Descriptive survey was used to collect information through administration of questionnaires to a pre-selected group from the population who were chosen for this research, the design was vital as it helped to link the research out come and the theory under which TOE, that helped to yield more reliable and accurate information. The design was also was also helpful as the study was in education fact finding towards increase accurately of the information, This was support by other authors who have publish about describe design including Orodho (2003), who clearly made a clarification that this method can be helpful, particularly to gain personal information regarding the respondents. Some of this personal information includes their habits, their view of social issues, opinions and attitudes. The others authors including Cohen, Manion and Morizon, (2000) who said that descriptive survey is appropriate for educational fact-finding since it yields a great deal of accurate information. Research design was critical since it provided a linkage between the argument and theory that is the basis of the particular research and all data collected as noted by Frankfort-Nachmias and Nachmias, 2008. The research design involves the

organization of research activity, in addition to the data collection methods applied in the course of the research (Thorpe et al., 2002). As such, the researcher had to strive to pick a research design that is most applicable to the research design (Tharenouet *al.*, 2007). In fact, it theatres an significant role in plateful a investigator to progress their summary while gathering and examining data obligatory for the study as proposed by Churchill and Iacobucci 2009. The role of this research is to facilitate the investigation on the adoption of SaaS and help comprehend why organizations adopt SaaS technologies in their operations at different rates. As such, there was formulation of a conceptual framework based on literature that is already existent on the adoption of ICT to help answer the research question. Alternatively, existing literature on the field of cloud innovation proves that a lot of work has been done in this field. Consequently, it shows that this field is already mature and various firms have already tried to adopt this strategy in their operations. However, it is not easy to determine how the findings from studies conducted in the past can be used to apply to other ICT innovations. Furthermore, it was not possible to identify any investigative framework based on current research problem. As such, research work is based on existing study and a theoretical framework. This research was undertaken in multiple stages. In the process, both descriptive and exploratory approaches were used .Therefore the qualitative data collection helped in the clarification of the research problems, especially to generate information about the different perception of companies concerning their implementation of Cloud Calculating and consequently to mature the research premise for the research. In the second stage, there was the adoption of a descriptive research design which involved correlation analysis; this helped to show the relationship that exists between the several variables. In research survey form were gathered for validation and determination of the direction to be taken by the hypothesized relationships. Since the collected data was used in the investigation of the adoption of different cloud ICT innovations, previously published studies in the field were compared with the findings. This approach enabled the study to establish factors that influence adoption of cloud computing. This research used both the qualitative and quantitative data samples in order to achieve the objectives as indicated by Creswel 2003). Consequently, the same approach has proved popular in several other areas (Johnson et al., 2007, Leech and Onwuegbuzie, 2009).

For this final study, the decision to select the quantitative method approach was based on the fact that it was important to generate a comprehensive analysis of this particular problem under research. For Creswel and Plano-Clark (2007), an investigation project encompasses mixed approaches of investigation with metaphysical expectations as well as approaches of inquiry. Mixed approaches embrace qualitative and assessable approaches in many phases in the examination procedure as well as logical expectations which guide the course of the gathering and examination of data .Assorted approaches focus on gathering, examining, and fraternization both measureable and qualitative data in a single study or series of trainings. The use of quantifiable and qualitative methods in incorporation transportations an improved sympathetic of research difficulties. This investigation work was showed in two phases. The preliminary phase complicated face-to-face meetings that were semi-structured. In this phase, the main role of the researcher was to provide detailed information on the issues that affect how small and medium scale firms adopt cloud computing. He employed Standardized open-ended interview for this case study (Ondiek at el 2013). The second phase involved a critical literature review of related studies which was done on cloud computing adoption for SMEs. McNamara (2009) indicates that the strongest point in the course of interviews in data research is the ability of the study of keeping overall areas of material as composed from each candidate. This guarantees more attention and motionless allows for liberty and adaptability in getting material from the candidate. The personal opinion of people in different industries plays a critical role in determining how they choose their providers of cloud service (Ondiek at el 2013). Multiple sources provided various questions, which highlighted key areas that should be looked at while developing the literature review, in addition to surveys that already exist in relation to SMEs. However, various firms were worried about how their security once it is shared. To deal with this, they were informed that their information will be handled with the utmost confidentiality. Finally, the last phase involved survey using questionnaires that was self-administered. This helped to provide statistics on the perception of SMEs in regards to the adoption of cloud services, and why other companies have not adopted the same technology in their operations. The research approach is a non-experimental quantitative-correlation one. It allows for flexibility in assessing the relationships among the variables.

3.3.1 The Research Design Stages

There were three stages involved in the course of the research. However, while some of the processes in these stages were only applicable in one stage, some were replicated in several stages. An example is the literature review, which was present in several stages. Below is a discussion of the various stages.

3.3.2 Research design and preparation

This study analyzed the adoption of SaaS among SMEs in the Nairobi County of Kenya. The research questions aimed to find out how SMEs adopt cloud computing and the extent to which other factors affect their roles they play. While there is a proper definition of the research problem, the researcher notes that there is minimal research on this particular field, particularly in regards to SaaS adoption by SMEs in Nairobi, Kenya. An important element of this study was the realization that in cases where the TOE model was adopted in the past, the issue has been criticized in the past since their choice is based on certain attributes based on innovations in the ICT sector (Ramdani and Kawalek, 2007).

At the start, interviews were selected as an ideal means for the exploration of how SME adoption of cloud computing since it is flexible and more information can be easily obtained through this approach. Additionally, it makes it possible to proceed to a quantitative research approach. On the other hand, exploratory research helps to analyze issues that cannot be clearly defined and there is less information on the topic (Tharenouet al., 2007). In regards to the adoption of ICT, an exploratory and qualitative study made it possible for the researcher to evaluate the role of all stakeholders in the decision-making process of the firm (Crotty, 1998; Leedy and Ormrod, 2005). As such, it helps to determine the perception of SMEs in regards to their operations, particularly in regards to this type of service. This approach also helps to further understand the issue under discussion, particularly how SMEs adopt SaaS in Nairobi. The collected data from the qualitative study helps in the provision of information before undertaking a larger survey. According to Sarantakos (1998) there is a similarity between exploratory studies and the literature review. Based on the contents of this study, the details and contents in the literature review also form part of the exploratory stage. This is because it provides a basis for planning and to generate different

theories and concepts. To facilitate this, various sources of information have been used including journals, web sites, books, both primary and secondary sources (Walsham, 2006).

3.3.3 Stage 1: Review of Literature for research design

The literature review helps in the articulation and clarification of the research hypothesis, based on the data from the different sources. It also helps to develop and structure the particular study. As previously stated, adoption using the TOE model has been criticized in the past based on attributes tested in relation to similar IS innovations (Ramdani, 2008). As such, it was necessary to facilitate the prevention of bias and the identification of various variables to ensure cloud-computing technologies are adopted by SMEs, with semi-structured interviews as the first approach to collecting the data. Since each participant was given the opportunity of airing their views, they each gave their opinion on which attributes were important, based on their personal experiences, instead of the attributes outlined by the TOE. Based on the basis of innovativeness presented by Roger's adopter categorization (Rogers, 2003), groups were formed to cater for the fifteen cases. Some of these cases include different kinds of SMEs. Those that had willingly adopted cloud computing in their operations, the second kind were those willing to adopt the technology in the coming years, while the last segment were not interested in the technology at all. These were termed as adopters, prospectors and non-adopters. Providers of cloud computing service who were used in this research provided, not only cloud computing, but several other services to clients.

3.3.4 Stage 2: Pilot Study for initial exploratory investigation

In this stage, what is most important is the identification of various factors based on the context being researched. The survey questionnaire was prepared depending on the findings obtained from additional research with the aim of knowing more about the hypothesis of the research. As such, what was most important was to identify personnel who are knowledgeable and specialized in IT. There were various options that could have been used in the course of the interview, these included open-ended and semi-structured. The semi-structured option was selected since it enables more discussion with the participants based on their knowledge of cloud computing. It was ,therefore, easy for the researcher to ask for clarifications and exploration of the subject

under study. Based on the information collected, it was easy to be made applicable to the SMEs which are under study (Punch, 2005).

The companies chosen for this study were obtained from the companies' directories. These were then contact at least a week to the initial interview, and a meeting organized with the personnel who handle such matters within the firm. Some of the matters discussed in the initial phone calls include the exact place and time for the meeting which was ideal for all the parties involved. Before the process, an independent individual went through the interview script and changes made based on the comments (Alshamaila 2013).

The employees who have the mandate of making decisions in the various companies were then interviewed. Since most of them are senior managers, it was difficult to have a lot of time considering their busy schedules. As such, it was necessary to keep these meetings short. Despite this, senior managers formed a critical role in regards to this research since they make the important decisions within the firm. It was ,therefore, necessary to have their comments taken into account (Day and Nedungadi, 1994). The success of the interviews was based on obtaining honest answers from the participants. As such, they were not notified of the contents in the interview sheet. The various interviews were conducted within the participant's office and did not exceed an hour. However, they were aware of the basis of the meeting and they had a right to discontinue whenever they felt like. Additionally, all of them gave their express content to be recorded while the interview was going on and have the contents transcribed immediately after. Some of the matter touched in the questionnaire include the background the various companies, impact of factors of TOE on their cloud computing adoption strategies, acquisition cost of technology and their general awareness of cloud services. All these constituted the organizational, technological, and environmental considerations related to adoption of this technology. Information used in this research was obtained from 15 interviews.

The stage of analysis was critical and continuous since it was difficult to separate all the three stages in the process (Folkestad, 2008). The data was analyzed by the procedure developed by Miles and Huberman, 1994. As such, there were three processes involved in the analysis of data. These included reduction of data, display, and the drawing of conclusions. The data displays made it possible to identify the linkages between the various data sets. This helped the researcher

in generation of meaning from the data (Saunders *et al.*, 2009). The foremost motive for the popularization and immediate of the information was to condense it (Robson, 2002; Saunders *et al.*, 2009). Additionally, the display of the data helped in the assembling of all relevant information, therefore, making it easy to generate a valid conclusion (Miles and Huberman, 1994).

Furthermore, data collected , which were semi-structured helped to provide some insight in relation to how SMEs have adopted cloud computing. These results were critical in four aspects and they were documented by Ondiek at el 2014 ISBN 978-9966-074-13-3.

3.3.5 Pre Study - initial Pilot Study for initial exploratory investigation

This was done to inform the study and get the actual adoption status from the cloud service providers, these study help build the framework of the study

3.3.6 Pre study research population

The element of a population was derived from Manoj (2006),an author who stated that it is any item in line of research that will be responding and that is the population. Including specific group of persons or events. Study population involved service cloud service providers in Kenya because they likely to be conversant with their objective of the study and how they could benefit from the study. This was a census study

Table 3.2 Pre - Study population

	Cluod ServveProvider	Location	Type of Cluod Platform	Name cluod busines	Purpose of Cluod
1	EMC	Upper Hill Nrb	DAAS PAAS	Reseller Large	Email Data Base
2	Dimenstion Data	Hurlingham	SAAS	Large	Buisness

		Nrb	IAAS PAAS *(EAAS)		development
3	Cisco Kenya	Hurlingham Nrb	IAAS PAAS SAAS	Large	Business Development
4	Gestalt Gild Ltd	Parklands	IAAS PAAS	SME/Large	Business Development
5	Kenya Cloud	CBD Nrb	SAAS	SME	Business Development
6	Pamoja Cluod	Lavingtone Nrb	DAAS IAAS	Reseller	Data management
7	Access Kenya	Westlands	DAAS	Large	Data management

Source :Author data 2013

3.3.7 Sampling procedure and sample size

Since there was a sample pool of cloud service providers to choose from, it was critical to have an unbiased selection to ensure the results represent the entire population. Study population involved all seven cloud service providers in Kenya because they likely to be conversant with their objective of the study and how they could benefit from the study. This was a census study. The research decided to use census sampling.

Table 3.3 Pre – Study Sampling

NO	CLOUD SERVICE PROVIDER
1	ACCESS KENYA
2	SEACOM-PAMOJA CLUOD
3	GESTALT GILD LTD
4	KENYA CLUOD
5	EMC
6	DIMENSION DATA
7	CISCO KENYA
7	Access Kenya

SOURCE:-Author data 2013

3.3.8 Pre study data collection approach

The researcher conducted an aggregate of six comprehensive qualitative conferences from an assortment of defendants beginning June 2013 and September 2013. These discussions were purely investigative with an aim of thoughtful the antiquity, conceptualization, steering, placement, implementation and influence of cloud computing SaaS in Kenya. The respondents included CEOs, Cloud managers, senior management (Finance, sales and marketing heads) of the six cloud service providers in Nairobi. The interview questions were pre tested by two cloud providers The investigator interrogated them tamed for different investigators with the aim of compliant their version of involvements. All the interviews were recorded, transcribed and used to generate various outputs

3.3.9 Pre study data analysis

The method that was to be used in the analysis of the data that was collected was to certain that this is quality and the out was transcribed based on the recorded response, from the interview schedule.

3.3.10 Pre study Results of findings

The researcher then proceeded to assess the constructs as per Table 4.1 in relation to constructs identified during the exploratory qualitative study. Out of the five constructs identified in section include; Awareness. Trust, Cost of Acquisition of SaaS and ICT skills for four were identified during qualitative work (Ondiek, Opiyo & Okello, 2014) namely Awareness. Trust, Cost of Acquisition of SaaS and ICT skills as shown in Table 4.1. The researcher therefore decided to proceed with these three constructs which appeared significantly in previous literature as well as in the exploratory study. These factors were also consistent with constructs in technology adoption models. Using the qualitative work, the researcher extracted additions four factors determining adoption and then proceeded to map these factors to the original TOE framework.. Below the researcher discusses further the new constructs.

Table 3.4: Mapping of factors from derived from pre study (qualitative work) (Ondiek, Opiyo & Okello, 2014) to TOE

Number	Factor	Mapping to TOE framework
1	Security	Exist as it sorted by External computing support
2	Awareness	Doesn't exist
3	Privacy	Exist as it can be corrected by Top level management support
4	Ability to Try before use	Exist –Triability
5	Trust	Doesn't exist
6	Digital Divide causing	Exist –Uncertainty

	uncertainty about cloud	
7	Cost of Acquisition of SaaS	Doesn't exist
8	SME Infrastructure	Exist as ICT Infrastructure is informed by Cost of acquisition
9	ICT skills for SME	Doesn't exist
10	Government Regulatory	Will be informed by Relative advantage to SMEs,Cloud providers, customers

Source author data 2013

3.3.11 Stage 3: Final study to validate the framework

Two research methods were used in the course of this study, they include applied cross-sectional and descriptive survey. Nonetheless, since of the large quantity of defendants that can be rummage-sale for this study, a smaller samples was used as a representative of the whole (Pedhazur and Schmelkin, 1991). The application of a cross-sectional survey was useful since it has several benefits in the course of the research. These include bringing out the link that exists between different variables and for description (Babbie, 2010). As such, the various questionnaires played a critical role in regards to collection of data among SMEs, in relation to their adoption of SaaS computing platforms.. Semi-structured interviews and literature review provided support to the information collected using the questionnaires.

3.4 Modeling of the Framework

According to the W.K. Kellogg Foundation (2004), a logic model refers to the visual and systematic approach of highlighting and sharing one's comprehension of the links within the resources available in a program, a plan of activities and the desired results. As such, program administrators find models useful when they are planning for changes. Additionally, logic models enable the aspect of consensus to arise based on the beliefs and values of the group. Bride et al. (2003) states that these models are strategies that can help to solve problems using a clear guideline. Furthermore, better understanding of these models is based on making approximations from what is happening in reality.

There are different classes of models, some of them include simulation, mathematical and physical models. Mathematical models describe behavior using mathematical formula and are abstract in nature. As such, they are most applicable in social sciences such as economics and in the engineering field (Bride et al., 2003). As indicated in figure 3.1 researcher came up with the model with the intension to validate it using this approach of mathematical modelling. These models are constantly used by computer scientists, physicists and economists. An example is their application in information systems whereby models are used to communicate, explore and validate the various systems (McNeile & Simons, 2004). Physical models are smaller versions of the various objects under evaluation. In engineering, such models helps to assess certain behavioral characteristics within the systems.

3.4.1 Objective of modeling

There are various applications for mathematical modelling but this depends on the modelling process and the knowledge available in regards to the system (Lawson, 2008). Below is a list of possible objectives:

1. Mathematics is a distinct language and manipulation are based on defined rules.
2. Evaluate the impact of variations within a system
3. Mathematics is applicable to computer simulations, thereby making it possible to complete high speed calculations.
4. Increasing knowledge in the field of science through quantitative expression

Helping managers and planners to make decisions.

3.4.2 Stages of model development

There are several steps that are involved in the modeling process, the first is building, the second is studying, the third is testing and the final step is using. Although many such projects follow this approach carefully, there are challenges usually encountered in the course of the process. In case there are some errors noticed at the second stage, the issue can easily be resolved by reverting to the first step. Though, any fluctuations that happen will central to the recurrence of the entire process (Lawson, 2008). The entire process is highlighted in the diagram below:

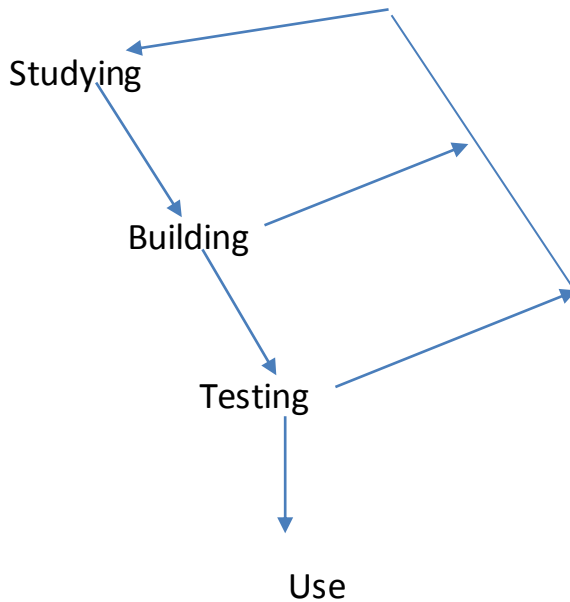


Figure 3.2 Stages of model development

Adopted from (Lawson 2008)

Most modelling projects make use of repeated iteration and it helps to understand the manner in which the system works (Lawson 2008).

3.4.3 Assessment of model and model fit evaluation

Whenever a prototypical has stood fashioned, forecasters will want to understand the model. The paths projected may be presented as path mockups, which are the influence of variables which are measured consuming the path tracing rules. The foundation for compliant and rejecting representations is the straightforward task in the SME modeling (Kline 2011). The conditions of the projected connection between the variables in the prototypical are instances of the output by the SEM programs. The assessment calculates how similar the actual data is to the presented data depending on the matrices containing the relationship (Kline 2011).

Estimation methods make the formal statistical tests and fits possible. This is because these tests have been developed where the model's parameters can be examined with the estimated models to see if they fit the driving theory. SEM models test are entirely based on assumptions that complete and correct the data that has been modeled as it is the case of all statistical hypothesis tests (Kline 2011). Assessment of fits can be done in different ways; Traditional approaches start

by stating null hypothesis, rewarding models with fewer parameters while taking into account the freely used parameter. Since the dissimilar procedures of fit imprisonment dissimilar fundamentals of the classical, it is obligatory to report dissimilar fit procedures assortment. Guidelines, including the ones listed, are some of the subject being debated by the SEM researchers (Kline 2011).

According to Kline (2011),

- Relative Fit Index rest on on the steady size of the influences in the material in exploratory typical contrasts. If the regular suggestion between variables is not high, then the CFI will be low. A CFI price of .95 or higher is needed (1999)
- Chi-Squared is an important quantity of acceptable. It is used in the calculating of frequent other procedures of fit. Abstractly, it is a connotation of the instance degree and the modification between the investigational covariance heaven and the perfect covariance atmosphere.
- Root Mean Square Error of Calculation is an appropriate index where nothing designates the best fit. While the guideline for determining a "close fit" using RMSEA is highly contested, many researchers concur that an RMSEA of .1 or more indicates poor fit(Loehlin 2004)

For all the measures of fit, the final determinant regarding what is considered a suitable relationship between the data and the model is dependent on several factors. Some of these factors include the model's overall complexity, the ratio of the various indicators and the size of the chosen sample. In case the sample size used is large, there is a high possibility the Chi-squared will show the model and data does not fit (Kline 2011). Additional information in relation to this is in chapter 4.

3.4.4 Model modification

In case there is a misfit, modifications can be made to the model, which involves estimations relating to the link between the various variables (Loehlin 2004). Various programs can generate the measures of modification to help with the process. Such indices help to estimate the changes

in χ^2 that usually arise when fixed parameters are freed. As such, this results in the addition of a path to an existing model which is pre-set at zero (Loehlin 2004). If these modification improve the fit of the model, then they can be marked as improvements that can be potentially made to the system. According to the model, such changes are considered to be factual (Loehlin 2004). Consequently, it is important that any modifications are sensible in relation to the theory being evaluated or to be considered as its limitations. Additionally, any variations to the measurement model indicate that the specific data are wrongful indicators of the latent variables highlighted in the theory (Loehlin 2004).

3.5 Structural Equation Modelling (SEM)

Although SEM (structural equation modelling) is very complex, it plays an important role in regards to data analysis (Shoat et al., 2004). Ever since the 20th century, SEM has been helpful to analyze relationships that exist between variables that cannot be observed (Shah and Goldstein, 2006). It consists of various statistical models, which analyze the relationships among various variables, and uses equations to examine these interrelationships (Hair *et al.*, 2006, p. 711). Additionally, it consists of both dependence and interdependence methods (Hair *et al.*, 2006, p. 711) and helpful when a dependent variable transforms due to the nature of the structural model to an independent variable (Hair *et al.*, 2006, p. 711, p.718). Below are some of the key characteristics of SEM

- *Estimation of multiple interrelated dependence relationships*
- *Incorporating latent variables which are not measured directly*
- *Defining a model.*

Unlike in the past, SEM is now widely used. This has been facilitated by the availability of literature and software on its use. Examples of this software include LISREL and AMOS (Henriksen and Pedersen, 2007). One of the main objectives of this survey was the development of a structural model that is applicable for SMEs. Another objective was the development of scales based on the constructs presented in the structural model and then evaluate them for validity and reliability to determine the measurement models for the various constructs within the model, thereby helping to assess them in relation to their interpretation and measures of fit.

Given these qualities, the use of SEM was chosen for this research. SEM operates by estimation of interdependent and separate variables (Hair *et al.*, 2006)

The proposed model has a relationship that is usually based on experience and theory, and the various variables are then translated into structural equations for a particular dependent variable. Most important is the fact that SEM only allows single relationships to exist between independent and dependent variables. Furthermore, latent variables can also be incorporated into the analysis. Other uses of SEM include representation of the theoretical framework, improvement of statistical estimation and identification of measurement errors.

Once an SEM model is complete, it consists of both a structural and measurement model. Each of these models is based on a particular theory. The model involves the specification of relationships between various latent structures that can be linked to measured variables by the use of dependence relationships. However, constructs can have both dependence and correlation relationships. A solitary projectile is recycled to designate a connection of necessity while a two-headed arrow shows a correlation relationship.

3.5.1 The goals in SEM

The goals in SEM are

- 1) To evaluate the correlation/covariance patterns within certain variables and
- 2) To use the specified model to explain their variance (Kline, 1998).

3.5.2 The purpose of the model

The most popular approach of the SEM is to interpretation for co-variation of the variables actuality measured (MVs), relationship among these variables and path analysis using the test models. Assenting influence examination advantages to estimate the association models amongst MVs and dormant variables that help to indicate the common factors. These factors include the variance, the estimate initial level (intercept), the latent growth curve models (LGM) and the structural slopes. However, there are various unique cases in relation to SEM. These include the confirmatory factor analysis, regression, repeated measures of analysis of variance and canonical correlation (Kline, 1998).

3.5.3 Similarities between Traditional Statistical Methods and SEM

There are numerous similarities between SEM and traditional approaches to statistical analysis such as variance, variance and correlation. The first similarity is that both of them have a high dependence on linear statistical methods (Suhr 2005). Secondly, both processes contain statistical tests whose validity is based on different assumptions. SEM consists of multivariate normality while the traditional approaches include normal distribution. Finally, a causality test is not present in both these approaches (Suhr 2005).

3.5.4 Differences Between Traditional and SEM Methods

Despite the various similarities, there are some distinct differences between the two approaches. The first difference is in relation to the methodology. SEM involves methodology that is comprehensive and flexible. Some of the field where this is applicable include peer and family dynamics, economic trends, achievement, depression and exercise. The second difference is in regards to the models involved. SEM involves testing using formal model specifications while the traditional approach involves the use of default models (Suhr 2005). In regards to SEM, there is need for any hypothesis stated to be supported using research or valid theory. The third difference is that SEM incorporates both unobserved and observed variables. It is therefore possible to calculate multiple equations simultaneously. On the contrary, only measured variables are analyzed using traditional approaches. Fourth, SEM makes it possible for a researcher to detect any defect in the measurements used (Suhr, 2005). In traditional approaches, the issue of error is ignored. Finally, there is significance tests carried out in traditional analysis to show the links between variables and groups.

3.5.5 Uses of SEM

Below are the various uses of SEM (Browne, 1993):

- Multiple group modeling: This is a technique allowing joint estimation of multiple models, each with different sub-groups. It can be applied to analyze variations between groups within the society, such as gender and in behavior genetics.
- Hierarchical/multilevel models
- Estimation and testing techniques

- Mixture model (latent class) SEM
- Logistic Regression
- Survey sampling analyses
- Latent growth modeling
- Factor analysis i.e. Confirmatory
- Structural Equation Model Trees
- Measurement invariance
- Multi-method multi-trait models

In regards to this study, SEM was used as a confirmatory factor analysis and path or regression analysis.

3.5.6. SEM Model Assumptions

To ensure that the model of ordinal regression is applicable, there is need to confirm the assumption of all parallel lines of several stages of the categorical data is met. This is because the particular model ignores the elements of constant variance and normality (Bender and Benner, 2000). However, logistic regression is not only applicable to linear link between dependent and independent variables. Furthermore, independent variables are not required to be unbounded or at an interval and there is an assumption of the error terms that are normally distributed.

3.5.7 Confirmatory Factor Analysis (CFA)

Factor analysis objectives can be obtained by the use of confirmatory and exploratory aspects (Hair et al. 2006). Exploratory approach is vital to reduce the amount of data in the identification of a structure from a series of variables. SEM can be applied by using a model with six steps;

Step 1: definition of the various constructs.

Step 2: development of the overall measurement model.

Step 3: design development that will produce the empirical results.

Step 4: carrying out assessments to determine the validity of the measurement model.

Step 5: specification of the structural model

Step 6: assessing the validity of the structural model (Hair et al, 2006; 734).

The first four steps are mainly evaluated using Confirmatory Factor Analysis, which helps to determine how well constructs are represented using the chosen variables (Hair et al., 2006, p. 773). Additionally, the CFA helps to indicate the manner in which actual data matches the specification of the factors, as such, it gives the researcher a basis to either reject or confirm their hypothesis. CFA helps in the estimation of linkages between other also constructs and to variables (Hair et al., 2006, p.779). However, CFA is often compared to EFA when it is applied in calculating correlation, covariance and factor loadings. Based on the results generated from the CFA model, additional theory testing can be done. In this case, SEM software was used to run the CFA.

3.5.8 Conducting a SEM analysis

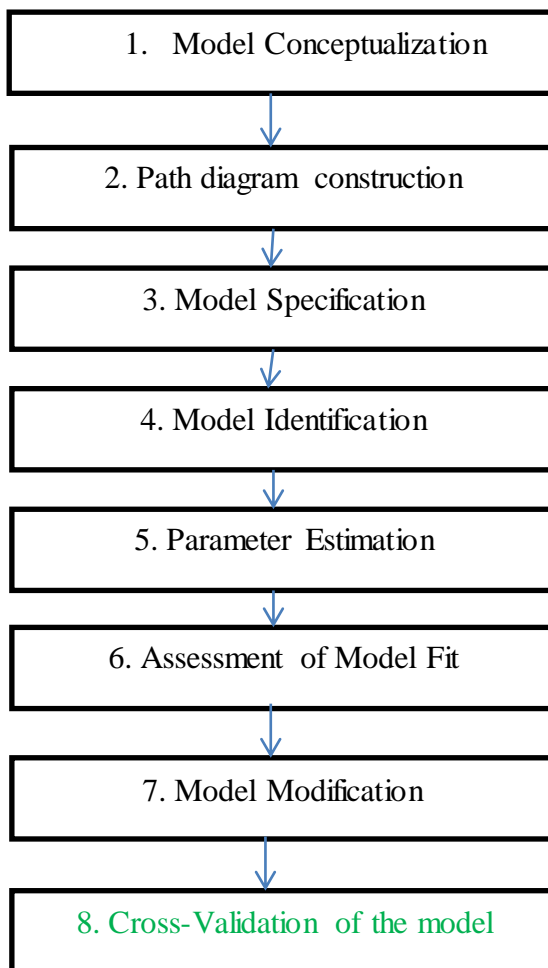


Figure 3.3. SEM Analysis Steps (adapted from Diamantopoulos & Sigauw, 2005, p.7).

Parameter Estimation

As explained earlier, SEM helps in the process of analyzing covariance structures. As such, the implied covariance matrix helps in the formulation of various predictions related to the covariance and variance of variables within SEM. In the process, the differences in variances and covariances that exist in matrix S are analyzed in relation to the matrix of the model. Any noticeable differences existing in these two matrices are known as the residual matrix. Consequently, Diamantopoulos & Siguaw (2005) notes that SEM strives to eliminate this difference. In the process, the equations relating to the model are presented as matrices which are linked to the various components of the model.

Measurement model validity

When the relationships among the underlying constructs and the variables are specified, it results to a measurement model (Anderson & Gerbing, 1988). The preferred approach when building these models involves multiple indicators since the meaning given to the stated construct is detailed and specific. As such, the number of indicators used is between two and four (J. C. Anderson & Gerbing, 1988). However, application of CFA occurs when there is sufficient information in regards to the measurement items and underlying constructs (Byrne 2001).

