



SOCIAL MEDIA AND HEALTH BEHAVIOUR IN SUB SAHARAN AFRICA

A Thesis Submitted to the Directorate of Research and
Graduate Training, ICT University as Partial Fulfillment of
the Requirements for the Degree of Doctor of Philosophy in
Information Communication Technology

By

Geoffrey Mayoka Kituyi

ICT University

April, 2017

© Copyright by
Geoffrey Mayoka Kituyi
April, 2017

SOCIAL MEDIA AND HEALTH BEHAVIOUR IN SUB SAHARAN AFRICA

Geoffrey Mayoka Kituyi, Student

APPROVED BY

Victor W. Mbarika, Ph.D.
Committee Chair

Kehbuma Langmia, Ph.D.
Committee Member

Clive K. Tsuma, Ph.D.
Committee Member

Emmanuel A. Anya, Ph.D.
Provost, ICT University

ABSTRACT

Social media has become an influential tool in causing Health Behavioral change globally and more especially in the Sub-Saharan Africa region. This study sought to analyze and model the Health Behavioral changes that were being presented through the use of social media using social cognitive and learning theories.

A quantitative research approach encompassing descriptive statistics, inferential statistics and Structural Equation Modeling techniques was applied. A survey research design was implemented using questionnaires. Data were analyzed and presented using quantitative methods. Purposive sampling was used to select three countries from the Sub-Sahara Africa region – including Uganda in East Africa, Cameroon in Central Africa and Nigeria in West Africa. Simple random sampling technique was used to select 150 survey respondents from each of these three countries. Quantitative data were analyzed using descriptive statistics, factor analysis, correlation and Multiple Hierarchical Regressions, and Structural Equation Modeling techniques.

Findings indicated that Cognitive Factors significantly influenced Health Behaviors as well as Self-Regulation; Self-Regulation had a significant positive relationship with Health Behavior as well as External Locus of Control; External Locus of Control had a positive significant relationship with Health Behavior; Outcome Expectations positively influenced External Locus of Control; Age Sensitivity negatively influenced Health Behavior; Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation; Self-Regulation has a partial mediation effect on the relationship between Cognitive Factors and Health Behavior; Self-Regulation and External Locus of Control had a partial mediation effect in the relationship between Cognitive Factors and Health Behavior; Self-Regulation has a partial mediation effect in the relationship between Age Sensitivity and Health Behavior; External Locus of Control has a partial mediation effect in the relationship between Self-Regulation and Health Behavior.

Generally, the current study provides empirical evidence in examining the cognitive and social learning theories on Health Behavioral change. The three theories were triangulated and tested to see how bet they explained the learning of new Health Behaviors by social media users in Sub-Saharan Africa. This was probably the first study that investigated social media and Health Behavioral change in the region. As had been indicated in chapter one, most studies on e-health concentrated mainly technology transfer, adoption and sustainability. Little or nothing had been done on investigating the Health Behavioral implications caused by adoption and usage of technology especially social media.

Specifically, this study makes a contribution to the body of knowledge on social media and Health Behavior by proposing a model for social media and Health Behavior. The proposed model was tested on empirical data and found to adequately explain how and why individuals learned new Health Behaviors via social media.

Since Outcome Expectations were found to positively affect External Locus of Control of social media users, it is important for social media platforms to be designed in such a way that they will make its users better and more acceptable people in society.

The also recommends online community education, sensitization and policing programs to help educate the careless learners on the dangers of learning bad Health Behaviors. Further, parents, teachers, and elders in the community should take keen interest in monitoring the activities of their young one online. In addition, Social media users should be taught on the benefits of using social media for positive health gain. It is also important to improve on the knowledge and beliefs of social media users to ensuring that social media users learn how to regulate themselves while using online platforms.

In terms of policy, parliaments of affected countries should enact laws that force social media developers to use local content. Using local content will ensure that only appropriate information is consumed by citizens via social media.

Further, ministries of education, youth, gender and culture come up with online educational programs which could be incorporated in the mainstream education system. The purpose of this curriculum will be to educate young people in schools, churches, mosques and other avenues about the dangers of reckless consumption of online health related materials such as pornography to their health. The young people should know that not all that comes from developed countries is good. Therefore they should not embrace foreign ideals in their way they handle their health related problems.

It is also important for government to enact laws and policies that prohibit child abuse pornography, prostitution, bestiality in all forms of media including social media, children games, television programs, churches, mosques, schools among other avenues. This is because, in recent times health related information that can be learnt and gradually transform somebody's behaviors is diffused through different media and channels. Some of these acts in recent days have been found to occur even in schools and places of worship. Therefore restricting such information via social alone may not yield the best results. A more holistic approach to eradicating immorality and moral degeneration should be adopted. Individuals who are found circulating harmful information via social media and those found inducting children in acts of immorality, upon conviction should be punished severely in order to discourage others from doing it.

Regarding Age Sensitivity, governments and relevant regulatory institutions should prohibit children from accessing adult content via social media. An age limit requirement could be placed on different online content such that individuals below that age are not eligible to access or watch such information. For example online channels that teach people how to sexually satisfy their partners should not be accessible to children below the legal age of marriage in the respective countries. This can be enforced through national Information Communication Technology regulatory institutions.

ACKNOWLEDGEMENT

I acknowledge the support of my supervisors; Prof. Victor W. Mbarika, Prof. Kehbuma Langmia and Dr. Clive K. Tsuma. Your invaluable guidance and mentorship has enabled me attain this level of achievement.

I acknowledge the financial support extended to me on this program by Makerere University Business School.

I appreciate the support of my colleagues and friends; Prof. Waswa Balunywa, Prof. Musa Moya, Edward Kabaale, Samali Mlay, Robert Kyeyune, Johnson Ssekakubo, Boniface Abima and Dr. Humphrey Sabi.

Thanks to aunt Beth Nekesa (RIP), and my uncles, Robert Watasa, Peter Kitto and Andrew Nekuse for the support in my life-long journey.

And to my dear wife Tina Kituyi, I say thank you for the love and support during this journey.

PREFACE

This thesis presents a modest model explaining how new health behaviors are learned via social media users Sub-Saharan Africa. The study covered 450 social media users from Cameroon, Nigeria and Uganda.

The study applied three social cognitive and social learning theories to understand how social media users learned new behaviors as they interacted on the social media platforms. The three theories were triangulated and seven constructs including cognitive factors, outcome expectations, age sensitivity, and internal locus of control, external locus of control, self-regulation, and behavioral intention were identified for investigation. A set of five research questions and eighteen hypotheses were formulated out of these theories for investigation.

Inferential statistics including zero-level correlations, multiple hierarchical multiple regressions and structural equation modeling were used to investigate the relationships between study variables. The proposed model was tested and validated and was found fit in explaining social media and health behavior.

LIST OF ABBREVIATIONS

AS	Age Sensitivity
AMOS	Average Moments of Structures
BI	Behavioral Intention
BP	Behavior Potential
BYU	Brigham Young University
CF	Cognitive Factors
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CPII	Centre for Practice Improvement and Innovation
D.F.	Degree of Freedom
E	Expectancy
EFA	Exploratory Factor Analysis
ELC	External Locus of Control
HB	Health Behavior
HIV	Human Immunodeficiency Virus
ICT	Information Communication Technology
ILC	Internal Locus of Control
KMO	Kaiser-Meyer-Olkin
NGO	Non-Governmental Organization
NIHCE	National Institute for Health and Clinical Excellence
NNFI	Nonnormed Fit Index
OE	Outcome Expectations
PS	Psychological Situation
PWC	PricewaterhouseCoopers

RMSEA	Root Mean Squared Approximation of Error
RV	Reinforcement Value
SCT	Social Cognitive Theory
SDV	Standard Deviation
SLT	Social Learning Theory
SM	Social Media
SPSS	Statistical Package for the Social Sciences
SR	Self-Regulation
SSA	Sub-Sahara Africa
STDs	Sexually Transmitted Diseases
TLI	Tucker Lewis Index
TV	Television
UK	United Kingdom
UN	United Nations
USA	United States of America
WHO	World Health Organization

GLOSSARY

Average Moments of Structures is a software add-on for SPSS that is used to quantitatively analyze data through construct structural equation models

Confirmatory Factor Analysis is a statistical procedure that is used to test the hypothesized set of observed variables and confirm if they measured the latent variable

Comparative Fit Index also abbreviated as CFI is statistical analysis technique used to control for sample

Exploratory Factor Analysis is a statistical method used to reduce a given set of observed variables or factors a reasonable level that best explains latent

Kaiser-Meyer-Olkin abbreviated as KMO is a statistical method used the analyze for sample adequacy

Nonormed Fit Index abbreviated as NNFT and also known as Tucker Lewis index (TLI) which is used to measure for parsimony by comparing degree of freedom for observed variables to the degrees of freedom of the hypothesized variables

Root Mean Squared Approximation of Error also abbreviated as RMSEA is a statistical method used to measure the differences in covariance matrices per degree of freedom for the hypothesized and observed model variables

Social Media are internet-based applications that allow individuals to create, join and participate in online communities through information exchange

NOMENCLATURE

Age Sensitivity is used to refer to the feelings an individual has towards people of different age groups.

Behavioral Intention is used to show the likelihood that an individual or community will learn new behaviors

Cognitive Factors are attributes unique to an individual such as knowledge, beliefs and attitudes that help in the learning process.

External Locus of Control is used to refer to an individual's locus of control or state of being where one is unable to controls the consequences of his / her behavior,

Health Behavior is used to refer to learned action, skills, practices an individual does that influence his wellbeing in terms of health.

Internal Locus of Control is used to refer to an individual's locus of control or state of being where one controls the consequences of his / her behavior,

Outcome Expectations is the likelihood and value of the consequences of behavioral choices.

Self-Regulation is the act of controlling oneself through goal setting, self-instruction, self-rewarding, inner feedback communication and self-evaluation to identify areas for which he individual can seek external support from the environment.

DEDICATION

This work is dedicated to my wife Tina Kituyi and our sons, Elijah K. Wakabenga and Eden K. Watuwa.

CONTENTS

ABSTRACT.....	iv
ACKNOWLEDGEMENT.....	vii
PREFACE	viii
LIST OF ABBREVIATIONS	ix
GLOSSARY	xi
NOMENCLATURE	xii
DEDICATION	xiii
LIST OF TABLES.....	xxii
LIST OF FIGURES.....	xxvi

CHAPTER ONE: Introduction

1.0 Introduction.....	27
1.1 Presentation format	28
1.2 Background of the study	29
2.3 Statement of the problem.....	33
1.4 Research questions	34
1.5 Study variables	35
1.5.1 Dependent variables	35
1.5.2 Independent variables.....	36
1.5.3 Mediator variables	36
1.5.4 Moderator variables.....	36
1.5.5 Control Variables	36
1.5.6 Extraneous Variables	37
1.6 General objective	37
1.6.1 Specific objectives	37

1.8 Significance of the study	38
-------------------------------------	----

CHAPTER TWO: Literature Assessment

2.0 Introduction.....	40
2.1 Literature assessment approach	40
2.2 Social media.....	41
2.3 Social Media in Sub-Saharan Africa.....	42
2.4 Social media and behavioral change	43
2.5 Theoretical framework.....	44
2.5.1 Evolution of the Social Learning Theory.....	44
2.5.2 Bandura’s Social Learning Theory	45
2.5.3 Rotter’s Social Learning Theory.....	47
2.5.4 Internal Locus of Control	48
2.5.5 External Locus of Control	48
2.5.6 Behavioral Intention.....	49
2.5.7 Social Cognitive Theory	49
2.5.8 Cognitive Factors	50
2.5.9 Outcome Expectations	51
2.5.10 Self-Regulation	51
2.5.11 Reciprocal determination.....	52
2.5.12 Behavioral factors.....	53
2.5.13 Age Sensitivity	54
2.5.14 Summary of the theoretical analysis.....	54
2.6 Strengths and weaknesses of Social learning and cognitive theories	60
2.7 Theoretical gaps of social learning and cognitive theories.....	63
2.8 Conceptual framework.....	64
2.9 Research questions and hypotheses.....	67
2.10 Conclusion on literature assessment	68

CHAPTER THREE: Methodology

3.0 Introduction.....	71
3.1 Philosophical perspectives	71
3.1.1 Ontology orientation	71
3.1.2 Epistemological orientation	72
3.1.3 Axiological approach	73
3.2 Research design.....	74
3.3 Study population	76
3.4 Sample design.....	76
3.5 Data sources and collection methods	77
3.6 Measurement and operationalization of variables.....	77
3.7 Research plan and trustworthiness of the research instruments.....	78
3.7.1 Validity and reliability of the questionnaire	78
3.7.2 Face validity	79
3.7.3 Construct validity, Convergent validity and Discriminant validity	81
3.7.4 Handling of missing values	82
3.8 Data analysis methods	82
3.8.1 Quantitative data analysis methods.....	82
3.9 Summary of methodology.....	83
3.10 Challenges and limitations faced	87
3.11 Ethical considerations	87
3.11.2 Human subjects	88
3.11.3 Confidentiality	88
3.11.4 Approvals and permissions	88

CHAPTER FOUR: Descriptive Statistics, EFA, Correlation and Regression analysis, CFA and Structural Equation Modelling

4.0 Introduction.....	90
4.1 Exploratory Factor analysis	90
4.1.0 Cognitive Factors	91
4.1.1 Descriptive Statistics for Cognitive Factors	92
4.1.2 Communalities test for Cognitive Factors	93
4.1.3 Rotated Component Matrix for Cognitive Factors	94
4.2.0 Internal Locus of Control	95
4.2.1 Descriptive statistics for Internal Locus of Control	96
4.2.2 Communalities test for Internal Locus of Control	97
4.2.3 Rotated Component Matrix for Internal Locus of Control	97
4.3.0 External Locus of Control	98
4.3.1 Descriptive Statistics for External Locus of Control	99
4.3.2 Communalities test for External Locus of Control	100
4.3.3 Component Matrix for External Locus of Control	101
4.4.0 Self-Regulation	102
4.4.1 Descriptive Statistics for Self-Regulation	102
4.4.2 Communalities test for Self-Regulation	104
4.4.3 Component Matrix for Self-Regulation	105
4.5.0 Age Sensitivity	106
4.5.1 Descriptive Statistics for Age Sensitivity	107
4.5.2 Communalities test for Age Sensitivity	108
4.5.3 Component Matrix for Age Sensitivity	108
4.6.0 Outcome Expectations	109
4.6.1 Descriptive Statistics for Outcome Expectations	110
4.6.2 Communalities test for Outcome Expectations	111
4.6.3 Rotated Component Matrix for Outcome Expectations	112
4.7.0 Behavioral Intention	113
4.7.1 Descriptive Statistics for Cognitive Factors	113