According to Byrne (2001), it is significant to demeanor an assenting influence examination after conducting an exploratory factor analysis since it helps in the verification and confirmation of the scales generated from the EFA. On the other hand, CFA helps in the confirmation of hypotheses grounded on the association amongst the pointer and the dormant variables. The first approach for evaluating the measurement model in CFA is assessment of the reliability and validity. The second approach involves calculation of the goodness of fit (GOF).

Model estimates

Although the fit criterion is highly commendable, various approaches are also used to assess the measurement model. These include the critical ration , standardized regression weight (factor loadings) and estimates criteria. The approach was applied on this research is the cut-off point. Based on the literature of Holmes-Smith (200), an ideal value for the factor loadings was 0.7.

However, as long as it was above 0.5, it could be accepted (Churchill, 1979). On the other hand, an ideal value for the critical value was above 1.96.

Constructing the structural model

The main process in this phase was the allocation of relationships that exist between variables in regards to the conceptual model that has been proposed. In this case, the requirement relations remained rummage-sale to test the suggestion of the hypothetical prototypical. This helped in identification of the relationships that exist within the various constructs. As such, there is a specific relationship representing each hypothesis.

Validating the structural model

At this last stage, the corresponding hypothesis was tested and validity of structural model was considered as both logistic regression and comparative factor analysis was done for the structural model. Testing structural relationships was done by evaluating the individual parameter estimates representing specific hypotheses. Structural Equation Modeling (SEM) demands that each of the exogenous variables should have at least three questions while the endogenous variables can have one question if it clearly generates the information desired. Once the amount of exogenous variables and the literateness level of the defendants are measured, the researcher decided to limit the number of questions to five. Previous research using SEM and studies extending adoption models provide guidance on the nature of questions to be used for each of the variables and for this study, the researcher generated and the questions as shown in the Questionnaire

3.6 Research Population

According to Hair et al. (2006; 170), several elements with similar characteristics constitute a population. As such, in the course of research, one cannot use the entire population but relies on samples from the group. However, it is necessary to ensure that the sample has similar characteristics to the study population. It is only under these circumstances that it will be possible to generalize the research findings from the sample to the entire population under study (Sarantakos, 1998). Similarly, Mugenda (2003) states observable characteristics are an important feature of any population. Any research is therefore based around a particular prearranged

populace. In this investigation, the populace was the SMEs in Nairobi based on the city council registry, comprising of 287,781 firms as indicated in table 3.1 below:

Table 3.5: SMEs sectors and population

Category	SME sector	Number	%-Percentage
100	General Trade, Wholesale, Retail stores	164722	57%
200	Informal Sector	9388	3%
300	Transport Storage and Communications	18599	6%
400	Agricultural, Forestry and Natural Resources	3930	1%
500	Accommodation and Catering	23040	8%
600	Professional and Technical Services	40707	14%
700	Private Education ,Health and Entertainment	8690	3%
800	Industrial Plants, Factories, Workshops	18705	6%
Total		287,781	100%

Source: - Author derived Nairobi County Council SME Registry June 2015

3.7 Sampling

After the sample population has been established, the best basis (sampling frame) of sampling is selected. As in Särndalet *al.* (2003), sampling frame refers to the materials or lists that are used to obtain observable characteristic of the population of interest. With the help of the sampling frame, the researcher is helped in identifying and selecting a sample that represents a given design which establishes contact with selected elements (Särndalet *al.* 2003). Cluster sampling techniques was employed in the study to help in establishing the representative population of the study. These procedures the target population faces considering the constraints faced and thus select the SME factors that are the representative of the entire population under the study. An

added advantage of the cluster sampling technique over other sampling techniques is that it does not select redundant clusters from the sample thus making it economical as indicated by Yates, Moore & Starnes, (2008). This was accomplished by assorted population into standardized subsections (per industry/sector) to safeguard representativeness. The sample of 377 SMEs was derived from the sectors based on their presentation ratio as indicated in table 3.1 and table 3.2 respectively. This means that the sample size was passable enough to ensure exemplification without being subject to data redundancy that occurs with larger sample masses. The reason to use this sample size is due to time constraint to cover all the potential SMEs. Through this we were able to get a varied range of opinions from the several SME cross sectors.

The expected respondents were CEO/General Manager, IT Director /CIO, Director/Chairman/Owner, Senior Management (Finance, HR, Marketing and Sales, Operations), Cloud Operations Manager, Administration staff, ICT Support staff and the Head of Project Management of the SMEs.

The sample size was composed of the formally registered businesses. The sample was mapped around Nairobi County as indicated in the county SME registry which was also used to get the sectorized distribution of the SMEs based on the data in them. This learning attentive on both adopters and non-adopters of cloud computing so as to overwhelm the pro-adoption prejudice, (Rogers, 2003.)

3.8 Sample size

As stated by Kombo & Tromp (2006) some of the inherent qualities of an ideal sample group include knowledgeable, accessible, representative, and diverse in relation to the topic under study. The sampling design helped to select candidates from a large geographical area to minimize any similarity based on the location of the SMEs. Since there was a large pool of firms to choose from, it was critical to have an unbiased selection to ensure the results represent the entire population. As such, selection of the pool of respondents was by descriptive research design with the application of cluster sampling.

3.8.1 Sample size determination formula

A sample size determination formula was used to arrive at the sample size for participants to be sampled in the study.

The formula is thus stated as:

$$n = \frac{(Z^2 \times p \times q)}{d^2}$$

Where:

n = sample size

Z= 1.96 i.e. the significance level set at 95% confidence interval which corresponded to Z value of 1.96

p = target population proportion of the total population estimated to have the characteristics being measured.

q = variable which was calculated as **(1-p)**

d = acceptable error level (set at in this study)

Therefore, the sample size of this study was calculated as follows:

$$n = \frac{1.96^2 \times (0.4) \times (1-0.4)}{0.05^2}$$

$$n = \frac{3.8416 \times (0.4) \times (0.6)}{0.0025}$$

$$n = \frac{3.8416 \times (0.24)}{0.0025}$$

$$n = \frac{0.921984}{0.0025}$$

$$n = 369$$

From the formula the sample size was three hundred and sixty nine (n=369).

Given that at least 200 respondents are required to evaluate a model using SEM, this particular research calculated as sample 369 participants, which was more than 80% the needed respondents. Additionally, the entire population was broken down based on their particular field of operation as highlighted in Table 3.3. This ensured there was limited bias in the study results and SMEs in all sectors could be covered in the course of the study without any preferences.

Table 3.6: General Selection of sampling frame

Participants	Total No. (N)	Sample(n)	Percent (%)
SMEs	8 in clusters	369	88.5% above

Source Author Derived 2015

Table 3.7: SMEs sectors and population

Category	SME sector	Number	%-Percentage
100	General Trade, Wholesale, Retail stores	219	58.2%
200	Informal Sector	12	3.1%
300	Transport Storage and Communications	23	6.1%
400	Agricultural, Forestry and Natural Resources	4	1.0%
500	Accommodation and Catering	31	8.2%
600	Professional and Technical Services	54	14.3%
700	Private Education ,Health and Entertainment	12	3.1%
800	Industrial Plants, Factories, Workshops	23	6.1%
Total		377	100%

Source: - Author derived Nairobi County Council SME Registry June 2015

3.9 Data collection

The researcher collected the data for the SME analysis from 377 respondents which was 177 (87% above) more than the desirable figure of 200. The different methods of primary data collection included archives/collections, field observations, questionnaires and interviews (Sharp and Howard, 1998). However, the most reliable method for this study due to the large opinion needed from the large and diverse group was the use of questionnaires. The questionnaires provide a much more structured method of data collection and recording of the data especially since the research is being entailed around a survey on SMEs in Kenya. The inquiry form were adapted to imprisonment the applicable data for the education. The enquiries were then regarded on a five-point Likert scale as follows; 1 characterized “strongly agree” while 5 considered “strongly distress”. Data was composed by self-administered questionnaire. This was done to establish the adoption framework of cloud computing architecture. The expected respondents were CEO/General Manager, IT Director /CIO, Director/Chairman/Owner, Senior Management (Finance, HR, Marketing and Sales, Operations), Cloud Operations Manager, Administration staff, ICT Support staff, and the Head of Project Management of the selected SMEs. The data collection and analysis was in phases done as follows:

Phase 1: Literature review and qualitative exploratory research to establish the core variables and moderators.

Phase 2: Quantitative data collection from firms that were sampled in Nairobi

Phase 3: Structural Equation modeling of analysis of the data collected in Phase 2:

3.9.1 Phase 1: Qualitative data: Two additional exercises were carries out to generate extra moderators and constructors for the research. The first exercise involved an extensive fieldwork that took 6 months; the results from this exercise were published in the chapter of the book (Ondiek C.O, Opiyo T.E & Okello W.O 2013). Based on this research, an additional variety of constructs were generated, which were then added to the framework formulation before carrying out the literature review carried out in regards to the various adoption models. The result of this was the conceptual framework highlighted in the second chapter.

3.9.2 Phase 2: Quantitative Data: The proposal of the researcher was based on SMEs located in Nairobi, Kenya. This is because of its strategic location whereby there are numerous firms within the city, technology use is growing rapidly, and the researcher could easily access it.

3.10 Data collection process

3.10.1 Questionnaire Design and Structure

The main objective of this segment is to state why the particular questionnaire was chosen, its content, structure, procedures for pre-testing and the modifications made based on the feedback from the process.

3.10.2 Questionnaire

A questionnaire is a research data collection instrument that is composed of a number of questions and other prompts designed to get information for the respondent on a given topic or a number of topics. Questionnaire can also be identified as a formalized instrument comprising of a set of interrogations and balances calculated to produce main data. The building of the questionnaire involves having a set of scale measurements then formatting them into a complete communication instrument that is able to collect raw data from the respondents (Hair *et al.*, 2003, p. 244). Some of the advantages that the questionnaire has over the other instruments include; they are more cost effective and easy to interpret the data from the standardized answers (Hair. *et al.*, 2003, p. 256). The main function of the questionnaires is to capture people's true thoughts and feelings about different issues even though some of these answers might frustrate the users of the collected information. The disadvantages of questionnaires on the other hand include they cannot be used by illiterate people, have reconstruction and grammar problems. The questionnaire in this study was organized in thematic sections (Appendix 2) and it was guided by the SEM requirements and was tested prior to actual roll out.

3.10.3 Pre-testing the Questionnaire

Pre-testing alludes to the process through which the questionnaire is assessed using a group of respondents. The main aim of having this process is to ensure that problems that may exist in the

questionnaire are detected. The problems that exist are likely to relate to contents of the questionnaire, the wordings, the general layout of the questionnaire and gauging the ability of the respondents in understanding the questions. Understanding the questions relate to the questions being either ambiguous or biased in nature as noted by Sekaran (2003).

As noted by Baines and Chansarkar (2002), pre-testing is a critical stage given that it has effect on every other aspect of the questionnaire design. While carrying out the research, the pre-test was done through the distribution of 35 questionnaires in Nairobi. The target population comprised of students who were studying in different universities in Kenya. Out of the questionnaires administered in the pre-test period, twenty-five were returned (71.4%). The reason for using the subjects as research objects was largely informed by the fact that they are all from Nairobi and some of them were technology experts. The respondents were requested to suggest some of the significant problems in regards to the design of the questionnaire. The answers to the request were considered with a view of ensuring that the survey questionnaire is improved. While executing the pre-testing, some of the interesting comments were obtained from the respondents. A case in point is that one owner of the SME indicated that she would not be comfortable providing her age in years but rather leave the section blank. The other problems that were noticed by the participants were regarding the wording and the wrong sequence of the questionnaire design. They too identified some of the ambiguities. While handling the process, the questionnaire was reviewed to appropriate terms and questions that were ambiguous were clarified or deleted.

The original form of the survey was industrialized from the preceding works (Ballester and Alemán, 2001; Cronin *et al.*, 2000; Imrie *et al.*, 2002) and rationalized grounded on discussions with researchers with knowledge in scale expansion and survey design. Scale reply classes were changed as contentedly felt by the defendants with five-point answers as with the innovative seven-point answers. Lastly, the survey was assessed in footings of commands, affluence of use, understanding smooth, clarity, item expression and answer formats, and was adjudicated to have appearance and background legitimacy (Hair, 2006, p. 147).

3.11 Data analysis strategy

This outlines the strategy that was to be used in the analysis of the data that was collected. Five stages were involved in the process. First was the data management's stage. An important task carried out during this stage was ensuring quality and using SPSS. Second stage was the analysis of demographic information using the software. Third stage involved data validity and reliability. Forth stage was determination of whether the data fits into the various models. The last stage included the testing of the various hypotheses by using P-values and AMOS (Hair et al., 2010).

3.11.1 Data Management

An important aspect of this research was maintaining high standards in data collection to ensure quality results. Even though the researcher was actively involved in the research process, the assistants recruited played a critical role in fastening the research and abiding to the predetermined timelines. In the field, it is the research assistants who handled the questionnaires and gave them to the respondents. However, the researcher closely supervised the entire process. The results were then entered into SPSS after going through to detect any omissions and errors. To ensure the results were consistent, data was entered imported to SPSS from shared spreadsheets on Google drive. Most importantly, backups of the data were created in separate files and protected by encrypted codes to maintain the integrity of the information.

3.11.2 Data Screening

It is necessary to check the data for various fundamental characteristics before running SEM. An example is in relation to the use of items that were not negatively worded; this ensures the data is prepared for other analyses in the future. Another item that is checked is linearity, missing values, normality, multicollinearity and influential outliers (Kline, 2005). The software used to test these assumptions was SPSS 20.

3.11.3 Missing values

Given that it was not compulsory for respondents to give their views, it was expected that several of them would simply ignore the queries. As such, several strategies were to be implemented to deal with this situation. The first approach was the application of SPSS in the counting of

responses that were missing for the particular items that formed the survey batch. In case the variables were expressed based on the total subscale score, the amount of data that was missing and the pattern was evaluated for all the specific items that consisted of the particular subscales and in case of the aggregate responses, it consisted of all the specific items that were part of the subscale calculations (Byrne, 2001). According to Hair et al. (2010), several strategies of dealing with missing data include: *Ignoring any data that is missing*. A researcher can simply assume any missing data is not relevant since the research design could still be applicable using the remaining data that was collected (Schafer, 1997). The second strategy involves *List Wise Deletion*. This is carried out before conducting a substantive analysis and is quite straightforward (Brown, 1983). In regards to this survey, the researcher simply eliminated responses that have some missing segments to ensure the entire data set was not greatly affected.

3.11.4 Data Coding

One of the best approaches when using online or self-administered surveys are Likert scales (Hair et al, 2006). The Likert scale has several intervals whereby respondents can indicate their acceptance or disagreement of the research question based on various levels. For this particular study, these intervals were marked from 1-5, with 1 meaning they strongly agree and 5 showing strongly disagree. These have been presented below:

Option 1: Strongly Agree,

Option 2: Agree,

Option 3: Neutral,

Option 4: Disagree,

Option 5: Strongly Disagree.

One advantage of this approach is that it offers respondents a variety of options since there are several scores and makes it possible to carry out several statistical analyses on the data (Premkumar and Ramamurthy, 1995; Pallant, 2007). The data was then prepared for analysis using SPSS in the following manner:

i) In regards to gender, 1 was entered male and 2 for female

ii) In regards to age 1) below 20 year,2) 21-30 while the others Market Scope, SME firm size and Industry (SME Sector)

iii) For each of the constructs, a number between 1 and 5 was used for each of the Likert scale choice (Strongly agree, agree, Neutral, Disagree, Strongly Disagree). However, in cases where it was necessary to reverse the entries in order to make sense, the researcher used 1 down to 5 for the Likert scale reliability,

vi) The moderators were captured as a construct for purposes of analysis. This was operationalized with three measures as the researcher was interested in the following moderators Age of the Firm/SME, Market Scope, SME firm size and Industry (SME Sector)

3.11.5 Multivariate Normality

Hypotheses testing: this technique was used to assess the relationships among various variables concurrently. We have multivariate statistical methods e.g. logistic regression (Everitt 2003; Tharenoute al.2007) hypothesized model was tested using multivariate analysis method as one of the hypothesis testing components fundamental assumption when it came to focusing on the distribution shape. The multivariate normality can be assumed (Hair et al., 2010), though the normality of the single variables is not guaranteed. The researcher determined skewness and kurtosis as the methods of normality. Skewness was used to measure the degree to which the distribution was symmetric whereby a negative value showed that the left side of the histogram was lengthier associated to the precise side; a optimistic worth demonstrations the opposite while the value of the zero indicates that the distribution is balanced (Newbold, et al., 2007). Kurtosis on the other hand, unhurried the competent highest of the unfriendly in a movement. Information distribution with in height worth has a high highest nearby the unfriendly and finished a hefty tail in unique course although low kurtosis has a horizontal top neighboring the unkind. Negative kurtosis showed platykurtic (flatter) distribution while positive values show deplokurtic (peaked) distribution.

All resulting statistical tests are invalid from the normal distribution if the variation is significantly large (Hair et al, 2010).The descriptive analysis of the education discovered that the material skewness and kurtosis persisted all indoors the rational wealth of ± 1 hence there was no prerequisite to consider data transformation to remedy the data set (Hair, et al., 2006).It is also

argued that for sample sizes of 50 and below, significant departure from normality could have significant impact on results but for sizes of 200 and above, these effects may be negligible. Many scales and measures used in social sciences have scores which are either positively or negatively skewed and this reflects the underlying nature of the construct that are being measured (Pallant, 2005).

3.11.6 Multi-co linearity

Multi-co linearity arises when there is a high level of correlation among various independent variables (Pallant, 2007). According to Tharenou (2007) this can lead to both interpretational and computational issues. As such, it is important to confirm that multi-co linearity does not exist before conducting a regression analysis. In this regard, if the correlation between independent variables is above 0.70, it leads to multi-co linearity. The interpretation of this is the existence of numerous similarities between the variables; hence, there is no need to have both of them. In such a scenario, one has to be deleted. Based on this study, a vicariate correlation was carried out among all variables.

3.11.7 Scale reliability testing: Testing for reliability is important since it helps to evaluate the random errors that can be in the measurements and the relevance of queries in the questionnaire. To measure the validity and reliability, the SEM should be used (Shook et al., 2004). As such, reliability helps to ensure that the latent construct indicators are consistent with the interrelation of the various indicators. Since their measurement is geared towards the same thing, they should be consistent (Hair et al., 2006, p.712). Assessment using reliability involves identification of the level of systematic variation which occurs within the particular scale. As such, one examines the association between the results generated when the scale is administered in different ways (Mazzocchi, 2008, p.318). When a scale is reliable, the same results should be repeated whenever the same trials are carried out at different intervals. However, an inconsistency arises when there is a random error in the measurements (Hair et al., 2003, p.396). Some of the approaches used to determine the reliability included the test-retest method and equivalent form. Conducting a test-retest method involves repetition of the measurements of the scale to different samples or the same samples on different occasions to assess the results. According to Hair et al. (2003), the equivalent form is also referred to as the alternative forms reliability. Mazzocchi (2008) states that to test the reliability, the researcher might require alternative scale

measurements for a particular construct, followed by administration to a sample group from the same population. Assessment of this involves the measurement of the specific correlations of different items and the mean value measurements. The scale measurement that is highly reliable has a higher correlation. In the course of this study, reliability scale used was assessed by application of the Cronbach's alpha coefficient using SPSS. This helped in the assessment of how various indicators assisted in the scale measurement (De Vellis, 2003 p.47). Testing for reliability helps to determine if the measurement results are stable, consistent and can be reproduced (Sekaran, 2000). As such, instruments that are used in the process should be able to generate results that are consistent. Bryman and Cramer (2005), state that in case of multiple measurement items for the constructs, internal reliability plays a critical role. Another approach used in the course of this study, was evaluation to determine if the answers given by the respondents were consistent with the questions given (Nunally, 1978).

In this education, the interior constancy of the numerous events was verified using Cronbach's alpha dependability quantities. An acceptable coefficient was 0.7. those below this were regarded as poor and any above 0.7 was ideal (Sekaran, 2000) According to Nunnaly (1978), adequate reliability when using Cronbach's alpha starts from 0.5. however, Hair et al. (2006) stated than an ideal measurement to indicate internal consistency was 0.7 and beyond. In this survey, the minimum accepted measurement was 0.5 and this helped in the determination of the reliability of the constructs used.

3.11.8 Outlier analysis

In this study, an outlier is an extreme data that point. When there are several of them, they have affect the results generated when using various statistical techniques (Tharenouet *al.*, 2007). Fortunately, in this particular study, the basis for evaluating the variables was the Likert 5-point score. In this approach, variables are evaluated in a range from strongly agree to strongly disagree. As such, there was no possibility for outliers. The furthest points of both sides strongly disagree or strongly agree were then considered as the outliers. Consequently, the outlier analysis helps to ensure the overall results are not affected by any extreme results (Tabachnick&Fidell, 2007). According to Lewis & Barnett (1985), an outlier is characterized with inconsistencies

with other observations. However, they can be both problematic and beneficial, based on the information provided and the particular context. Problematic outliers can easily affect the objectivity of the research and lead to biases. Additionally, it can affect statistical tests, thereby leading to wrong conclusions. Alternatively, outliers that are beneficial help to highlight unique qualities within the target population. Such qualities could have easily gone unnoticed (Hair et al. 2010).

3.12 Research instrument Triability

3.12.1 Trial instruments

Pre-testing is usually carried out to ensure that all the instruments to be used in the research are working well and can achieve their purpose. Baines and Chansarkar (2002) stated the importance of pre-testing by stating that it has an impact on the final design of the questionnaire. In this case, the questionnaires were handed to a small segment of the respondents, to determine it was easily legible and understandable (Sekaran, 2003). The respondents chosen for this activity consisted of 35 SMEs within the location highlighted. Each of them was then asked to go through the questionnaire and offer their views and suggestions regarding the questions and even the layout.

As expected, there was reaction from the sample SMEs involved in the pretesting exercise. An example is one respondent who could not understand why it was important to state their age. According to her, it was not relevant in any way, considering the subject of the research. Other respondents showed areas where the researcher had used wrongful wording or difficult words that could not be easily understood. Additionally, some noted that the questions should be in a sequence that can be easily followed to make it easier for them to answer. Based on these comments, several changes were made to the questionnaire to ensure it meets the expected standards.

While the first questionnaire was solely based on the requirements of the study, the final version was affected considerably by the feedback from the respondents in the pretesting phase. Similarly, examples by Harris and Ezeh (2000) helped in regards scale development and the overall design of the questionnaire. Initially, there were seven point responses for each query, and these were

reduced to five point queries. This was based on the fact that many respondents were more comfortable with the five point responses and it was more convenient to them.

3.12.2 The final instrument

Some of the qualities used to evaluate the final questionnaire were clarity, readability, wording, visual presentation and ease of use by the respondents (Hair, 2006, p. 147). Reliability was measured by assessing the relationship of variables with others within a similar construct. As such, in this regard, the inter-term correlations was not expected to exceed 0.30. (Robinson, 1991). Another measure of reliability was Cronbach's alpha, which helps to establish the relationship of several items within a group. When there is a high alpha value, it shows that various items fit into the underlying construct. Consequently, an acceptable reliability coefficient is one which is equal to or higher than 0.700 since this is a sign of adequate convergence (Hair et al., 2006).

The following constructs are included in the study: item-total association, inter-item association and Cronbach's alpha. The scale used was poor (≥ 0.0 and < 0.4), average/acceptable (≥ 0.6 and < 0.5), high/good (≥ 0.7 and < 0.9) and excellent (≥ 0.9). Given that the coefficients based on Cronbach's alpha are beyond 0.8, then they are considered acceptable. According to Ferketich (1991) a good scale should have the correlations of the item total at 0.40-0.70 and those above this scale are a sign of redundancy among the various variables. However, just like in this survey, the respondents gave strong views which led to the high values. As such, the reliability tests in this case were carried out using instruments already tested for consistency.

3.13 Validity

Validity in the research helps to analyze if the measures used are accurate (Sekaran, 2000). According to Zikmund (2003), validity refers to a scale that can readily measure what should be measured (p.331). As such, it helps in the determination of whether there is a relation between the measurement indicators that are corresponding and the construct. It helps to determine if the various indicators are a correct (Hair et al., 2006). Similarly, a higher level of validity is achieved when there is a better fit between the measured items and the theoretical latent construct (Neuman, 2003). This study also tested the validity tests as results are in next chapter

3.13.1 Convergent Validity

Convergent validity arises when the variables observed in regards to particular elements vary (Hair et al., 2006). Some of the estimations used to assess convergent validity include the Average Variance Extracted (AVE), factor loadings of construct and the Construct Reliability (CR). The loading estimates that are standardized ought to be 0.7 or above i.e. AVE should ideally be above 0.5 and the reliability estimates above 0.7. Attainment of these figures is an indication of convergent validity. As such, these standards were used in this research to evaluate the convergent validity.

3.13.2 Discriminate validity

This is the distinction of a latent construct from other constructs (Hair et al., 2006). The average variance of the particular construct and other the corresponding squared inter construct correlations (SIC) are compared. In case the estimated average is larger than the estimates of the SIC on a regular basis, it indicates discrimination validity. This approach has been effective to determine the discriminate validity throughout the survey.

3.13.3 Nomological validity

This is the behavior of variables in relation to other constructs (Bagozzi, 1980). It is tested to find out if the links between the measurement model and the constructs are sensible (Hair et al., 2006).. Considering the construct model that is applicable in this study, the various constructs defined are significant and positive. As such, to demonstrate this validity, there must be a positive relationship based on the theoretical model (Hair et al., 2006). It is these estimates (construct correlations) that test the model's Nomological validity.

3.14 Structural model evaluation and hypothesis testing

At the beginning parts of this chapter, there was the application of an approach which had two steps. The first step involved the measurement model evaluation whereby CFA remained used to control the latent constructs' dependability, dimensionality and rationality. As such, this stage was shadowed by the organizational prototypical to investigate the connotations amongst the hidden concepts and the projected model (Kline, 2005; Hair et al., 2006). To represent connection

between the hidden concepts that has been discussed in the second chapter we use the physical models with an intention of determining the concepts that affect other within the model. The consequences after the challenging of the organizational prototypical have been illustrated in the fourth chapter.

3.15 Importance of research assistants

Given the important role played by assistants in the study, training was compulsory to enable them obtain in-depth knowledge of the study and the role played by each question. As such, they were carefully taken through the questionnaire and the conceptual framework. For this study, the researcher selected candidates from the African Nazarene University to act as assistants. This was because they had worked together before on a previous research assignment and the candidates were therefore competent and knowledgeable on the subject. Before the onset of the study, all the assistants were given the opportunity to ask for clarifications on the subject and how to use the various instruments. Since they had previous experience in the exercise this process was fairly easy and required only minimal time. Although they were tasked with interacting with the respondents, they were given targets they had to cover by the end of the day, which ensured all of them achieved a high response rate.

3.16 Ethical measures

In the course of the survey, it is important to protect all the stakeholders involved. As such, some of the elements that should be integrated into the research include objectivity, integrity and confidentiality. Cohen et al. (2004; 47) stated that proper research should be conducted ethically. For purposes of this research, a permit was obtained from NACOSTI '(National Council for Science and Technology in the Ministry of National Communion for Council for Science, Technology and innovations).' To ensure that the various locations planned for the study were prepared, they were given a notice fourteen days before the actual visit. These were part of the ethical clearing processes outlined by UON, in addition to designing the research instruments and negotiating for consent.

Various philosophers such as Immanuel Kant formed the foundation for ethics. According to him, people are expected to behave in a particular manner that is right to everyone affected by the action. Similarly, Saunders (2009) mentioned that informed consent is critical in any venture. In this regard, all the stakeholders were aware of the research and the underlying reasons behind

it. With this information, they could then make a choice, on whether to accept or decline to be part of the research. To ensure that all the standards were met, the project supervisor reviewed and cleared the related documents. Considering the nature of this research, there was a direct interaction between the participants and the researcher.

3.17 Chapter Summary

The main focus to this chapter is in regards to the transformation of TOE into several instruments and the data collection approaches. Other areas that have been highlighted relate to rationality and dependability of the numerous gadgets, specimen and the incomes of data examination practical in this study.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter deals with the presentation of the data analysis results which were carried out using SPSS 21 and AMOS Version 21. The initial part addresses the descriptive statistics which is then followed by the respondent's profiles analysis. The final section discusses the testing of the hypotheses plus the moderator effects put forward in relation to the conceptual framework then reflects upon the results, giving a comparison between them and the relevant literature as discussed in the previous chapter. Prior to proceeding to present the results and the findings, this chapter first outlines a few additional aspects of the qualitative study undertaken in stage 2 of the overall research design. Before proceeding to the present, it also indicate and highlight some of the procedures used in the development of the final output.

4.2 Results and Findings from the Final Study

Data screening in terms of response and non-response rates achieved, missing data ,the influential outliers is considered in this section. This is followed with the necessary assumption for further analysis. The demographic characteristics of respondents of the study are given. The statistical items are presented. Structured Equation Modeling (SEM) results analysis are then presented in order to answer the research findings..

4.3.1. Response Rate and Non-response Bias

4.3.2 Response rate

In this study conducted, 347 questionnaires were returned out of 369 circulated. Notwithstanding is one among those who returned the questionnaires in total we receive a response rate of 94.04% among this returned forty one of them were disposed because of in complete response while the another thirteen questionnaires were returned totally to in the extreme answers like strongly agree and strongly disagree meaning had the same answers on all the Likert scale. In this way 293 questionnaires were utilized final data analysis. The finals data analysis was constituted last study in this research received a response rated of 79.04%

4.3.3 Non-response bias

Potential non-response inclination was checked when the researcher expected that individuals who neglected to fill the questionnaire were similar to the individuals who postponed in response as opposed to the individuals who addressed immediately, as proposed (Babbie, 1990, p 180). In this way, questionnaires obtained from early respondents and late respondents were utilized as a part of investigation to evaluate the non-response bias.