4.7.2 Communalities test for Behavioral Intention	115
4.7.3 Rotated Component Matrix for Behavioral Intention.....	115
4.8.0 Health Behavior	117
4.8.1 Descriptive Statistics for Health Behavior	117
4.8.2 Communalities test for Health Behavior	120
4.8.3 Rotated Component Matrix for Health Behavior	121
4.9 Gender	123
5.1.1 Age group	124
5.1.2 Level of education	125
5.1.3 Marital status.....	125
5.1.4 Country of residence	126
5.1.5 Knowledge of social media.....	127
5.1.6 Usage of social media.....	127
5.1.7 Social media platforms	128
5.1.8 Social media usage duration	129
5.1.9 Usage of social media to access health related information	130
5.1.10 Purpose of social media use.....	130
5.1.11 Devices used	131
5.1.12 Type of information.....	132
5.2 Correlation and regression analysis	134
5.2.1 The relationship between Outcome Expectations and External Locus of Control	140
5.2.2 The relationship between External Locus of Control and Health Behavior	140
5.2.3 The relationship between Cognitive Factors and Health Behavior.....	140
5.2.4 The relationship between Cognitive Factors and Internal Locus of Control.....	141
5.2.5 The relationship between Internal Locus of Control and Behavioral Intention	141
5.2.6 The relationship between Behavioral Intention and Health Behavior	142
5.2.7 The relationship between Cognitive Factors and External Locus of Control	142
5.2.8 The relationship between Cognitive Factors and Self-Regulation	142
5.2.9 The relationship between Self-Regulation and External Locus of Control	143

5.2.10 The relationship between Self-Regulation and Health Behavior	143
5.2.11 The relationship between Age Sensitivity and Health Behavior	144
5.3 Multiple Hierarchical Regression analysis for answering research questions 1-3.....	144
5.4 Testing for moderation.....	151
5.4.1 Age Sensitivity moderating Cognitive Factors and Self-Regulation	151
5.4.2 Testing for moderation effect using modgraph	152
5.5 Testing for Mediation	154
6.0 Confirmatory Factor Analysis	161
6.1 Confirmatory Factor Analysis Explained	161
6.1.1 CFA for Cognitive Factors	162
6.1.2 CFA for Internal Locus of Control	165
6.1.3 CFA for External Locus of Control.....	166
6.1.3 CFA for Self-Regulation.....	168
6.1.4 CFA for Age Sensitivity.....	170
6.1.5 CFA for Outcome Expectation	172
6.1.6 CFA for Behavioral Intention	174
6.1.7 CFA for Health Behavior	176
7.0 Structural Equation Models	179
7.1 Using Structural Equation Modeling to test research hypothesis	179
7.2 The hypothesized model	180
7.2.1 Testing of research hypotheses on the hypothetical structural equation model.....	183
7.2.2 Testing for Mediation effects	187
7.3 Development of the final structural equation model for social media and Health Behavior	192
7.3.1 Testing of research hypotheses on the final structural model	197
7.3.2 Testing mediation effects	202

CHAPTER FIVE: Discussion, conclusions and recommendations

8.0 Introduction..... 208

8.1 Summary of findings..... **Error! Bookmark not defined.**

8.2.0 Discussion of findings 213

 8.2.1 Cognitive Factors 213

 8.2.2 Internal Locus of Control 213

 8.2.3 External Locus of Control 213

 8.2.4 Self-Regulation 214

 8.2.5 Age Sensitivity 214

 8.2.6 Outcome Expectations 214

 8.2.7 Behavioral Intention 215

 8.2.8 Health Behavior 215

8.3.0 Outcome Expectations and External Locus of Control of social media users 215

 8.3.1 External Locus of Control and Health Behavior 216

 8.3.2 Cognitive Factors and Health Behavior of control of social media users 217

 8.3.3 Cognitive Factors and Internal Locus of Control of control of social media users 219

 8.3.4 Internal Locus of Control and Behavioral Intention of control of social media users 219

 8.3.5 Behavioral Intention and Health Behavior of control of social media users 220

 8.3.6 Cognitive Factors and External Locus of Control of social media users..... 221

 8.3.7 Cognitive Factors and Self-Regulation of social media users..... 221

 8.3.8 Self-Regulation and External Locus of Control of social media..... 222

 8.3.9 Self-Regulation and Health Behavior of social media users..... 223

 8.3.10 Age Sensitivity and Health Behavior of social media users..... 223

 8.3.11 The moderation effect of Age Sensitivity in the relationship between Cognitive Factors and Self-Regulation of social media users 224

 8.3.12 The mediation effect of Internal Locus of Control and Behavioral Intention in the relationship between Cognitive Factors and Health Behavior of social media users..... 225

 8.3.13 The mediation effect of Self-Regulation in the relationship between Cognitive Factors and External Locus of Control of social media users 225

8.3.14 The mediation effect of External Locus of Control in the relationship between Self-Regulation and Health Behavior of social media users	226
8.3.15 The mediation effect of Self-Regulation in the relationship between Cognitive Factors and Health Behavior of social media users	226
8.3.16 The mediation effect of External Locus of Control in the relationship between Cognitive Factors and Health Behavior of social media users	227
8.3.17 The mediation effect of Self-Regulation in the relationship between Age Sensitivity and Health Behavior of social media users	228
9.0 Conclusions, contributions and recommendations	228
9.1 Conclusions.....	228
9.2 Theoretical implications and contributions	232
9.3 Methodological implications.....	233
9.4 Implications and recommendations to practice	234
9.5 Implications and recommendations to policy.....	237
9.6 Limitations of the study.....	239
9.7 Future research	240
References.....	241
Appendix I – survey questionnaire	254
Appendix II – Results of the pilot study	267
Appendix III- Histogram for objective one.....	287
Appendix IV- Normal P-P Plot for Objective one	288
Appendix V – Histogram for objective two.....	289
Appendix VI – Normal P-P Plot for objective two.....	290
Appendix VII- Histogram for objective 3.....	291
Appendix VIII- Normal P-P Plot for objective three	292
Vita	293

LIST OF TABLES

Table 1: Study variables.....	37
Table 2: Summary of the reviewed theories	57
Table 3: SLT vs SCT strengths and weaknesses	61
Table 4: Matrix analysis.....	64
Table 5: Research questions and hypotheses	67
Table 6: Survey sample.....	77
Table 7: Reliability results	78
Table 8: Expert content validity index results	80
Table 9: Variable Content Validity Index.....	81
Table 10: Summary of methodology	84
Table 11: KMO and Bartlett's Test for Cognitive Factors	92
Table 12: Descriptive Statistics for Cognitive Factors	92
Table 13: Communalities for Cognitive Factors.....	94
Table 14: Rotated Component Matrix Cognitive Factors.....	95
Table 15: KMO and Bartlett's Test for Internal Locus of Control.....	96
Table 16: Descriptive statistics for Internal Locus of Control.....	96
Table 17: Communalities test for Internal Locus of Control.....	97
Table 18: Component Matrix for Internal Locus of Control	98
Table 19: KMO and Bartlett's Test for External Locus of Control.....	99

Table 20: Descriptive Statistics External Locus of Control.....	99
Table 21: Communalities for External Locus of Control	100
Table 22: Component External Locus of Control.....	101
Table 23: KMO and Bartlett's Test Self-Regulation.....	102
Table 24: Descriptive Statistics for Self-Regulation regulation	102
Table 25: Communalities for Self-Regulation.....	104
Table 26: Component Matrix for Self-Regulation.....	105
Table 27: KMO and Bartlett's Test for Age Sensitivity.....	107
Table 28: Descriptive Statistics for Age Sensitivity	107
Table 29: Communalities for Age Sensitivity	108
Table 30: Rotated Component Matrix for Age Sensitivity.....	109
Table 31: KMO and Bartlett's Test for Outcome Expectations	110
Table 32: Descriptive Statistics for Outcome Expectations	110
Table 33: Communalities for Outcome Expectations.....	111
Table 34: Component Matrix for Outcome Expectations.....	112
Table 35: KMO and Bartlett's Test for Behavioral Intention	113
Table 36: Descriptive Statistics for Behavioral Intention.....	114
Table 37: Communalities for Behavioral Intention	115
Table 38: Rotated Component Matrix for Behavioral Intention.....	116
Table 39: KMO and Bartlett's Test for Health Behavior	117
Table 40: Descriptive Statistics for Health Behavior	117
Table 41: Communalities for Health Behavior.....	120
Table 42: Rotated Component Matrix for Health Behavior	121

Table 43: Respondents' gender.....	124
Table 44: Respondents' age	124
Table 45: Level of education	125
Table 46: Marital status	126
Table 47: Country of residence.....	126
Table 48: Knowledge of social media	127
Table 49: Usage of social media.....	128
Table 50: Social media platforms	128
Table 51: Social usage duration.....	129
Table 52: Usage of social media to access health related information	130
Table 53: Purpose of social media use.....	130
Table 54: Devices used	131
Table 55: Type of information.....	132
Table 56: Correlation results.....	135
Table 57: Multiple Hierarchical Regressions for External Locus of Control.....	136
Table 58: Multiple Hierarchical Regressions for Internal Locus of Control	136
Table 59: Multiple Hierarchical Regressions for Self-Regulation	137
Table 60: Multiple Hierarchical Regressions for Behavioral Intention.....	138
Table 61: Multiple Hierarchical Regressions for Health Behavior	139
Table 62: Regression results for objective one	145
Table 63: Regression results for objective two.....	147
Table 64: Regression results for objective three.....	149
Table 65: Age Sensitivity moderating Cognitive Factors and Self-Regulation.....	151

Table 66: Coordinates for Age Sensitivity.....	153
Table 67: Summary of chapter five findings	159
Table 68: Model Fit Summary for Cognitive Factors.....	163
Table 69: Table Model Fit Summary for Internal Locus of Control	166
Table 70: Model Fit Summary for External Locus of Control	167
Table 71: Model Fit Summary for Self-Regulation.....	169
Table 72: Model Fit Summary Age Sensitivity	171
Table 73: Model Fit Summary Outcome Expectations.....	173
Table 74: Model Fit Summary for Behavioral Intention	175
Table 75: Model Fit Summary for Health Behavior.....	178
Table 76: Model Fit Summary for the hypothesized model	182
Table 77: Bootstrap Mediation effects.....	188
Table 78: Summary of hypotheses accepted and rejected by the hypothetical model.....	190
Table 79: Hypotheses in the proposed	194
Table 80: Social media and Health Behavior Model Fit Summary	196
Table 81: Squared Multiple Correlations for the proposed model	196
Table 82: Mediation results for the proposed model	203
Table 83: Summary of findings	209

LIST OF FIGURES

Figure 1: Conceptual framework (Source: developed by the researcher from literature of Bandura, 1965; Rotter, 1966; Bandura, 1986; Venkatesh et al. 2003)	66
Figure 2: Moderation effect of Age Sensitivity	153
Figure 3: MedGraph Self-Regulation in Cognitive Factors and External Locus of Control	155
Figure 4: MedGraph Self-Regulation in Cognitive Factors and Health Behavior.....	156
Figure 5: MedGraph External Locus of Control in Cognitive Factors and Health Behavior	157
Figure 6: MedGraph Self-Regulation in Age Sensitivity and Health Behavior	158
Figure 7: Measurement model for Cognitive Factors	163
Figure 8: CFA model for Internal Locus of Control.....	165
Figure 9: CFA model for External Locus of Control.....	167
Figure 10: Measurement model for Self-Regulation	169
Figure 11: Measurement model for Age Sensitivity.....	171
Figure 12: Measurement model for Outcome Expectations	173
Figure 13: Measurement model for Behavioral Intention.....	175
Figure 14: CFA model for Health Behavior	177
Figure 15: Hypothesized structural equation model	181
Figure 16: Model for social media and Health Behavior.....	193
Figure 17: Age Sensitivity moderating Cognitive Factors and Self-Regulation	202

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Technology has become a driving force in almost every aspect of life. Innovations that address the challenges and the wellbeing of man are sprouting up – many of these in the area of Information Communication Technology (ICT). ICT is the umbrella word for all elements of communication equipment (Rouse, 2014). It includes hardware, software and liveware that operate to accept and process data, store and disseminate information to the users. These include – but not limited to computer hardware and software, radios, phones, televisions and communications networks. ICTs are being used in all business disciplines across the globe. Different ICT applications have been developed for use in areas such as education - for the case of e-learning and education management systems, healthcare such as hospital information management systems, telemedicine applications, and general communications such as Social Media (SM) and social networks, telecommunications, among others (Hilliard, 2012).

Social media, which have gained prominence and wide use over the past decade, are online applications and platforms that enable individuals to exchange information in close groups of interest or to the wider online community (Dewing, 2012). According to Saleh *et al.* (2012, p 294), SM encompasses all electronic platforms “through which users create and engage in online communities to share ideas, personal messages, and other information”. Using these media provide powerful features that allow users to create customized content for exchange. Users who cannot create their own content have a variety of readily available online content which they can use and share. Many SM platforms in existence today offer a multiplicity of services, ranging from simple text exchange platforms to high-tech enabled platforms that allow exchange of multimedia forms of data such as text, voice, videos among others. Most of SM interactions are instant, very affordable and can be accessed even using a basic internet enabled phone. The media are being used for business and leisure (Boyd & Ellison, 2016; Leonardi & Huysman, 2013). The most popular SM in use today include Facebook, YouTube, Twitter, Skype, WordPress, Wikipedia, Instagram, Bobo, Naijanet and Baraza among others (Boyd & Ellison,

2016; Dewing, 2012. Facebook that launched in the early 2000s is now the leading SM website with over 1.44 billion users (Protalinki, 2015), followed by WhatsApp with about 1 billion users (Statistica, 2016a) and Instagram with 300 million users (Statistica, 2016b), Skype 74 million users (Statistic Brain, 2016).