4.3.4 Data Screening

Prior to running the SEM, there is need to carefully screen the data to determine the data features. While handling the existing study, the words that are negative in nature were first reversed to ensure that data is ready for the analyses that the data would be subjected to. Additionally, the data was then examined and explored in regards to the values that are missing, the significant outliers, normality, the linearity of the data, multi co linearity. Further, SPSS 20 was then employed to help in testing the various assumptions.

The error-checking procedures were undertaken after all data were exported from the SPSS version 20. First, the regularity deliveries of all composed variables were inspected to recognize values outside the allowable range of answer options. Separate archives with outliers were recognized, mistakes modified, and the complete record inspected for data entrance accuracy. The procedure of examination the occurrence spreading of all study variables sustained iteratively in anticipation of no values external the permitted range of rejoinder options were acknowledged. The second error-checking technique complicated assortment of an arbitrary sample of the chronicles in the database. Data in each entry were checkered against the source article to verify effective data transfer straight into SPSS.

4.3.5 Missing Data

A number of strategies were taken to assess the missing data. SPSS was used to count the number of missing responses for individual items included in the survey batch. Since the analysis plan included variables expressed as a total subscale score of a measure, different strategies were necessary to deal with missing data, based on how the individual items were used in the planned analysis. The pattern and quantity of missing data was assessed for each individual item for

variables that were expressed as a total subscale score, comprising the respective and the aggregate responses for all items included in all subscale calculations (Byrne 2001). There were 26 questionnaires which are returned completely blank with missing values, this were eliminated. While the other thirteen questionnaires we partially filled having the missing values, this were also removed.

4.3.6 Outliers

Outliers are known to be the high and low points of data that can result in disproportionate effect on the conclusions that arise from the various statistical techniques employed. In this research, however, most variables were measured in nominal scale from strongly agree to strongly disagree. If respondents answered strongly agree or strongly disagree, these response options became outliers as there are extreme points in the scale. While doing the analysis, the identification of the univariate outliers happened through determination of frequency distribution of scores for the various observed data. However, there was no outlier identified for this study because it utilized a 5 point Likert scale ranging from (5) strongly disagrees to (1) strongly agree. In the event that the respondents gave an answer of strongly agree and disagree, the options of the response can easily be outliers given that they are the very large extents of the points within the scale. I was noted that only thirteen questions have outlier issues, as in the answered on the extreme as strong only agreed and strongly disagreed. These were eliminated before data analysis took place.

4.4 Reliability, Normality and Validity of the Data Collected

A reliable data gathering form is checked with consistency of the responses to the questions. Cronbach's alpha test was used in order to study the reliability of factors affecting SME SaaS adoption, which was calculated using IBM SPSS 21. This shows how much random error there is in measurement .

Using confirmation factor analysis, structural equation modelling, where the correlations that fits the expected pattern contribute evidence of construct validity. There are four components of construct validity; convergent validity, discriminate validity, Nomological validity and face validity .

4.4.1 Construct validity

Validity is the appropriateness of inferences made on the basis of observations or measurements i.e. is the degree to which a test measures what it claims to measure. It examines the question; does the measure behave like the theory says a measure of the conduct should behave. Construct validity comprises of convergent and discriminant validity (Bagozzi, 1980).

Table 4.1 Cronbach's alpha test using factors

study factors	Number of cases studied	Cronbach's alpha	Reliability
1. Awareness	4	0.604	Average
2. Trust	4	0.779	High
3. ICT knowledge and skills	4	0.556	Average
4. Cost	5	0.489	average
5. Relative advantage	5	0.691	Average
6. Uncertainty	2	0.775	High
7. Compatibility	5	0.774	High
8. Complexity	5	0.704	High
9. Trialability	4	0.667	Average
10. Top management support	5	0.617	Average
11. Innovativeness	3	0.666	Average
12. Prior IT experience	5	0.797	High
13. Competitive pressure	5	0.706	High
14. Supplier computing support	4	0.829	High

Source :Author data 2015 derived from SPSS Vr 21

4.4.2 Discriminant validity

Discriminant legitimacy investigates whether concepts that ought to be unrelated are unrelated. It also quantifies the variance between the characteristics in the prototype. The concepts should be empirically unique. When the inter-relationship of the characteristics is

greater than 0.80 or 0.90, it advocates that there is lack of differentiate rationality (Holmes-Smith, et al., 2006). It becomes necessary to conduct some form of discriminate validity assessment on those constructs so as to give greater confidence to later interpretation of findings.

Factor investigates there is a method that allows the investigators to merge many variables on a scale when there are more sensible number of measurements (Pallant, 2007). Discriminate legitimacy, on the other case, tests the level to which an idea change from different ideas and is shown by a measure not associating exceptionally with different measures from which it need to hypothetically contrast (Bagozzi et al, 1990). One needs to test for both discriminant and united validities keeping in mind the end goal to set up build legitimacy. Merged and discriminant legitimacy were assessed Cronbach's alpha test was led on all factors in the questionnaire. The extraction strategy and Varimax pivot technique were connected. Keeping in mind the end goal to decide the fit between the builds and their factors, factor loadings ought to be more prominent than 0.5 and have no cross-loadings.

Factor analysis was run once again to determine whether the factor structure remained stable. The table 4.12 below represents the communalities extracted from the factors. Since they were all high (above 0.5), this implies that the components represented the factors very well

Table 4.2 Communalities^a

	Initial	Extraction
Awareness	1.000	.550
Trust	1.000	.610
ICT knowledge and skills	1.000	.571
Cost of SaaS	1.000	.556
Relative advantage	1.000	.560
Uncertainty	1.000	.692
Compatibilty	1.000	.655
Complexity	1.000	.759
Trialabilty	1.000	.585
Top management support	1.000	.581
Innovativeness	1.000	.680
Prior IT experience	1.000	.563
Competitive Pressure	1.000	.519
Supplier computing support	1.000	.787
Extraction Method: Principal Component Analysis.		

Source :Author data 2015 derived from SPSS Vr 21

Verification and elimination based on Squared Multiple Correlations was used. A good measure for construct validity is The Squared multiple correlation for the observed variables (Bollen, 1989). Squared multiple correlations measure the correlation between a measurement variable and the construct it measures. The results as indicated in the table below, gives a summary of Squared multiple correlations. Squared Multiple Correlation of 0.30 does indicate an acceptable indicator variable, a good Squared Multiple Correlation measure should be over 0.50 (Holmes-Smith, et al., 2006).

The table 4.4 below represents the total variance explained. From the table, we can extract only four components from the factors from which we could retain 59.757% of the original data (from the extraction sums of squared loadings cumulative %)

Table 4.3 Rotated Component Matrix

	Component			
	1	2	3	4
Awareness	.425	.417	-.437	.063
Trust	.771	.119	.001	.026
ICT knowledge and skills	.229	.564	.002	-.008
Cost of SaaS	.279	.557	-.036	.407
Relative advantage	.634	-.017	.147	.369
Uncertainty	-.221	.741	-.187	-.245
Compartibility	.709	-.148	.356	.052
Complexity	-.260	.813	.105	.137
Trialabilty	.742	-.012	-.150	.107
Top management support	.444	.456	.272	.038
Innovativeness	.139	-.011	.813	.009
Prior IT experience	.628	.119	.387	.066
Competitive Pressure	.300	.223	.364	.497
Supplier computing support	.030	-.070	-.076	.881

Source :Author data 2015 derived from SPSS Vr 20

The strength of relationships between variables could underestimated or underestimated if the there is inconsistency(Farrell, 2009).Comparison of correlations between the latent variables and the construct in the second model clearly indicated that all the latent variables had correlations between them less than 0.80. This meant that each construct was distinct from one another and therefore none could be deleted from the model.

4.4.3 Multivariate Normality

Focusing on the shape of distribution of the data, normality is the most fundamental assumption. If single variables are normal, their multivariate normality can be assumed (Hair et al, 2010), though not guaranteed. The researcher determined the skewness and kurtosis as measures of normality (Hair et al, 1998). Skewness measures the distribution if it is symmetric. A negative skewness results if the left side of the histogram is longer than the right side, a positive value indicates the opposite while a value of zero indicates that the distribution is balanced (Newbold, et al, 2007). Kurtosis quantifies the comparative peak of the mean distribution. In distribution with high kurtosis has a greater peak closer to the mean with a weight tail in one route while less kurtosis might have a flat top adjacent to the average. Undesirable kurtosis shows that the spreading is flatter (platykurtic) while progressive values are deplokurtic (peaked) distribution. Hair et al, 2010, shows that if an alternative from earlier distribution is importantly large, all ensuring statistical tests are valid.

The table 4.4 below summarizes the mean, standard deviation, skewness and kurtosis of the variables.

Table 4.4 Multivariate Normality

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Age of the SME/Firm	293	1	5	2.82	1.377	.361	.142	-1.159	.284
Market scope for Respondent for SME/firm	293	1	4	2.58	1.124	-.174	.142	-1.343	.284
Awareness	293	.00	1.50	.8724	.28886	-.974	.142	1.366	.284
Trust	293	.00	2.33	.8059	.34979	-.520	.142	1.122	.284
ICT knowledge and skills	293	.00	1.61	.8895	.28423	-1.068	.142	1.711	.284

ost of SaaS	293	.00	1.92	.8911	.28515	-.729	.142	1.312	.284
Relative advantage	293	.00	1.61	.7183	.32838	-.692	.142	-.061	.284
Uncertainty	293	.00	1.61	1.0834	.36155	-.817	.142	.609	.284
Compartibility	293	.00	1.28	.7781	.31139	-.968	.142	.477	.284
Complexity	293	.00	1.61	1.0437	.26249	-1.018	.142	1.976	.284
Trialability	293	.00	1.50	.8203	.30802	-.697	.142	.543	.284
Top management support	293	.00	1.53	.9502	.26840	-1.023	.142	1.869	.284
Innovativeness	293	.00	1.61	.8134	.35007	-.456	.142	.198	.284
Prior IT experience	293	.00	1.61	.9565	.31555	-.531	.142	.165	.284
Competitive Pressure	293	.00	1.61	.8975	.27036	-.690	.142	.738	.284
Supplier computing support	293	.00	1.56	.5840	.38522	-.120	.142	-.826	.284
Valid N (listwise)	293								

Source :Author data 2015 derived from SPSS Vr 20

The ordinariness of the data was sharpened by defining the skewness and kurtosis information. The skewness and kurtosis numbers were originate to be less than ± 1 , which designated no nonconformity from data familiarity. Normality is the most fundamental assumption, focusing on the shape of distribution of the data. If single variables are normal, their multivariate normality can be assumed (Hair et al, 2010), though not guaranteed. Kurtosis quantifies the relative peak of the average circulation. Information distribution with greater kurtosis has a high peak near the mean with a tail in one direction while low kurtosis would have a flat top near the mean.

Analysis used the multivariate normality the data was assessed as specified by Diamantopoulos and Siguaw (2005). Assessment of univariate and multivariate normality was done The univariate normality test for continuous variables were also assessed. The tests examined each variable individually and calculated a z-score coefficient of skewness and kurtosis; significant *p* values indicated departures that were significantly different from zero. The multivariate measures of skewness and kurtosis were also measured. Skewness concerns the symmetry of the distribution whereas kurtosis considers the peak of the distribution. Skewness is 0 and kurtosis is

3 with a normal distribution (Olsson, Foss, Troye, & Howell, 2000). At moderate univariate skewness of two and at kurtosis of seven, Curran et al. found 6% bias and 100% rejection of the model using chi-squared as the statistic with N of 293. The descriptive analysis showed that the data kurtosis and skewness, were within the acceptable value of +1 and -1, except for a few variables that were transformed to achieve the normality level. Thus in most cases, there was no need to transform the data set (Hair et al, 2006). Besides, it is argued that for a sample size of 50 and below, significant departure from normality can have a significant impact on results. For sizes of 200 and above, these effects may be negligible. The dataset of 293 for this study increased the confidence in the minor deviations would not have much bearing.

4.4.4 Nomo logical validity

Nomo logical validity assesses if the correlations among the variables in the measurement model make theoretical sense (Hair, et al., 2010). Construct correlations are used to assess the validity. The variables must be positively related. The P values for the covariance among the constructs were questionable, indicating the correlations were highly significant except the correlations between significant factors. Results show that the following factors which are significant with p values .Complexity moderated by SME size $p < 0.005$, Awareness moderated by Market scope $p < 0.007$ ICT knowledge and skills moderated by Market Scope $p < 0.062$, Trust moderated by SME sector $p < 0.005$, SME size to Saas Adoption $p < 0.004$, IT Prior experiences to Saas Adoption $p < 0.003$ Market Scope to Saas Adoption $p < 0.036$, SME Sector to Saas Adoption $p < 0.028$, Relative advantage to Saas Adoption $p < 0.048$, Trial ability to Saas Adoption $p < 0.012$, Trust to Saas Adoption $p < 0.005$, ICT knowledge and skills to Saas Adoption $p < 0.013$, Complexity to Saas Adoption $p < 0.044$, Top Management Support to Saas Adoption $p < 0.006$, Supplier Efforts to Saas Adoption $p < 0.042$).

4.4.5 Multi colinearity test analysis (multi colinearity matrix)

This phenomenon happens when there is correlation between two or more independent variables. Having these kinds of multi-co linearity, there are very high chances of computation and interpretation problems occurring. Therefore, it is recommended that where there is no multi-co linearity investigation is done prior to doing regression and interpretation. According to the

works documented by Tabachnick and Fidel (2007), if there are two independent variables that have a correlation of 0.70 or higher, then chances are that there is multi co linearity. The table below indicates correlations of all the factors. None of the Pearson correlation values is beyond 0.70, thus according to Tabachnick and Fidel (2007), there is no multi-co linearity among the factors. This kind of relationships is supported in many cases as shown by p-values being less than 0.05 except the cases that are highlighted in yellow ($p > 0.05$)

Table 4.5 Multi co linearity test analysis (multi co linearity matrix)

		Awar eness	Trust	ICT knowl edge and skills	Cost of SaaS	Relati ve advan tage	Unce rtaini ty	Com parti bility	Com plexit y	Trial abilty	Top manag ement suppo rt	Innov ativen ess	Prior IT experie nce	Comp etitive Pressu re	Suppl ier comp uting suppo rt
Awareness	Pearson Correlation	1	.253**	.263**	.255*	.213**	.173*	.186*	.165*	.273*	.231**	.210**	.306**	.228**	.105
	Sig. (2- tailed)		.000	.000	.000	.000	.003	.001	.005	.000	.000	.000	.000	.000	.074
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Trust	Pearson Correlation	.253**	1	.225**	.313*	.459**	-.048	.484*	.152*	.401*	.393**	.310**	.336**	.289**	.226**
	Sig. (2- tailed)	.000		.000	.000	.000	.415	.000	.009	.000	.000	.000	.000	.000	.000
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
ICT knowledge and skills	Pearson Correlation	.263**	.225**	1	.392*	.308**	.058	.255*	.172*	.237*	.214**	.268**	.110	.047	.159**
	Sig. (2- tailed)	.000	.000		.000	.000	.319	.000	.003	.000	.000	.000	.060	.426	.006

	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Cost of SaaS	Pearson Correlation	.255**	.313**	.392**	1	.397**	.122*	.238*	.332*	.329*	.305**	.233**	.213**	.168**	.210**
	Sig. (2-tailed)	.000	.000	.000		.000	.036	.000	.000	.000	.000	.000	.000	.004	.000
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Relative advantage	Pearson Correlation	.213**	.459**	.308**	.397*	1	-.123*	.480*	.055	.407*	.326**	.311**	.236**	.236**	.397**
	Sig. (2-tailed)	.000	.000	.000	.000		.036	.000	.349	.000	.000	.000	.000	.000	.000
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Uncertainty	Pearson Correlation	.173**	-.048	.058	.122*	-.123*	1	-.153*	.471*	-.054	.201**	.049	.108	.029	-.149*
	Sig. (2-tailed)	.003	.415	.319	.036	.036		.009	.000	.360	.001	.400	.064	.622	.010
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Compatibility	Pearson Correlation	.186**	.484**	.255**	.238*	.480**	-.153*	1	-.070	.364*	.340**	.343**	.370**	.262**	.249**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.009		.234	.000	.000	.000	.000	.000	.000

	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Complexity	Pearson Correlation	.165**	.152**	.172**	.332*	.055	.471*	-.070	1	.040	.416**	.169**	.171**	.192**	.066
	Sig. (2-tailed)	.005	.009	.003	.000	.349	.000	.234		.495	.000	.004	.003	.001	.257
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Triability	Pearson Correlation	.273**	.401**	.237**	.329*	.407**	-.054	.364*	.040	1	.314**	.292**	.339**	.319**	.260**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.360	.000	.495		.000	.000	.000	.000	.000
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Top management support	Pearson Correlation	.231**	.393**	.214**	.305*	.326**	.201*	.340*	.416*	.314*	1	.347**	.379**	.285**	.119*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.001	.000	.000	.000		.000	.000	.000	.042
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Innovativeness	Pearson Correlation	.210**	.310**	.268**	.233*	.311**	.049	.343*	.169*	.292*	.347**	1	.339**	.284**	.202**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.400	.000	.004	.000	.000		.000	.000	.001
	N	293	293	293	293	293	293	293	293	293	293	293	293	293	293

Prior experience	IT	Pearson Correlation	.306**	.336**	.110	.213*	.236**	.108	.370*	.171*	.339*	.379**	.339**	1	.370**	.012
		Sig. (2-tailed)	.000	.000	.060	.000	.000	.064	.000	.003	.000	.000	.000	.000	.000	.837
		N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Competitive Pressure		Pearson Correlation	.228**	.289**	.047	.168*	.236**	.029	.262*	.192*	.319*	.285**	.284**	.370**	1	.186**
		Sig. (2-tailed)	.000	.000	.426	.004	.000	.622	.000	.001	.000	.000	.000	.000	.000	.001
		N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Supplier computing support		Pearson Correlation	.105	.226**	.159**	.210*	.397**	-.149*	.249*	.066	.260*	.119*	.202**	.012	.186**	1
		Sig. (2-tailed)	.074	.000	.006	.000	.000	.010	.000	.257	.000	.042	.001	.837	.001	
		N	293	293	293	293	293	293	293	293	293	293	293	293	293	293
**. Correlation is significant at the 0.01 level (2-tailed).																
*. Correlation is significant at the 0.05 level (2-tailed).																

Source :Author data 2015 derived from SPSS Vr 21

Co linearity is the point to which any consequence of the inconstant can be projected by the other variables in the investigation (Hair et al., 1998). In this instruction, inter-correlations between item parcels extended from .01 to .77. Subsequently, no co linearity delinquent was confronted since these principles did not go beyond the critical value of .90 as proposed by Kline, 2005.

4.5 Demographic analysis

4.5.1 Respondent Descriptive Statistics

Table 4.6 SME respondent descriptive statistics

Gender	Frequency	Percentage
Male	177	60.4
Female	116	39.6
Age bracket		
Less than 20 years	13	4.4
21-30	154	52.6
31-40	93	31.7
41-50	25	8.5
Over 50	8	2.7
Education level		
Primary school	3	1.0%
High school	51	17.4%
Craft/certificate	67	22.9%
Diploma	79	27.0%
Bachelor	73	24.9%
Masters	16	5.5%
Doctorate	4	1.4%
Others	3	1.0%
Position in organisation		
Director/chairman/owner	60	20.5
CEO/general manager	18	6.1
IT director/CIO	28	9.6
Senior management	81	27.6
Cloud operations manager	106	36.2

Source Author data 2015

The descriptive statistics of the study was carried out on the respondents: The frequency distribution of the status of the respondents in terms of gender, age level and education level was presented on the tables 1a, 1b and 1c below. Table 1a shows that 60.4% of the respondents were males, while 39.6% were females (n=293). Age of respondent shows that among the 293 respondents, 4.4% were below of 20 years of age, 52.6% were of the age 21-30 years, 31.7% were of the age 31-40 years of age, 8.5% were of the age 41-50 years, while 2.7% were over 50 years of age. Education level of respondent however revealed that just only 1.02% of the respondents, had education level upto primary level, 17.4% had education level upto high school, 22.9% had upto certificate or craft level, 27% had upto diploma level of education, 24.9% had upto bachelor level of education, 5.5% had masters level of education, 1.4 % had upto doctorate level of education, while only 1% of the respondents had other level of education. on the question addressing the position of the respondent in the organization; 106 (36.2%) were cloud operations managers, 81 (27.6%) were senior management, 60 (20.5%) said they were directors/Chairmen/Owners of their SMEs, 28 (9.6%) of respondents said they were IT Directors/CIO of their SMEs, while another 18 (6.1%) said they were CEO/General managers. The only surprise the research found out in this section was the response in relation to cloud operations manager at 36.2% where the research was of the thinking that some respondents could have confused this with IT directors/CIO nevertheless it's also tallies with the cloud adoptions status which is at 30%.

4.5.2 SME descriptive statistics

Table 4.7 SME descriptive statistics

Age of the firm	Frequency	Percentage
Less than 1 year	51	17.4
1-5 Years	100	34.1
6-10 years	48	16.4
11-20	39	13.3
Over 20	55	18.8
Size of the Firm / Enterprises		
Small (10-50 employees)	186	63.5
Medium (51-250 employees)	107	36.5
SME Industry/Sector		
General Trade, Wholesale, Retail stores	170	58.2%
Accommodation and Catering	9	3.1%
Informal Sector	18	6.1%
Professional and Technical Services	3	1.0%
Transport Storage and Communications	24	8.2%
Private Education ,Health and Entertainment	42	14.3%
Agricultural, Forestry and Natural Resources	9	3.1%
Industrial Plants, Factories, Workshops	18	6.1%
Market scope of the firm		
Local	72	24.6
Regional	55	18.8
National	89	30.4
International	77	26.3
Number of employees in SME compaquestiony/business		
Up to 10	106	36.2
10-50	92	31.4
50-250	46	15.7
Over 250	49	16.7

Source Author data 2015

The descriptive statistics of the study was carried out on the moderators for SaaS cloud adoption status of the SMEs some of them are like the SME'S size, the market scope and the age of the SME, industrial sector of the SME and the position held by the respondent. The table 4.6 below reveals that majority of the SMEs are of small scale at 63.5% while the medium scale were 36.5% of the total sample (n=293). Age of SME, however reveals that majority of the SME were of the age 1-5 years (34.1%), while those of 11-20 years of age were the least (13.3%), Frequencies on the market Scope of the SMEs, however, further revealed that most of the SMEs were operating nationwide (30.4%) and the least operating regionally (18.8%), n=293 as indicated on the table Most SMEs represented by 106 (36.2%), had up to 10 employees; 92 (31.4%) SMEs had between 10 – 50 employees; 49 (16.7%) SMEs had over 250 employees; another 46 (15.7%) SMEs had between 50 -250 employees.

4.5.3 SME SaaS Adoption status for SMEs in Nairobi County

Adoption status of the SMEs was the main focus of this research in relation to other factors such as SaaS awareness, trust, ICT knowledge and skills, cost, relative advantage, uncertainty, compatibility, complexity, trialability, top management support, innovativeness, prior IT experience, competitive pressure and supplier computing support. This is a trichotomous variable indicating mere already adopters, prospecting adopters and those who do not plan to adopt SaaS in the foreseeable future. Out of 293 collected cases 88 cases had already adopted representing 30%, 164 cases were prospecting adopters, representing 56%, and 41 cases had not adopted representing 14% as shown in the table 4.8.

Table 4.8 Respondent description of their SME cloud adoption status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Already adopted	88	30.0	30.0	30.0
	Prospecting to adopt	164	56.0	56.0	86.0
	Do not intend to adopt	41	14.0	14.0	100.0
	Total	293	100.0	100.0	

Source Author data 2015

When asked about their SME adoption status; 164 (56.0%) said they were prospecting to adopt , 88 (30.0%) said they already adopted, while 40 (13.7%) were not intending to adopt. However, 1 respondent did not give a response to the question. . This is clear justification that SaaS aadoption is still low among the SMEs.

4.6 Hypothesis Testing analysis

The study results looked at hypothesis analysis to test factor for both Significant and those that were found to be non-Significant the table 4.10 below show a summary of the hypothesis testing results

Table 4.9 Hypothesis test summary results

FACTOR STUDIED	HYPOTHESIS TESTED	STATUS OF THE TESTED HYPOTHESIS	ACCPECT ED HYPOTHE SIS
Awareness	H1 ₀ : Increased awareness of SaaS increases SMEs' propensity to adopt SaaS services	Rejected	Alternative
Trust	H2 ₀ : Trust on SaaS Services will have	Accepted	Null

	significant influence towards adoption of SaaS Applications		
Cost	H3 ₀ SaaS Computing Service provides higher per user annual cost than traditional ERP system,the adoption decision on SME	Rejected	Alternative
ICT Skills and knowledge	H3 ₀ :-Low or basic ICT Skill levels decrease SMEs' propensity to Cloud SaaS computing services	Accepted	Null
Relative Advantage	H5 ₀ : SMEs' predisposition to implement SaaS services increases with perceived relative advantages.	Accepted	Null
Uncertainty	H6 ₀ : SMEs' predisposition to adopt SaaS service decrease professed uncertainty of	Rejected	Alternative
Compatibility	H7 ₀ SMEs' propensity to adopt SaaS services increase with perceived compatibility	Rejected	Alternative
Complexity	H8 ₀ : SMEs' predisposition to adopt SaaS service increased with decreased perceived complexity of SaaS	Accepted	Null
Trial ability	H9 ₀ : SMEs' predisposition to adopt SaaS services increased by the trialing cloud services.	Accepted	Null
Top management support	H10 ₀ : SMEs' predisposition to adopt SaaS services with high top management support.	Accepted	Null
Innovatiness	H11 ₀ :When a firm is inventive it is more	Rejected	Alternative

	likely to adopt SaaS		
prior similar IT experience	H12 ₀ : SME propensity to implement SaaS services increases with increased prior IT experience.	Accepted	Null
competitive pressure	H13 ₀ : SME predisposition to implement SaaS services increase with increased competitive pressure.	Rejected	Alternative
external computing support	H14 ₀ : SME propensity to adopt SaaS service increases with increased external support.	Accepted	Null
Market Scope	H3b ₀ The market scope of an SME affects the cost of SaaS adoption	Accepted	Null
SME Size	H10b ₀ The size of the firm will have significant influence in High top management support associated towards adoption of SaaS	Rejected	Alternative
SME Age	H6b ₀ Higher age of SME decreases the uncertainties associated with SaaS	Rejected	Alternative
	H14b ₀ The age of the SME has little significance with respect to dealer's energies and outdoor computing support, thereby decreasing the possibility of implementing SaaS solutions.	Rejected	Alternative
SME Sector	H2b ₀ : The SME Sector is likely significantly influence towards Trust in adoption of SaaS	Accepted	Null

Source :Author data 2015 derived from SPSS AMOS Vr 21

The individual hypothesis factor analysis testing analysis description show is show below

4.6.1 Awareness

The study found Awareness as not important factor in predicting implementation of Cloud SaaS computing .The awareness that is significant was ($p=0.092$ in the research model).

It contradicts previous work of Howard and Moore (1982) that emphasized that for adoption to take place “consumers must become aware of new brand.” Lack of alertness is the most significant aspect that undesirably affects Internet banking acceptance (Sathye, 1999).Those awareness moderated by Market scope will be of significant at $p=0.007$ to adoption. hence the findings indicated that hypothesis H1₀: Increased awareness of SaaS increases SMEs’ propensity to adopt SaaS services was rejected.

4.6.2 Trust

Trust was discovered to be important consideration when predicting Cloud SaaS Computing acceptance in the study and was important ($p=0.005$ in the investigation model).

It confirms previous study by Poon (2008) who indicates that approximately 70% of the respondents agree that trust is influencing them to use Internet banking. In another empirical study in Singapore by Fock and Koh (2006), the authors found out that advanced levels of trust are important and are related with greater willingness to try SaaS. Again the trust was indicated as truly moderated by SME Market scope at $p=0.005$. The findings indicated that H2₀: Trust on SaaS Services will have significant influence towards adoption of SaaS Applications was accepted

4.6.3 ICT Knowledge and Skills

The present findings are consistent with past research which report ICT knowledge and skills which is a significant consideration to use SMEs’ decision making in the events of implementation of SaaS.And was important ($p=0.013$ in the investigation model). The limited IT skills and the unavailability of suitable advanced IT products for SMEs are inhibitors, which compound the asset specific transaction costs related to proprietary environment and increased customization (Ondiek et al, 2013). The IT skills required by SMEs can also be outsourced to the

SME IT firms. Hence, there is a need to develop the SME IT sector which can focus on the domestic market (Bhat 2013). Hence the findings indicated that hypothesis H3₀: Low or basic ICT Skill levels decrease SMEs' propensity to Cloud SaaS computing services was accepted

4.6.4 Cost

Cost was not observed to be noteworthy factors for anticipating Cloud SaaS computing appropriation in this study. As to, this discovering contrasts from some distributed studies like as per (Faasen et al., 2013), the application of evidence systems (IS) such as ERP is measured a safe strategy for SMEs in relationships of as long as both a substance for transaction-based innovativeness and as a foundation of cost investments and practical improvement (Khamis 2015). In comprehensive, Bank of cloud SaaS ERP eruditions that are as elongated as on software as a service (SaaS) foundation have looked as a honest additional to relating in-house ERP organizations (Khamis 2015). The findings indicated that H3₀: SaaS Computing Service provides higher per user annual cost than traditional ERP system, the implementation .

4.6.5 Relative advantage

Relative advantage is completely associated with the employment pronouncement on Cloud SaaS figuring and is substantial ($p=0.048$ in the schoolwork model).

Conferring to (Chau and Tam, 1997), adopters and non-adopters are not essentially different in their judgement about the assistances of different IT. This assists in challenging the consequences of the other distributed studies.