There are all categories of users engaged on these media including young and old professionals, marketers, politicians, spiritual leaders, and educationists. Anyone can create or consume information as long as they have access to the internet. Abbasi *et al.* (2016) posits that SM platforms have transformed information consumers into information producers. A lot of the SM information is health-related. The PWC Health Research Institute (2012) posits that people in the United States of America (USA) are increasingly using SM to exchange health-related information. Patients in most developed countries and some developing countries are able to access health information, share their health problems and get assistance via some kind of SM. The active engagement, instant sharing and consumption of information via SM is influencing behavior in various forms. Even those behaviors that are not necessarily originating from a health perspective may in the long run have health bearings on the consumers. Overtime, behaviors are being learned and unlearned (Abbasi *et al.* 2016; Cui, 2016). Some of these behaviors influence the health of consumers which this study proposes to examine.

1.1 Presentation format

This thesis is arranged in five chapters as follows:

Chapter one presents an introduction, background of the study, statement of the problem, significance of the study, conceptualization, the study objectives, research questions and hypotheses. In the introduction, we define the key concepts used in the study. Background of the study presents the current state of affairs and a detailed account of the motivation behind this study. Statement of the problems gives a summary of the problems for investigation. This chapter winds up with conceptualization, formulation of objectives, research questions and hypotheses.

Chapter two presents a critical assessment of literature on the study variables, the theoretical framework and a matrix analysis of the various studies that were triangulated to form the conceptual framework for the study.

Chapter three presents the various research methods that were used to achieve the objectives, to answer research questions and also test the research hypotheses.

Chapter four presents descriptive statistics of background information and exploratory factor analysis of the hypothesized variables. It also presents correlation and Multiple Hierarchical Regression analysis and hypotheses testing. Further, this chapter presents confirmatory factors analysis results using Structural Equation Modeling in Average Moments of Structures (AMOS) software. This helped to generate and confirm measurement models that were used in developing structure equation models. The chapter winds up with a presentation of Structural Equation Modeling results of both the hypothesized model and the proposed model for social media and Health Behavior in Sub-Saharan Africa.

Chapter five presents a discussion of the research findings while comparing it to theory and prior literature. It also presents a conclusion and recommendations of the study while highlighting implications to theory, policy and practice.

1.2 Background of the study

The Centre for Practice Improvement and Innovation (CPII) indicates that demand for online health information is on the increase (CPII, 2008). A study by Harris poll showed that 81% of Americans go online in search of healthcare information, while over 90% seek interaction with medical physicians about their ailments (The Harris Poll, 2010; CPII, 2008; Taylor, 2002). Due to this social media, has greatly picked up and benefited patients in the USA and elsewhere. For example, the UAMS Winthrop P. Rockefeller Cancer Institute, Arkansas USA¹ has patients discussing their experiences with hospital medical staff (Hartley *et al.* 2013). In this case, a visitor is welcomed by a medical doctor explaining how to diagnose diseases and how they will

¹ URL: <https://www.facebook.com/uamscancerinstitute>

handle a given disease. This page is linked to YouTube videos². A hospital official responds to posts by visitors to guide them on various issues that concern their health, while asking for feedback.

Another example of hospitals using SM is the Pew Research Center's Hispanic Trends Project³ and⁴ (Livingston, Minushkin & Cohn, 2014). Pittsburgh Medical Center and Hillman Cancer Institute has a Facebook page, UPMC Cancer Center⁵ where they give professional advice to visitors (PWC Health Research Institute, 2012). The following was posted by a visitor:

“Is anyone having trouble getting Tamoxifen Tablets? I couldn't get them at Giant Eagle recently and now my ExpressScripts mail in is telling me that can't get them until March 7th. I was able to get them at Hillman's pharmacy, which is where I will go for next refill, but now I'm getting nervous. Why the shortage???”

The hospital replied as follows:

“Hi, Mary. The pharmacy at Hillman Cancer Center is not aware of any shortage on Tamoxifen. Pharmacies have different whole sellers, so that may be where the issue is. If you'd like to get your prescription filled at Hillman, you can bring in your bottle and they can get you what you need. Or, you can call Giant Eagle and ask them to send it over to the Hillman Pharmacy. If you have any further questions or concerns, please send us a private message on Facebook, or email us at outreach@upmc.edu. Thanks!”

The hospital page has many images and a link to YouTube with a video showing how stereotactic radio surgery for lung cancer is delivered in one to five days and treatment in a period of seven to ten days⁶. This kind of interaction has helped patients get first-hand information from the medical experts at almost zero costs compared to other forms of medical consultations that are very costly (Ejughemre, 2013; Morrison *et al.* 2008).

² URL: <https://www.youtube.com/watch?v=4CSZVevsbDc&feature=youtu.be>

³ URL: <https://www.facebook.com/pewhispanic/info>

⁴ URL: <https://www.facebook.com/pewhispanic/info>

⁵ URL: <https://www.facebook.com/UPMCCancerCenter>

⁶ URL: https://www.facebook.com/UPMCCancerCenter/app_576144945740892

In Africa, several healthcare providers have adopted SM for providing healthcare services to their patients. For example, the Volunteer Abroad in Africa - orphanages, schools, hospitals, clinics, HIV⁷, a healthcare Non-Governmental Organization (NGO) uses SM to mobilize healthcare volunteers to come and provide healthcare services in Ghana.

Another example is the SM page for Valley Farm Animal Hospital⁸ which is a Facebook page that provides healthcare services for dogs and pets in Pretoria South Africa.

Genesis Clinic Saxonwold, Johannesburg also has a page on Facebook⁹ with over 1000 users. This page is used to communicate and educate members about the clinic's natural birth fertility services.

Med clinic Southern Africa¹⁰ is a page for the hospital and teaching school used to disseminate information about the hospital's services.

Edna Adan University Hospital has over 8,000 member Facebook page¹¹ exchanging information about the hospital's maternity services, and Nairobi Women's Hospital Facebook page¹² provides healthcare information services to the members.

Perhaps the most healthcare related content was found on YouTube videos. A quick search on YouTube yields several videos that have documented medical issues in different parts of Sub-Saharan Africa and Africa at large. For example, there are videos for JHB Hospital¹³, Ghana hospital¹⁴ and Edendale Hospital, South Africa¹⁵. On Twitter, there is information on healthcare from African healthcare providers, such as Edna Maternity Hospital, Somalia.

⁷ URL: https://www.facebook.com/Elghanavso?hc_location=timeline

⁸ URL: <https://www.facebook.com/vfah.info>

⁹ URL: <https://www.facebook.com/pages/Genesis-Clinic-Saxonwold/301252829988>

¹⁰ URL: <https://www.facebook.com/MediclinicSouthernAfrica>

¹¹ URL: <https://www.facebook.com/edna.hospital>

¹² URL: <https://www.facebook.com/NAIROBIWOMENSHOSPITAL>

¹³ URL: https://www.youtube.com/watch?v=eMrd6Er_VPk

¹⁴ URL: <https://www.youtube.com/watch?v=IQ2Ck07SutA>

Behaviorist scientist, psychologists and social learning scholars such as Bandura (Bandura, 2000; Rotter, 1966; Bandura, 1965; Bandura, 1961) emphasize the influence of consuming information – whether textual, audio, or images on behavioral change. Given that SM platforms have abilities to store data so that it can be used in the future, they provide repeated consumption of the same information over a period of time. According to Bandura’s Social Cognitive Theory, this leads to indirect learning (also known as delayed learning) – a form of learning that occurs over a period of time through observation (Bandura, 1986).

Further, as earlier indicated, SM platforms provide easy access to information from actors and players in different aspects of life. There are celebrities, medical practitioners, religious leaders, students, teachers, political leaders, organizations, etc. These actors play an important behavioral dissemination role. They act as role models from whom new behaviors can be learned by users in their online communities. For example, a cancer hospital is able to offer counseling services to patients through a Facebook page (Hartley, Tatum and Gatto, 2013). Pharmaceutical corporations and NGOs promote condoms and other sexual reproductive products via SM (Purdy, 2011; Levine, 2009). Cigarettes companies are able to market their products to the global online audience (Liang *et al.*, 2015; Wrzosiński, 2015). Beer and other alcoholic beverage producers are able to market their products online via SM (McQuiston, 2013; Lozoff, 2016) and prostitutes are also available and rigorously marketing their services via online SM platforms (Rocha *et al.*, 2016; Holme, 2014; Fottrell, 2013; Weiss, 2010). Religious organizations offer services via online SM platforms (Ware & Goodmanson, 2009; Boyd & Michigan, 2007).

As described above, online services via SM allow messages to be transmitted. As earlier indicated these messages come in all forms such that they can be easily consumed by the receivers. Consequently, there will be behavioral changes amongst the receivers. For example, in the case of hospitals and other healthcare institutions offering healthcare services such as counseling and promotion of healthcare products, patients are able to follow and in most cases share with friends and relatives on how to better manage their sicknesses or use the advertised products. Testimonies are passed from individuals who formerly suffered from the same disease,

¹⁵ URL: <https://www.youtube.com/watch?v=rAmM55TRW2I>

or those that had used the products/services about their experiences. This leads to behavioral change which could be manifested the patients' adherence to treatment and the learned practices. Some of the behaviors created may bring about positive change in behavior, whereas others such as those marketing tobacco, alcohol, drugs and prostitution are likely to negatively impact on the behavior.

2.3 Statement of the problem

Several social media platforms exist where different people meet to share information freely (Morrison *et al.* 2008). Hospitals and other healthcare service providers, manufactures, educationists, political and spiritual leaders use these platforms to inform, educate, convince, and mobilize support and demand for their products and services. Tailored information services are also available (Moorhead *et al.* 2014; Martinasek *et al.*, 2011).

However, not all information being shared brings about positive behavioral change. For example, as earlier seen, information about contraceptives may lead to moral decay (Purdy, 2011; Levine, 2009). Deliberately attractive information about tobacco products targeting youths and other non-smokers may cause smoking addiction and its accompanying effects such as cancers (Liang *et al.*, 2015; Wrzosiński, 2015). Alcohol and other spirits advertisements may lead to alcoholism and associated socio-economic implications (McQuiston, 2013; Lozoff, 2016). Online sex networks may led to prostitution, spread of sexually transmitted diseases and moral degradation (Rocha, 2016; Holme, 2014; Fottrell, 2013; Weiss, 2010). Yet all these are readily and indiscriminately available on SM. Worse still, the business corporations pay influential people in society to present these advertisements, thereby effectively acting as role models.

The above scenarios and incidences are likely to cause new Health Behaviors among SM users. Some are immediate while some will be felt in the long run. The immediate Health Behavioral changes will be manifested in increasing number of youths and other groups adopting risky and immoral sexual behavior such as prostitution, masturbation, homosexuality and lesbianism, cross generational sex due to increased materialism among others. This is because attractive information about these sexual acts is readily available via social media. The long-term effect of

these acts is a systemic breakdown in morals, religious faiths and beliefs in society, spread of diseases, emergence of new sexually transmitted diseases, population degradation due to single sex marriages and deaths among others.

The short-term effects of smoking and alcoholism messages on Health Behaviors of SM users are increased uptake of alcohol, drugs and smoking among the youths and other groups using the technology. Once this happens, the future generation will be full of alcohol, drugs and smoke addicts. The socio-economic effects of an addicted society will be reflected in mass breakdown of families due to disengagements, divorces, increased medical bills, and generally a violent society.

It is important to note that many of the above Health Behavioral patterns and accompanying effects are already being experienced in most developed countries where SM is part and parcel of life. Given the increasing uptake of SM in Sub-Saharan Africa, the same might be replicated in the region. Moreover, Sub-Saharan Africa region hosts the most fragile, diverse and vulnerable people, who if taken up by these Health Behavioral patterns, the effects will be immense and difficult to control.

This study therefore sought to investigate, analyze and model the Health Behavioral changes that are being presented by the use of social media Sub-Saharan Africa so as to mitigate the negative effects described above. A social cognitive approach proposed by Bandura (1986), triangulated with Rotter's (1966) and Bandura (1965) social learning theory constructs were used to guide the study.

1.3.1 Purpose of the study

The purpose of this study was to investigate the factors influencing health behavior via social media and to develop a model that can be used to promote learning of useful health behaviors by social media users in Sub-Saharan Africa.

1.4 Research questions

The following research questions were investigated:

QTN1: What is the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa?

QTN 2: What is the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Saharan Africa?

QTN 3: What is the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa?

QTN 4: What is the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa?

QTN 5: What is the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa?

1.5 Study variables

BYU (2016) defines a variable as “a measurable characteristic that varies. It may change from group to group, person to person, or even within one person over time.” It is a theoretically measurable thing that can have a dynamic value (Kaur, 2013; Baron & Kenny, 1986). Variables are used to explain differences in things and what causes those differences. According to ORI (2016), the changes in variables are as a result of some force that may be from within the variable itself or another source.

BYU (2016) lists six types of variables;

1.5.1 Dependent variables

A dependent variable is one that is affected by a change in the independent variable (s). Dependent variables in this study include; Health Behavior, Internal Locus of Control, External Locus of Control and Self-Regulation.

1.5.2 Independent variables

An independent variable is one whose change affects the dependent variable. It is within the researcher's control. Independent variables in this study are; Cognitive Factors, Internal Locus of Control, Behavioral Intention, Outcome Expectations, External Locus of Control, Age Sensitivity and Self-Regulation.

1.5.3 Mediator variables

A mediator variable is one that connects a linkage between the independent and dependent variables. It is a third variable influencing a zero order correlation (Statistics Solution, 2016; Baron & Kenny, 1986). Mediator variables in this study are; External Locus of Control, Internal Locus of Control, Self-Regulation and Behavioral Intention.

1.5.4 Moderator variables

A moderator variable is one that influences the relationship between the independent and dependent variables by changing the impact of intervening variables. It affects the strength of a relationship between two variables (Statistics Solutions, 2016). In this study, the only moderator variable is Age Sensitivity.