Frameworks. Truth be told, it compares to the prevailing contention with respect to the centrality of relative preferred standpoint in comprehension SMEs' appropriation of new ICT advancements. At the point when firms see that a development offers a relative preferred standpoint, then it is more probable that they will receive that advancement (Miller (2008). In any case, these relative favorable circumstances that are unblemished for SMEs. It is anticipated that small firms are supposed to see Cloud SaaS service as a new as computing prototypical that could build their benefit before they take a positive reception choice. Given that the vast majority of utilizations that were accounted for as embraced had a tendency to be those on the essential

end of the range it might be that members did not trust that these applications would really offer them an upper hand. The study accepted Hypothesis H50: Increased perceived relative favorable position of SaaS builds SMEs' inclination to receive SaaS services.

4.6.6 Uncertainty

The uncertainty factor was required to be a significant obstruction for adoption choice, attributable to the notoriety of Cloud SaaS computing in regards to security and protection concerns. In fact this was observed to be the situation in our analysis was in critical ($p=0.885$ in the research model). According to (Armbrust et al, 2009), at times an organization can examine the sellers that have more safety and consistency mastery that they do on the environment that they have no capacity in-house to weigh the safety of a multifaceted offering.

Unpredictability of the technology trends, service quality parameters like security and privacy, scalability and elasticity, service-continuity, reliability and liability (Armbrust et al, 2009, Jaeger et al. 2008, Sarkar and Young, 2011) increase uncertainty which increase the ex-ante costs of drafting, negotiating and framing the cloud contracts. Reputation and fate sharing with other customers of the cloud is a unique aspect of uncertainty in SaaS (Armbrust et al, 2009). In any case, SaaS computing services, for example, SaaS, can be immaterial to customers as electronic applications might be utilized online as a part of spot of direct establishment on computers in-house. The difficulties required in this viewpoint incorporate customers' worries about security and availability issues, for example, frameworks disappointment or Internet dispassion. Some these matters can make SMEs to be indefinite whether to accept Cloud SaaS computing. Consequently, a sensible problems of this uncertainty in the remedial action of Cloud SaaS computing reception has been eminent in this scrutiny, hence the findings indicated that hypothesis.

H6₀: SMEs predisposition to implement SaaS services was refused since it increases with the decreased perceived uncertainty of SaaS.

4.6.7 Compatibility

Compatibility was not observed to be significant factors for forecasting Cloud SaaS computing adoption in this study. With respect to, analysis was in significant ($p=0.403$ in the study

prototypical). The discoveries varies, for example (Thong, 1999) suggested that compatibility is important properties of the IS implementation and it was discovered that some organization will implement it in the event that they are compatible with existing work. According to Rogers (2003) keeps up that a fast adoption rate for innovation happens if the association perceive the compatibility of the implementation rate for innovation is made easier if the the perceived compatibility of implementation is necessary with the existing practices.

Hence, leaders want to guarantee that new ICT services are compatible with people's occupation obligation and quality frameworks. Be that as it may, the unimportance of compatibility may be on the grounds that SMEs don't stress over coordinating their applications either in light of the fact that their frameworks are generally simple to incorporate with Cloud SaaS computing, or on the grounds that they anticipate that them will simply supplant existing stand-alone frameworks. Another conceivable clarification for this discovery is that compatibility may have substantial influences amid the implementation stage. The degree to which the invention is steady with the principles, involvement, and needs of potential adopters may not be clear enough in the pre-adoption stage. Adopters may understand how a new IS innovation can be made more effective and compatible after they are adopted. This finding is in hence the hypothesis

H7₀: SMEs predisposition to implement SaaS services increases with increased professed compatibvility was rejected.

4.6.8 Complexity

Most of the present finding are consistent with past research which do not report difficulty .According to (Tiwan and Bush .2007; Chaudhury and Bharati 2008; Harindaranath et al 2008), this is seen as an imperative characteristics for SMEs decision making in the implementation of a new know-how. From the reseach outcomes the investigation was significant ($p=0.004$ in the research investigation). Furthermore the results from this analysis regarding complexity is inconsistent. A commercial is expected to adopt an development or a new knowledge if it necessitates high altitudes of new assistances for its memberships to implement it (Sahin 2006 Priset 1995). The outcomes may be expounded by the information that SMEs do not apprehension about how stress-free these arrangement are to activate since Cloud SaaS service are simpler to implement.

Based on the acceptance secondhand on Cloud SaaS based this could have reduced the complexity for the organization as its hardware and software support is undertaken by the Cloud SaaS solution vendor .The findings regard the hypotheses of H8o

4.6.9 Trial ability

Trial ability was discovered to be an important forecaster of implementation either.

The investigation was substantial ($p=0.012$ in the study prototypical), this is in conjunction with the studies done by (Kendall, 2001; Rogers, 2003; Martins et al., 2004; Ramdani and Kawalek, 2007).

This also may also influence the implementation rates and promptness among productions in an affirmative way.

It is important in exploring new inventions for the early implementers and investors according to (Roger, 2003).

To support this given that Cloud SaaS-based systems are often available for a quick demonstration, it may be that SMEs find them easy to trial, especially when compared with traditional business computing systems that are more involved. This could in turn suggest that

In order to encourage SMEs to try Cloud SaaS services, a lot of efforts from the providers side is required .This is not just to try Cloud SaaS services but to trial them for a long period and observe how it can upset their business enactment.

This outcome showed in regards to assumption H9₀: Trialing cloud services before implementation rises SMEs' predisposition to approve SaaS services was acknowledged.

4.6.10 Top Management Support

With respect to management support, it is fascinating to note that this variable ended up being measurably huge at ($p=0.006$ in the research model), Typically, SMEs' manager/proprietor backing is crucial to allocate the assets required for appropriation; be that as it may, a proprietor will conceivably not be included in the basic assessment for settling on the selection choice. This outcome is in accordance with the studies that have demonstrated that technology development

selection can be prevented by top administration (Premkumar and Michael, 1995; Eder and Igbaria, 2001; Daylami et al., 2005).

Cloud computing reception management backing is considered as the fundamental connection amongst individual and authoritative ICT development selection. For the most part, top management backing is crucial to keep up the significant alteration complete an expressed conjuring up for the association, and by distribution indications for the position of the new knowledge to miscellaneous personalities from the association (Thong, 1999; Low et al., 2011).The discoveries have affirmed Hypothesis H100: High top management support expands SMEs' inclination to receive SaaS services as acceptable.

4.6.11 Innovativeness

The findings indicate that innovativeness was not a significant factor when it came to Cloud SaaS computing adoption. Statistically, it shows that in significant at ($p=0.348$ in the research model), the outcomes can be elucidated by the huge amount for working and executing progressively multifaceted hardware and network tools and the associated time costs. In turn this will also act as a distraction from their core business. Innovative businesses would also need to have an agile organisation structure and IT infrastructure to underpin their innovative nature. This result is not consistent with the studies done previously by (Damanpour, 1991; Marcati et al., 2008) indicated that a history of innovativeness promotes the chances of futher constructive implementation decisions for the know how within the organization.The discoveries signposted that assumption H110: The higher the advanced a firm is, the more likely it is to implement SaaS was rejected.

4.6.12 Prior IT experience

This quantitative study demonstrates that Prior technology experience is a huge component in the assortment for the Cloud SaaS computing by SMEs in the Nairobi County, Kenya. The discoveries results show factually noteworthy at ($p=0.003$ in the research model).: According to Roger (2003) the client's appropriation conduct can be influenced by the gathered experience utilizing new advancements. On account of cloud computing, commonality with technologies, for example, virtualization, bunchin regard to cloud computing services ,computing or utility

computing can have an immediate impact upon clients. by researchers who contend that clients' acknowledgment of earlier comparable

According to (Lippert and Froman, 2005) experiences can be considered to depict the level of linkages between present practices and past experience.

A connection exists between a customer's former evidence and their understanding of another scenery or situation (Bandura, 1977). As indicated by Roger the client's reception conduct can be influenced by the amassed experience utilizing new developments. On account of cloud computing, nature with technologies, for example, virtualization, bunch calculating or usefulness computing can possess an immediate impact on client discernments in regards to cloud computing services. The discoveries demonstrated that hypothesis H120: Increased earlier comparable IT experience expands SME penchant to embrace SaaS services as Accepted.

4.6.13 Competition pressure

Pressure emanating from competition was observed to be in critical indicator of appropriation either. The examination was in critical ($p=0.760$ in the research display), this is repudiated by various studies have found that experimental studies have noticed the significance of aggressive competition as the drive to adopt SaaS. (Crook and Kumar 1998; Iacovou et al., 1995; Grover, 1993). Leibenstein, 1976 says that struggle puts more weight in different firms hence making them go for alternatives in order to have improvement in their products and the production capacity.

The discoveries showed that Hypothesis H130: Increased competitive pressure builds SME penchant to receive SaaS services as rejected

4.6.14 External computing support

Outside computing backing is another ecological stimulator. The consequences of this study demonstrate that with regards to SMEs in the area, outer computing bolster, which is likewise deciphered as backing from the Cloud SaaS supplier, altogether and emphatically influenced the appropriation of Cloud SaaS computing administrations. Its was observed to be in huge indicator of appropriation either. The investigation was important ($p=0.042$ in the inquiry prototypical). The other former studies done has endeavored to draw an association between supplier

showcasing endeavors and the customer's selection choice have exhibited that the accessibility of supplier endeavors and outside backing are decidedly identified with appropriation from (Woodside and Biemans, 2000; Hultink et al., 1997; Frambach et al., 1998; Woodside and Biemans, 2005). The discoveries demonstrated that Hypothesis H140: Increased outer computing bolster expands SME penchant to embrace SaaS services as accepted.

4.7 Moderator Effect

4.7.1 SME Firm Age

SME size was observed to be in huge indicator of appropriation either. The examination demonstrated that it was not huge ($p=0.062$ in the research show), this is repudiated by various studies have found that observational studies have noticed the significance of SME age as a selection driver (Sathye 1999) The organizations were ordered to those short of what one year, those one to five years, those six to ten years, those eleven to a quarter century those more than a quarter century. Two hypotheses were tried in this respects. H6b: The Higher the age of the SME the more prone to diminish the vulnerabilities connected with cloud selection. The examination demonstrated that it was not huge with instability ($p=0.062$ in the research model) thus dismissals of the theory. Secondly H14b0: The age of the SME has little criticalness with the Supplier endeavors and outside. The investigation showed that it was not huge with Supplier endeavors ($p=0.303$ in the research model) consequently dismissals of the speculation.

4.7.2 SME Size

As indicated by for Rogers (2003), extent is a standout amongst the greatest basic elements of the outline of an innovator. As examined before in part three, hierarchical size has for quite some time been at the pivot point of studies taking a gander at IT development selection and is thought to be a vital indicator of ICT advancement appropriation (Jeyaraj et al., 2006; Lee and Xia, 2006). Be that as it may, experimental results on the relationship between's them have been blended and are not clear yet. In this concentrate, firm size was not observed to be the huge anticipating component for Cloud SaaS computing appropriation. The examination showed that it was critical with SaaS reception ($p=0.004$ in the study). Given the relative homogeneity sample and the types of applications adopted, this may suggest that they have relatively similar

IT requirements and consequently it is not a matter of size as such. Two hypotheses were tested in this regard. H8b₀: The size of the firm will have significant influence in the complexities associated with adoption of SaaS.

The analysis indicated that it was significant with uncertainty ($p=0.005$ in the research model) hence acceptance of the hypothesis. Secondly H10b: The size of the firm will have significant influence in High top management support associated towards adoption of SaaS, The analysis indicated that it was not significant with Supplier efforts ($p=0.190$ in the research model) hence rejection of the hypothesis. This means that acceptance can be more readily rehabilitated into authenticity by persons or organisations, irrespective of their extent

4.7.5 SME Sector

SME sector was established to be noteworthy prognosticator of implementation. The analysis indicated that it was more important ($p=0.028$ in the study prototypical), this can be affirmed by various studies have found the industry as the right pointer for appropriation, showing how definite parts are acceptance cloud computing supervisions more than others. The sectors on study were namely a) General Trade, Wholesale, Retail stores b) Informal Sector c) Transport, Storage and Communications d) Agricultural, Forestry and Accepted Properties) Housing and Cookery f) Specialized and Mechanical Facilities g) Isolated Teaching, Fitness and Entertainment lastly h) Industrial Plants, Factories, Workshops. The hypothesis H2b₀: The SME Sector is likely significantly influence towards Trust in adoption of SaaS The analysis indicated that it was significant with trust ($p=0.005$ in the research model) hence the hypothesis was accepted.

4.7.4 SME Market Scope

SME scope was originate to be noteworthy prognosticator of implementation. The analysis indicated that it was in substantial ($p=0.036$ in the investigation prototypical), this can be supported by a number of studies. A study conducted by Chopra and Meindl (2001) demonstrated that when organizations growth for business sector achieve, which bring about stock allotment overheads and perhaps pursue costs, however the same study negates findings by Thong (1999), which demonstrated an immaterial relationship between industry part and IT

development appropriation. Two hypotheses were tested in this regards market scope . H1b₀: Market Scope increases awareness of SMEs towards SaaS adoption , The analysis indicated that it was significant with awareness (p=0.007 in the research model) hence acceptance of the hypothesis. secondly H13b: The market scope of the SME will have significant on the competitive pressure , The analysis indicated that it was not significant with competition pressure (p=0.381 in the research model) hence rejection of the hypothesis.

4.7.8 Summary of tests of hypothesis

To test hypotheses, the standardized path coefficients (regression weights) in the structural model provided guidance in examining the possible causal linkage between constructs. The standardization, done automatically by AMOS involves multiplying the ordinary regression coefficient by the standard deviations of the corresponding construct (Byrne, 2001). In regards to the findings posted in this paper, there is resilient for significance of perceived similarity, trialability, perception on the support of top management and degree of innovation in SMEs' selection choices in regards to cloud computing services. Table 4.10 offers a synopsis of the hypothesis that have been accepted and rejected.

4.8 Results Overview and Discussion

In spite of, cloud SaaS computing being viewed as a critical ICT development that can give vital and operational points of interest, it is yet to witness huge rates of reception among SMEs. In this way, it is vital to comprehend what variables decide cloud SaaS computing appropriation in the small organizations. In light of the TOE hypothetical system, this exploration created and approved an examination structure to comprehend the powerful logical variables on cloud SaaS computing selection in SMEs.

This study acquired a few essential discoveries and suggestions nearly the causes of SaaS computing selection for SMEs. SMEs " appropriation of cloud SaaS computing in the Nairobi County, Kenya relies on upon the mindfulness, trust, ICT Knowledge and aptitudes, Cost, Relative preferred standpoint , Uncertainty, Compatibility ,many-sided quality, trial ability , Top administration bolster, creativity, Prior IT experience, Competitive weight and supplier exertion which is dictated by SME Age, SME size, SME Sector and Market scope. New technologies are required to bring heaps of imperative advantages and esteem to a SME, well past those that

officially embraced technologies convey. Appropriation of new technology is in some cases delayed in light of the fact that the firm is not completely mindful of the potential advantages of embracing these developments and this is unmistakably directed by the business sector extent of the firm. Mindfulness and comprehension of these focal points is noteworthy for the reception choice. mindfulness, trust, ICT Knowledge and abilities, Relative preferred standpoint , ,multifaceted nature, trial ability , backing of the top administration, Prior IT experience, and supplier exertion directed by SME size, SME Sector and Market extension were seen to impact cloud SaaS computing reception in the SMEs. This implies that supervisors need to assess the potential advantages of SaaS computing and build their trust about these administrations so as to abate the level of vulnerability. A key ramification from this is cloud SaaS computing suppliers need to chip away at giving a solid and secure environment in the most adaptable, savvy, and persuading way. This is genuine particularly toward the starting phases of cloud SaaS computing, when suppliers are yet to end up being prepared, Also, a key concern when agreeing to and utilizing cloud SaaS administrations that keep running from an alternate nation or isolated server area is this may prompt lost protection for a customer's information, in light of the different security enactment applying to those in our nation. Consequently, governments might be required to consider modification to this enactment identified with information insurance, e.g. enactment coordination access to cloud serves with respect to cloud SaaS computing administrations. , the inventiveness of the firm on cloud SaaS computing selection decides the significance of these elements in clarifying the imaginative conduct of a firm. This finding firm imaginativeness does not affect cloud SaaS computing appropriation prompts some critical ramifications for administration suppliers in their endeavors to comprehend their clients better and plan promoting systems. Henceforth, a more broad study which incorporates different components and the part of firm imaginativeness ought to yield better expectations for future analysts.

Ultimately, the outcomes demonstrate that outside computing support assumes an imperative part, and exercises that suppliers execute can fundamentally impact SMEs' appropriation choices from various perspectives. Supplier promoting action can impact the likelihood that an advancement will be embraced by associations altogether (Frambach et al., 1998), and will lessen the level of instability in regards to cloud SaaS administrations. Computing administration

suppliers dependably endeavor to offer imaginative types of IT backing to their clients to fulfill their requirements for effectiveness, cost diminishment and adaptability. Already, in the customary in-house technique, gear must be gotten and ventures must be made in human funding to set up, oversee, and work the equipment and implanted software required with creating IT administrations. Computing administration suppliers used to have awesome interest in-house software and equipment, which rolled out the improvement entirely troublesome for them. Be that as it may, these days, suppliers perceive the transforming IT industry-environment, and are making an extremely dynamic moves into be a facilitators for cloud SaaS administrations. Supplier endeavors and the outer computing support laid out in this study have an extraordinary impact from a scholarly position, as well as on the changing business matters. Mutually the customer and supplier point of view of cloud SaaS computing administrations, consequently, need be considered. This is on account of customers would be influenced by the perspectives of their administration supplier and the degree to which this supplier has faith in SaaS computing. Cloud SaaS computing suppliers may need to enhance their association with SMEs, to make a sound domain for cloud SaaS computing selection, and to evacuate any dubiousness encompassing this sort of technology. Suppliers may likewise need to explain their position and position concerning offering in-house administrations against cloud SaaS services, which could therefore influence customers' certainty.

4.9 Model validation using SPSS AMOS

4.9.1 Original Model fitness

This section discusses the testing, modification and verification of the proposed research model. The general model initially developed by the researcher is tested and upon fulfilling the test requirements, some variables are dropped and the maintained variables form the final model that is verified. The analysis of the model was achieved through the Analysis of Moment Structures (AMOS), an SPSS add on.

The model had 24 variables which were: endogenous or exogenous and observed or unobserved.

Table 4.10 Summary of Variable counts

Number of variables in the model:	24
Number of observed variables:	19
Number of unobserved variables:	5
Number of exogenous variables:	19
Number of endogenous variables:	5
Endogenous	Exogenous
Observed	Observed unobserved
SaaS Adoption	Innovativeness Error 1
Age of the SME	Prior IT experience Error 2
Size of the SME	Competitive pressure Error 3
Market scope of SME	Top management Error 4
Sector of the SME	Complexity Error 5
	Awareness
	Knowledge
	Trust
	Uncertainty
	Cost
	Relative advantage
	Compatibility
	trial ability
	Supplier competitive pressure

Source :Author data 2015 derived from SPSS AMOS Vr 21

An exogenous variable is one that is not produced by additional variable in the classical, but tends to foundation one or more variables in the prototypical. A characteristics is one that is instigated by one or more variables in the prototypical and may cause another endogenous variable. Exogenous variables are equivalents of independent variables while endogenous variables are equivalents of dependent variables (Hair, et al., 2006).

A hidden characteristics or hypothesis is not quantified directly, but somewhat through one or additional obvious variables. Measured variables, commonly called the observed variables, come

from the responses by the respondents to a specific question, implying that observed variables become the indicators of latent variables. These indicators associated with the latent variables are quantified by the investigator according to (Hair, et al., 2006).

Within SEM, there are two representations, namely the mechanical model and the quantity model. The quantity model comes out as a graphic depiction postulating the replica's hypotheses, pointer variables, and relationships. The mechanical model is a collection of separate associations that link the theorized model's concepts, forming the foundation of determining whether the relations exist between the concepts and hence enables one to accept or reject a theory. The measurement model deals with hidden characteristics and indicators, while the structural model is the set of operational equations portrayed by emblems of exogenous and endogenous physiognomies in the prototypical with projectiles and commotion rapports. Omwansa(2012).

Next step was to transform the feeder variables making the construct variables. This was achieved through a transformation process in SPSS. The simple process was as follows: from the SPSS menu, click on transform> compute variable>input the target variable you want >select 'statistical' under function group > under functions and special variables, select 'mean'> under the numeric expression, write mean(then choose the variables that make up the target variable separating them by a comma then close the parenthesis).

4.9.2 Model measurements and assessments

The assessment of measurement model was done to confirm its validity. Rationality hinge on instituting a satisfactory level of Goodness of fit for the quantity model. Goodness of fit shows the resemblance between the perceived (reality) and projected (theory) covariance environments (Hair, et al., 2010); meaning if the theory were perfect, the matrices would be the same. AMOS offers a quantity of approaches for approximating the mechanical reckoning representations such as thoroughgoing probability, un-weighted least quadrangles and comprehensive least rectangles. The chi-square is the fundamental statistical measure in SEM to quantify the differences between the covariance matrices. The chi-square value is small (with a corresponding large p-value, for statistical significance), to demonstrate minimal difference between the two matrices. As the chi-square value increases, an indication of growing difference (residuals) between the matrices is

demonstrated. The implied null hypothesis for SEM is that witnessed and projected backgrounds are equal meaning the model fits perfectly. The first run of the data in AMOS for the maximum likelihood estimate generated a chi-square value of 2228.518 with 1072 degrees of freedom. The large value of chi-square could lead the model being rejected (Byrne, 2001); (Hair, et al., 2006); (Bentler, 1990). However, the same researchers have conclusively argued against relying on chi-square statistics for assessing models, because it can be interpreted wrongly (Byrne, 2001); (MacCallum, 1990); (Hair, et al., 2006). The reasons why this can be misleading include:

- i. Larger samples more so larger than 200 result in higher likelihoods of refusal of the model and rise the likelihoods of Type II fault (Hoe, 2008). The data set of 293 for this study was large and could potentially significantly affect the chi-square value.
- ii. The chi-square guide is very crucial to desecrations of multivariate normality assumptions. The data for the study was not normally distributed with skewedness either to the right or to the left of centre.
- iii. When samples are very large, any slight variations between the perceived model and the flawless fit model can be established to be very substantial.
- iv. A large number of indicators make it difficult to use chi-square to assess model fit. Adoption of cloud computing started with 49 factor/indicators representing constructs, which was very large.

Other indicators of measuring fitness a model which were developed to correct for biasness as a result of larger data samples such as: Proportional fit catalogue (PFC), Goodness of fit index (GFI), Derivation Nasty Tetragonal Error of Estimate (DNTEE) and Tucker Lewis index (TLI).

. At minimum a researcher should consider the chi-square test, at least one absolute index and one incremental index. Absolute fit indices provide straight events of in what way a model reproduces the observed data without comparing the GOF with any other model, while the incremental fit indices assess the suitability relative to some standard model. There is an argument is that there is no other model that could possibly improve it because no relationships exist between the constructs. These indices indicated the following values as in the table below.

4.9.3 Model Absolute and incremental fit indices

Table 4.11: Absolute and incremental fit indices

Name	Description	Good measures
Chi-square statistic	“statistically based SEM fit. Aims at showing no difference between the matrices. When sample sizes are large or when observed variables are many, it is not reliable in measuring fitness”	“A low value demonstrates minimal difference between the matrices. (Tabachnick & Fidell, 2007)”
Normed chi-square	“Proportion of chi-square to the notches of autonomy. An unimportant chi-square worth relative to its gradation of autonomy is symptomatic of respectable fit.”	“Relations in the instruction of 3 to 1 or less are measured respectable for appropriateness (Kline, 1998).”
Goodness of fit index (GFI)	“This is less sensitive to sample size, does not ignore completely. Value ranges between 0 and 1.”	“high value of 0.90 and above shows good fit. Above 0.95 is even more desirable (Sekaran, 2003); (Tabachnick & Fidell, 2007)”
Root Mean Square Error of Approximation (RMSEA)	“A truncated value designates better fit. A very normally used incomes of determining appropriateness.” It factors in illustration magnitude and prototypical complexity in its multiplication.	“A worth of 0.05 or 0.08 is measured a respectable cut-off” Contemporary investigation reasons that the sureness level ought to be encompassed for even lower RMSEA values. Accordingly, values of 0.03 to 0.08 with a self-confidence of 95% are

		Measured satisfactory (Schumacker & Lomax, 2004); (Browne & Cudeck, 1993)”
Normed Fit Index (NFI)	Also familiar as the Bentler-Bonett Normed fit index. “Proportion of the modification in the chi-square price of the projected model and a unimportant prototypical alienated by the chi-square value”	“The value ought to be amongst 0 and 1. The quicker it is to 1, the improved the fit (Ullman, 2001).”
Tucker Lewis Index (TLI)	“Employs the Normed chi-square value for equally the projected prototypical and the null prototypical. By by means of the Normed chi-square, it takes care of difficulty.”	“Since TLI is not normed, its value can be less than 0 or greater than 1. Overall, the higher the TLI value is, the better the fit Reference. The TFI is usually lower than is the GFI--but values over .90 or over .95 are considered acceptable (Hu & Bentler, 1995).”
Comparative Fit Index (CFI)	“Values range between 0 and 1.” It is commonly used as a measure of fit. It is also acknowledged as the Bentler Proportional Fit Index.”	“An assessment overhead 0.90 is measured a respectable fit (Kline, 1998).”
Relative noncentrality index (RNI)	“This also compares with the null model.”	“A worth above 0.90 is measured a respectable fit (Bentler, 1990).”

Source author:- Adopted from Tabachnick & Fidell, 2007 and SPSS Amos Vr 21 User guide

4.10. Standardised estimates and output of the un-modified model in SPSS AMOS Ver 21

Table 4.12: Standardised estimates and output of the un-modified model

			Estimate	S.E.	C.R.	P
Market_Scope_of_SME	<---	compe_pressure	.008	.101	.078	.381
Size_of_SME	<---	top_management	.057	.043	1.311	.190
Size_of_SME	<---	Complexity	.027	.040	.673	.005
Market_Scope_of_SME	<---	Awareness	-.272	.101	-2.704	.007
Market_Scope_of_SME	<---	Knowledge	-.050	.101	-.498	.062
Sector_of_SME	<---	Trust	.092	.136	.675	.005
Age_of_SME	<---	Uncertainty	.072	.080	.902	.367
Age_of_SME	<---	supplier_comp	-.113	.110	-1.031	.303
SaaS Adoption	<---	question5_Age_of_SME	-.002	.026	-.090	.728
SaaS Adoption	<---	question6_Size_of_SME	-.002	.073	-.032	.004
SaaS Adoption	<---	Innovation	.041	.044	.938	.348
SaaS Adoption	<---	prior_experience	.130	.043	3.003	.003
SaaS Adoption	<---	question8_Market_Scope_of_SME	-.066	.032	-2.092	.036
SaaS Adoption	<---	question7_Sector_of_SME	-.019	.018	-1.069	.028
SaaS Adoption	<---	Cost	.017	.051	.340	.734
SaaS Adoption	<---	relative_advantage	-.107	.054	-1.974	.048
SaaS Adoption	<---	Compatibility	.047	.056	.836	.403
SaaS Adoption	<---	Trialability	.130	.052	2.507	.012
SaaS Adoption	<---	Awareness	-.092	.055	-1.683	.092
SaaS Adoption	<---	Trust	.117	.042	2.811	.005
SaaS Adoption	<---	Knowledge	.148	.055	2.696	.013
SaaS Adoption	<---	Uncertainty	.005	.035	.144	.885
SaaS Adoption	<---	Complexity	-.101	.050	-2.018	.044
SaaS Adoption	<---	top_management	-.010	.054	-.176	.006
SaaS Adoption	<---	compe_pressure	-.017	.055	-.305	.760
SaaS Adoption	<---	supplier_comp	.011	.048	.228	.042

Source author data derived from SPSS Amos vr 21

From the above table, it was clear that the model did not fit well. Henceforth, some variables were to be dropped in order to get a good model fit. The dropping of variables was done through the use of p-value measure. Any p value ≤ 0.05 was retained as highlighted in the above table.