1.5.5 Control Variables

A control variable is one that can be silenced or ignored by the researcher for the interest of other more important variables. Demographic attributes such as age, gender and education in this study that treated tested as control variables

1.5.6 Extraneous Variables

Extraneous variables are those that can potentially influence the dependent variable but are not controlled. Demographic variables such as age, gender and education were tested as extraneous variables. Table 1 presents a summary of study variables.

Table 1: Study variables

Type	Variables
Independent variables	Cognitive Factors, Internal Locus of Control, Behavioral Intention, Outcome Expectations, External Locus of Control, Age Sensitivity and Self-Regulation.
Dependent variables	Health Behavior, Internal Locus of Control, External Locus of Control and Self-Regulation.
Moderator variable	Age Sensitivity
Mediator variables	External Locus of Control, Internal Locus of Control, Self-Regulation and Behavioral Intention.
Control variables	Age, Gender and Level of education, Country of residence
Extraneous variables	Age, Gender and Level of education, Country of residence

1.6 General objective

The general objective of this study was to investigate the learning of new health behaviors of social media users in Sub-Saharan Africa using social cognitive and learning theories.

1.6.1 Specific objectives

The specific objectives of this study were;

Objective 1: To exam the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa.

Objective 2: To analyze the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Sahara Africa.

Objective 3: To examine the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa.

Objective 4: To analyze the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.

Objective 5: To study the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.

1.8 Significance of the study

This study on social media and Health Behavior was among those few that attempted to address social media and Health Behavior in Sub-Saharan Africa region. Similar studies have been conducted in the region, but these centered mainly on telemedicine transfer and sustainability (Isabaliya *et al.* 2013; Isabaliya *et al.* 2011; Kifle *et al.* 2006a; Kifle *et al.* 2006b; Kifle *et al.* 2008; Kifle *et al.* 2005; Kifle *et al.* 2004). Telemedicine is a more generic type of healthcare service delivery using information technologies. Some of these studies such as Namakula and Kituyi (2014); Kituyi *et al.* (2012) concentrated mainly on health information systems design. This particular study narrows the scope down to social media and Health Behavioral change using social learning and cognitive theories. The proposed model will be very instrumental in

understanding the learning process and the pertinent factors that influence learning Health Behaviors via social media platforms.

According to Alison (2011), social media tools such as Facebook and Twitter can help a lot in diffusing information to various stakeholders. Moreover these social media tools have not yet been fully embraced by Health Behavioral scientists and other relevant stakeholders in the Sub-Saharan region. This is probably due to fears of the unintended consequences of social media to communities. It is hoped that findings of this study will encourage and facilitate adoption of social media tools in health information sharing, consultations and campaigns hence influence with the aim of fostering positive Health Behavioral change.

1.9 Summary of chapter one

Introduction, presentation format, background of the study, statement of the problem, purpose of the study, research questions, study variables, objectives and significance of the study. We have described the study problem and shown the need for an empirical investigation on study variables leading to health behavior in Sub-Saharan Africa.

The next chapter will in detail examine the relevant literature on study variables. Chapter two also presents theoretical and conceptual frameworks of the study, while showing theoretical gaps and espousing for triangulation of different theories used in the study.

CHAPTER TWO: LITERATURE ASSESSMENT

2.0 Introduction

This chapter covers a critical review of literature and a matrix analysis of the study concepts and theories in order to theoretically inform the study.

2.1 Literature search strategy and assessment approach

Relevant journal articles and other publications such as organizational reports, newspapers, among others were obtained from internet sources. The research searched for these materials various academic platforms such as Google Scholar, Academia, ResearchGate, University web portals among others. The key words and phrases such as “social media”, “health behavior”, “cognitive factors”, “cognitive learning theory”, “social learning theory”, “internal locus of control”, “external locus of control”, “behavioral intention”, “self-regulation”, “age sensitivity”, “Social media in Sub-Saharan Africa” among others. The collected literature was checked for consistency with the above themes. Those found lacking on either of the themes were removed from the review exercise. The literature assessment is presented in three sections:

The first section looks at the definitions of SM and later explores the current affairs of SM in Sub-Saharan Africa and how SM influences behavioral change.

The second section examines the theoretical underpinning of the study. First, we present the evolution of the Social Learning Theory and then next - in detail, we discuss the three pertinent theories for the study. These include Bandura’s Social Learning Theory and its constructs; Rotter’s Social Learning Theory and its constructs of Internal Locus of Control, External Locus of Control. Lastly, we examine the Social Cognitive Theory also by Bandura and its constructs of Cognitive Factors, Outcome Expectations, and Self-Regulation, Reciprocal determination, Behavioral Intention and Behavioral factors. We also discuss the role played by Age Sensitivity in moderating the relationship between Cognitive Factors and Self-Regulation.

The third section presents a summary and a critical comparison of the study theories by examining each theory's strengths and weaknesses in order to identify a theoretical gap. Because this study uses all the three theories, a matrix analysis method is used to triangulate them. After analyzing the gap, a conceptual framework is formulated and presented together with accompanying hypotheses. The last part of this chapter is a presentation of the findings and a conclusion on literature assessment.

2.2 Social media

According to Dewing (2012 p 1), the term SM is used to refer to the “wide range of internet-based applications and mobile services that allow users to participate in online exchange, contribute user-created, or join online communities”. SM allows individual to create a public or semi-public profile in bounded systems for enlisting friends and sharing views and content (Boyd & Ellison, 2016). SM can be used for leisure in the way of chatting with friends about people or events and “hanging out” in the virtual space. It is also used for business purposes through SM marketing (Leonardi & Huysman, 2013). SM includes blogs such as WordPress; wikis such as Wikipedia; social network sites such as Facebook, MySpace, Bobo (Boyd & Ellison, 2016); status update services such as Twitter; social bookmarking such as LinkedIn; virtual word content such as avatars; media sharing sites such as YouTube (Dewing, 2012). Boyd and Ellison (2016) posit that hundreds of SM platforms exist with varying capabilities.

Blogs are a form of online journals that display information in the reverse ordered pages. They are used by individuals or organizations that seek to communicate subject specific information to an interest group (Dewing, 2012). On the other hand Wikis are open websites where individuals are free to updated and or create new pages (Dewing, 2012). Social bookmarking sites are online websites that provide a mechanism for sharing content with other sites, while social network sites are those websites that allow individuals to create account profiles, enlist friends and peers and share content that is developed by the individual or those that are availed to him/he by those in the network (Boyd & Ellison, 2016; Dewing, 2012). Status update services are websites that allow individuals to share short updates about themselves, events or other people (Dewing,

2012), while Virtual world content are game-based websites where people meet to play as they interact amongst themselves. Media sharing sites are websites and online applications that allow individuals to upload and share multimedia forms of data to the public (Dewing, 2012)

According to Edosomwan *et al.* (2011), SM started way back in the 1970s when home-based telegraphs were used to exchange information in analogue form. Over the years, this has revolved into one of the most powerful tools of communication (Edosomwan *et al.*, 2011; Carton, 2009). Today's SM tools allow exchange of multimedia forms of data via the internet and are available everywhere on the globe. The upsurge of SM and its total transformation started in the year 2000 with the emergence of social networking sites such as Cyworld, Wikipedia, LunarStorm, and ryze (Edosomwan *et al.*, 2011). This was followed by more sophisticated and powerful SM sites including Facebook, Skype, MySpace and YouTube that are predominantly being used today (Edosomwan *et al.* 2011; Junco *et al.*, 2011).

In this study, the term social media are used to refer to all online platforms that support creation of public and / or private profiles for purposes of sharing information in various forms.

2.3 Social Media in Sub-Saharan Africa

The United Nations Statistics Division defines Sub-Sahara Africa as all of Africa excluding North Africa and Sudan (UN, 2013). It includes all African countries except Egypt, Algeria, Libya, Morocco, Sudan, and Tunisia. The region has a total of 52 countries with a population of about 943m people, 234m of these people use the Internet. The region has an internet penetration rate 25% of the population (Internet World Statistics, 2015). A total of 68,968,500 people representing 7.3% use Facebook. Although internet penetration is still low compared to the global average of 46% it is on the upward trend having shifted from 0.4% in the year 2000 to 7.3% in the year 2015 (Internet World Statistics, 2015).

The region is forecasted to be among the fastest growing economies in the world, given its immense socio-economic opportunities and potential. Mobile penetration is currently standing at 34% of the population (GSMA Intelligence, 2014). Most of the mobile phones are being used to

access social media. By the year 2020, a total of 504m people will have mobile phones in Sub-Saharan Africa, representing a penetration rate of 49% (GSMA Intelligence, 2014).

Although application specific statistics are scanty, except for Facebook, most users of SM in Sub-Saharan Africa are on Facebook, followed by WhatsApp, Twitter, Instagram, YouTube and Skype. According to Statistica (2014b), South Africa has the highest WhatsApp adoption rate standing 78%.

2.4 Social media and behavioral change

Over the past decade, SM platforms have become one of the key drivers of behavioral change (Jin *et al.*, 2013). The platforms provide an environment where information flows freely (Benevenuto *et al.*, 2016). There are role models such as community leaders, political leaders, religious leaders, celebrities all over the social media platforms (Han & Tang, 2015). These role models send information that is readily available to the world. Information is easily received via social media and processed cognitively to influence behavior (Das, 2014). Consequently, new patterns of behavior are emerging globally, as the platforms have no boundaries (Boyd & Ellison, 2016; Ioană & Stoica, 2014; BBC, 2008). A behavior that was predominant on one continent is now eminent on all the other continents.

Although there is a tendency for people in developed countries to learn some behavior from developing countries, the biggest influence has been behavior moving from the developed to underdeveloped countries. Many people, especially the youth perceive cultures, norms and beliefs of those in developed countries more superior and trendy compared to theirs. Hence, little is being exported from underdeveloped to developed countries, but rather from the developed to the underdeveloped. Consequently, SM users in Sub-Saharan Africa have embraced the cultural practices, norms and values of western countries. These are in terms of democracy, single spouse marriages, same sex marriages, religious beliefs, education, family values, and human rights among others. Therefore, it is apparent that social media plays a great role in influencing behavior.

Bandura (2001) applied the social cognitive theory in trying to understand how mass communication and the media at large influenced behavior. Bandura (2001) argues that the mass media provides a symbolic form of communication that influences human thought, thereby affecting the behavior. Social media platforms influence behavior in two ways; 1) media influence and 2) providing connection to social systems. Media influence promotes changes through provision of information, provision of an enabling environment for information sharing, provision of the motivational factors for behavioral change, and provision of the much needed guidance for the users to implement learned behavior. Bandura (2001) posits that the networks provided through media help to create linkages among various participants. This provides natural incentives necessary for behavioral change.

2.5 Theoretical framework

This section presents the underpinning theories for the study. Anderson (2005) argues that theories are imperative considerations in problem solving. Almost every research problem has a theory. Wandersman (2009) adds that selection of a good theory plays a big role in helping researchers get solutions to multifaceted societal tribulations. In order to ground the understanding of SM and Health Behavior, a number of empirical theories are reviewed.

We commence by looking at evolution of the Social Learning Theory and then conduct a critical assessment of the specific theories of learning. These will include the Social Learning theory by Albert Bandura (Bandura, 1961), the Social Learning Theory by Julian Rotter (Rotter, 1966), and the Social Cognitive theory by Albert Bandura (Bandura, 1990; Bandura, 1986). The purpose of the assessment is to identify the strengths and weaknesses that each of these theories has so that we can triangulate them using the matrix method.

2.5.1 Evolution of the Social Learning Theory

According to Bachar (2016), studies on Social Learning Theory (SLT) started way back in the 1800s. The first proponent of eminent ideas of this theory was William James in 1890. Through his study titled “the social self”, James (1890) was the first scholar known to have laid the

foundation for investigating individuals and the environment where they operated. In the 1900, Adler brought in the idea that individuals purposively behaved the way they did with the motivation of realizing some goals (as cited by Bachar, 2016). Later and Tolman (1930's) introduced the idea that cognition factors influenced behavior. Miller and Dollard (1941) were the first scholars to publish a paper on social learning theory in 1941. In this paper they argue that human behavior can be reinforced through the environment and also that humans are motivated internally. With all these developments leading up-to the end of 1950, several researchers had applied Miller and Dollard (1941) social learning and imitation model. However, Bachar (2016) notes that most of these studies centered on three themes namely; 1) learning through experience and observation; 3) modeling behavior based on identification (similarity and emotional attachment); 3) the probability of a person repeating a given behavior depended on the ultimate consequences. Bachar (2016) classified the consequences as either rewards or punishments. After the 1950s, more advanced theories were proposed by notable scholars including Julian Rotter (Rotter, 1966), Ronald Arkers (Arkers *et al.*, 1979) and Albert Bandura (Bandura 1961; Bandura, 1990).

Whereas Bandura (1982) agrees that several theories have been advanced over the years to investigate behavioral change and learning, he posits that the various theories have differences in understanding of human nature in terms of motivation for behavioral change. In the subsequent section, we present a discussion on these theories and show how they can be used to understand Health Behavioral change via SM. Specifically, we will cover the Social Learning theory by Albert Bandura (Bandura, 1961), the Social Learning Theory by Julian Rotter (Rotter, 1966), the Social Cognitive theory by Albert Bandura (Bandura, 1990; Bandura, 1986).

2.5.2 Bandura's Social Learning Theory

Introduced by Bandura (1965), the Social Learning Theory (SLT) which was later modified and renamed the Social Cognitive Theory by Bandura (1986) explains how human beings adopt behaviors when exposed to certain conditions. Bandura (1965) conducted experiments on kids and observed that children behaviors changed through a process of replication, retention and mimicking of their role models. Bandura's Social learning theory was as a response to the

limitations of behaviorism theories in addressing how humans learned new behavior. The behaviorism theories assumed that human behavior could be learned and tested in a controlled environment – laboratories. Further, the behaviorism theories at the time failed to show how people responded to new situations. The third limitation was that the behaviorism theories could only explain direct learning - the form of learning that takes place in a classroom. They ignored other forms of learning. Bandura argued that learning could be delayed and could happen over a period of time through observation and mimicking of role models. Further, Bandura argues that learning influences behavioral change over a period of time (Bandura, 1986). According to Bandura (1986), learning can take place through a process called reinforcement. There are three forms of reinforcement proposed by Bandura including; 1) direct reinforcement - which is directly caused by the learner himself, 2) vicarious reinforcement - one that happens due to observation of a role model's behavior. Vicarious reinforcement is caused by the role model, and 3) self-reinforcement - which manifests in the form of satisfaction and dissatisfaction arising from one's good or poor performance. Bandura (1986) argues that the most influential aspect of learning is by seeing and experiencing actions of other people.

The social learning theory can be used in studying the SM aspect in trying to understand how the participants on a given SM tool learn how to treat and manage their ailments through sharing experiences. More experienced or former patients of a similar disease can act as role models to newer, younger and inexperienced patients in the learning process. However, the social learning theory has its limitations in applicability, especially in this kind of research as it requires the physical interaction of participants for learning to take place. The theory also encompasses more of behavioral change than information sharing and the role played by technology in causing change. This far, we argue that SM's main purpose is foster information sharing. We also argue that behavioral change on SM is just a symptomatic result of the core purpose of information sharing. In addition, Bandura's (1965) social learning theory is only relevant if the role model being observed is "appropriate, relevant and similar to the observer" (Bandura *et al.* 1963). Considering the fact that most actors on SM are of diverse attributes such as backgrounds, cultures and educational levels among others, the social learning theory may actually have no impact on influencing behavioral change.

2.5.3 Rotter's Social Learning Theory

Julian Rotter, who worked as a clinical psychologist was influenced by Bandura's social learning theory to come up with his own version that was more applicable in clinical psychology discipline. Just like Bandura, Rotter rejected earlier strictly behaviorist approaches to understanding human behavior by adopting Bandura's SLT construct of reinforcement (Boundless, 2016). Rotter then modified and expanded the theory by adding a construct called "locus of control". According to Rotter (1966) locus of control helps to show the link between people and environment and not self-efficacy as had been proposed by Bandura (1961). Before this, Rotter (1954) had tried to integrate learning with personality by using theories from both clinical and psychological disciplines and published his breakthrough work on Social Learning and Clinical Psychology. Rotter envisaged strong beliefs in the teaching of clinical psychologists and proposed a paradigm shift in the teaching of psychologists from clinical to psychology (Herbert, 2002).

Whilst Rotter's development of SLT, the overriding approach in clinical psychology was Freud's psychoanalysis. This approach perceived individuals' deep-seated instinctual motives as the key factors that influenced their behaviors. This approach ignored the fact that people, irrespective of the psychological state had a conscious- a perception which Rotter disagreed with. In terms of learning, the studies at the time were largely guided by the drive theory, which posted that physiologically-based impulses influenced individuals' motivation and learning. Rotter parted with this view by developing his version of the SLT.

Rotter's SLT has four constructs including; 1) Behavior Potential (BP) which is the likelihood of engaging in a given behavior, 2) Expectancy (E) which is the probability that a given behavior will result into certain outcome(s), 3) Reinforcement Value (RV) which shows the extent to which the outcomes are desired, and 4) the Psychological Situation (PS) which states that the environment in which an individual experiences a situation will influence that individual's behavior (Rotter, 1966).

The major contributions of Rotter's SLT are in trying to address both internal and external factors that influence behavior explained through internal and External Locus of Control

constructs. Secondly, Rotter makes a great contribution in the field of clinical psychology by relating the health outcomes of individuals to the environment in which the situations arose (Bachar, 2016).

2.5.4 Internal Locus of Control

Rotter (1966) places the individual on a spectrum of locus of control; one side internal and the other side External Locus of Control. On the Internal Locus of Control, the individual controls the consequences of his behavior. Once this happens, the individual will realize better performance in terms of achievement; the individual will have better interpersonal relations and will make greater efforts to learn (Boundless, 2016; Rotter, 1966). This is basically because an individual with Internal Locus of Control believes that they are in charge of their activities and are directly responsible for the consequences of their actions (Boundless, 2016). Such individuals also tend to control themselves better (Self-Regulation) and can internalize success or failure before taking action. Because of this, they tend to perform better. Boundless (2016) advance cultural norms, gender, age, level of education, level in managerial hierarchy as some of the factors that influence one's Internal Locus of Control. For example older people tend have a higher internal locus compared to the young ones who are under the control of their parents or guardians. Similarly, top managers have a higher Internal Locus of Control compared to their counterparts in the lower managerial ranks. According to Rotter (1966), Internal Locus of Control is a motivating factor.

2.5.5 External Locus of Control

On the other side of the spectrum is External Locus of Control, which stipulates that the consequences of an individual's behavior are outside his control. Once this happens, such an individual will have lower achievements, low morale to learn and poor interpersonal relations (Boundless, 2016; Rotter, 1966). However, when such individuals are exposed to a non-responsive environment, they will realize better satisfaction. Boundless (2016) posit that an individual with a higher external locus will rely mainly on luck and or chance. Such an individual will be quick to blame others for their failures. Hence they rarely internalize their

actions before execution, but rather, they externalize them. Boundless (2016) further argues that individuals who grow up in an environment of external locus go through a process called “learned helplessness”. In other words, they often perceive themselves as being unable to help themselves out of challenging situations even if they possess the ability to do so. Whereas External Locus of Control can be influenced by the same factors responsible for Internal Locus of Control, many times people who find themselves in this state have learned it over a period of time. Hence, it can be unlearned (Boundless, 2016; Rotter, 1966).

2.5.6 Behavioral Intention

Behavioral Intention is used to show the likelihood of an individual or community towards learning new behaviors (Venkatesh et al.2003; Ajzen, 1991). According to (Ajzen, 1991), Behavioral Intention variable should always precede the dependent intended behavioral variable. Behavioral Intention has been used in several health and e-health studies (Kituyi et al. 2011). Behavioral Intention this study was hypothesized to play a mediation role between Internal Locus of Control and Health Behavior.

2.5.7 Social Cognitive Theory

Developed by Albert Bandura in 1986, Social Cognitive Theory (SCT) has its roots in the Social Learning Theory (SLT) by the same author in 1961 (Bandura, 1986; Bandura, 1961). The theory tries to understand the learning process that takes place in humans and animals through observing others. SCT has been widely used in social research aimed at predicting behavioral change in individuals and has recently become a benchmark to technology acceptance theories that examine computer acceptance and usage (Compeau & Higgins, 1995a, 1995b).

According to Bayrón (2013) the SCT of Bandura (1986) posits that whereas the environment influences changes in behavior, a person’s behavior also influences changes in the environment, hence the “reciprocal determinism” (Bandura, 1986). Reciprocal determinism explains the situation where “the world and the behavior of persons are mutually caused” (Bayrón, 2013; Bandura, 1986). The theory proposes three reciprocal constructs that interact to cause behavioral

change. These include personal factors (also known as Cognitive Factors), environmental factors and behavioral factors.

As earlier indicated, Bandura's (1986) SCT puts emphasis on reinforcement and observation as key drivers for learning and behavior change. The ultimate change in behavior will be influenced by the role models observed - hence credence is given to role models. Role models are those actors whose behavior is learned and or imitated by the subject. These can be teachers, parents, peers, or even outstanding people in the society such as political leaders, TV personalities and celebrities among others. A discussion of the SCT constructs follows;

2.5.8 Cognitive Factors

Cognitive or personal factors are those attributes unique to an individual that help in the learning process. These include beliefs, knowledge, and attitudes. Bayrón (2013) argues that not all that is observed can be learned or imitated. This is because Cognitive Factors come into play during the observation process and can block some obscure messages observed from being learned by the subject. Hence, Cognitive Factors help the subject to learn new behavior - but selectively.

For example, a Muslim may observe their role model eating pork, but because of his religious beliefs, such a person may not start eating pork. Similarly, for an individual having knowledge of the consequences of eating pork as a Muslim, they will unlikely imitate the act. Hence, there will be no behavioral change. However, if the subject's beliefs are similar to the role model – in this he is not Muslim and his religious beliefs permit him to eat pork, such a person will learn the observed act and do it through imitation. This causes behavioral change.

Just like beliefs, Self-Regulation is the inner feeling that compels the subject to learn an observed act or not. Self-Regulation goes hand in hand with ultimate rewards and punishment. If the subject perceives rewards after imitating the observed act, such a person will actually do the act. On the other hand, if a person perceives the outcome to be punishments, they will not do the observed act for fear of being punished. The example of Muslims eating pork can also apply

here. A Muslim will not eat pork even if they observed their role model eat it because they fear the consequence of punishments by Allah.

In terms of SM and Health Behavior, whereas a celebrity or even a medical doctor may share information concerning the use of contraceptives for better family planning and prevention of Sexually Transmitted Diseases (STDs), a subject from the catholic religious faith may not learn and actually use contraceptives. This is because the Catholic Church forbids its followers from using such contraceptives.

2.5.9 Outcome Expectations

Blalock *et al.* (2016) define Outcome Expectations as the "likelihood and value of the consequences of behavioral choices". If the Outcome Expectations are positive, an individual will be attracted to the behavior. However, if the Outcome Expectations are negative, such as rejection, mistrust or punishment, the subject will not be attracted to the new behavior (Buck, 2010; Bandura, 2000; Bandura 1986). Blalock *et al.* (2016) expounds that an individual will be willing to reveal his HIV status if he expects a positive outcome. However, he will not reveal such a status if the expected outcome is negative.

In Rotter's SLT, Expectancy is used in place of Outcome Expectations. The only difference is that Rotter's Expectancy construct is based on chance and is probabilistic. Expectancy is either high or low (Rotter, 1966), whereas Outcome Expectations in the SCT can be negative or positive (Blalock *et al.*, 2016; Bandura, 1986). Rotter uses Expectancy to show the probability that an act will result to a given behavioral outcome, while Bandura uses Outcome Expectations to show the nature and impact of behavioral outcomes (either negative or positive) given that an individual imitates a behavioral action (Bandura, 1986; Rotter, 1966).

2.5.10 Self-Regulation

Blalock *et al.* (2016) defines Self-Regulation as the act of controlling oneself through goal setting, self-instruction, self-rewarding, inner feedback communication and self-evaluation to identify areas for which he individual can seek external support from the environment. Bandura

(1988; 1986) argues that Self-Regulation helps one to consciously learn new behaviors. Individuals who are self-regulated set their own goals, monitor themselves, seek and maintain social support necessary for the achievement of their set goals, and have contingency plans for countering barriers (Blalock *et al.*, 2016).

According to Winters *et al.* (2003), Self-Regulation is essential to the learning process. On SM, it helps the learners to set their learning goals, eliminate “noise” or unwanted information that circulates around SM and ensure only they seek support from the online society in trying to achieve their goals. Individuals can observe their own engagements and know what to do, why and when to stop. By doing this, Blalock *et al.* (2016) argues that one is able to set a purpose for his engagement. Through the process of self-reinforcement, an individual feels good about his accomplishments and regrets the bad things they have done. Self-regulated individuals learn to reward themselves for the accomplishments and also punish themselves for the failures or offenses committed against themselves and other people.

2.5.11 Reciprocal determination

Also referred to as reciprocal causation or reciprocal determinism, it is the causal influence that Cognitive Factors, environmental factors and behavioral factors have on each other in the learning process. As seen in Bandura’s SCT, reciprocal determination helps to understand how these factors interact to cause behavioral change (Blalock *et al.*, 2016; Langlois *et al.*, 1999; Bandura, 1986). The mentioned factors mutually influence one another. Blalock *et al.* (2016) posits that learning takes the form of data processing, storage and information sharing, which is affected by the learner’s personal or Cognitive Factors such as beliefs and abilities. For example when a person observes his role model, they obtain information that is cognitively processed and fed to their brain for subsequent implementation. Blalock *et al.* (2016) explains an example, where one performs poorly in a test - which is an environmental factor. This influences the individual to believe that he has insufficient ability to pass the test (which is a cognitive factor). This individual’s belief will then transform into a behavior such as changing his study habits and attitude (which are behavioral factors). The change in a student’s behavior may influence him to approach his teacher for assistance (which is an environmental factor)

In this study, reciprocal determinism will help to understand how a SM user faced with a health challenge (environmental factors) will realize that he has no ability to help himself out (Cognitive Factors) and seeks external assistance on SM platform (behavioral factor).

2.5.12 Behavioral factors

The ultimate outcomes in the learning process are manifested through acquired skills, new practices, observational Learning, and moral disengagement (Bandura, 1986). Observational learning enables behavioral change through observing role models. In this process, the observer (learner) retains the key pieces of information observed and uses them at a later stage (delayed learning). The motivation for learning is the desire to mimic the role model (wanting to behave and act like the person observed). After observing the role model, a learner can self-train himself on the observed aspects of behavior (Blalock *et al.*, 2016). This happens through cognitive modeling, overt guidance, overt self-guidance and faded overt self-guidance.

Winett *et al.* (1999) conducted a study on observational learning of church members and its influence on their behavior in participating in health physical exercises. It was found that the number of people participating in this activity increased after observing their church leader participate in it. The community had confidence in the priest because he was their spiritual leader (role model) and had grown up from the same community (had similar attributes as the learners).

Another aspect of behavioral change is moral disengagement (Bandura, 1990). Moral disengagement is a behavioral attribute that makes the learner to aspire and imitate harmful behaviors to the individual or to the community at large (Blalock *et al.*, 2016). These could be smoking, pornography, prostitution, drug abuse, among others. For the case of cigarette smoking mentioned earlier, a young person may learn to smoke by observing an influential member of the community who could be a political leader, teacher – but this mainly comes from celebrities and other entertainers (Blalock *et al.*, 2016). The observed role model in this case acts as an incentive and provides a facilitating condition and motivation to the observer – hence, he is responsible for the new behavior (Kane, 2004).