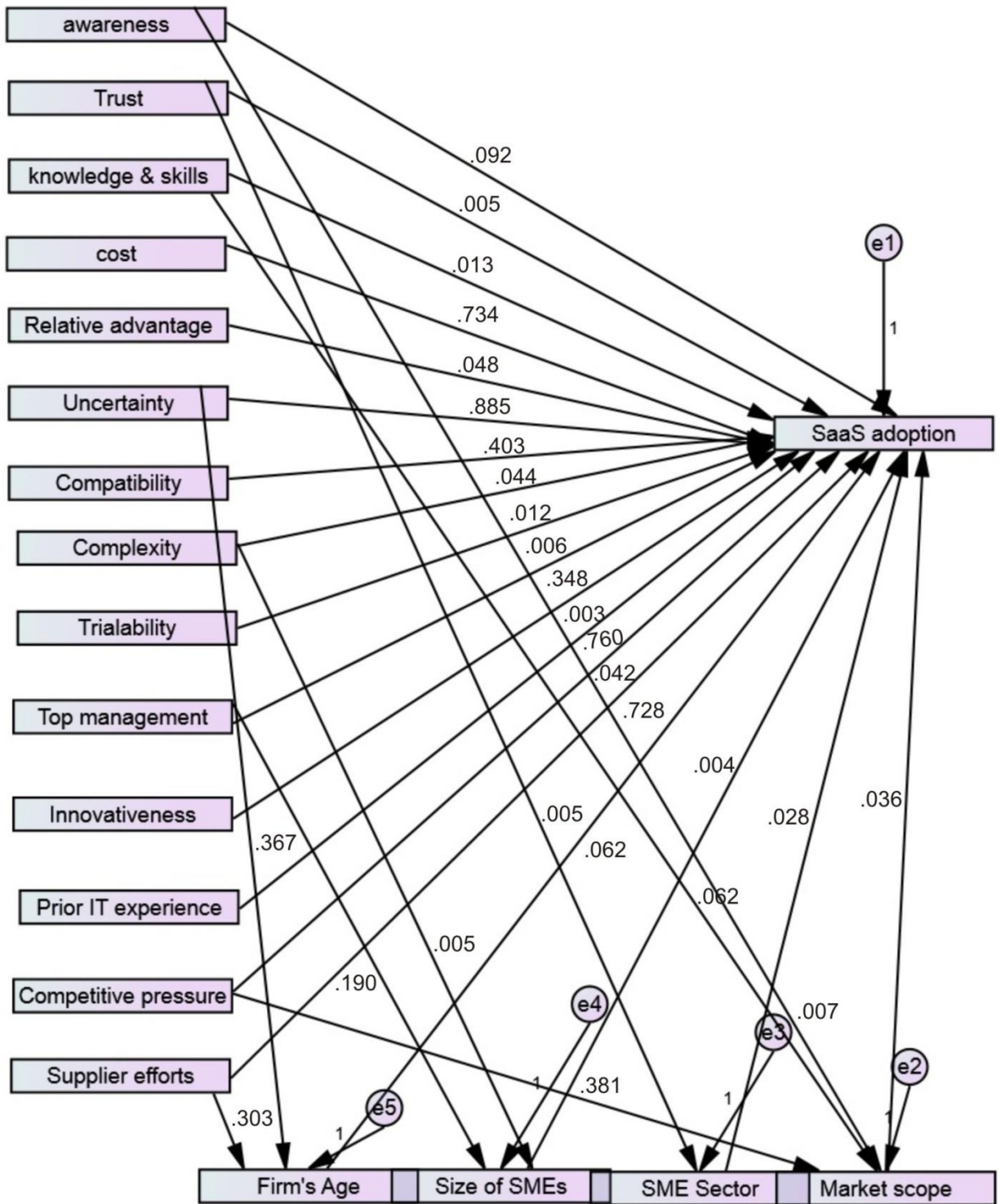


Figure 4.1 : Fit indices for the un-modified model

Source author data derived from SPSS Amos vr 2

4.10.1 Fit indices for the un-modified (original) model

Table 4.13 : Fit indices for the un-modified (original) model

Test Statistic	Description of good measures	Obtained value	Comment
Comparative Fit Index(CFI)	“Values should lie amongst 0-1 nevertheless standards above 0.9 have very good fit”	0.038	Poor
Incremental Fit Index (IFI)	“Standards adjacent to 1 are designated good”	0.061	Poor
Root Mean Square Error of Approximation (RMSEA)	“A worth of 0.05 or fewer designates respectable fit. 0.08 Or fewer specify suitable fit” A self-same of frequently used means of measuring fitness. It factors in sample size and model complication calculation. .	0.154	Poor
Normed Fit Index(NFI)	“Standards of 0.9 and overhead specify good fit.”	0.434	Poor
Chi-square Statistic (CMIN)	“A statistically based SEM fit. Aims at showing difference between the matrices. When sample size are large or when observed variables are many, it is not reliable in measuring fitness.”	1146.43 with df 145	Poor
Minimum Chi-square	“Tests independent model with the default model. If the index exceeds 2 or 3, then many paths have to been dropped.”	7.906	Too many paths to be dropped
Goodness of Fit Index(GFI)	“This is less sensitive to sample size, does not ignore completely. Ranges between 0 and 1. However, it should exceed 0.9 for a good model.”	0.594	Average

Source Author data derived from SPSS Amos vr 21

The value of the chi-square should be small (with a corresponding large p-value, for statistical significance), to demonstrate minimal difference between the two matrices. As the chi-square value increases, an indication of growing difference (residuals) between the matrices is demonstrated. The null hypothesis therefore is; “The *projected and witnessed matrices are equal;*” meaning the model fits perfectly (Omwansa 2012).

Chi-square alone could not be used to make up a conclusion on the model fitness since when the sample size is large, i.e. >200, its value seems misleading and the model could be easily rejected. Therefore, CMIN, GoF, RMSEA, IFI and CFI were also used. CMIN is a Chi-square dimension of connecting the recognized perfect and the independence prototypical to the drenched classical. CMIN/DF, the comparative chi-square, is a directory that expressions in what way much the fit of data to prototypical has been concerted by reducing one or supplementary paths. Unique rule of scan is to purpose you have dropped too many paths if this directory surpasses 2 or 3. GFI, the blimey of fit catalogue, articulates you what proportion of the modification in the model variance-covariance matrix is accommodated for by the prototypical for any respectable model it ought not exceed .9. When it is 1 that shows a perfect saturated model, the prominence of this prototypical is that it associates your model to the independent model relatively than to the drenched model.

The Normed Fit Index (NFI) mentions to the modification amongst the double models' chi-squares shared by the chi-square for the independence prototypical. For the information that we congregated, this was 0.54. After the values are of .9 or developed (some say .95 or higher) designates good fit. The Proportional Fit Index (PFI) uses an analogous method (with an on central chi-square) and is supposed to be a dressed catalogue with unimportant example groups. It diverges from 0 to 1, when the NFI is of .95 (or .9 or higher) designates good fit.

The Derivation Malicious Square Blunder of Estimate (DMSBE) approaches lack of fit connected to the drenched prototypical. RMSEA of .05 or scarcer designates respectable fit, and .08 or fewer passable fit.

4.11 Model trimming

Since all the measures of goodness of fit failed for the model, the researcher had to come up with a way to improve on the fitness. One of the ways to improve on fitness is to drop paths from the model, with a goal of improving the parsimony (simplicity) of the model. The suggestion here is that a model can be developed by stipulating fewer projected bound trails, thus making it simpler. Models with relatively few parameters are sometimes said to be high in parsimony and preferred. There is general agreement in modelling research that the simpler the model, the better (Hair, et al., 2010); (Mulaik, 1990). This is the opposite of complex models which lack in parsimony (Arbuckle, 2005). Dropping any paths or constructs must be completed only if unflinching with philosophy and face authority (Hair, et al., 2010). However, one should only drop paths which are statistically insignificant as measured using the P value . The resultant model is known as the nested version of the original model. Critical Ratio (CR) can also be used to establish the significance of a path. If the critical ratio is >1.96 , then its estimated path parameter is significant at 0.05. Hui (2011). Model trimming was done based on estimated path parameter is significant at 0.05 as indicated in the table below .

4.12 Standardized estimates and output for the trimmed-modified model

Table 4.14: Standardized estimates and output for the trimmed-modified model

			Estimate	S.E.	C.R.	P
Size_of_SME	<---	Complexity	.045	.040	1.113	.005
Market_Scope_of_SME	<---	Awareness	-.284	.101	-2.821	.007
Sector_of_SME	<---	Trust	.092	.136	.675	.005
SaaS Adoption	<---	Size_of_SME	-.006	.074	-.084	.004
SaaS Adoption	<---	prior_experience	.130	.044	2.932	.003
SaaS Adoption	<---	Market_Scope_of_SME	-.073	.032	-2.280	.036
SaaS Adoption	<---	Sector_of_SME	-.016	.018	-.896	.028
SaaS Adoption	<---	relative_advantage	-.030	.056	-.546	.048
SaaS Adoption	<---	Trialability	.150	.053	2.820	.012
SaaS Adoption	<---	Trust	.117	.042	2.811	.005
SaaS Adoption	<---	Knowledge	.140	.056	2.497	.013
SaaS Adoption	<---	Complexity	-.101	.050	-2.018	.044
SaaS Adoption	<---	top_management	-.010	.054	-.176	.006
SaaS Adoption	<---	supplier_comp	.011	.048	.228	.042

Source author data derived from SPSS Amos vr 21

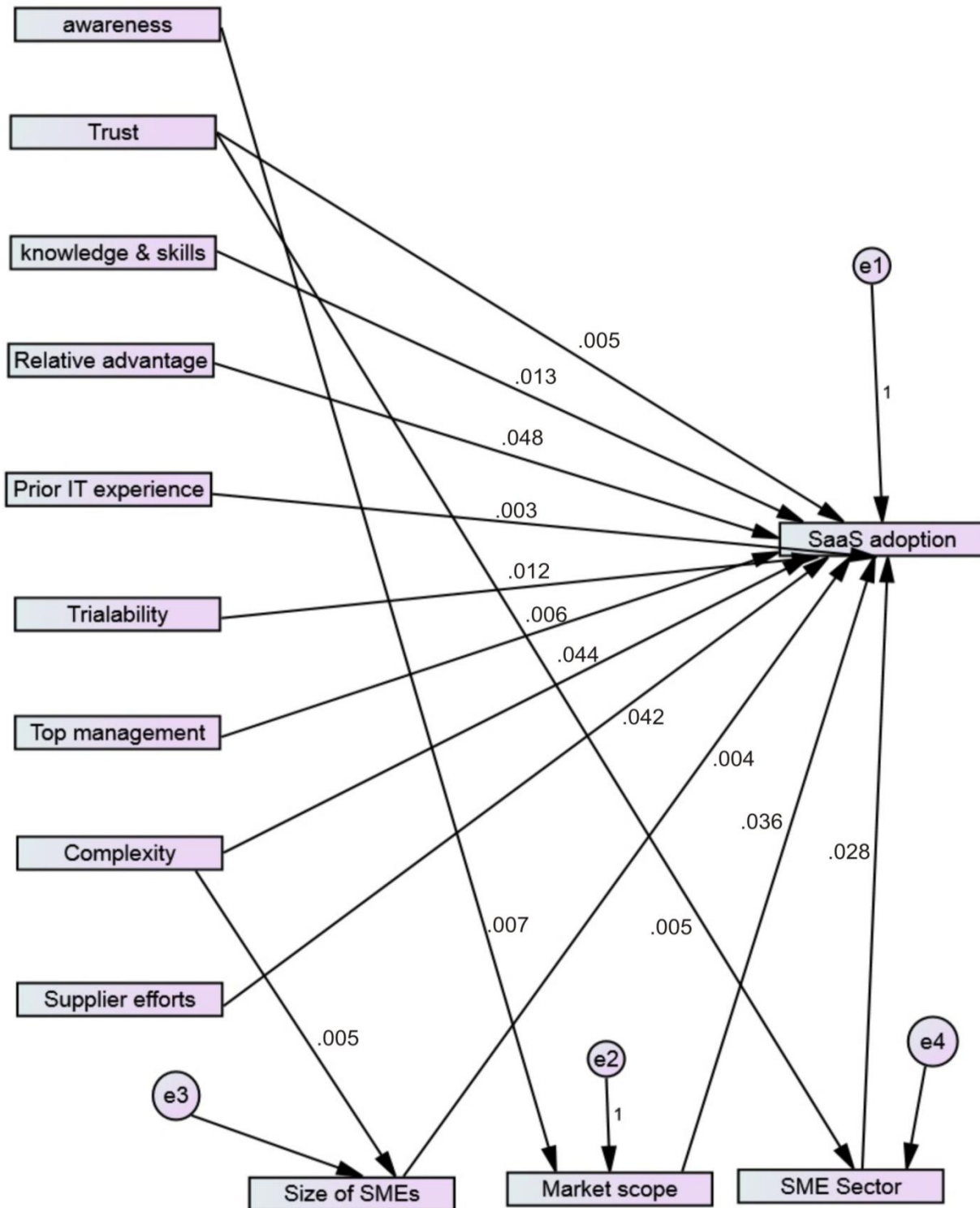


Figure 4.2 Fit indices for the trimmed-modified model

Source author data derived from SPSS Amos vr 21

4.12.1 Fit indices for the modified model

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 66

Number of distinct parameters to be estimated: 21

Degrees of freedom (66 - 21): 45

Result (Default model)

Minimum was achieved

Chi-square = 327.087

Degrees of freedom = 45

Probability level = .000

4.12.1 Fit indices for the trimmed-modified model

Table 4.15: Fit indices for the trimmed-modified model

Test Statistic	Description of good measures	Obtained value	Comment
Incremental Fit Index (IFI)	“Values close to 1 are termed good”	0.061	Good
Root Mean Square Error of Approximation (RMSEA)	“A value of 0.05 or less indicates good fit. 0.08 or less indicate adequate fit”	0.07	Adequate fit
Goodness of Fit Index(GFI)	“This is less sensitive to sample size, does not ignore completely. Ranges between 0 and 1. However, it should exceed 0.9 for a good model”	0.794	Better
Normed Fit Index(NFI)	“Values of 0.9 and above indicate good fit.”	0.84	Better
Comparative Fit Index(CFI)	“Values should lie between 0-1 though values above 0.9 have very good fit”	0.88	Good
(CMIN)	“Tests independent model with the default model. If the index exceeds 2 or 3, then many paths have been dropped.”	2.269	Good fit
Chi-square Statistic	“A statistically based SEM fit. Aims at showing difference between the matrices. When sample size are large or when observed variables are many, it is not reliable in measuring fitness.”	327.08 with 45 df	Good fit

Source author data derived from SPSS Amos vr 21

Since most of the tests were fulfilled, the final model was then considered good fit.

4.11.3 Final Structural model extracted from the final measurement model

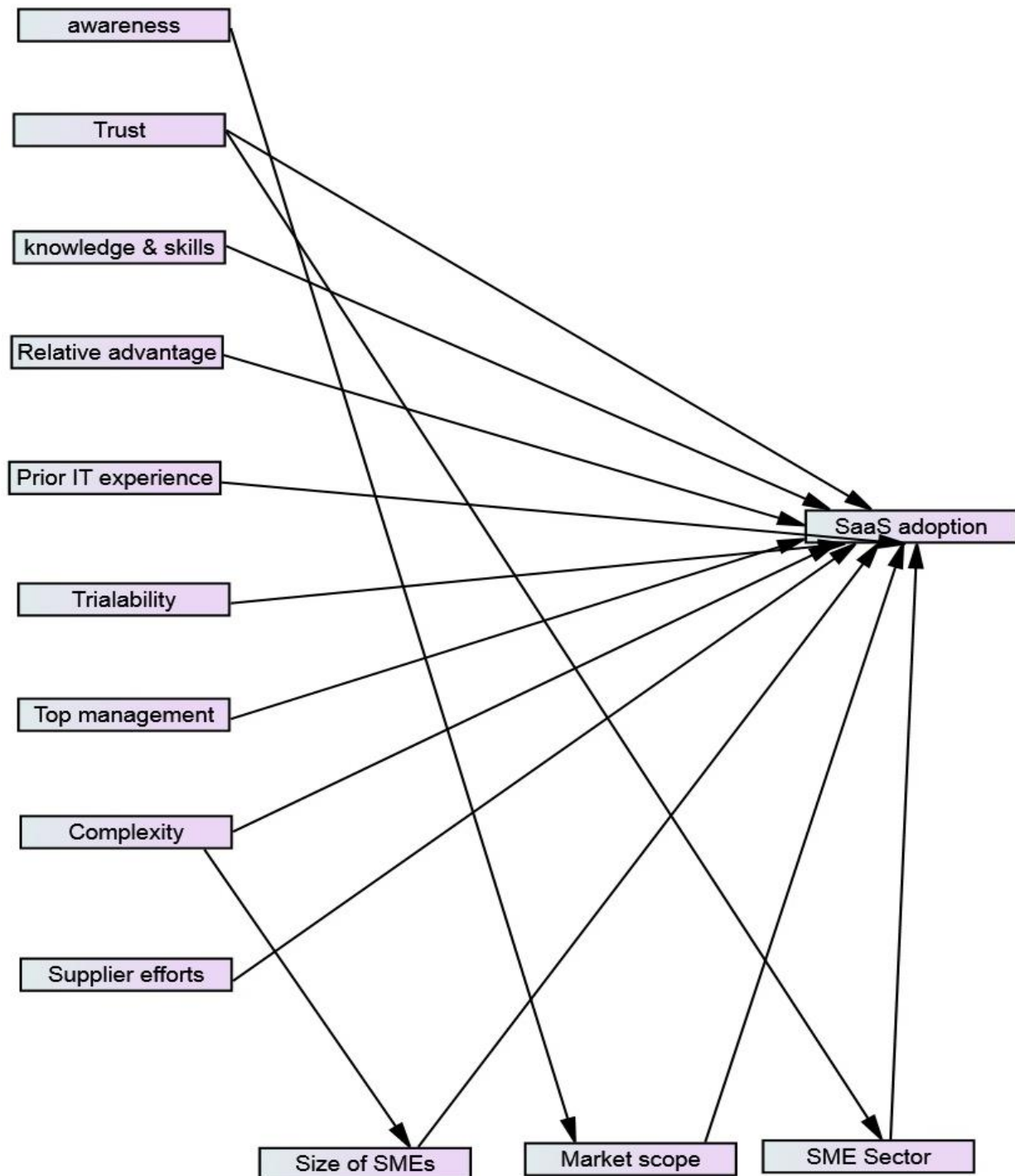


Figure 4.3: Final Structural model extracted from the final measurement model

Source author data derived from SPSS Amos vr 21

4.13 Results discussion addressing the gaps in the previous studies

Many of the existing literature on Cloud computing present a particular vendor perspective. To understand these factors, there is need to investigate the influence of SaaS on cloud computing. This is significant in ensuring that SMEs contribute to knowledgeable conclusions concerning the prominence of Cloud SaaS technology for their various dealings. Even though the literature review was not large enough, it provided enough awareness and also provided apartment for the existences of examination in the employment of Cloud Computing in SMEs.

SMEs in many cases have not gotten hold of the stages that impact on bossiness. It was discovered that none of the concepts were acknowledged for the acceptance of SaaS Technology. To address various gaps and differences in the literature review, the research results showed that Awareness, ICT knowledge and skills Trust, relative advantage ,prior IT experience, trial ability, Top level management support and complexity. Three intervening variables were also maintained which incorporated the market scope intervening the awareness factor, SME sector intervening trust, in addition, size of the SME on complexity were create to be useful elements of SaaS computing acceptance on the other hand, The six variables that were found to be insignificant determinates of the SaaS included cost, compatibility, innovativeness, age of the firm, completion pressure and uncertainty.

4.14 Overall Data management and quality assurance

The researcher ensured that quality of the research and data collections and the entire process was efficiently managed. To ensure quality in data gathering process the uppermost data was gathered by the principal investigator /research but the service of the five assistant researchers was involved in the data collection which helped to fasten the process. A hard copy questionnaire in printed format was handed to the each respondent's individual with the help of research assistants with the researcher closely supervising the data collection practices. The questionnaires were all screened carefully for any errors, omissions, legibility and consistency before they were entered into SPSS. Data entry was entered into shared spreadsheets on Google drive prior to importing them into SPSS for instant checks. To ensure consistency with errors, all the data entered were stored in backed up copies in spreadsheets, and removable drives with encryption of access for future back up and reference

4.15 Ethical considerations

This is an important element of research aimed at ensuring the protection of the participants, the researcher, the research itself, and other stakeholders. Research should have direct bearing on honesty, respectfulness, objectivity and confidentiality. According to Cohen *et al.*(2000:47), readers have got right to expect the research to have been conducted “scrupulously and in an ethically defensive manner”. Before beginning the data collection begins, the researcher secured a research permit from the National Council for Science and Technology in the Ministry of National Communion for Council for Science, Technology and innovations (NACOSTI), through the School of Computing and Informatics at the University of Nairobi. Notice to the various institutions of the intended study was dispatched two weeks before the researcher visits the institutions. The researcher followed the University of Nairobi ethical clearing process. It is at this stage that the student considered the procedure to negotiate consent to conduct the research and designed the research instruments to be used in the research. For centuries now, questions have arisen regarding the composition of what is right/ acceptable and what is wrong. Immanuel Kant (1724-1904) shows that there are different studies that support the issues with basics for ethical rights emanating because every human being has a right and duty. One of the great elements of ethical behaviour is informed consent as noted by Saunders (2009). Therefore, any research person has to give a clear statement regarding the components of research, the issues involved and the things that make up the research. Primarily these are the documents, which had to be reviewed and cleared by the supervisor. In this study, the researcher and /or the research assistants met directly with the participants in their firms to administer the questionnaires. He dealt directly with them when administering questionnaires. The researcher and /or the research assistants asked them questions of which they were expected to answer to the best of their knowledge. Permission to do this research was sought from the National commission for Science, Technology and innovations (NACOSTI), University of Nairobi and from SME Authority of Kenya.

4.16 Summary of the Results

The factors that were retained so as to form a model of good fit were: Awareness, Trust, prior IT experience, relative advantage, trial ability, ICT knowledge and skills, Top level management support and complexity. Three intervening variables were also retained which included the

market scope intervening the awareness factor, SME sector intervening trust, size of the SME on complexity while six variables (cost, compatibility, age of the firm, innovativeness, uncertainty and competition pressure) were found not to be significantly determine SaaS computing adoption.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This research has made an effort to discover and construct an SME SaaS Computing implementation ideal that is reliant on the TOE framework. While undertaking the research, a validated conceptual framework was drawn to help in the determination of the twelve contextual factors in regards to SaaS computing adoption in SMEs that are within Nairobi County, Kenya. The research outcome generated supports the concept of more than one framework can be held accountable for the pronouncement of SME in order to take up the ICT innovation. For this study, consideration is given to technological as well as organizational and environmental issues. This consideration is done by adopting the TOE framework. Additionally, the SaaS computing adoption is affected by different factors and therefore, making a conclusion that it only depends on one context is fallacious.

Consequently, this thesis provides additional support concerning the applicability of the TOE framework in investigating Cloud SaaS Computing implementation amongst SMEs. The last chapter's main focus is to finalize on the study apart from giving the study overview, with emphasis is laid on SaaS adoption model and a focus on the theoretical, methodological and practical implications. Also explored for further research the suggestion and study limitations

5.2 Overview of the research

The scholarship remained intelligent to progress a prototypical of mechanical employment that will make it easy to demonstrate SaaS adoption among the Kenyan SMEs. Before the study, the researcher developed a research question, was from the research question that the research objectives were developed. The first detached continued to originate the applicable decisive and controlling influences and in chance use them in verbalizing a SaaS implementation model for Kenya's SMEs to validate the model using the data collected by Structural Equation Modeling (SEM) and lastly to generate a research model that best describes Kenya's SME's SaaS actual use. The researcher during the study also outlined the significance and the scope which set the base for the real study. The researcher reviewed the literature on modeling, technology adoption, construct determining, SMEs in Kenya, and moderating intention to adopt and use SaaS besides

conducting preliminary exploratory studies to establish the drivers of adoption. After understanding the construct and the models, the researcher developed a conceptual framework which was an extension and modification of the TOE to guide this study. There was also a substantial justification for starting off with TOE and for making the necessary extensions that was done after reviewing the TOE framework's moderators, and add 'awareness', 'Trust', 'Cost' and ICT Skills for SMEs as he retained the other citrus trust. As the constructs in the first TOE, the model was retained. From this particular framework, there were sets of hypotheses to guide the development of a research instrument that was detailed in chapter 2. The third section tend to elaborate the process of conducting the study, the research design that included the sampling process and a presentation of various data collection instrument. There was also a tool that was developed through an interactive process. This was also tested. The instrument was then improved with time and also assessed for the reliability and validity that was done scientifically. With the good instrument, the researcher designed a sample frame, determined the size of the sample for data collection. With a set of various research assistants, the researcher made a visit to SMEs per sectors within Nairobi, Kenya. To ensure that the interview was as random as possible, the procedure for interviewing respondents was defined at a pre-determined convenient time to users. It was also noted that at least 200 respondents were required, the researcher then set out to collect from 377 respondents. The motivation for aiming for a larger number was to take care of unforeseen events such as having incorrect entries. By the end of the data collection, it was noticed that, a total of 293 responses were obtained from all the SMEs.

The major instrument that was used to record the data was the SPSS to facilitate the preparation for the data analysis. First, preliminary data management was done before analysis. This was specifically done to clean and verify the entries. Using Structural Equation Modeling, a technique that is normally considered powerful in analyzing multiple aspects simultaneously so that one can answer interrelated questions in a particular model, in light of this, the researcher started to test the strength of the prototypical assumed earlier. The purpose of this particular stage was to establish the consistency of collected data with the model. Measurement and the structural models are used test the model fitness. The steps were verified using conventional fit indices. The design was drawn in AMOS(Analysis for Moment Structures).AMOS is a graphical tool that is specifically designed for testing effects between models' constructs as the data is

retained in SPSS. To ensure the fitness of the model, the researcher linked the two models, power of relationship, the relevance of construct and causal effects.

SaaS computing is considered by many to be a vital for ICT invention. This can dispute both the premeditated and operational benefits, for important rates of implementation amongst SMEs. Basing our argument on the TOE theoretical background, this research, therefore, developed validated a study framework to examine the contextual factors that are seen to be influencing SaaS computing based on the TOE framework. The study found that organization's technological and environmental context determines its adoption of SaaS computing in Nairobi Kenya. In certain cases, firms were seen to be postponing the adoption of new technology since they are not wholly aware of the potential benefits that come with the adoption of these innovations. As illustrated before, Awareness, prior existence, relative advantages, triability, Trust, ICT knowledge and skills, complexity and Top level management support. Three intervening variables were also maintained which incorporated the market scope intervening the awareness factor, SME sector intervening trust, in addition, size of the SME on complexity were found to be significant factor of SaaS computing implementation. The following factors were found to be unimportant to SaaS Computing implementation six variables (cost, compatibility, and innovativeness, age of the firm, completion pressure, and uncertainty).

5.3 Revisiting the research objectives

The study aim was then broken down into two major objectives: each was discussed in the following sections:

5.3.1 Objective 1: To Establish relevant influencing and moderating factors and theory for adoption of SaaS for SMEs

In this case, the TOE framework was proposed to explore SaaS computing implementation in SMEs as noted by (Baker 2011) TOE tend to symbolize one fragment of the invention process. It also shows how the organization context is implemented. From this model, the process of technology modernization adoption is predisposed on the context, for example; structural, technical, and Environmental. According to Rogers (2003), at the organizational level there are various theories of dispersion of innovation have been broadly functional to the studies by explicitly witnessing how inventions are approved and diffused. SaaS computing is restrained an

increasing prominence expansion in material and communication knowledge (ICT) and proposals the probable of educating the promise and scalability of IT preparations. The dissemination of SaaS computing can also provocatively transfigure the resources in which marketable substantial organizations are burrowed up, recognized, continued and remunerated for. It was also noted that this kind of objective was achievable in three different ways as indicated in figure 2.3. First, it was realized through thorough review of literature of adoption. Studies conducted on the penetration of SaaS computing in Kenya and other related fields were used to establish which factors can be considered to be relevant for SaaS adoption and developed the following constructs i.e. prior IT experience and external computing support the moderates derived include market scope and SME age. Secondly, the research reviewed adoption theories and various frameworks so as to develop some of the constructs and models the two theories selected for the study included TOE and Innovation diffusion theory for informatory. Finally, the researcher was able to conducted exploratory studies to obtain a set of variables users considered significant when determining what SaaS services that were then mapped to TOE so as to realize if they already exist including Awareness, Trust, Cost and ICT skills). These new variables were aggregated into constructs (Trust, Compatibility Cost of Acquisition of SaaS, ICT skills for SME employees, Uncertainty, Prior Similar IT Experience, Support external computing support, Top level management support Trail ability, Complexity, Relative advantage, and Innovativeness) and used to extend the framework to facilitate in coming up with a model that was later used to conduct this research. Moderating variables (Age of the Firms, Industry, Market Scope, and SME Sector and were also modified apart from the constructs.

5.3.2 Objective 2: To Develop a framework for technology adoption of SaaS for SMEs.

In order to investigate the implementation of SaaS computing services, a conceptual model of the business organizations and the developed hypotheses outlined. The model consist of eleven major variable categories that are considered to be significant influencing SaaS adoption or SMEs ie Trust, Compatibility Cost of Acquisition of SaaS, ICT skills for SME employees, Uncertainty, Prior Similar IT Experience, Support external computing support, Top level management support Trail ability, Complexity, Relative advantage, and Innovativeness with moderators Market Scope, SME Age, SME Size and SME sector as indicated in figure 2.4.

5.3.3 Objective 3: To empirically validate the conceptual framework qualitatively and ensure its validity.

In chapter four there was an experiential research that remained done to test the background assumed earlier by means of the slighter example of SMEs prior to conducting a larger quantitative approach in regards to the survey. Focused on TOE, this research suggests that adoption of SaaS computing decision is influenced by different types of factors. These factors in most cases are seen to be beyond the Environmental, technological and organizational contexts. Additionally, the various variables that may turn out to be of great significance as ICT frameworks become so much interconnected are often also dispersed so much. Some of the main variables and the issues that are identified to be very significant in the process in SME implementation for the cloud computing. The factors include the degree of uncertainty, compatibility of the software's, advantage relative to the other factors, size, triability, support by the top management organs, earlier experience, level of innovation, the industry, scope of market, the efforts made by the various suppliers, and external computing support. Out of these variables, six of them were found to be insignificant as far as determination of SaaS computing adoption is concerned. Six of these factors include cost, compatibility, and age of the firm, innovativeness, and uncertainty and competition pressure.

Through a detailed methodology, plus the use of previous studies that have used SEM, the surveyor translated the conceptual model into an information gathering instrument. The investigator utilized a well-planned sample to obtain the information. For the data obtained was then analyzed using SPSS and AMOS guided by the SEM steps. With the help of SPSS and AMOS, the surveyor validated the data and after a thorough analysis process, including model modification, the data fit the model ending the analysis process, with a structural model, the researcher was able to use the logistic regression techniques to test the different hypothesis of the study. The results that were obtained from the study pointed to the fact that four out of the twelve hypotheses that were designed could be supported. Upon using the TOE framework, the research revealed that more than just a single context is responsible for decision making when taking up a new ICT innovation by SMEs. Additionally, the research also supports the application of TOE

model in regards to investigation of adoption of ICT innovation in different SMEs. Awareness, Trust, ICT knowledge and skills, relative advantage, trial ability, prior IT experience, Top level management support and complexity. There were also three intervening variables that were retained. These variable included; the market scope intervening the awareness factor, SME sector intervening trust, size of the SME on complexity were discovered to be important elements of SaaS computing implementation, on the other side, six variables (cost, compatibility, uncertainty age of the firm, innovativeness and competition pressure) were found to be of not great help in determining SaaS computing adoption.