2.5.13 Age Sensitivity

An element that is lacking in Bandura's (1986) SCT and even Totter *et al.* (1966) SLT is the role played by Age Sensitivity in influencing behavioral change. Even in the presence of Cognitive Factors such as beliefs, knowledge, attitudes, an individual's Self-Regulation will change relative to Age Sensitivity. A studies by the United Kingdom's (UK's) National Institute for Health and Clinical Excellence (NIHCE) and the World Health Organization (WHO, 2000) show that indeed Age Sensitivity has an influence on behavioral change. The study carried out in the UK posits that national attempts to change people's Health Behavior did not result into universality. They did not apply across the population because different age groups responded differently to the incentives (NIHCE, 2007). Given the same cognitive attributes, a young person will be quick to change compared to an older person. This also applies in the case of motivation – a given motivational factor may not apply on different age groups. Moreover age alone per-se may not cause change in the absence of Cognitive Factors. Further, individuals participating in online communities are quite selective on the age groups of users they interact with. If for example, an individual is of an older age, he / she may prefer to join online communities of a mature age group. Such a person may not learn new Health Behaviors from you age groups. Inversely, the young people prefer to join online social media communities where members are relatively young and may desist information from mature people (Cahill & Coffey, 2013). A study by the Australian Communications and Media Authority revealed that young people joined online social network communities of fellows youths, where they engaged in various activities among which were sexting, bullying. Children of 16 to 17 years reported that they had received or sent sexually provocative images of vides of themselves or others on their communities (ACMA, 2013). The same study shows that adult parents of age 45 and above where keen on monitoring their children's activity on online social networks, although they did not join such communities themselves.

2.5.14 Summary of the theoretical analysis

Each of the three reviewed theories has a great contribution to this study in different ways. The main constructs advanced by Bandura (1961) SLT include direct reinforcement, vicarious reinforcement, self-reinforcement, role modeling and self-efficacy.

In Bandura's (1961) SLT, we are able to understand how humans adapt behaviors when exposed to certain conditions and also that learning happens through replication, retention and mimicking of role models. The most influential form of learning is presented as indirect learning, which influences behavioral change over a period of time. Direct reinforcement is caused by the learner, while vicarious reinforcement happens due to observation of a role model. Self-reinforcement is a state of satisfaction or dissatisfaction arising from one's performance

On the other hand, we learn that Rotter's (1966) SLT addresses both internal and external factors that influence behavior by relating the health outcomes of individuals to the environment in which they situations arose. The key constructs of this theory are locus of control- internal and external, behavioral potential, expectancy, reinforcement value and psychological situation.

Locus of control – which can be internal or external, helps to show the link between people and environment. This theory tries to integrate learning with personality- psychology. Behavioral potential looks at the likelihood of engaging in a given behavior, while expectancy is the probability that a given behavior will result into certain outcomes. Reinforcement value is used to show the extent to which the outcomes are desired, while Psychological situation states that the environment in which an individual experiences a situation will influence that individual's behavior.

In Bandura's 1986 SCT, we learn that learning takes place through observing others. Whereas the environment influences changes in behavior, a person's behavior also influences change in the environment, hence the "reciprocal determinism". The key constructs advanced by Bandura's SCT are role modeling, reciprocal determinism, Cognitive Factors, environmental factors, behavioral factors, Outcome Expectations, self-efficacy and Self-Regulation.

Reciprocal determinism explains the situation where "the world and the behavior of persons are mutually caused". Three reciprocal constructs interact to cause behavioral change. These include Cognitive Factors, environmental factors and behavioral factors. Outcome expectation is a

"likelihood and value of the consequences of behavioral choices", while self-efficacy is a person's ability to self-judge and perform a given task. Reciprocal determination is the causal influence that Cognitive Factors, environmental factors and behavioral factors have on each other in the learning process. Environmental factors are those elements of the learning process that are not within the learner's control, while Cognitive Factors are those attributes unique to an individual that help in the learning process. These include beliefs, knowledge, attitude, and Self-Regulation. Behavior factors are the ultimate outcome in the learning process manifested through acquired skills, new practices, observational learning, and moral engagement or disengagement.

Additional constructs include age (Totter *et al.* 1966; WHO, 200; NIHCE, 2007) and gender (Orji (2014; Sebstad & Manfre, 2011; Flandorfer *et al.* 2010; Lindova *et al.* 2006). These play a moderation role in the relationship between Cognitive Factors and Health Behavioral change on SM. Table 2 presents a summary of the reviewed theories.

Table 2: Summary of the reviewed theories

Theory and author	Description	Key constructs
Social learning theory by Bandura (1965)	<ul style="list-style-type: none"> • explains how humans adapt behaviors when exposed to certain conditions; • learning happens through the process of replication, retention and mimicking of their role models; • human behavior cannot be tested in a controlled environment; • caters for indirect learning; • learning influences behavioral change over a period of time; • learning takes place through a process called reinforcement; • direct reinforcement is caused by the learner; • Vicarious reinforcement happens due to observation of a role model; • Self-reinforcement which is satisfaction or dissatisfaction arising from one's performance; • the most influential aspect of learning is by seeing and experiencing actions of other people 	<ul style="list-style-type: none"> • direct reinforcement • vicarious reinforcement • self-reinforcement • role modeling • self-efficacy
Social learning theory by Rotter	<ul style="list-style-type: none"> • trying to address both internal and external factors that influence behavior; • relates the health outcomes of individuals to the environment in which they situations arose; • locus of control helps to show the link between people and environment; • integrate learning with personality- psychology; • Behavioral potential looks at the likelihood of engaging in a given behavior; • Expectancy is the probability that a given behavior will result into 	<ul style="list-style-type: none"> • locus of control- internal and external • Behavioral potential • Expectancy • Reinforcement value • Psychological situation

(1966)	<p>certain outcome</p> <ul style="list-style-type: none"> • Reinforcement value shows the extent to which the outcomes are desired; • Psychological situation states that the environment in which an individual experiences a situation will influence that individual's behavior 	
Social cognitive theory by Bandura (1986)	<ul style="list-style-type: none"> • learning takes place through observing others; • whereas the environment influences changes in behavior, a person's behavior also influences change in the environment, hence the "reciprocal determinism" • Reciprocal determinism explains the situation where "the world and the behavior of persons are mutually caused"; • Three reciprocal constructs interact to cause behavioral change. These include Cognitive Factors, environmental factors and behavioral factors; • Outcome Expectations as "likelihood and value of the consequences of behavioral choices" • self-efficacy is a person's ability to "self-judgment" and perform a given task; • Reciprocal determination is the causal influence that Cognitive Factors, environmental factors and behavioral factors have on each other in the learning process; • Environmental factors are those elements of the learning process that are not within the learner's control; • Cognitive Factors are those attributes unique to an individual that help in the learning process. These include beliefs, knowledge, attitude, and Self-Regulation; • Behavior factors are the ultimate outcome in the learning process manifested through acquired skills, new practices, observational Learning, and moral disengagement. 	<ul style="list-style-type: none"> • Role modeling; • Reciprocal determinism • Cognitive Factors; • environmental factors • Behavioral factors. • Outcome Expectations • Self-efficacy • Self-Regulation.

Added constructs from literature		
Age by Totter <i>et al.</i> (1966); WHO (200); NIHCE (2007).	Age Sensitivity plays a moderation role in the relationship between Cognitive Factors and Health Behavioral change on SM.	Age Sensitivity

2.6 Strengths and weaknesses of Social learning and cognitive theories

Further to the summary in Table 4, a meta-analysis of the reviewed theories identified some strengths and weakness in them.

The strengths of Bandura's 1965 SLT are; 1) it shows that learning is a process that takes time and not an event, 2) role models are key in learning and unlearning behavior through observation and mimicking, 3) the three types of reinforcement (direct, vicarious and self) show the different ways an individual processes learning information, and 4) it caters for indirect learning- a form of learning outside the classroom. Table 3 presents the strengths and weaknesses of the reviewed theories of social learning and social cognitive theory.

Table 3: SLT vs SCT strengths and weaknesses

Theory	Author	Strengths	Weaknesses
Social learning theory	Bandura (1965)	<ul style="list-style-type: none"> • Shows that learning is a process that takes time and not an event • Role models are key in learning and unlearning behavior through observation and mimicking; • The three types of reinforcement (direct, vicarious and self) shows the different ways an individual processes learning information; • caters for indirect learning; 	<ul style="list-style-type: none"> • it requires the physical interaction of participants for learning to take place; • there is more of behavioral change than information sharing; • the role played by technology in causing change is ignored- emphasis is on physical role models; • only relevant if the role model being observed is “appropriate, relevant and similar to the observer” • May not be appropriate in studying SM because actors on SM are of diverse attributes.
Social learning theory	Rotter (1966)	<ul style="list-style-type: none"> • principle of locus of control – internal and external • Addresses both internal and external factors that influence behavior. • contributes to the field of clinical psychology by relating the health outcomes of individuals to the environment in which they situations arose 	<ul style="list-style-type: none"> • Role model lacking • More into clinical psychology- may not apply in studying SM

Social cognitive theory	Bandura (1986)	<ul style="list-style-type: none"> • Principle of reciprocal determinism • Learning is cognitive • Outcome Expectations as "likelihood and value of the consequences of behavioral choices" • Self-efficacy and Self-Regulation control learning • Environmental factors can't be controlled the learner; • Behavioral change happens in different forms 	<ul style="list-style-type: none"> • Age and gender are ignored
-------------------------	----------------	--	--

2.7 Theoretical gaps of social learning and cognitive theories

For a better understanding of the theoretical gaps in the three theories towards addressing SM and Health Behavioral change, a matrix analysis method was used (Ingram et al. 2006). As seen in Table 5, Bandura (1965) has direct reinforcement, vicarious reinforcement, self-reinforcement, role modeling, and self-efficacy but lacks Internal Locus of Control, External Locus of Control, behavioral potential, expectancy, reinforcement value and psychological situation and yet these are key in addressing behavioral change as seen in Rotter (1966). Further, Bandura (1965) does not ably address reciprocal determinism, Cognitive Factors, environmental factors, behavioral factors, Outcome Expectations and Self-Regulation seen in Bandura (1986). Age and gender are also missing in this theory – yet these have been identified as moderators of Cognitive Factors and behavioral change (Totter *et al.*, 1966; WHO, 2000; NIHCE, 2007, Orji, 2014; Sebstad & Manfre, 2011; Flandorfer *et al.*, 2010; Lindova *et al.*, 2006).

On the other hand, Rotter's 1966 theory covers both internal and External Locus of Control, behavioral potential, expectancy, reinforcement value and psychological situation. However, the theory does not address salient issues such as direct reinforcement, vicarious reinforcement, self-reinforcement, role modeling and self-efficacy that had been advanced by Bandura (1965) as important consideration for understanding the learning of human behavior. In addition, Rotter's theory is faulted on addressing cognitive, behavioral and environmental factors of learning (Bandura, 1986). It is also apparent that role modeling, reciprocal determinism, Outcome Expectations, self-efficacy and Self-Regulation are all missing (Bandura, 1986). Just like Bandura, Rotter (1966) did not address age and gender in behavioral influence (Totter *et al.*, 1966; WHO, 2000; NIHCE, 2007, Orji, 2014; Sebstad & Manfre, 2011; Flandorfer *et al.*, 2010; Lindova *et al.*, 2006).

Lastly, a close examination of Bandura's 1986 SCT reveals that the theory adequately addresses role modeling, reciprocal determinism, Cognitive Factors, environmental factors, behavioral factors, Outcome Expectations, self-efficacy and Self-Regulation. However, Bandura (1986) SCT does not address age and gender issues (Totter *et al.*, 1966; WHO, 2000; NIHCE, 2007, Orji, 2014; Sebstad & Manfre, 2011; Flandorfer *et al.*, 2010; Lindova *et al.*, 2006). Further,

Bandura (1986) ignored what he had proposed in Bandura (1965) as important elements of behavioral change. These include direct reinforcement, vicarious reinforcement and self-reinforcement. It is also evident that locus of control (internal and external), behavioral potential, expectancy, reinforcement value and psychological situation are lacking in this theory. Table 4 presents results from the matrix analysis.

Table 4: Matrix analysis

Construct	Bandura (1965) SLN	Rotter (1966) SLN	Bandura (1986) SCT
Psychological situation	X	✓	X
Reciprocal determinism	X	X	✓
Role modeling	✓	X	✓
Cognitive Factors	X	X	X
Direct reinforcement	✓	X	X
Internal Locus of Control	X	✓	X
Environmental factors	X	X	✓
Behavioral potential	X	✓	X
Self-reinforcement	✓	X	X
Outcome Expectations	X	X	✓
Vicarious reinforcement	✓	X	X
External Locus of Control	X	✓	X
Behavioral factors	X	X	✓
Age	X	X	X
Self-efficacy	✓	X	X
Reinforcement value	X	✓	✓
Self-Regulation	X	X	✓
Expectancy	X	✓	X
Gender	X	X	X

2.8 Conceptual framework

The conceptual framework is based on Social cognitive theory of Albert Bandura which states that Cognitive Factors and environmental factors play a big role in causing behavioral change through the process of reciprocal determinism (Bandura, 1986). In addition, we borrow the constructs of Internal Locus of Control and External Locus of Control that were identified as important factors in influencing the learning of new behaviors by Rotter in his Social Learning Theory (Rotter, 1966). Another hypothetical addition to the study is that age and gender moderate the relationship between Cognitive Factors and Health Behavior as had been proposed by researchers in field of psychology. People of different ages and gender tend to behave differently in the learning process. Further, studies by Bandura (1986; 1988), and Rotter (1966) show that Outcome Expectations (expectancy for the case of Rotter) influence behavior. However, Rotter (1966) argues that only in a responsive environment will the Outcome Expectations influence behavioral change. Hence, in this study, we hypothesize that Outcome Expectations mediate between environmental factors and Health Behavior change.

In addition, self-efficacy can equally influence Health Behavior as explained by Blalock *et al.* (2016) and Bandura (1988). If self-efficacy is high, individuals will be more open to adopt new observed behavior. The reverse is true; a low self-efficacy will make an individual to refrain from new behaviors that have been observed.

The other construct hypothesized in this study is Self-Regulation, which is the extent to which an individual internally controls himself or herself in the face of imitation and observation of new behavior. This study hypothesizes that Cognitive Factors positively influence Self-Regulation. However, Self-Regulation has a negative effect on Health Behavioral change. Where the individual is highly self-regulated, it is difficult for them to change and adopt new behaviors (Bandura, 1988; 1986). Figure 1 presents the conceptual framework.

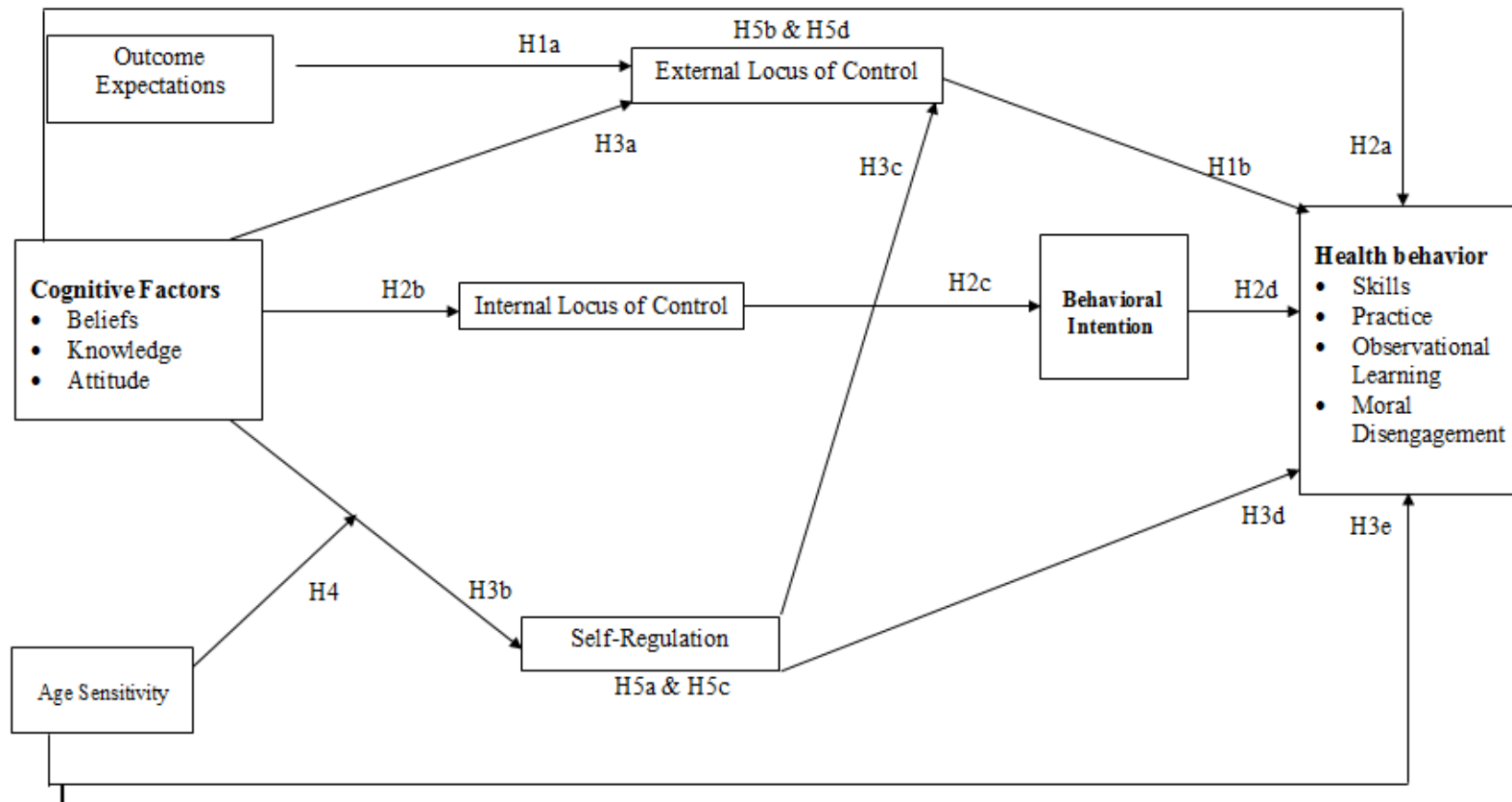


Figure 1: Conceptual framework (Source: developed by the researcher from literature of Bandura, 1965; Rotter, 1966; Bandura, 1986; Venkatesh et al. 2003)

2.9 Research questions and hypotheses

Table 5 presents the research questions and the resultant research hypotheses.

Table 5: Research questions and hypotheses

Research question	Hypothesis
<p>QTN1: What is the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa?</p>	<p>H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.</p>
<p>QTN 2: What is the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Sahara Africa?</p>	<p>H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Sahara Africa.</p> <p>H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Sahara Africa.</p>
<p>QTN 3: What is the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa?</p>	<p>H3a: Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Sahara Africa.</p> <p>H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.</p>

	H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.
QTN 4: What is the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa?	H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.
QTN 5: What is the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relation between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa?	<p>H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5e: External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5f: Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Sahara Africa.</p>

2.10 Summary and conclusions from literature assessment

As earlier indicated, the literature assessment was conducted and presented in three sections. A conclusion is now being made for each section:

In the first section, we examined the definitions of SM, the current state of affairs of SM in Sub-Saharan Africa and the influence of SM on Health Behavioral change.

The most outstanding definition of SM adopted by this study is given by Dewing (2012 p 1) who postulates that SM is “a wide range of internet-based and mobile services that allow users to participate in online exchange, contribute user-created content, or join online communities”. It was also found that SM allowed individuals to create public and semipublic profiles in bounded systems for enlistment of friends and sharing of information. The most common types of SM were identified as blogs, wikis, social network sites, status update services, social bookmarking sites, virtual word content, and media sharing sites.

Further, it was found that SM was on the upward trend in Sub-Saharan Africa. Although the numbers of SM users were still below the global average, Sub-Saharan Africa presented the future opportunities and potential for the growth of SM due to improved internet connectivity and high mobile penetration. Facebook was the most used form of SM, followed by WhatsApp, Skype and Twitter.

In terms of Health Behavioral change, SM was found to have an influence and had become a key driver for introduction of new behaviors in Sub-Saharan Africa communities. The role models, adverts, and other campaigns conducted on SM platforms were responsible for Health Behavioral change. It was found that there is a paradigm shift in behavioral learning patterns where most new behaviors were coming from developed countries to the region, and little behavior was being exported.

In the second section of the literature review, we examined the theories of social and cognitive learning. Three theories were found to be eminent and most applicable for the study. These included Bandura’s Social learning theory, Rotter’s Social Learning Theory and Bandura’s Social Cognitive Theory. It was found that each theory addressed a certain key aspect of the study, but no single theory could address all the aspects hypothesized in the study.

In the third section, we identified the strengths and weaknesses of each adopted theory. Bandura’s SLT was found to be strong in depicting learning as a process that takes time, and also

that role models were significant agents of Health Behavioral change through observation. Further, Bandura's reinforcement was found to be relevant in explaining how individuals processed learning information and changed behavior. However, Bandura's SLT was faulted on 5 main aspects including its requirement for physical interaction of participants for learning to take place; too much concentration more on behavioral change while ignoring information sharing; ignorance about the role played by technology in causing change. The theory was found to be relevant only if the role model being observed had similar attributes as those of the learner. Hence, theory could not be appropriate in studying SM and Health Behavioral change because actors on SM are of diverse attributes.

On the other hand, Rotter's SLT was found to be relevant to the study in the sense that it addressed the issues of locus of control (internal and external), considered both internal and external factors that influence behavior, and relates the health outcomes of individuals to the environment in which the situations arose. Rotter's SLT was however faulted on two aspects namely; 1) the lack of role modeling and 2) being so much inclined to clinical psychology than social sciences.

Finally, a critical review of Bandura's SCT established that it ably addressed issues of reciprocal determinism, Cognitive Factors of learning, Outcome Expectations, self-efficacy, Self-Regulation, environmental factors, and behavioral factors. Just like the first two, this theory also had limitations in addressing SM and Health Behavioral change by ignoring the salient role that is played by age and gender in influencing Health Behavioral change.

Given the above limitations highlighted on each theory, it was eminent that reliance on only one theory for the study would not holistically handle all the research questions. Hence, all the three were triangulated to form a more concrete framework seen in Figure 1 for the study.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

The current study sought to investigate the learning of new health behaviors via social media by social media users in Su-Saharan Africa using social learning and cognitive theories. Chapter one presented the background and research problem. Chapter two presented a critical review of literature, theoretical framework, conceptual framework and research hypotheses. In this chapter, present a detailed description of how the study was conducted, starting with selection of appropriate philosophical approach, research design, methods of data collection and analysis.

3.1 Philosophical perspectives

3.1.1 Ontology orientation

Ontology is a major branch of philosophy that aims to study what is in existence, or what will exist. It is derived from the Greek word “onto” that means “being”, and “logos” that means “science” (Lawson, 2004). It can be perceived in a philosophical sense or in the computational sense (Guarino et al. 2009). This study looks at ontology from the philosophical perspective – which is “the science of what is, of the kinds and the structures of objects, properties, events, processes relations in every area of reality” (Smith, 2003, p 1). Lawson (2004) adds that ontology is the study of being or the science of being a thing or something. In computer science, ontology can be used to study the interrelations between objects. There are mainly two branches of ontology; positivism / positivist ontology and subjectivism or subjectivist ontology.

The positivism ontology assumes a single reality that is independent of the researcher. It allows the researcher to conduct the study in a neutral manner. On the other hand, subjectivism ontology assumes existence of multiple realities such that the researcher has to engage it in a value-based approach. The current study used positivist ontology - also known as objectivism ontology which adopts a quantitative research approach.

3.1.2 Epistemological orientation

Tennis (2008) defines epistemology as “how we know”. It is a term used to describe the process of discovering knowledge through scientific methods. It is used to validate justifications about truths and beliefs. It centers on philosophical analysis, problems of skepticism, sources of information, and mechanisms for validating new knowledge. Dretske (2016) argues that epistemology is one effective way of doing cognitive science since it helps researchers to understand how knowledge is sourced, processed and extended. It encompasses critical reasoning also known as critical realism (Hjørland, 2004).

Epistemology helps scholars to differentiate knowledge from beliefs, truths and justifications. There are cases where truths held in society about something transform into knowledge. However, such knowledge is obscure without justifications. This is because the beliefs may be mistaken and untrue. Therefore, for a belief to become knowledge, it must be true and justifiable.

Currently, there are beliefs that social media influences Health Behavior of its users. It is also true that social media are influence behavior of its users. However, these beliefs and truths are unsubstantiated and unsupported because there is no empirical justification. Hence, in this study, the main aim will be to justify these beliefs and truths about the influence of social media on Health Behavior. These justifications can then help us build knowledge through development a theoretical model explaining the relevant factors and constructs responsible for social media and Health Behavioral change.

Although little literature exists on the term, different schools of thought have proposed various types of epistemology as; positivist epistemology – which posits that scientific knowledge should emerge from observable scientific evidence (IGI, 2016); genetic epistemology – which is a study aimed at understanding the original sources of knowledge (Wikipedia, 2016a), or the genesis of knowledge; feminist epistemology - which is a study of knowledge from a feminist point of view (Wikipedia, 2016b); social epistemology - which construes knowledge as a collective work of society (Wikipedia, 2016c); constructivist epistemology - which is a study of natural science

embedded in and can be explained by mental constructs of nature by measuring them (Wikipedia, 2016d).

This study proposes to use a positivist epistemology in trying to create knowledge from empirical and observational evidences across Sub-Saharan Africa region. The type of epistemology assumes that the researcher is independent of the study. This helps to alleviate biases. Hence it is the most appropriate epistemological orientation for the current study.

3.1.3 Axiological approach

According to Klement (2016), axiology is the study of value attached to good or bad things. It explains what makes good things good and bad things bad. Tomar (2014, p 51) advances that axiology as a branch of philosophy that helps in examining the problems of values of “nature, origin, and permanence of values”. Its main aim is to establish the ethical and moral dimensions of people’s behavior. Axiology in this study will help in identifying, not only the right decisions made by SM users but also the making of ethically and morally upright health decisions.

Methodologically, the field of axiology can help guide the research approach. There are basically two approaches to be adopted in axiology. The first approach is one that argues that research must be truly free of value for it to be valid – the conventional approach. The other approach perceives research as being value-based – i.e. the interpretivist approach. The conventional approach requires researchers to conduct studies in a natural and objective manner, while the interpretivist approach argues that research should be biased towards the researcher’s personal, cultural, and other values. This is so because it is impossible for a natural being to be free of values.

In this study, the conventional axiological approach will be adopted such that the researcher uses scientific methods to arrive at conclusions without being biased by his values. The research will be held as a separate entity from the researcher. This will help to eliminate biases, thereby improving on the reliability of findings and recommendations of the study.

3.2 Research design

Research can take three paradigms, namely; qualitative research, quantitative research and mixed research. According to Tashakkori and Teddlie (2003) a paradigm specifies viewpoints held by researchers about certain values, assumptions and concepts. Initially, quantitative research was the most popular research paradigm until 1990s when Guba (1990) started debates on the qualitative research. One of Guba's aims was to explain the differences between quantitative and qualitative research paradigms. Guba argues that these two research paradigms distinctively differ in terms of methodology, rhetoric, ontology, epistemology and axiology (Guba, 1990). Many of these characteristics had been well explored in earlier studies although with little emphasis on qualitative research (Guba & Lincoln, 1989, 1992; Lincoln & Guba, 1985). There are basically five main types of qualitative research. These include phenomenology research, ethnography research, case study research, grounded theory research, and historical research.

Phenomenology research is one where a researcher sets out to understand how one or more individuals experience a given phenomenon. An example of phenomenology research is where a researcher can conduct a phenomenological study on combat soldiers who have returned from a war to understand how they experienced the war phenomenon. According to Williamson, Pollio and Hood (2000), phenomenology research is based on experiences (Bailey *et al.* 2000; Williamson *et al.* 2000).

On the other hand, ethnography research is a type of qualitative research that involves "writing about people". For example, a researcher can conduct an ethnographic study to document a certain people's culture, norms and practices. It is mainly used in social and education research where there is much need to describe attributes of a community such as language, attitudes, values, norms, practices and patterns.