5.4 Research Achievement

The researcher showed a whole of 6 in-depth qualitative conferences from a variability of defendants amid June 2013 and September 2013. These conversations were morally investigative with an aim of appreciative the history, conceptualization, directing, disposition, implementation and influence of cloud computing SaaS in Kenya. The environment of plaintiffs fluctuated beginning at CEOs, Cloud managers, senior management (Finance, sales and marketing heads) of top cloud service providers in Nairobi. The researcher interviewed them housebroken for unlike defendants with the aim of accepting their form of knowledges. All the interviews were recorded, transcribed and used to generate various outputs. First, the researcher co-authored the book chapters Publication on the book Title: *Distributed Computing Systems Research and Applications with Focus on Research Sharing* by University of Nairobi School of Computing and Informatics ISBN: 978-9966-21-330-3. By (Ondiek, Opiyo & Okello) in October, 2012) “TRENDS IN DIRTUBUTED COPMPUTING APPLICATIONS by University of Nairobi School of Computing and Informatics ISBN: 978-9966-074-13-3.” (Ondiek, Opiyo & Okello) in April, 2014. This piece of work was published in support by IBM, UON and UNESCO. The chapter the challenges that abstracts of fast penetration on clouding computing in the kenya market especially from the SME and it targeted a variety of readers; academics, cloud service providers, SMEs, Regulatory institutions, development partners and policy makers. Secondly, the author has used the data to write a number of academic papers. Two papers had been officially published “Adoption Of Framework Of Software As A Service for the Development of Small and Medium Enterprises in Kenya ISBN: 978-9966-074-13-3 and another paper published by School of Business, University of Nairobi published African Journal of Business and

Management Vol.III: ISBN 978-9966-1570-3-4 and Thirdly, the researcher used the data to make presentations in a number of workshops and conferences in The 4th African International Business and Management (AIBUMA 2013) Conference and Conference for Operation Research Society of Kenya(ORSEA) organized by Schools of Business for University of Nairobi, University of Dar es salaam and Makerere University Business School held at Imperial beach hotel in Entebbe Uganda. Fourthly, the researcher will use the information and network created as the basis for organizing a conference on SME adoption of SaaS. Finally, the researcher will use some of the data to extract constructs that could be determining SME adoption of SaaS. From the qualitative work (Ondiek, Opiyo and Okello, 2014), a number of factors were identified as influencers of adoption

5.5 Evaluation of the research study

This survey was evaluated based on a number of the recommendations that were issued by Whetten in his paper titled “What Constitutes a Theoretical Contribution”, in this particular paper, the writer presents the argument that a complete theory should be having four key elements namely what, how, why and a combination of who, where and when (Whetten, 1989). The first three aspects tends to give a description and an explanation. Below is a brief description of the what, how and why with a short mapping to this SaaS study. ‘What’ describes the constructs, variables or factors that the researcher considered logically significant in explaining the subject under study? For one to judge the extent to which the survey have incorporated the right factors, there are dimensions that had to be proposed that is, comprehensiveness (all the relevant factors were included). In this research, qualitative and literature studies were used to develop a conceptual model that were both comprehensive. Using all the constructs of TOE, the surveyor was convinced that the starting point was solid enough and by adding new constructs, with clear justification he strengthened the comprehensiveness argument. The ‘Why’ factor tend to provide the justification for the constructs and relationships. Also it is where the rationale and assumptions about the various decisions are normally factored in. In this research, the researcher presented these arguments as he as building on the conceptual model where each construct included in the study framework was meticulously discussed, hence leading to an argument for inclusion. Literature backs the relationships between constructs as the removal of constructs, measurements, and variables from the study framework was also argued out and justified. ‘Who,’

‘where’ and ‘when’ factors were found to be providing the limitations of the proposition presented in the study. Since it is not possible to generalize findings when a study does not cover all scenarios, these three aspects provide the context, setting the boundaries in which they can be generalized. Witten then proposed that researchers should think about the effect of aspects such as time. Through conducting a test on what, how and why factors in d various settings, the surveyor were able to discover the limiting conditions. The timing is vital since the respondents for the study had used SaaS for at least three years and were located at a particular time of this study.

5.6 Research contribution

This study types an involvement to the arrangement of material from organizational, hypothetical, and applied or decision-making arguments of view.

5.7 Theoretical contributions

The research contributes to adoption literature by studying SaaS computing in SMEs. One can enrich his or her knowledge and understanding of the SMEs adoptions by viewing the adoption of new IS innovations adoption. This research has therefore developed an SME SaaS computing acceptance prototypical that is hypothetically beached in the TOE background in an challenge to discover the whole idea of cloud computing.

The researchers in common have absorbed on the outcome of administrative and technical factors such as the top administration and administrative magnitude on the dispersion of IS and innovation adoption. However, this study adopts a wide perspective on SaaS computing and hence responds to the call of adopting “generic” theory such as the TOE model for investigating the diffusion of technology as suggested by Zhu and Kraemer. The SaaS computing implementation examined the effects of the three main elements By examining the effects of three main elements, this study to an extent, adds to a increasing body of nonfiction on the administrative revolution implementation. Such elements include technology characteristics, organizational factors and environmental determinants. The technology characteristics include relative advantage, compatibility, and uncertainty and trial ability. The organizational factors include size, prior experience, top management support and innovativeness. The environmental determinants include the industry, supplier efforts, market scope and the external computing

support. The conceptual framework considers the majority of the main basics cited in the literature to clarify and deliberate the implementation of ICT innovations by firms.

The study conversely, never proposed to select from the features that had been empirically established as having predisposed the implementation of innumerable modernizations. It is significant to note that this prototypical was fashioned after the initial qualitative study and consequently it ought to be viewed as investigative and not an unbending agenda.

This investigation shapes on the Technology-Organization-Environment (TOE) model according to (DePietro et al., 1990) by integrating SaaS totaling, the detailed concepts that signify unique features of SaaS computing such as , ICT skills, Trust and Awareness cost, ICT.

The study work showed previous though have not piercing out the prominence of this important factor in the implementation of other IS modernizations. This research therefore incorporates Awareness, ICT knowledge, Trust and skills as some of the new constructs which were mapped on TOE framework and have significance in adoption of SaaS to SMEs

5.8 Contributions to the External Environment for SAAS Adoption.

5.8.1 Contribution to SME Management

A fast growing and uncertain environment normally represents a great challenge within which business leaders tend to make decisions since issues which influence choices drops with time with unknown consequences when choices are made, in most cases, there is usually an extended period consisting between the choice itself and when its outcomes become clear (Fisheraet al., 2000). It has since been found that recent studies can be used by managers to facilitated in their decision making process in such environments. Considering its integrative approach, the proposed model may be better positioned to assist the organizations with SaaS computing adoption ambitions in carrying out in-depth analyses of the resources and capabilities of SaaS computing resources. To assess the company's situation, a study instrument can be obtained from which the outcome recommendation from this assessment can be used to validate weakness or strengths in a manner in which the adopted capabilities managers can also improve or reduce these in strengthening their competitive position. Furthermore, the experience gained by using this framework to evaluate the potential adoption of one technology, e.g. SaaS computing, result in the use of the technologies by the managers in balancing particular

decisions concerning adoption in the future. This study, may also help organizational managers to develop practices which assess various risks that are involved in adopting cloud services. The managers also stands a chance of gaining from developing a set of specifications that tends to cover all the aspects of their security needs, such as legal issues, physical security, policy concerns and technical factors. Generally, TOE framework is of significant because it can include many factors from different contexts. This model thus has the potential to enable SME managers practice decision making. In this research the study model that have been developed can be used to provide managers with insight that helps them in their decision making processes.

5.8.2 Contribution to Practice

The results of this research have also an amount of applied suggestions. Basically, It has led to the understanding that deploying SaaS services in SMEs just because there is perceived demand could be not good bearing that the large investment in developing and deploying SaaS service. In light of this, a good understanding of the drivers of adoption is therefore significant so as to make the organizations prioritize their resources effectively. The research, therefore, helped answer the question on what really determines a user decision in adopting a SaaS service. The constructs now clear and their significance can now be established too. It's great for management responsible for development and deploying SaaS services to think about the constructs and moderators that have been established in this survey. Firms which deploy SaaS services, and its related technologies, need to get the priorities right as far as variable and contrast are concerned.

5.8.3 Research Implications for technology consultants and software vendors

This examination stimulates crucial practical consequences for know-how advisors and software salespersons. Vendors and intervening establishments ought to guarantee that they are much more centered around distinguishing proper models, comprehend authoritative qualities, find out about the particular issues these organizations face, and play a more proactive part to advance fruitful dispersion the organizations. In the initial study, the project prospectors had a late response that was identified with nonappearance of mindfulness about this sort of services. Software vendors therefore should devise a strategy that effectively promotes of SaaS computing without wasting time (special classes, presentations, workshops, and on location visits). Once

more, it's crucial for technology consultants and vendors to minimize the instability feeling relating SaaS computing reception which has for the most part been about how information is taken care of. Security and giving up aggregate proprietorship are, in this manner, the significant attentiveness toward organizations while embracing SaaS computing is viewed as that should be caught on. Unless the instabilities are determined, acknowledgment of a few worries in SaaS computing are liable to frustrate SMEs selection of SaaS computing.

The suppliers of the software likewise need to deal with giving secure and dependable situations in the most versatile, persuading, and financially savvy, way which will give steady business environment. The technical group that works on a day in and day out premise should be offered by suppliers to minimize the clients worry about their information, which is typically put away remotely far from their premises. Ultimately, despite the fact that adopters and miners underlined the noteworthiness of suppliers' exercises in making SMEs embrace cloud administrations, in different events amid the exploration, SMEs did not feel they were satisfactory up to this point. This can be credited to the way that as of now, suppliers perceive the transforming IT industry-environment, overall are playing an extremely dynamic part to be an organizer for cloud managements. On the similar note, they have a countless deal of welfares in-house equipment and software that they would fancy not to be prejudiced. At the point when these are influenced it can prompt an impression among partners that cloud administration suppliers themselves can have no reasonable position or vision about SaaS computing. As an aftereffect of this, more concentrate should be done on this specific point before clarifying and talking about the part benefit suppliers can play in SaaS computing dispersion.

Customers would be influenced by the perspectives of their administration supplier and the degree to which the supplier has faith in the favorable circumstances SaaS computing can convey to their business. In synopsis, for administration suppliers, utilizing the examination model as a part of this study can help in expanding their comprehension and the learning of why some SMEs receive or not to embrace SaaS computing administrations. Then again, notwithstanding, SaaS computing suppliers may need to expand their connection with SMEs required in the SaaS computing background, to make a sound domain for SaaS computing reception, and to evacuate any unclerness that encompasses this sort of technology. Suppliers need to elucidate their position and position with regards to offering in-house administrations versus cloud

administrations, which can influence customers' certainty as well. According to Frambach (1998), Supplier marketing activities can essentially impact the likelihood that advancement will be utilized by firms which bring down the level of vulnerability with respect to cloud services.

5.8.4 Research Implications for government and policy makers

SaaS computing selection, requires the best government approaches and directions with the goal that it can exist. It is documented that in Nairobi, the presence of very high state standard ICT offices is vital for holding existing organizations, affecting the business premise location, making new occupation, and extending opportunities in the upper east locale. The development and improvement of SaaS computing could include government investigating its impetuses and approaches to help with advancing the appropriation of innovation among SMEs. An essential concern when agreeing to and utilizing cloud benefits that have a tendency to work from an alternate nation is that it can simply prompt customers' information security misfortune since various protection enactments applying to those in our nation.

The governments could think that it is important to consider overhauling this enactment identified with information assurance. When all the above variables are put into thought, this examination accordingly gives some vital data to organizations, vendors and policy, innovation specialists and is along these lines, seen as being noteworthy to the present period of fast improvements of SaaS computing advances. Finally, the discourse on the suggestions and commitments of this study was to give rules to arrangement producers, experts and innovation merchants in executing and quickening SaaS computing improvement and usage among different SMEs.

5.9 Research Study Limitations

This particular study has been found to be efficient in improving knowledge on adoption of SAAS innovation among SMEs. However, there were still some areas that needed further and elaborate studies. It is worth noting that this research covered just a small chunk or part of the wide knowledge concerning SaaS innovation adoption. Nonetheless, it is worth considering as a substantial part in contributing to the pursuit of fulfilling the knowledge that concerns adoption of technology in SMEs with specific focus on SaaS computing services. Just as captured in the previous studies, very minimal research has been done in regards to SaaS computing in SMEs.

This then implies that a lot more can still be covered especially in regards to the process where SMEs of different sizes adopt SaaS and other new technologies.

Geographically, this survey was majorly limited to the Nairobi County of Kenya hence, nonetheless, it is not advisable to have the study outcomes generalized on the entire population of the SMEs in Kenya or even in the other countries. As such, there is a great need for more studies and inquiries to be done in the various areas. Additionally, the methodology that was used in the area was highly constricted to two kinds of data collection. The two methods included questionnaire survey and semi-structured conversations. The excellent of the approaches was principally informed by the different limitations that have been mentioned in the methodology part of the study. Given that this is a PhD, time limit and cost constraint were major factor that affected the study to large extent. The various research works that will be carried out this study can be used to start up and bulid on the idea with exact approvals for the study to focus on the SaaS adoption in other sectors with focus on both quantitative and qualitative research methods. The other research that will be done on this study subject can depend on this study to build on by opting to examine SaaS computing implementation in dissimilar segments and businesses both in terms of qualitative and quantitative.

5.10 Further Research

a) First, future studies could widen geographical coverage within Nairobi. This is because this particular study may have a regional limitation which limits the generalizability of the result due to the research that is the results cannot be applied directly to other countries or industries since this study examined specifically Nairobi county against the background of Kenyan .In addition ,exploration is required on how start-ups, SMEs, and large organizations are affected by the adoption of SaaS computing and/or other IS innovation in different sectors.

b) Given that this research shows that SaaS computing implementation has largely focused in SMEs, very many grey areas emerge worth researching on. For instance, the research that will be conducted in future can take advantage of the grey areas and examine the adoption of SaaS computing in different areas and industries. The research can employ both qualitative and quantitative research methods.

- c) While conducting the study, the data collection employed the use of cross-sectional survey. The studies to be carried out in the future should make use of longitudinal method to explore the various factors that influence the SMEs' perception while using the information system. Therefore, with deeper investigations it is predictable that scholarships done in forthcoming will consider the various discoveries of the study with an aim of using the longitudinal data.
- d) The studies to be carried out in future need to mainly concentrate on the various companies and firms that have big data.

5.11 Conclusions

In this research, the model used mainly focused on the associations that occur amongst the changed concepts in the study. Some of the variables used in the study were not very elaborate in nature given that they were selected and represented the main issues that affect the adoption of SaaS computing in SMEs. Therefore, the results that emerge should keenly be focused on with a lot of caution given that the other potential important factors have been excluded. Having such elements in the new context of TOE philosophy would absolutely increase to the aptitude of TOE background to prediction on the readiness of an SME to implement innovative knowledge.

Notwithstanding the fact that this study project has focused mainly on cloud SaaS computing adoption among SMEs in Nairobi, this research model could be applied by other researchers and may also provide strong theoretical foundations for further studies on IS innovation adoption. Most of the SMEs that have been reported to have adopted SaaS would continue using SaaS services as it is trust worthy, reliable, and dependable to compete in the market. Furthermore, the level of innovation of these SMEs (adopters) would remain higher due to ease access to information provided by SaaS services. As a result, this has since, influenced other SMEs to be prospectors of SaaS adoption, which was over 56% of the SMEs, a sign that adoption of SaaS is likely to spread even to those SMEs no willing to adopt SaaS. The chapter discussed the summary of the conclusions obtained from this particular research, the consequences for forthcoming study, restrictions of the research, and the main recommendations for marketing strategies. The primary implications and some of the insights that have been since presented are of value to both practitioners and researchers.

REFERENCE

- Abdulaziz, A., (2012). Cloud Computing for Increased Business Value. *International Journal of Business and Social Science*, 3(1), pp. 234-239.
- Agrawal, M., Kishore, R. and Rao, H.R. (1998). Market Reactions to e-business outsourcing Announcements: An event study. *Information & Management*, 43(7), 861-873.
- Aiken, M., Bacharach, S.B. and French, J.L. (1980). Organizational structure, work process, and proposal making in administrative bureaucracy.
- Alshamaila, Y., Papagiannidis, S., & Li, F. (2013). Cloud computing adoption by SMEs in the North east of England: A multi - perspective framework. *Journal of Enterprise Information Management*, 26(3), 250 – 275.
- Annuka, Unhelkar B (2008). *Lessons in implementing "Green" Business Strategies with ICT, In Murugesam, S. (Ed). Cutter IT journal, Spacial issue on "Can IT Go Green?"* 21(2). February 2008, pp. 32-39.
- Ariyo, D. (2005). Small Firms are the Backbone of the Nigerian Economy. *African Economic Analysis*. Retrieved from <http://www.afbis.com/analysis/small.htm>.
- Armbrust, M., Fox, A., Griffith, R., Joseph, A., Katz, R., Konwinski, A., Lee, G. Patterson, D. Rabkin, A., Stoica, I. and Zaharia, M. (2010). *AAgrawabove the Clouds: Adoption and Optimization for Cloud service composition based on economic model*.
- Babbie, E. (2010). *The Practice of Social Research*, 11th ed., Wadsworth/Thomson Belmont, CA : Wadsworth , London : Cengage Learning [distributor], ©2010.
- Babcock, L., & Laschever, S. (2009). *Women don't ask: Negotiation and the gender divide*. Princeton University Press.
- Baines, P., and Chansarkar, B. (2002). *Introducing Marketing Research*. England: John Wiley & Sons, Ltd.
- Bagozzi, R. (1980). Causal models in marketing. *New York: Wiley. Journal of the Academy of Marketing Science*, v8 n3 (19800601): 304-305.
- Baker, C. (2011). *Foundations of bilingual education and bilingualism (Vol. 79). Multilingual matters*.
- Baraghani SN (2007). *Factors Influencing the Adoption of Internet Banking*, A Master's thesis presented to the Department of Business Administration and Social Sciences, Lulea University of Technology, Sweden.

- Barcomb, K. E., Humphries, J. W., & Mills, R. F. (2011). A case for DoD application of public cloud computing services. In *Military Communications Conference, 2011-Milcom 2011* (pp. 1888-1893). IEEE.
- Bardinet, E., Bhattacharjee, M., Dormont, D., Pidoux, B., Malandain, G., Schupbach, M., Ayache, N., Cornu, P., Agid, Y., Yelnik, J. (2009). *A three-dimensional histological atlas of the human basal*.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change *Psychological Review*, 84(2), 191-215.
- Barnett, V. and Lewis, T. (1985). *Outliers in Statistical Data*, 2nd edn, Wiley Chichester.
- Barnatt, C. (2010). *Brief guide to cloud computing* [Book]. London: Constable & Robinson
- Bart, Y., V. Shankar, F. Sultan, and G.L. Urban (2005). "Are the Drivers and Role of Online Trust the Same for All Web Sites and Consumers? A Large-Scale Exploratory Empirical Study," *Journal of Marketing*, Vol. 69, and No.4:133-152, 2005.
- Belso-Martinez JA, Molina-Morales X, Mas-Verdu F(2011). Clustering and internal resources: moderation and meditation effects . *J Knowl Manage* 15(5):738-758.
- Bender, R., and Benner, A. (2000). Calculating Ordinal Regression Models in SAS and SPlus, *Biometrical Journal* 42:677-99.
- Bharadwaj, C., Chauhan S.K., Rajguru G., Srivastava R., Satyavathi T. C. and Yadav S. (2010). Diversity analysis of chickpea (*Cicer arietinum* L.) using STMS markers. *Indian J. Agric. Sci.* **80**, 947–951.
- Biddick, M. (2010). Why you need a SaaS strategy. *InformationWeek*. (Retrieved August 1, 2015 from: <http://www.informationweek.com/news/services/saas/showArticle.jhtml?articleID=222301002>).
- Bidgoli, H. (2010). *The Handbook of Technology Management, Volume 2: Supply Chain Management, Marketing and Advertising, and Global Management*. Hoboken: John Wiley and Sons.
- Bitta, M.N. (2012). A Framework to guide companies on adopting cloud computing Technologies. Master of Science Thesis, Strathmore University.
- Bohlen, Beal and Rogers. (1957). *The Diffusion Process (Technology Adoption Lifecycle)*. Iowa

State University

- Böhm, Markus, Leimeister, Stefanie, Riedl, Christoph, & Krcmar, Helmut. (2009). Cloud Computing – Outsourcing 2.0 or a new Business Model for IT Provisioning? In F. Keuper, C. Oecking & A. Degenhardt (Eds.), *Application Management* (pp. 31-56): Gabler.
- Bois, R.C. (2010). MEI Computer Technology. *Journal on Why Going “SaaS” is the New trend a survey on cloud computing adoption in Kenya's banking industry.*
- Bollen, K.A. (1989). *Structural equations with latent variables*. New York: John Wiley & Sons.
- Boniface, M., B. Nasser, J. Papay, S. Phillips, A. Servin, Z. Zlatev, K. Yang, G. Katsaros, K. Konstanteli, G. Kousiouris, A. Menychtas, D. Kyriazis, and S. Gogouvis, “Platform-as-a-service architecture for real-time quality of service management in clouds,” in *Proc. Fifth International Conference on Internet and Web Applications and Services*, pp. 155-160, May 2010.
- Boniface G, Fedden T, Hurst H, Mason M, Phelps C, Reagon C, Waygood S (2008). Using theory to underpin an integrated occupational therapy service through the Canadian model of occupational performance *The British Journal of Occupational Therapy* Vol 71 (12) 531 – 539.
- Buonanno, A., Sigl, G., Raffelt, G. G., Janka, H., & Muller, E. (2005). Phys. Rev. D, 72,084001 Bureau of Industry and Security Advisory Opinion on the application of EAR to grid and cloud computing services. http://www.bis.doc.gov/policiesandregulations/advisoryopinions/jan13_2009_ao_on_cloud_grid_computing.pdf, retrieved AUGUST 2015.
- Brinkkemper, S. et al. (2009). On the Challenge of Creating an Attractive Research Master Program: Graduate Education Avant-la-Lettre.
- Bodlaender, H., Duivesteijn, W., Nijenhuis, C. (2015). Fascination for Computation. 25 *jaarinformatica*, 217-240.
- Browne MW, Cudeck R. (1993). Alternative ways of assessing model fit. In *Testing structural equation models*, Bollen KA, Long JS (eds). Sage: Beverly Hills, CA; 136–162.

- Bryman, A. & Cramer, D. (2005). *Quantitative data analysis for social scientists*. Rev. ed. London: Routledge
- Businesstech (2014). Africa to lead in cloud growth accessed from <http://businesstech.co.za/news/general/50269/africa-to-lead-in-cloud-growth/> retrieved from on June 13th 2015
- Buyya, R., Sulistio, A., (2008). A Service and utility oriented computing systems: Challenges and Opportunities for modelling and simulation communities. In: Annual Stimulation symposium. Lulea University of Technology, Sweden
- Buyya, R., Yeo, C.S., Venugopa, S., Broberg, J., & 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.
- Buyya, R., Voorsluys, W., Broberg, J. and Buyya, R. (2011). Introduction to Cloud Computing. In: Broberg, J. and Goscinski, A. (Eds) *Cloud Computing*, John Wiley & Sons, Inc. 1-41.
- Caldeira, M. r. M., & Ward, J. M. (2013). Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises. *European Journal of Information Systems*, 12, 127 - 141.
- Chau, P.Y.K. and Hu, P.J.-H. (2001). Information technology acceptance by professionals: A model comparison approach. *Decision Sciences*, 32(4), 699-719. Chau, P., & Tam, K. (1997). Organizational Adoption of Open Systems: A 'Technology-Push, Need-pull' Perspective. *Information and Management* 37(5), 229-39.
- Chaudhury, A. and Bharati, P. (2008). "IT outsourcing adoption by small and medium enterprises: a diffusion innovation approach", *Proceedings of the Americas Conference on Information Systems (AMCIS)*, pp. 14-17.
- Churchill, G. A., & Lacobucci, D. (2009). *Marketing Research: Methodological Foundations* (9th ed.). Mason, Ohio: Thomson South-Western.
- Churchill, G. A., Jr. (1979). "A Paradigm for Developing Better Measures of Marketing Constructs." *Journal of Marketing Research* 16 (1 (February)): 64-73.
- Chopra, S. and Meindl, P. (2001). "E-business and the supply chain", *Supply Chain*

- Management, Prentice Hall, Upper Saddle River, NJ, pp. 33-37
- CIO EA (2015). Interactive Intelligence reports 76 percent growth in cloud revenue 2016 Accessed on <http://www.cio.co.ke/news/top-stories/interactive-intelligence-reports-76-percent-growth-in-cloud-revenue> retrieved from on January 18th 2015
- Claire A. (2016). Cloud enables 92% of Organisations to Innovate Faster, Oracle Research Finds accessed on <http://www.cio.co.ke/partnerzone/oracle/cloud-enables-92-of-organisations-to-innovate-faster,-oracle-research-finds> retrieved from on February 10th 2016
- Clutch S and Dave L (2016). Cloud Security is both a benefit and cause for concern for many Enterprises accessed from <http://www.cio.co.ke/news/top-stories/cloud-security-is-both-a-benefit-and-cause-for-concern-for-many-enterprises-study> retrieved from on march 17th 2016
- Cohen, L., Manion, L., & Morrison K. (2000). *Research Methods in Education* (5th Edition).
- Chopra, S. and Meindl, P. (2001), "E-business and the supply chain", Supply Chain Management, Prentice Hall, Upper Saddle River, NJ, pp. 33-37.
- Creswell, J. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: SAGE Publications. presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Creswell, J. W., & Clark, V. L. P. (2007). Designing and conducting mixed methods research.
- Crook, C. and Kumar, R. (1998). "Electronic data interchange: a multi-industry investigation using grounded theory", *Information & Management*, Vol. 34 No. 2, pp. 75-89.
- Crotty, M. (1998). *The Foundations Of Social Research Meaning And Perspective In The Research Process*, Sage Publications, London.
- Cronin, Blaise. (2000). Hyperauthorship: A postmodern perversion or evidence of a structural shift in scholarly communication practices? *Journal of the American Society for Information Science and Technology* 52, no. 7: 558-69.
- Cohen, L., Manion, L., & Morrison K. (2000). *Research Methods in Education* (5th Edition).
- Crook, C. and Kumar, R. (1998). "Electronic data interchange: a multi-industry investigation using grounded theory", *Information & Management*, Vol. 34 No. 2, pp. 75-89.
- 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.
- Day, G.S. and Nedungadi, P. (1994). Managerial representations of competitive advantage, *Journal of Marketing*, 58:31–44.
- 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.
- Damanpour, F. (1992). “Organizational size and innovation”, *Organization Studies*, Vol. 13 -402.
- Damanpour, F. (1991). “Organizational innovation: a meta-analysis of effects of determinants and moderators”, *The Academy of Management Journal*, Vol. 34 No. 3, pp. 555-590.
- De Vellis, R.F (2003). *Scale Development: Theory and Applications* (2ndEdn.), Thousand Oaks, California, Sage.
- Dedrick, J. and West, J. (2003). *Proceedings on the Workshop on Standard Making: A critical Research Frontier for Information Systems*,. Washington. delivering cloud compute clusters. *BMC Bioinformatics* 11(Suppl 12)
- Delgado-Ballester, Elena and Jose Luis Munuera-Aleman (2001). "Brand trust in the context Ofconsumer loyalty," *European Journal of Marketing*, 35 (11/12), 1238-58.
- DePietro, R., Wiarda, E., and Fleischer, M. (1990). The context for change: Organization, technology, and environment. In L. G. Tornatzky& M. Fleischer (Eds.), *Processes of technological innovation* (Vol. 273, pp. 151-175). Lexington, MA: Lexington Books
- Eder, L. and Igbaria, M. (2001). “Determinants of intranet diffusion and infusion”, *Omega*, Vol. 29No. 3, pp. 233-242.
- Enders, J. (2006). *Governing the academic commons: About blurring boundaries, blistering Organizations, and growing demands. The CHEPS Inaugurals 2002*(pp. 69-105). Enschede, the Netherlands: University of Twente.
- ENISA. (2009). "Cloud computing: benefits, risks and recommendations for information security." Available:<http://www.enisa.europa.eu/act/rm/files/deliverables/cloud-computing-Risk-assessment> [Jul. 10, 2014].
- European Commission, Renewable Energies Unit (2005). ‘Code of Conduct on Data Centers EnergyEfficiency,Version1.0’availableat<http://re.jrc.ec.europa.eu/energyefficiency/pdf/CoC%20>

- European Commission (2013). Report on the basis of the study by Analysis Mason, The socioeconomic impact Of broadband.
- Erumban, A.A. and de Jong, S.B. (2006). 'Cross-country differences in ICT adoption: A Consequence of Culture?' *Journal of World Business*, 41(4), pp. 302-314.
- Everitt, B.S. (2003). *Modern Medical Statistics: A Practical Guide*. Hodder Arnold.Extension Service, Iowa State University, Ames, Iowa. (also reprinted in Ferketich S (1991) Focus on psychometrics: aspects of item analysis. *Research in Nursing and Health* 14, 165–168.
- Faassen, M. (2013). Interview with the author on March 10, 2005. Rotterdam. [Notes in possession of author M. A. Bhat, B. Ahmad, R. M. Shah and R. I. Bhat, "Cloud Computing: A Solution to Information Support Systems (ISS)," *International Journal of Computer Applications*, vol. 11, no. 5, pp. 5-9, 2010.[29] L. Wang and G. von Laszewski, "Scientific Cloud.
- Featherman, M. 'Is Perceived Risk Germane to Technology Acceptance Research?', (2001). *AMCIS Proceedings*, Boston, MA
- Fink E. Gillett (August 1998). "Future View: The new technology ecosystems of cloud, cloud services and cloud computing" Forrester Report.
- Folkestad, E. Pilskog, B. Tessem, (2004). Effects of software process in Organization development. – a case study, in: *Proceedings of the Sixth International Workshop on Learning Software Organizations*, Springer Verlag, Banff, Canada, , pp. 153–164.
- Farrell, A.M. (2009). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty and Shiu (2009). *Journal of Business Research*, in press.
- Frankfort-Nachmias, C, & Nachmias, D. (2008). *Research Methods in the Social Sciences* (5th ed). New York St. Martin's Press.
- Frankline S (2013). SME's shores up revenue for cloud computing providers: <http://www.standardmedia.co.ke/business/article/2000087893/sme-s-shores-up-revenue-for-cloud-computing-providers/?pageNo=1> retrieved from on August 8th, 2014.
- Frambach, R., Barkema, H., Nootboom, B. and Wedel, M. (1998). "Adoption of a service innovation in the business market: an empirical test of supply-side variables", *Journal of Business Research*, Vol. 41 No. 2, pp. 161-174.

- Fock, H.K.Y. and Woo, K.S. (2006). 'The China market: strategic implications of Guanxi', *Business Strategy Review*, 9 (3), 33-43.
- Fock, H.K.Y. and Woo, K.S. (2006). 'The China market: strategic implications of Guanxi', *Business Strategy Review*, 9 (3), 33-43.
- Foster, C. Kesselman, C. Lee, R. Lindell, K. Nahrstedt, and A. Roy. (1999). "A Distributed Resource Management Architecture that Supports Advance Reservations and Co-Allocation", Intl Workshop on Quality of Service, 1999.
- Forman, C. (2005). 'The Corporate Digital Divide: Determinants of Internet Adoption', *Management Science*, 51(4), pp. 641-654.
- Frambach, R. and Schillewaert, N. (2002). "Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research", *Journal of Business Research*, Vol. 55 No. 2, pp. 163-176.
- Frambach, R., Barkema, H., Nooteboom, B. and Wedel, M. (1998). "Adoption of a service innovation in the business market: an empirical test of supply-side variables", *Journal of Business Research*, Vol. 41 No. 2, pp. 161-174.
- Fuchs, S. (2005), *Organizational Adoption Models for Early ASP Technology Stages: Adoption and Diffusion of Application Service Providing (ASP) in the Electric Utility Sector*, WUVienna University of Economics and Business, Vienna.
- Gallagher, Sean 2012, *How Africa is embracing "the cloud" on its own term*, Sage publications *Ganglia. II. Atlas deformation strategy and evaluation in deep brain stimulation for Parkinson disease', J Neurosurg, vol.110, no.2, pp.208-19.*
- Gareth van Zyl (2015) *Nigeria to overtake SA to become Africa's cloud computing Powerhouse*-retrieved on <http://www.itwebafrica.com/cloud/516-africa/231969-nigeria-to-overtake-sa-to-become-africas-cloud-computing-powerhouse> retrieved from on December 4th 2015
- Gartner. (2012).Gartner says 821 Million Smart devices will be purchased worldwide in 2012, sales to rise to 1.2 billion in 2013.Retrieved February 9, 2013, from <http://www.gartner.com/newsroom/id/2227215>.
- Gefen, D., Straub, D. and Boudreau, M. (2000). "Structural equation modelling and regression: Guidelines for research practice", *Communications of the Association for Information Systems*, Vol. 4 No. 7, pp. 1-77.
- Gens, F. (2010). "IDC's public IT cloud services forecast: new numbers, same disruptive

- Story”, International Data Corporation, available at: <http://blogs.idc.com/ie/?p=922> (accessed April2013).
- Gibbs, J. and Kraemer, K. (2004). “A cross-country investigation of the determinants of scope of e-commerce use: an institutional approach”, *Electronic Markets*, Vol. 14 No.2,pp. 124-137.
- Glenn E C(2009). *Starting green : from business plan to profits : an ecopreneur's toolkit for starting a green business from business [Irvine, Calif.] : Entrepreneur Press.*
- Georgios (2001). *GFAM: Evolving Fuzzy ARTMAP neural networks* Department of ECE, Florida Institute of Technology, Melbourne, FL 32901-6975, United State.
- 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*, Vol. 11 No. 2, pp. 129-154.
- Grover, V. (1993). 'An Empirically Derived Model for the Adoption of Customer-based Interorganizational Systems', *Decision Sciences*, 24(3), pp. 603-640.
- Haag, S. & Cummings, M. (2010). *Management Information Systems for the Information Age* (8thed.). New York: McGraw-Hill/Irwin.
- Harindranath, G., Dyerson, R. and Barnes, D. (2008). “*ICT in small firms: factors affecting the adoption and use of ICT in Southeast England SMEs*”, Paper No. 167, Proceedings of the 2008 European Conference on Information Systems (ECIS), 9-11 June.
- Hair, J.F. Black, B. and Anderson, R.E. (2010). *Multivariate data analysis*. Prentice Hall.
- Harris, S., Cresswell, W. J., Forde, P. G., Trehwella, W. J., Woollard, T., & Wray, S. (1990). Home-range analysis using radio-tracking data—a review of problems and techniques particularly as applied to the study of mammals. *Mammal review*, 20(2-3), 97-123.
- Heide, J.B. and Weiss, A.M. (1995). Vendor consideration and switching Behavior for buyers in markets. *The Journal of Marketing*, 59(3), 30-4.
- Henriksen, H. Z., Andersen, K.V., and Pedersen, T., (2002). IS innovation: Adoption of B2B ecommerce. in *Towards the Knowledge Society: eCommerce, eBusiness and eGovernment*. Proceedings of the second IFIP conference on eCommerce, eBusiness, eGovernment (I3E 2007) (pp. 569-81). October 7-9. Lisbon, Portugal.
- Hirschman, E. (1980). “Innovativeness, novelty seeking, and consumer creativity”, *Journal of*

- Consumer Research, Vol. 7 No. 3, pp. 283-295.
- Hirschheim, R.R.A., Heinzl, A., & Dibbern, J. (2007). *Information Systems Outsourcing: Enduring Themes, Global Challenges, and Process Opportunities*: Springer Berlin Heidelberg.
- Hitt, L.M. (1999). 'Information Technology and Firm Boundaries: Evidence from Panel Data', *Information Systems Research*, 10(2), pp. 134-149.
- Hsbollah, H.M. and Idris, M. (2009). "E-learning adoption: the role of relative advantages, trialability and academic specialization", *Campus-Wide Information Systems*, Vol. 26 No. 1, pp. 54-70. <http://www.nova.edu/ssss/QR/QR15-3/onwuegbuzie.pdf>
<http://www.redbooks.ibm.com/redbooks/pdfs/sg246778.pdf>
- Howard, K and Sharp, J (1983). *The Management of a Student Research Project*, Gower
- Hoe H. T (2008). Device and process technologies for microelectronics, MEMS, photonics, and nanotechnology IV:5-7 December 2007, Canberra Australia SPIE (Society); Australian National University. Research School of Physical Sciences and Engineering.; University Of Adelaide. Centre for Biomedical Engineering.; Bellingham, Wash. : SPIE, ©
- Holmes-Smith, P., Coote, L., & Cunningham, E. (2002). *Structural Equation Modelling: From the Fundamentals to Advanced Topics*. Melbourne: SREAMS.
- Howard, K and Sharp, J (1983). *The Management of a Student Research Project*, Gower.
- Hultink, E., Griffin, A., Hart, S. and Robben, H. (1997), "Industrial new product launch Strategies and product development performance", *Journal of Product Innovation Management*, Vol. 14 No. 4, pp. 243-257. IBM Redbook Retrieved on 1/8/2015 at: IEEE Engineering Management Review 31(3): 31-40.
- Hu, L.T. and Bentler, P.M. (1999). "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modelling*, 6 (1), 1-55
- Hui B. (2011). *Structural Equation Modelling with AMOS II*. East Carolina University, Office for Faculty excellence.
- Iacovou, C.L., Benbasat, I. and Dexter, A.S. (1995). Electronic data interchange and small organizations: Adoption and impact of technology, "MIS Quarterly", Vol. 19, No. 4, pp 465-485.
- IDC Report (2010). Defining "Cloud Services" and "Cloud Computing" IDC August 2010, <http://blogs.idc.com/iee/?p=190> International Data Communications.
- International Association of Sound and Audiovisual Archives (2009). 40th IASA annual

- conference : IASA-HeNAA, Athens, Greece, 20-25 September 2009, Athens Megaron International Conference Center) 2009). "towards a new kind of archive? : the digital philosophy in audiovisual archives" : preliminary program.IASA..
- Jaeger, P. T., Bertot, J. C., & McClure, C. R. (2008). Public libraries and the Internet 2006: Issues, funding, and challenges. *Public Libraries*, 46(5), 71-78.
- Jalonen, H., & Lehtonen, A. (2011). Uncertainty in the innovation process. European Conference on Innovation and Entrepreneurship.
- Jefwa Baraka (2016). First Distribution launches cloud brokerage service in Kenya accessed on <http://www.cio.co.ke/news/top-stories/first-distribution-launches-cloud-brokerage-service-in-kenya> retrieved from on February 10th 2016.
- Jeyaraj, A., Rottman, J., & Lacity, M. J. (2006). A review of the predictors, linkages, and biases in IT innovation adoption research. *Journal of Information Technology*, 21(1), 1–23. doi:10.1057/palgrave.jit.200005
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). *Mixed methods research: Is there a criterion of demarcation?* Paper Journal of Marketing, Vol. 59 No. 3, pp. 30-43.
- Kalakota, R. and A.B. Whinston (1997). *Electronic commerce: a manager's guide*: Addison-Wesley Professional.
- Kamal, M. (2006). 'IT innovation adoption in the government sector: identifying the critical Success factors', *Journal of Enterprise Information Management*, 19(2), pp. 192-222.
- Kaplan, J. (2005). Sorting through software as a service. Network World. (Retrieved August 1, 2015 from: <http://www.networkworld.com/columnists/2005/112105kaplan.html>).
- Microsoft (2010). *Microsoft's input to the preparation of a European Radio Spectrum Policy Programme*. [Online]. Available at: http://ec.europa.eu/information_society/policy/ecomms/radio_spectrum/eu_policy/rspp/rspp_pc_rep/responses/0408_microsoft.pdf.
- Kendall, J. (2001). 'Receptivity of Singapore's SMEs to electronic commerce adoption', *The Journal of Strategic Information Systems*, 10(3), pp. 223-242.
- Kidero Evans (2015). Key note speech during the iHub accessed from <http://republicofkenya.org/newsroom/facts/> (accessed on June 15, 2015).

- Kim Weins (2015). Cloud Computing Trends: 2015 State of the Cloud Survey accessed on <http://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2015-state-cloud-survey> retrieved from on December 16th 2015
- Kituku, K.M. (2012). Adoption of cloud computing in Kenya by firms listed in the Nairobi Stock Exchange. Unpublished MBA Project, University of Nairobi.
- Kiveu, M. (2013). Enhancing Market Access in SMEs in Kenya Using ICT. Paper For Presentation at the 2nd National Science, Technology and Innovation Week (13-17th May, 2013)
- Kirton, M.J. (2003). *Adaption-innovation: in the context of diversity and change*. London; New York : Routledge, 2003.
- Kettinger, W., and Grover, V. (1995). "Special section: toward a theory of business process Change management," *Journal of Management Information Systems* (12:1), pp 9-30.
- Khajeh-Hosseini, A., Sommerville, I. and Sriram, I. (2010). Research challenges for enterprise cloud computing. LSCITS Technical Report.
- Khavul, S., Brush, C., V., Kalish, S. & Lerner, M. (1985). 'Public policy and private initiative in the incubation of Israeli high technology entrepreneurial firms', 205paper presented to Babson Entrepreneurship Research Conference, Babson College, Wellesley, MA, www.babson.edu/entrep/fer/papers98.
- Kline, R.B. (2005). *Principles and Practice of Structural Equation Modelling* (2nd Edition ed.). New York: The Guilford Press.
- Kline, R.B. (2011). *Principles and practice of structural equation modelling* (Third Edition). New York: Guilford Press.
- Kombo, D and Tromp, A. (2006). *Proposal and Thesis Writing: an introduction*. Nairobi: Paulines publications Africa.
- Kwon, T. and Zmud, R. (1987). 'Unifying the fragmented models of information systems implementation', in *Critical issues in information systems research*. New York: John Wiley & Sons, Inc, pp. 227-251.
- Kuan, K. K. & Chau, P. Y. (2001). A perception-based model for EDI adoption in small Businesses using a technology–organization–environment framework. *Information & Management*, 38(8), 507-521.

- Lawson, R., Alcock, C., Cooper, J., Burgess, L. (2008). "Factors Affecting the Adoption of Electronic Commerce Technologies by SMEs: An Australian Study"
- Lacity, M. and Willcocks, L. (1998). "An empirical investigation of information technology sourcing practices: lessons from experience", *Management Information Systems Quarterly*, Vol. 22 No. 3, pp. 363-408.
- Laplante P, Zhang J, Voas J. (2009). (Retrieved October 1, 2013 from: <http://www.gartner.com/it/page.jsp?id=%201223818>).What's in a name? Distinguishing between saas and soa IT Professional 2000.
- Lawson, R., Alcock, C., Cooper, J., Burgess, L. (2008). "Factors Affecting the Adoption of Electronic Commerce Technologies by SMEs: An Australian Study", *Journal of Small Business Management*
- Lawton, J. (2008). *International Conference on Systems and Networks Communications*. Published by the IEEE Computer Society June 2008
- Lee, G. and Xia, W. (2006). "Organizational size and IT innovation adoption: a meta-analysis", *Information Management*, Vol. 43 No. 8, pp. 975-985.
- Lee, J. (2004). "Discriminant analysis of technology adoption behavior: a case of internet technologies in small businesses", *Journal of Computer Information Systems*, Vol. 44 No. 4, pp. 57-66.
- Leedy, P.D. and Ormrod, J.E. (2001) *Practical Research: Planning and Design*. 4th edition. USA: Merrill Prentice Hall
- Leibenstein, H. (1976). *Beyond Economic Man: A New Foundation for Microeconomics*, Harvard University Press, Cambridge, MA.
- Leopoulos, V.N., Kirytopoulos, K.A., Malandrakis, C. (2006). RM for SMEs: Tools to Use and How. *Production Planning & Control*, 17(3), 322-332.
- Lertwongsatien, C. and Wongpinunwatana, N. (2003). "E-commerce adoption in Thailand: an empirical study of small and medium enterprises (SMEs)", *Journal of Global Information Management*.
- Levenburg, N., Magal, S.R. and Kosalge, P. (2006). "An exploratory investigation of organizational factors and e-business motivations among SMFOEs in the US", *Electronic Markets*, Vol. 16 No. 1, pp. 70-84.
- Liao, Y.S., Huang, J.T., Su, H.C. (2011). "A Study of machining-parameters Optimization

- of wire electrical discharge machining”, *Journal of Material Processing Technology*, 71 , 487-493.
- Lippert, S.K. and Forman, H. (2005). 'Utilization of information technology: examining cognitive and experiential factors of post-adoption behavior', *Engineering Management, IEEE Transactions on*, 52(3), pp. 363-381.
- Lin, C.A. and Jeffres, L.W. (1998). 'Factors Influencing the Adoption of Multimedia Cable Technology', *Journalism & Mass Communication Quarterly*, 75(2), pp. 341-352.
- Lin, H.-F. and Lin, S.-M. (2008). 'Determinants of e-business diffusion: A test of the technology diffusion perspective', *Technovation*, 28(3), pp. 135-145.
- Li, X., Li, Y., Liu, T., Qiu, J. & Wang, J. (2010). The Method and Tool of Cost Analysis for Cloud Computing. Proceedings of 2010 IEEE International Conference on Cloud Computing, 93—10087.
- Loehlin, J. C. (2004). *Latent Variable Models: An Introduction to Factor, Path, and Structural Analysis*. Hillsdale, NJ: Lawrence.
- Louis Columbus (2015). Roundup Of Cloud Computing Forecasts And Market Estimates Q3 Update, access from <http://www.forbes.com/sites/louiscolombus/2015/09/27/roundup-of-cloud-computing-forecasts-and-market-estimates-q3-update-2015/#7621a7a36c7> retrieved from on February 10th 2016.
- Lohr, S. (2007). Google and IBM join in „cloud computing“ research. New York Times. Retrieved august 1, 2015, from <http://www.nytimes.com/2007/10/08/technology/08cloud.html> London: Routledge Falmer.
- Low Chinyao, Ychsueh Chen, Mingchang Wu, (2011). "Understanding the determinants of cloud computing adoption", *Industrial Management & Data Systems*, Vol. 111 Iss: 7, pp.1006 – 1023.
- Luper, I., & Kwanum, I. M. (2012). Capital structure and firm performance: Evidence from Manufacturing companies in Nigeria. *Research Journal of Finance and Accounting*, 3 (5), 151-158.
- Low, C., Chen, Y. and Wu, M. (2011). “Understanding the determinants of cloud computing adoption”, *Industrial Management & Data Systems*, Vol. 111 No. 7, pp. 1006-1023.

- Lu, J., Yu, C.-S., Liu, C., & Yao, J. E. (2003). Technology acceptance model for wireless Internet. *Internet Research: Electronic Networking Applications and Policy*, 13(3), 206-222.
- McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D. J., & Barton, D. (2011). Big Data. The management revolution. *Harvard Bus Rev*, 90(10), 61-67.
- MdNor, K., Abu-Shanab, E. & Pearson, J. (2007). "Internet Banking Acceptance In Malaysia Based On The Theory Of Reasoned Action" *Journal of Information Systems and Technology Management*, Vol. 5, No. 1, 2007, p. 3-14.
- MacCallum, R.C., Browne, M.W., and Sugawara, H., M. (1993). "Power Analysis and Determination of Sample Size for Covariance Structure Modelling," *Psychological Methods*, 1 (2), 130-49.
- McNamara, Kerry S. (2009). 'Mobile Applications in Agriculture and Rural Development – Framing the Topic, and Learning from Experience', *WorldBank Workshop on Mobile Innovations for Social and Economic Transformation*.
- Mahler, A. and Rogers, E. (1999). "The diffusion of interactive communication innovations and the critical mass: the adoption of telecommunications services by German banks", *Telecommunications Policy*, Vol. 23 Nos 10-11, pp. 719-740.
- Majumdar, S.K. and Venkataraman, S. Snider Entrepreneurial Center (1992). *New Technology Adoption in US Telecommunications: The Role of Competitive Pressures and Firm-Level Inducements*, Wharton School of the University of Pennsylvania, Snider Entrepreneurial Center, Philadelphia.
- Makris, P., Skoutas, D., Rizomiliotis, P., Skianis, C. (2011). A User-Oriented, Customizable Infrastructure Sharing Approach for Hybrid Cloud Computing Environments. 2011 Third IEEE International Conference on Cloud Computing Technology and Science.
- Marcati, A., Guido, G. and Peluso, A. (2008). "The role of SME entrepreneurs' innovativeness and personality in the adoption of innovations", *Research Policy*, Vol. 37 No. 9, pp. 1579-1590.
- Marsh, H.W., Hau, K.T., and Wen, Z. (2004). "In Search of Golden Rules: Comment on Hypothesis-Testing Approaches to Setting Cutoff Values for Fit Indexes and Dangers in Overgeneralizing Hu and Bentler's Findings" *Structural Equation Modelling*, 11 (3),

- Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., & Ghalsasi, A. (2011). Cloud computing — the business perspective. *Decision Support Systems*, Vol. 51. Issue 1. Pp. 176; 176-189.
- Martins, C., Steil, A. and Todesco, J. (2004). “Factors influencing the adoption of the internet as a teaching tool at foreign language schools”, *Computers & Education*, Vol. 42 No. 4, pp. 353-374.
- Mazzocchi, M. (2008). *Statistics for Marketing and Consumer Research*. London : SAGE Publications.
- M. A. Bhat, B. Ahmad, R. M. Shah and R. I. Bhat, (2010). “Cloud Computing: A Solution to Information Support Systems (ISS),” *International Journal of Computer Applications*, vol. 11, no. 5, pp. 5-9.
- Mell, P. and Grance, T. (2011): The NIST Definition of Cloud Computing, in: NIST Website (National Institute of Standards and Technology), [<http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-v15.doc>], 10/07/2011. [Accessed: 01/08/2015].
- Meredith, S. and Bessant, J.; Brown, S.; Francis, D.; Kaplinsky, R and (2001). Developing manufacturing agility in SMEs. *International Journal of Technology Management*, 22(1)
- Midgley, D. and Dowling, G. (1978). 'Innovativeness: The Concept and Its Measurement', *Journal of Consumer Research*, 4(4), pp. 229-242.
- Miles M. and Huberman A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*, Beverly Hills, CA: Sage.
- Miller, M. (2009). *Cloud Computing: Web Based Applications That Change the Way You Work and Collaborate Online* Que Publishing.
- Moore, G. and Benbasat, I. (1999). 'Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation', *Information Systems*
- Misra, S.C. and Mondal, A. (2011). 'Identification of a company's suitability for the adoption of cloud computing and modelling its corresponding Return on Investment', *Mathematical and Computer Modelling*, 53(3-4), pp. 504-521.
- Mugenda, O. M. & Mugenda, A. G., (2003). *Research Methods; Quantitative and Qualitative Approaches*, Acts Press, Nairobi, Kenya.
- Muhuni Dan (2014). East Africa to host premier educational cloud event for global IT leaders <http://www.cio.co.ke/news/main-stories/east-africa-to-host-premier-educational-cloud-event-for-global-it-leaders>, retrieved from on April 21st 2015.
- Mulaik, S. A., (1990). *An analysis of the conditions under which the estimation of*

- parameters inflates goodness of fit indices as measures of model validity. s.l:s.n.*
- Murugesan, "Cloud Computing: A New Paradigm in IT," *Cutter Business Intelligence Executive Report*, Vol. 9, No. 2, 2009.
- Nabeel Khan, Adil Al-Yasiri(2016). Framework for cloud computing adoption: A road map for Smes to cloud migration *International Journal on Cloud Computing: Services and Architecture (IJCCSA)* Vol. 5, No. 5/6.
- Neuman, W.L. (2003). *Social Research Methods - Qualitative and Quantitative Approaches*, Fifth edition, Allyn and Bacon, Boston.
- Newbold, Chris (2007). 'The media effects tradition', in O. Boyd-Barrett and C. Newbold *Approaches to Media: A Reader*.
- Neves, F.T., Marta, F.C., Correia, A.M.R. and Neto, M.C. (2011). The Adoption of Cloud Computing by SMEs: Identifying and Coping with External Factors, 11th Conference of the Portuguese Association for Information Systems, Lisbon.
- Nguyen, T.H. (2009). Information Technology adoption in SMEs: an integrated framework. *International Journal of Entrepreneurial Behavior and Research*, 15(2), 162-186.
- Nunnally, J.C. (1978). *Psychometric Theory*. 2nd Edition, McGraw Hill, New York, NY
- Olsson, U.H., Foss, T., Troye, S.V., Howell, R.D., 2000, The Performance of ML, GLS and WLS in Structural Equation Modelling under Conditions of Misspecification and No normality, *Structural Equation Modeling*, 7 (4), 557-595.
- Oliveira, T. and Martins, M. (2010). "Understanding e-business adoption across industries in European countries", *Industrial Management & Data Systems*, Vol. 110 No. 9, pp. 1337-1354.
- Ondiek C.O Okello O.W & Opiyo T.E.O (2012). Book Chapter Publication on the book Title: *Distributed Computing Systems Research And Applications With Focus On Research Sharing* By University of Nairobi School of Computing and Informatics ISBN: 978-9966-21-330-3.
- Ondiek C.O Okello O.W & Opiyo T.E.O (2014). Book Chapter Publication on the book Title: *Trends In Distributed Computing Applications* By University of Nairobi School of Computing and Informatics ISBN: 978-9966-074-13-3.
- Ondiek C.O Okello O.W & Opiyo T.E.O (2013). AIBUMA Conference 2013 on "*Business &*

- Management Outlook: Optimism or Pessimism?*” On the 11th and 12th July 2013 in Nairobi, Kenya.
- Onwuegbuzie, A., Leech, N. L., & Collins, K. M. T. (2009). Innovative data collection Strategies in qualitative research. *The Qualitative Report*, 15(3), 696-726
- Omusolo Moses (2015). The ‘Kenya We Want’ is on the Cloud-Study
<http://www.c4dlab.ac.ke/2015/05/the-kenya-we-want-is-on-the-cloud-study-2/>
 retrieved from on November 11th 2015
- Omwansa K. Tonny and Sullivan Nicholas (2012). “Money, Real Quick: The story of M-PESA”,
 The Guardian books.
- Omwansa K. Tonny and Waema T Mwololo (2012). ”Modelling adoption of mobile money by the poor in Kenya”University of Nairobi Kenya
- Orodho, A. & Kombo, D. (2002). *Research Methods*. Nairobi: Kenyatta University Institute of Open Learning
- Ostlund, L. (1974). “Perceived innovation attributes as predictors of innovativeness”, *The Journal of Consumer Research*, Vol. 1 No. 2. pp. 110-121.
- Pallant, J. (2007). *The SPSS Survival Manual*. Maidenhead, UK: OUP.
- Parisot, A. (1995). *Technology and Teaching: The Adoption and Diffusion of Technological Innovations by a Community College Faculty*, Montana State University, Bozeman, MT. Paulines publication Africa.
- Pedhazur E J, Schmelkin L P (1991). *Measurement, Design, and Analysis: An Integrated Approach*. Hillsdale, NJ: Lawrence Erlbaum.
- Petty, C. and Stevens, H. (2009). Gartner says worldwide SaaS revenue to grow 18 percent in 2009. (Retrieved October 1, 2013 from: <http://www.gartner.com/it/page.jsp?id=%201223818>).
- Pflugheoft, K.A., Ramamurthy, K., Soofi, E.S., Yasai-Ardekani, M. and Zahedi, F. (2003). 'Multiple Conceptualizations of Small Business Web Use and Benefit', *Decision Sciences*, 34(3), pp. 467-512.
- Plummer, D., Bittman, T., Austin, T., Cearley, D. and Smith, D. (2008). *Cloud Computing: Defining and Describing an Emerging Phenomenon*. Gartner.
- Poon, S., and P. M.C. Swatman. (2008). “An exploratory study of small business Internet

- commerce issues". *Information and Management* 35: 9-18
- Porter, C. & Donthu, N. (2006). "Using the technology acceptance model to explain how attitudes determine Internet usage: The role of perceived access barriers and demographics". *Journal of Business Research*, 59, pp.999-1007.
- Porter, M.E. (1998). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press.
- Premkumar, G. and Ramamurthy, K. (1994). 'The Role of Interorganizational and Organizational Factors on the Decision Mode for Adoption of Interorganizational Systems*', *Decision Sciences*, 26(3), pp. 303-336.
- Premkumar, P. (2003). 'Meta-Analysis of Research on Information Technology Implementation in Small Business', *Journal of organizational computing and electronic commerce*, 13(2), pp. 91-121. Prepared for review by R. McCann, Meredith Planning Office publication. Nairobi, Kenya. *Qualitative Approaches*. Nairobi: Acts Press. *Quantitative and Qualitative Research*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Premkumar, G. and King, W.R. (1994). "Organizational characteristics and information systems planning: an empirical study", *Information Systems Research*, Vol. 5 No. 2, pp. 75-109
- Quelch JA, Klein LR (1996). The internet and international marketing. *Sloan Management Review*, spring: 60–75.
- Rackspace. (2009). *Understanding the cloud computing stack. SaaS, PaaS*. Sebastopol, CA: O'Reilly Media, Inc., ©2009
- Raghavan S; Anandalingam G (2006). *Telecommunications planning : innovations in pricing, network design and management* New York, NY : Springer Rogerson P. *Statistical methods for geography* London. : Sage, 2001
- Ramdani, B., & Kawalek, P (2007). SME adoption of enterprise systems in the Northwest of England: An environmental, technological, and organization perspective. *Transactions*, 2012 International Conference for (pp. 688-691) IEEE.
- Raymond, L. (1985b). Organizational characteristics and MIS success in the context of small businesses, *Management Information Systems Quarterly*, 9(1), pp. 37-52.
- Ridings C.M., Gefen D. and Arinze B., (2002). Some antecedents and effects of trust in Virtual communities. *Journal of strategic Information systems* 11. Pp271-295.

- Robinson, P. (1991). *ESP today: A practitioner's guide*. Prentice Hall. UK: Prentice Hall International (UK) Ltd
- Robson, C. (2002). *Real World Research: A Resource for Social Scientists and Practitioner Researchers*. 2 edn. Oxford: Wiley-Blackwell.
- Rogers, E.M. and Shoemaker, F.F. (1971). *Communication of innovations: a cross-cultural approach*. Free Press.
- Rogers, E. (2003). *Diffusion of Innovations* 5th edn. New York: Free Press.
- 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*, Vol. 5 No. 2, pp. 14-23.
- Saunders, M., Thornhill, A. and Lewis, P. (2009). *Research Methods for Business Students*. 5th edn. Harlow: Financial Times/ Prentice Hall.
- Sarantakos, S. (1998). *Social Research*. (2nd Ed). China: Macmillan Publishers.
- Sarkar, P. and Young, L. (2011). *Sailing the Cloud: A case study of perceptions and changing roles in an Australian university*.
- Sathye, M. (1999). "Adoption of E-Banking by consumers: An empirical investigation." *International Journal of Bank Marketing*, pp.324-331.
- Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. London: Chapman and Hall.
- Shook, CL, Ketchen DJ, Hult GTM, Kacmar KM. (2004). *Research notes and commentaries: An assessment of the use of structural equation modeling in strategic management research*.
- Schaper, M. and T. Volery (2004). *Entrepreneurship and small business: A Pacific Rim Perspective*. Milton, Queensland, John Wiley and Sons Australia Ltd.
- 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), pp. 52-71.
- Schurbert L, Jeffrey, K & Neidecker-Lutz, B, (2010). *The future of Cloud Computing :Opportunities for European Cloud Computing beyond 2010*, European Commission information and society Theme-Expert Group Report Retrieval February 2, 2013 from <http://cordis.europa.eu/fp7/ict/ssai/docs/cloud-report-final/pfd>.

- Siau, K. and Shen, Z. (2003). Building Consumer Trust in Mobile Commerce, *Communications of the ACM*, 46(4), pp. 91-93.
- Shahonya, E. (2011). Cloud Computing Offers Big Gains and Challenges to Firms. *Daily Nation*, December 12, 2011. The role of information systems. *MIS quarterly*, 473-506.
- Sokolov, I.P. (2009). *Cloud Computing: Overview, Concepts and Business Deployment Scenarios*. Vienna University of Economics and Business.
- Sosinsky, B. (2011). *Cloud Computing Bible*. Wiley.
- Sosinsky B. *Cloud Computing Bible* Hoboken : John Wiley & Sons, 2010.
- Sotomayor, B. (2009). 'Virtual Infrastructure Management in Private and Hybrid Clouds', 13, pp. 14-22.
- Smit, Y. and Watkins, J.A. (2012). A literature Review of Small and Medium Enterprises (SME) risk management practices in South Africa. *Africa Journal of Business Management*, 6, 6324-6330.
- Son, and D. Lee (2011). "Assessing a New IT Service Mode, Cloud Computing" 3rd Edition India.
- Suhr, D.& Shay, M. (2005). Guidelines for Reliability, Confirmatory and Exploratory.
- Starnes, D. S., Yates, D. S., and Moore, D. S. (2008), *The Practice of Statistics* (4th ed.), New York: W. H. Freeman and Company.
- Staten, J. (2008). Is Cloud Computing Ready For The Enterprise? Forrester.
- Street, C. T., & Meister, D. B. (2004). Small business growth and internal transparency:
- Stuart, W.D. (2000a) *Influence of Sources of Communication, User Characteristics and Innovation Characteristics on Adoption of a Communication Technology*. University of
- Sun YL, Perrott R, Harmer T, Cunningham C, Wright P, Kennedy J, Edmonds A, Bayon V, Maza J, Berginc G, Hadalinz P (2009). SLA-Aware Resource Management, Service Level Agreements in Grids Workshop.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston: Pearson/Allyn& Bacon.
- Taft, K.D. (2011). Is This the Year PaaS Goes Mainstream?.
- Tan, M. and Toe, T. (1998) 'Factors influencing the adoption of the internet', *International Journal*.

- of Electronic Commerce*, 2(3), pp. 5-18.
- Tan, K.S., Chong, S.C. and Eze, U.C. (2009a). 'Factors influencing internet-based ICT Adoption among Malaysian SMEs', *International Journal of Management and Enterprise Development*, Vol. 6 No. 4, pp. 397-418.
- Taylor, S. and Todd, P.A. (1995). Understanding Information Technology Usage: A Test of Competing Models', *Information Systems Research*, 6(2), pp. 144-176.
- Thong, J., Yap, C. and Raman, K. (1993). Top management support in small business Information systems implementation: how important is it?', *Proceedings of the 1993 conference on Computer personnel research*. St Louis, Missouri, United States.
- Thong, J. (1999). An integrated model of information systems adoption in small businesses', *Journal of Management Information Systems*, 15(4), pp. 187-214.
- Tharenou, P., Donohue, R. and Cooper, B. (2007). *Management Research Methods*. Cambridge University Press.
- Tharenou, P., R. Donohue and B. Cooper (2007). *Management Research Methods* Melbourne, Cambridge University Press.
- Tiwana, A. and Bush, A. (2007). A Comparison of Transaction Cost, Agency, and Knowledge-Based Predictors of IT Outsourcing Decisions: A U.S.-Japan Cross-Cultural Field Study', *Journal of Management Information Systems* 24(1), pp. 259-300.
- Tommy K. Omwansa, Prof. Timothy M. Waema, Mr. Brian Omwenga (2014). Cloud Computing in Kenya: A 2013 Baseline Survey accessed from <http://www.capitalfm.co.ke/campus/microsoft-university-of-nairobi-release-cloud-computing-study-findings/> retrieved from on May 17th, 2015.
- Tornatzky, L. and Fleischer, M. (1990). *The process of technology innovation*, Lexington, MA, . Lexington: Lexington Books.
- Troshani, I., Jerram, C. and Hill, S.R. (2011). 'Exploring the public sector adoption of HRIS', *Industrial Management & Data Systems*, 11(3), pp. 470-488.
- Tumer, O. S. (2010). Digital ecosystems & Co-innovation towards sustainable societies. Paper presented at the 4th IEEE International Conference on digital Ecosystems and Technologies (DEST), 13-16 April.
- Ullman, J. B. (2001). Structural equation modelling. In B. G. Tabachnick & L. S. Fidell (2001). *Using Multivariate Statistics* (4th ed; pp 653- 771). Needham Heights, MA: Allyn & Bacon.

- Utterback, J. (1974). Innovation in Industry and the Diffusion of Technology', *Science*, 183(2), pp. 620-626.
- VAQUERO, L, ET al. (2009). A break in clouds towards a cloud definition in ACM SIGCOMM Computer Communication Review, 2009 Vol 39 No.1, pp.50-55.
- Varun, G. and Goslar, M. (1993). The initiation, adoption, and implementation of telecommunications technologies in U.S. organizations', *Journal of Management Information Systems*, 10(1), pp. 141-163.
- Velte, T., Velte, A., and Elsenpeter, R. (2010). *Cloud Computing, A Practical Approach*. New York: McGraw-Hill.
- Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003). 'User Acceptance of Information Technology: Toward a Unified View', *Management Information Systems Quarterly*, 27(3), pp. 425-478.
- Walsham, G. (2006). "Doing Interpretive Research," *European Journal of Information Systems* (15:3), pp. 320–330.
- Wang, Jian-Jun, & Yang, De-Li. (2003). Using a hybrid multi-criteria decision aid method for information systems outsourcing. *Computers & Operations Research*, 34(12), 3691 - 3700.
- Wang, L., Von, G., Younge, A., He, X., Kunze, M., Tao, J. and Fu, C. (2010). 'Cloud Computing: a Perspective Study', *New Generation Computing*, 28(2), pp. 137-146.
- Whetten, D.A. (1989). "What Constitutes a Theoretical Contribution? ," *Academy of Management Review*(14 4), pp 490-495.
- Weinhardt, C., Anandasivam, A., Blau, B., &Stoesser, J. (2009). Business Models in the Service World.IEEEComputer Society 11(2), 28-33.
- Weigelt, C. and Sarkar, M. (2009). 'Learning from supply-side agents: the impact of technology solution providers' experiential diversity on clients' innovation adoption', *Academy of Management Journal*,, 52(1), pp. 37-60.
- Welsh JA and White JF (1981). A small business is not a little big business. *Harvard Business Review*. 59, No. 4, 18-32.
- Williams, M., Dwivedi, Y., Lal, B. and Schwarz, A. (2009). 'Contemporary trends and issues in IT adoption and diffusion research', *Journal of Information Technology*, 24(1), pp. 1-10.

- Wilson, S. AppEngine Outage. CIO Weblog (2008). Available from: http://www.cio-weblog.com/with_public_clouds. InformationWeek.
- Wu, F. and Lee, Y.-K. (2005) 'Determinants of e-communication adoption: The internal push Versus external pull factors', *Marketing Theory*, 5(1), pp. 7-31.
- Woodside, A.G. and Biemans, W.G. (2005) 'Modelling innovation, manufacturing, diffusion and adoption/rejection processes', *Journal of Business & Industrial Marketing*, 20(7), pp. 380-393.
- Wyld, D. C. (2010). The Cloudy future of government IT: Cloud computing and the public sector around the world. *International Journal of Web & Semantic Technology*.
- Wu Q, Lyenger A et al (2011) combining quality of service and social infrastructure for the ranking services in: icsoc/service Wave 2011, pp 561-575.
- Xu, L. and Brinkkemper, S. (2007). Concepts for product software. *European Journal of Information Systems*, 5(16):531–541.
- Yang, H & Tate, M 2009, 'Where are we at with Cloud Computing?: A Descriptive Literature Review', Presented to 20th Australasian Conference on Information Systems, Melbourne, accessed 2-4 Dec 2009.
- Young, R. and Jordan, E. (2008) 'Top management support: Mantra or necessity?' *International Journal of Project Management*, 26(7), pp. 713-725.
- Yap, C., Thong, J. and Raman, K. (1994). 'Effect of Government Incentives on Computerization in Small Businesses', *European Journal of Information Systems*, 3(3), pp 191- 206.
- Yap, S. (1990). 'Distinguishing characteristics of organizations using computers', *Information and Management*, 18(2), pp. 97-107.
- Y.Yu, M. Isard, et al. (2003). DryadLINQ: A System for General-Purpose Distributed Data-Parallel Computing Using a High-Level Language. Proc of Symposium on Operating System Design and Implementation (OSDI). San Diego, CA.
- Zhao Chenhong, (2009). Networking and Mobile Computing 5th International Conference on Wireless Communications.
- Zheng, Y., Shroff, N., Sinha, P., & Tan, J. (2011). Design of a power efficient cloud computing environment: heavy traffic limits and QoS. *Preprint*.

- Zhu, K., Kraemer, K. and Xu, S. (2005). 'Electronic business adoption by European firms: a Cross-country assessment of the facilitators and inhibitors', *European Journal of Information Systems*, 12(4), pp. 251-268.
- Zhu, K., Kraemer, K., Gurbaxani, V., and Xu, S. (2006). "Migration to open-standard inter organizational systems: Network effects, switching costs, and path dependency", *MIS Quarterly*, Vol.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2000). *Business Research Methods*, 8th Edition.

APPENDICES

APPENDIX 1 INITIAL SURVEY SEMI-STRUCTURED INTERVIEW SCRIPT

INITIAL SURVEY SEMI-STRUCTURED INTERVIEW SCRIPT

Section A - organization/institution/company background

Name of organization/institution/company _____

Position in your company: _____

Firm Background:

1. Can you please tell us about your firm's background? (Number of employees/ main services industry/ Years since establishment...)
2. What are the main challenges / benefits of running your IT operations on the enterprise?
3. Why has your firm decided to use / not to use cloud computing services?

Level of IS Innovations adoption & Use in the Firm:

4. What IS innovations your clients have adopted?
5. What cloud platforms do you trade in i.e. SaaS, PaaS and IaaS
6. What has been the process of converting them to cloud platforms?
7. What are the benefits and drawbacks do they get from SaaS Adoption? Why?
8. How effective do you think your clients are exploiting new IS innovations particularly SaaS Applications ?
9. What challenges do you think SMEs are confronted with in the adoption of cloud innovations? Why?
10. What cloud computing service does your firm use (or think about using)? (i.e., Email application, CRM, Data storage, CPU usage, etc.)?
11. To what extent do you feel your firm is aware of cloud computing?
12. What factor do you think that has led to adoption of cloud by SMEs
13. What factors do you think had lagged behind the prospective adopters of cloud i.e. your target market
14. What factors do you think SMEs are not adopting cloud services in Kenya

Questionnaire code.....
Date
Time.....

APPENDIX 2 FINAL SURVEY QUESTIONNAIRE

Questionnaire about SaaS adoption for SMEs

This questionnaire is part of a study on Cloud Computing Software As A Service (SaaS) adoption for Small and Medium Size Enterprises in Nairobi County. Your participation in this study is voluntary. The questions will purely be used to satisfy an academic requirement only, and not for any statistical study. We will not identify you as an individual. The researcher would be most grateful if you give your views by answering the questions below. Please, first answer the background questions and then complete the rest of the survey. Be assured that Confidentiality of information solicited is guaranteed.

Thank you

Instructions: Please read the questions and answer them by either filling in the blank

Spaces or ticking the check boxes [/] or tables

SECTION A: GENERAL INFORMATION

Please indicate and tick in the box where appropriate

1. Indicate your Gender

a) Male [] b) Female []

2. Choose you age bracket

a) Less than 20 years [] b) 21- 30 years [] c) 31-40 years [] d) 41-50 years []
e) Over 50 years []

3. Education Level

a) Primary School [] b) High School [] c) Certificate/Craft [] d) Diploma []
e) Bachelor [] f) Masters [] g) Doctorate [] h) Others []

4. Position in the Organization

a) Director/Chairman/Owner [] b) CEO/General Manager [] c) IT Director /CIO []
d) Senior Management (Finance, HR, Marketing and Sales, Operations) [] e) IT Support
staff [] f) Cloud Operations Manager []

B. SME INFORMATION

5. Age of the firm

a) Less than 1 year [] b) 1-5 Years [] c) 6-10 years [] d) 11-20 [] e) Over 20 []

6. Size of the Firm / Enterprises

a) Small (10-50 employees) [] b) Medium (51-250 employees) []

7. SME Industry/Sector

Tick the SME Industry/Sector that applies. Please tick only one

No	SME Industry/Sector	Tick	No	SME Industry/Sector	Tick
a.	General Trade, Wholesale, Retail stores		b.	Accommodation and Catering	
c.	Informal Sector		d.	Professional and Technical Services	
e.	Transport Storage and Communications		f.	Private Education ,Health and Entertainment	
g.	Agricultural, Forestry and Natural Resources		h.	Industrial Plants, Factories, Workshops	

8. What is the market scope for your firm?

- a) Local [] b) Regional [] c) National [] d) International []

9. Number of employees in SME compaquestiony/business

- a) Up to 10 [] b) 10-50 [] c) 50-250 [] d) Over 250 []

SECTION C

10. ICT Services/Technologies used by your SME

Does your firm/organization use any of the following softwares? Please tick Yes [] No []

If Yes please tick in the appropriate boxes to indicate the extent to which your organization uses the software:

SCALE: - LE (Large Extent) A E (Average Extent) SE (Small Extent) NE (No Extent)

Technologies /Systems	Use Types Yes/No	LE	AE	SE	NE
a. Finance Systems /Human Resource & Payroll Systems					
b. Document & File Management Systems					
c. Assets Management Systems / Inventory Management Systems					
d. Decision-Support Systems such as: Sales region analysis, cost analysis					
e. Basic Internet services (email and web) gmail,yahoo,Hotmail					
f. Web site with advanced ecommerce functions such as CRM/SFA / ERP systems					

Scale: - LE (Large Extent) A E (Average Extent) SE (Small Extent) NE (No Extent)					
Technologies /Systems	Use Types Yes/No	LE	AE	SE	NE
g. Business Intelligence Systems e.g. SAP and Cognos					
h. Transaction Processing Systems such as: Payroll, Order Tracking,					
i. Tele/video/audio conferencing / Communications					
j. Web site with simple ecommerce functions Sales and marketing software					
k. Project management (billing/ time/expense management)					
l. Manufacturing (scheduling/quality control)					
m. Business related applications (i.e.: Accounting software, purchasing)					
n. Management applications, web-based HR and SAP					
o. Executive Support Systems such as: profit planning, Manpower planning,					
p. Management Information Systems such as: Sales management, inventory control					

SECTION D

(This section describes your current state of cloud computing Software as a service concept)

11. Have you heard of the following cloud computing technologies?

- i) Yes [] ii) No [] if Yes which one
 - a. IaaS (infrastructure services, such as, storage, network capacity - compute) []
 - b. PaaS (Complete operating system and software package available via cloud services-Develop) []
 - c. SaaS (Individual software packages) []

12. Kindly indicate where you learnt (main source of information) about cloud computing?

- i)Not aware of Cloud Computing [] ii)Social Media [] iii) TV, Radio or Newspapers []
- iv)Friends/family [] v)School (learning institution) [] vi) Cloud providers []

13. What describes your firm best in terms of Cloud computing adoption of SaaS (Individual software packages)

- i) Already adopted [] ii) Prospecting to adopt [] iii) Do not intend to adopt []
- a) For those who already have adopted cloud computing SaaS, Please state the benefits you have experienced. Please tick one or more benefits you have experienced, if others specify

Benefit	Tick	Benefit	Tick
i)Global accessibility		iv)Multi-Tenant efficiency	
ii)Cost saving		v)Easier administration	
iii)Automatic updates		vi)Easier collaboration	
others specify			

Others specify below

- b) Which of the following cloud computing types your firm adopted or considers to adopt?
 - i) Public cloud [] ii) Private cloud [] iii) Hybrid cloud [] iv) questionquestion []
- c) For the prospector adopter of Cloud computing SaaS
 - i) Indicate the reasons why you have not adopted

-
- ii) Do you plan to invest in SaaS cloud computing? Yes [] No [] If Yes specify
- 1) Short term (Within the next 12 months) [] 2) Medium term (within 1-2 years) []
- 3) Long term (more than 2 years) [] 4) Uncertain []
- d) For those that don't intend to adopt Cloud computing SaaS in foreseeable future
Specify the reasons why you don't intend to adopt
-

SECTION E

FACTORS THAT INFLUENCE THE DECISION TO ADOPT SOFTWARE AS A SERVICE FOR SME

14. The following are factors that influence adoption of cloud computing, kindly indicate the extent to which you agree with the statements with regard to your company?

Please tick Strongly Agree (SA), Agree (A), Neutral (N), and Disagree (D) and Strongly Disagree (SD)

SA - (Strongly Agree), A -(Agree), N-(Neutral), D – (Disagree) and SD –(Strongly Disagree)

Factor/Statement	S	A	N	D	S
	A				D
a) Awareness	S	A	N	D	S
	A				D
i)AWR 1 Issues related to using cloud SaaS computing are easily evident					
ii)AWR 2 I'm not aware of cloud SaaS computing strategies for SMEs					
iii)AWR 3 I'm aware the benefits of cloud SaaS adoption are evident					
iv)AWR 4Am aware of the drawbacks (constraints) regarding adopting SaaS					
b) Trust	S	A	N	D	S
	A				D
i)TRS1 The benefits of the decision of Cloud computing - SaaS sites are Trustable					
ii)TRS2 Cloud computing - SaaS platforms sites keeps its promises and commitments					
iii)TRS3 Cloud computing SaaS platforms keeps customers best interest in mind					
iv)TRS4 I trust my firms' data on Cloud computing SaaS platforms					
c) ICT Knowledge and Skills	S	A	N	D	S
	A				D
i)IKS1 My ICT knowledge and skills will benefit from using cloud computing SaaS adoption					
ii)IKS2 I have advance skills in ICT to help me with SaaS adoption					
iii)IKS3 I have basic skills in ICT to help me with SaaS adoption					
iv)IKS4 I have no basic skills in in ICT to help me with SaaS adoption					
d) Cost	S	A	N	D	S
	A				D

SA - (Strongly Agree), A -(Agree), N-(Neutral), D – (Disagree) and SD –(Strongly Disagree)

i)Cst1 Cloud computing- SaaS eliminates the cost of licensing new software					
ii)Cst2 Cloud computing-SaaS eliminates the cost of upgrading the system and system maintenance					
iii)Cst3 Cloud computing - SaaS increases our IT costs (such as IT personnel)					
iv)Cst4 Cloud computing SaaS has high training Costs					
v)Cst5 The overall cost of using cloud computing - SaaS is less than the cost of installing or developing a technology In house					
e) Relative Advantage	S A	A	N	D	S D
i)RA1 Using SaaS cloud computing would enable us to accomplish tasks more quickly and gives us greater control over our work.					
ii)RA2 Using SaaS cloud computing would increase our firm's productivity					
iii)RA3 Using SaaS cloud computing firms information can be accessed from any time from any place					
iv) RA4 Using SaaS cloud computing, we need not administer any ICT infrastructure					
v)RA5 Performance of SaaS cloud services does not decrease with growing user base					
f) Uncertainty	S A	A	N	D	S D
i)UNC1 Cloud computing SaaS services might not perform well with our IT operations.					
ii)UNC2 Cloud computing SaaS services may not support our IT operations effectively					
g) Compatibility	S A	A	N	D	S D
i)COM1 SaaS cloud computing fits well into our company's work style					
ii)COM2 Using SaaS cloud computing services fits well with the way					

SA-(Strongly Agree), A-(Agree), N-(Neutral), D–(Disagree) and SD –(Strongly Disagree)					
we like to work.					
iii)COM3 SaaS cloud computing services is compatible with our routine business works					
iv)COM4 SaaS Cloud services are compatible with existing technological architecture of my company					
v)COM5 There is no difficulty in exporting applications/ data to SaaS cloud services					
h) Complexity	S A	A	N	D	S D
i)CPXT1 The use of cloud SaaS computing is complicated, it is difficult to understand what is going on					
ii)CPXT2 It takes too long to learn how to use the cloud SaaS computing to make it worth the effort					
iii)CPXT3 Learning to use the cloud SaaS computing system is easy for me					
iv)CPXT4 In general SaaS cloud computing is very complex to use					
v)CPXT5 When we use SaaS cloud computing, we find it difficult to integrate our existing work with the cloud-based services					
i) Trialability	S A	A	N	D	S D
i)TRI1 I have a great deal of opportunity to try various types of cloud SaaS computing applications					
ii)TRI2 Cloud SaaS computing is available to me to adequately test run various applications					
iii)TRI3 Before deciding whether to use any cloud SaaS computing service, I would be able to properly try them out					
iv)TRI4 I should use cloud SaaS computing on a trial basis long enough to see what it could do					
j) Top Management Support	S A	A	N	D	S D
i)TMS1 The company's top management provides strong leadership and engages in the process SaaS adoption in the SME					
ii)TMS2 My top management is likely to consider the adoption of					

SA-(Strongly Agree), A-(Agree), N-(Neutral), D–(Disagree) and SD –(Strongly Disagree)

iii)TMS3 My top management is willing to take risks involved in the adoption of SaaS cloud computing					
iv)TMS4 It is not essential for the top management team to be involved in reviewing a consultant's cloud computing recommendations.					
v) TMS5 The top management team has nothing to do with the cloud computing adoption project monitoring.					
k) Innovativeness	S A	A	N	D	S D
i)INN1 Among our competitors , we are usually the first to try out new information technologies					
ii) INN2 If we heard about a new information technology, we would look for ways to experiment with it					
ii) INN3 We readily embrace new technologies as they come for our business					
l) Prior IT Experience	S A	A	N	D	S D
i)PIE1 All my employees have basic knowledge about SaaS Cloud computing					
ii)PIE2 All my employees have already used cloud computing (personal use/ business purposes)					
iii)PIE3 We have sufficient technological resources to implement SaaS cloud computing – unrestricted access to computer					
iv)PIE4 We have sufficient technological resources to implement SaaS cloud computing – high bandwidth connectivity to the internet					
v)PIE5 Overall, our firm has extensive technical knowledge about technologies similar to SaaS cloud computing.					
m) Competitive Pressure	S A	A	N	D	S D
i)CP 1 It is easy for our customers to switch to another company for similar services/products without much difficulty using SaaS cloud applications					
ii)CP 2 The rivalry among companies in the industry which my company is operating in is very intense hence I have to use SaaS as the					

SA-(Strongly Agree), A-(Agree), N-(Neutral), D–(Disagree) and SD –(Strongly Disagree)

rest					
iii)CP 3 There are many products/services in the market which are different from our products but perform the same function using SaaS					
iv)CP 4 We are aware of SaaS cloud computing implementation in our competitor organizations					
v)CP 5 We understand the competitive advantages offered by SaaS cloud computing in our industry					
n) Supplier computing support	S	A	N	D	S
	A				D
i)SCS1 It is important for our company to receive training from SaaS cloud providers					
ii)SCS2 We believe that a good relationship with other parties will be crucial					
iii)SCS3 It is necessary to have adequate technical support after SaaS cloud computing services adoption					
iv)SCS4 It is necessary to have adequate technical support before SaaS cloud computing adoption.					

We thank you for your participation and hope you have a Wonderful day!

APPENDIX 3:- NACOSTI RESEARCH CLEARANCE PERMIT

THIS IS TO CERTIFY THAT:
MR. ONDIEK COLLINS ODUOR
of UNIVERSITY OF NAIROBI, 0-200
NAIROBI, has been permitted to conduct
research in Nairobi County
on the topic: SOFTWARE AS A SERVICE
(SAAS) ADOPTION FOR THE
DEVELOPMENT OF SMALL AND MEDIUM
SIZE ENTREPRISES (SMES). A CASE
STUDY OF SMALL AND MEDIUM SIZE
ENTERPRISES (SME) IN NAIROBI COUNTY
OF KENYA

for the period ending:
18th December, 2015

god
Applicant's
Signature

Permit No : NACOSTI/P/15/1550/7693
Date Of Issue : 24th August, 2015
Fee Received :Ksh 2,000



Director General
NACOSTI
Director General
National Commission for Science,
Technology & Innovation

- 1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
- 2. Government Officers will not be interviewed without prior appointment.**
- 3. No questionnaire will be used unless it has been approved.**
- 4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- 5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
- 6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.**



REPUBLIC OF KENYA



National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A

6317

CONDITIONS: see back page

APPENDIX 4:-NACOSTI RESEARCH AUTHORISATION LETTER



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@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.

Date:

24th August, 2015

NACOSTI/P/15/1550/7693

Ondiek Collins Oduor
University of Nairobi
P.O Box 30197-0100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Software as a Service (SAAS) adoption for the development of Small and Medium Size Enterprises (SMES). A Case Study Of Small and Medium Size Enterprises (SME) In Nairobi County Of Kenya”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **18th December, 2015.**

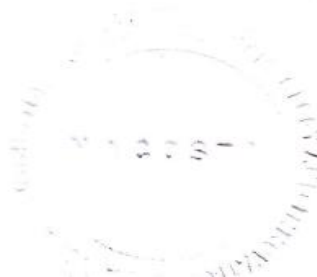
You are advised to report to **the Chief Executive Officer, Micro and Small Enterprises Authority County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are required to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

Said Hussein
SAID HUSSEIN
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Chief Executive Officer,
Micro and Small Enterprises Authority.



APPENDIX 5: RELATED AUTHOR ACADEMIC WRITINGS AND PUBLICATIONS

Book Publications

Ondiek Collins Oduor, 2012,”AN INVESTIGATION INTO THE FACTORS THAT AFFECT THE ADOPTION OF INTERNET BANKING AMONG CORPORATE BANK CUSTOMERS IN KENYA” LAMBERT ACADEMIC PUBLISHING GmbH & Co.KG Germany ISBN NO 978-3-8473-4909-9 Published Book in 2012.

Book Chapter Publications

Ondiek C.O Okello O.W & Opiyo T.E.O 2014 Book Chapter Publication on the book Title: TRENDS IN DISTRIBUTED COMPUTING APPLICATIONS By University of Nairobi School of Computing and Informatics ISBN: 978-9966-074-13-3.

Collins Oduor Ondiek, Lelei Joel Amos Njihia Gichamba 2013. An Investigation Into The Challenges Of Internet Banking Adoption In Kenya. The 4th African International Business and Management (AIBUMA 2013) Conference The University of Nairobi, School of Business, Lower Kabete Campus, Nairobi, Kenya: "Business and Management Outlook: Optimism or Pessimism?" organized and hosted by the School of Business, University of Nairobi published African Journal of Business and Management Vol.III: ISBN 978-9966-1570-3-4.Sponsored by Africa Nazarene University –Staff professional development Fund. R”

Ondiek C.O Okello O.W & Opiyo T.E.O 2012 Book Chapter Publication on the book Title: DISTRIBUTED COMPUTING SYSTEMS RESEARCH AND APPLICATIONS WITH FOCUS ON RESEARCH SHARING By University of Nairobi School of Computing and Informatics ISBN: 978-9966-21-330-3.

Ondiek Collins Oduor 2010” ICT integration in Education” Training modules and Journals with USAID/AED/TEPD Programme Nairobi-Kenya’

Refereed Conference Papers/Journal publications –Citations

Ally S Nyamawe and Emmanuel C Mbosso. Article: Road Safety: Adoption of ICT for Tracking Vehicle Over-speeding in Tanzania. *International Journal of Computer Applications* 96(16):12-15, June 2014

National and International Conference Papers

Veronicah Kaluyu; Hannah Wambugu; Collins Oduor 2015 impact Of Proficiency In Information Communication Technology Skills On Job Performance: A Case Of University Quality Assurance Officers In Kenya , **Published by** International Journal of Economics, Commerce and Management (IJEEM; ISSN 2348-0386) accessed from <http://ijecm.co.uk/volume-iii-issue-2>

Mary Ooko, Collins Oduor, 2014 The implementation framework of social media for distance learners in Africa Nazarene University, Nairobi –Kenya Published by FORMAMENTE - Anno VIII Numero 3-4/2013GUIDE Association – Issue 20: VI International GUIDE Conference, 3-4 October, Athens, Greece

James Imende Obuhuma, Collins Oduor Ondiek and Edward Osoro Ombui. 2013. Reduction of Over Speeding: A GPS Model for School Transport in Kenya. Accessed from <http://www.esria.co.ke/EdUC-2013/> on 18th May 2014.

Collins Oduor Ondiek and James Obuhuma Imende 2013 Adoption Of Framework GPS transport systems for schools in Kenya. Conference for Operation Research Society of Kenya organized by Schools of Business for University of Nairobi, University of Dar es sa/laam and Makerere University Business School sponsored by Africa Nazarene University held at Imperial beach hotel in Entebbe Uganda.

Collins Oduor and Mary Ooko 2013 *The Implementation Model For Social Media Amongst Distance Learners In Africa Nazarene University, Kenya* . 2013 eLearning Innovations Conference & Expo held at Safari Park Hotel, Nairobi, Kenya. Organized by Talents Coaching & Consulting, Public Service Commission, Kenya and EAiEC

Amos Gichamba and Collins Oduor. *Mobile Technology in Kenyan Agriculture: The Status and Opportunities*. IST Africa Conference 2013. Objective of the study is to identify the status implementations of mobile technology in Agriculture in Kenya, Identify the challenges facing the implementation of those technologies and Identify other areas of application in Agriculture that can be impacted by the implementation of mobile technologies. Organized by MOE, EU and AU held in Safari Park Hotel, Nairobi.

Community Services

2015 ICT chairman of ACK goodsherpel Langata for the parish church council

2011 Volunteer ICT tutor for primary schools teachers in Bondo District in Siaya County

2011 Volunteer ICT teacher for days schools in Ugunja district in Siaya County

Consultancies

May 2-5 2016 Facilitator/Consultant for e-Learning training for lecturers at Jaramogi Oginga Odinga University of Science and Technology.

Jan-March 2016 Awarding winning grant deployment as UNES Consultant for Transitional Authority exit strategy in charge of Six ministries.

Oct-Dec 2015 Awarding winning grant deployment as UNES Consultant for eLearning Trainer and Deputy project leader for the Office of the Auditor General.