The other most popular type of qualitative research commonly used in social sciences research is case study research. Case study research is where a given entity is chosen among a whole to provide a more detailed understanding about the whole. Stake (1995) argues that case study research can be exploratory or descriptive research. For example, a descriptive case study

research can be conducted in a school to examine how schools in a given community have adopted Information Communication Technology.

The last two types of qualitative research are grounded theory research and historical research. Grounded theory research is one where the focus is on building theory that presents steps on solving real-life problems. Although grounded theory may rely on secondary data, many times, it builds theory from primary data (Lake & Billingsley, 2000). On the other hand, Historical research is one that sets out to study events of the past. These may be about a people's culture and how it evolved over the past 100 years. Historical research is mostly presented using a narrative approach because it is based on literature review and storytelling.

On the other hand, quantitative research is one where a phenomenon is explained through collecting numerical data and mathematically analyzing it (Aliaga & Gunderson, 2000). Quantitative research is perhaps the most commonly known and used research paradigm in today's social sciences studies. According to Edmonds and Kennedy (2010), quantitative research normally follows a series of five steps namely; problem identification, literature review, setting of research objectives, data collection, data analysis and interpretation and report writing.

Although no literature outlines the types of quantitative research holistically, it can take various forms. Even the types of qualitative research described in the previous section can easily be transformed into quantitative depending on the researcher's objective. As earlier mentioned, however, quantitative research paradigms can take the form of descriptive, analytical, and exploratory, among several others. The foundations of quantitative research include realism and objectivism - whereby every assumption can be mathematically proven by numbers, other than relying on subjective perceptions. Quantitative research is based on post-positivism and experiential realism and pragmatism philosophies. For example, findings of a quantitative study should be totally objective, truthful, certain and predicTable.

This study adopted a quantitative research approach and in which quantitative research methods were applied in line with (De Lisle, 2016). According to Bulsara (2016) quantitative research

involves collecting and analyzing quantitative data. A survey research design was implemented by use of questionnaires.

3.3 Study population

According to Internet World Statistics (2015), Sub-Saharan Africa has a population of 943,445,548 people. However, given that this study is targeting SM users, the general population cannot work as our study population. This is because out of the 943,445,548 people, only 234,342,776 people use the internet and only 68,968,500 people use Facebook (Internet World Statistics, 2015). Further, given that Facebook alone cannot represent SM (as had been defined in chapter two), we were unable to use the total number of Facebook users as our study population. In this case therefore, the actual study population remained unknown. Generally however, as of the year 2013, the population of Cameroon was 22 million people; the population of Nigeria was 174 million people and the population of Uganda was 38 million people. Hence, if we were to look at the entire population with no regard to social media usage, the study population would have been 234m people.

3.4 Sample design

Given that this study involved several countries, the researcher used a purposive sampling technique to select 3 countries that participated in the study. These included Uganda (located in East Africa which has 9 countries), Cameroon (located in Central Africa which has 9 countries) and Nigeria (located in West Africa which has 16 countries). This was done to ensure a fair distribution of samples across the Sub-Saharan Africa region. Further, these countries were selected because the researcher was able to access them for data collection using his academic networks.

A total of 150 survey respondents comprising of ordinary SM users was selected using simple random sampling method from each of the participating countries. This gave a total survey sample of 450, which is in line with Roscoe (1975) rule of thumb that a sample between 30 and 500 is sufficient for surveys. The researcher resorted to this rule of thumb in determining the

sample size because the study population of SM users in Sub-Saharan Africa was not known (VanVoorhis & Morgan, 2007). Moreover, simple random technique is praised for being unbiased as it gives each element of the population the same chance of being selected to participate in the study. Table 6 shows the survey sample.

Table 6: Survey sample

Country	Sample category	Sampling technique	Sample size
Uganda	SM users	Simple random	150
Nigeria	SM users	Simple random	150
Cameroon	SM users	Simple random	150
Total			450

3.5 Data sources and collection methods

Data for this study came from both primary and secondary sources. Primary sources were SM users, while secondary sources were published journals and other scholarly, management and policy documents from organizations and agencies across the region.

Data for both pilot study and the final survey were collected using online and printed questionnaires. Online questionnaires were designed using Goggle forms. It was necessary for the researcher to use online questionnaires in order to reach respondents in all three participating countries. This also helped to save on travel costs. The printed questionnaires were administered by the researcher and or his research assistants. The study questionnaire is in Appendix i.

3.6 Measurement and operationalization of variables

Each variable and construct was measured by a set of items evaluated on a 5 point likert scale. Theoretically, Age Sensitivity was measured by literature from WHO (2000) and NIHCE (2007). Health Behavior was measured by Bandura (1986); Blalock et al. (2016); Winett et al. (1999);

Bandura (1990); Blalock et al. (2016); Blalock et al. (2016); Kane (2004) while Self-Regulation was measured by Blalock et al. (2016); Bandura (1988; 1986); Winters et al. (2003). Behavioral Intention was measured by Venkatesh et al. (2003) while Outcome Expectations Was measured by Blalock et al. (2016); Buck (2010); Bandura, (2000); Bandura (1986); Rotter (1966). Cognitive Factors was measured by Bayrón (2013). External Locus of Control was measured by Boundless (2016); Rotter (1966) while Internal Locus of Control was measured by Rotter (1966); Boundless (2016); Rotter (1966).

3.7 Research plan and trustworthiness of the research instruments

The research proposal was approved by the Committee of Supervisors including Prof. Victor Mbarika (Chair), Prof. Kehbuma Langmia and Dr. Clive Tsuma. This Committee of Supervisors was nominated by the researcher and appointed by the Graduate School of the ICT University as per the university’s graduate research policy.

3.7.1 Validity and reliability of the questionnaire

The research instrument was developed and pre-tested using Crombach Alpha Reliability Coefficients for reliability (Crombach, 1951), face validity, and Content Validity Index (Krishnaveni & Ranganath, 2011) for validity before being administered. The higher the reliability and validity of an instrument, the better it is.

Reliability ensures the consistence of an instrument such that it can yield the same results if reused. To test for reliability, a pilot study was conducted on the same study sample, in which 45 questionnaires were fully filled-in and returned. This data was analyzed to determine the reliability of the questionnaire using Crombach Alpha Reliability Coefficients. Table 7 presents the reliability results.

Table 7: Reliability results

Variable	No of items	CAC
Cognitive Factors	14	.804

Internal Locus of Control	7	.805
External Locus of Control	8	.894
Self-Regulation	16	.890
Age Sensitivity	6	.869
Outcome Expectations	7	.873
Behavioral Intention	8	.827
Health Behavior	25	.883

Results in Table 7 reveal that the study questionnaire was reliable since all variables had a CAC>0.7. individual CAC are given as follows; Cognitive Factors (CAC=.804); Environmental Factors (CAC=.868); Internal Locus of Control (CAC=.805); External Locus of Control (CAC=.894); Self-Efficacy (CAC=.878); Self-Regulation (CAC=.890); Age Sensitivity (CAC=.869); Gender Sensitivity (CAC=.789); Outcome Expectations (CAC=.873); Behavioral Intention (CAC=.827); Health Behavior (CAC=.883).

On the other hand, questionnaire validity was conducted to ensure that the instrument did exactly what the researcher intended it to do (Whichard, 2006). This involved running a face validity, construct validity as well as content validity.

3.7.2 Face validity

Face validity measures the extent to which an instrument appears effective in achieving its stated goals (Drost, 2016). It is a subjective form of evaluating research instruments through reading through the items and giving an opinion on whether they are appropriate, well written and adequately measure their constructs or variable. In this study, face validity was done by the research supervisors and peers on the Ph.D. program. These were given the developed questionnaire for review. Their comments were incorporated into the final survey instrument. Owing to its subjectivity, Drost (2016) argues that face validity is a weak form of validating research instruments. Hence, it was incumbent upon the researcher to explore other approaches in validating the questionnaire such as content validity index.

The research instrument was given to 10 experts in the area of information technology, who were selected purposively by the researcher. The experts had a minimum of a master’s degree in the discipline and had work experience of at least 10 years teaching and working in the area Information Communication Technology. These experts were requested to indicate the relevance of items on the questionnaire on a 5 point likert scale where 1=Not Relevant, 2=Not relevant, 3=Quite Relevant, 4= Relevant and 5= Very Relevant. In the computation for CVI, only responses indicating Relevant (4) and Very Relevant (5) were considered. Out of the 10 experts, 7 returned fully filled-in questionnaires. The content validity index for each expert was computed as the frequency of responses for Relevant (4) added to the frequency of responses for Very relevant (5) divided by the total number of items. The average CVI for all experts was then computed to represent overall expert findings. Table 8 presents the CVI for experts:

Table 8: Expert content validity index results

Experts	CVI
Expert 1	0.955882
Expert 2	0.772059
Expert 3	0.389706
Expert 4	0.963235
Expert 5	0.389706
Expert 6	0.485294
Expert 7	0.757353
Average CVI	0.673319

Results in Table 8 show that the average CVI=0.67, which is greater than the required 0.6 for a research instrument to be valid. Each expert CVI is given as follows; Expert 1 (CVI=0.955882); Expert 2 (CVI=0.772059); Expert 3 (CVI=0.389706); Expert 4 (CVI=0.963235); Expert 5 (CVI=0.389706); Expert 6 (CVI=0.485294); Expert 7 (CVI=0.757353).

In addition the above, content validity index was run on each variable to establish how well each variable measured what is was intended to measure. The CVI for each variable is given in Table 9 below:

Table 9: Variable Content Validity Index

Variable	No of items	CVI
Cognitive Factors	14	0.875
Environmental Factors	15	0.857
Internal Locus of Control	7	0.979
External Locus of Control	8	0.607
Self-Efficacy	10	0.871
Self-Regulation	16	0.830
Age Sensitivity	6	0.833
Gender Sensitivity	5	0.857
Outcome Expectations	7	0.795
Behavioral Intention	8	0.826
Health Behavior	25	0.678

Results in Table 9 above show that all variables met the minimum CVI of 0.6; hence the questionnaire was valid for the study. The individual variables CVI scores are given as follows; Cognitive Factors (CVI=0.875); Environmental Factors (CVI=0.857); Internal Locus of Control (CVI=0.979); External Locus of Control (CVI=0.607); Self-Efficacy (CVI=0.871); Self-Regulation (CVI=0.830); Age Sensitivity (CVI=0.833); Gender Sensitivity (CVI=0.857); Outcome Expectations (CVI=0.795); Behavioral Intention (CVI=0.826); Health Behavior (CVI=0.678).

3.7.3 Construct validity, Convergent validity and Discriminant validity

Using Exploratory Factor Analysis (EFA) as seen in the pilot results in Appendix II and also in chapter four for the final survey, the researcher tested for commonalities. Commonalities for all variables were greater than 0.4, indicating that items were measuring the same variable (Costello & Osborne, 2005). Further, Kaiser-Meyer-Olkin (KMO) obtained was greater than 0.7 for all variables, indicating that the sample was adequate. According to Tabachnick and Fidell, (2001) a KMO above 0.5 is appropriate. The Total Variance Explained was greater than 0.7 indicating

that the items and constructs largely explained the variables. Further still, the Rotated Component Matrix Factor Loadings were greater than 0.5 and items were distributed independently into different constructs. This meant that there was discriminant validity within each variable (Campbell & Fiske, 1959), and also convergent validity within each construct.

3.7.4 Handling of missing values

Missing values were inevitable due to errors committed during data entry and also due to nonresponse on some questions. The researcher tested to establish if the missing values Missing Completely at Random (MCAR). A Little MCAR test found that Sig. = 1.0, which was significant i.e. Sig>0.05. This meant that the missing values were not intentional. Therefore, we used linear interpolation to replace missing values (Zarate, Nogueira, Santos, & Song, 2006).

3.8 Data analysis methods

Data for this study were analyzed using quantitative data analysis methods explained as follows.

3.8.1 Quantitative data analysis methods

Quantitative data analysis is the process of constructively summarizing, classifying, measuring, categorizing, tabulating, counting and interpreting numerical data. It is aimed at describing an event or a situation by trying to answer questions about it. It helps to answer the “how”, “why”, and “when” questions (Abeyasekera, 2016) and is done on numerical data (Aliaga & Gunderson, 2000). The various types of quantitative data analysis are; descriptive analysis, factor analysis, correlation analysis, regression analysis, and Structural Equation Modeling among others.

Descriptive analysis methods aim to illustrate the object being analyzed. They include percentages, means and frequencies (Abeyasekera, 2016). While correlation analysis is used to examine the relationship between variables and regression analysis is used to determine the predicting power of the independent variable on the dependent variable. They help in measuring associations between two variables (Grosshans & Chelimsky, 1992).

Further, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are used to analyze measurement variables. Structural Equation Modeling (SEM) software is used to perform confirmatory factors analysis as well as latent growth modeling (Hox, 2016).

This study used all the quantitative data analysis methods described above depending on the research objective, question and or hypothesis under investigation. For example, descriptive statistics were used to analyze background information, while correlation and regression analysis methods were used to analyze the relationships and strength of the relationship between variables. Further, confirmatory analysis methods and modeling were implemented using Structural Equation Modeling methods. In addition, modgraphs were used to analyze for moderation (Jose, P2013), while medgraphs (Jose, P2013) and bootstrapping were used to analyze for mediation.

3.9 Summary of methodology

Table 10 shows a summary of methodology in which each research objective, question and hypothesis has been matched to the methods that will be used to do the investigation.

Table 10: Summary of methodology

Research question	Hypothesis	Methods
<p>QTN1: What is the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa?</p>	<p>H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.</p>	<p>Correlation analysis, Multiple Hierarchical Regression analysis, Structural Equation Modeling</p>
<p>QTN 2: What is the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Sahara Africa?</p>	<p>H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Sahara Africa.</p> <p>H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Sahara Africa.</p>	<p>Correlation analysis, Multiple Hierarchical Regression analysis, Structural Equation Modeling</p>
	<p>H3a: Cognitive Factors have a positive effect on External Locus of</p>	

<p>QTN 3: What is the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa?</p>	<p>Control of social media users in Sub-Saharan Africa.</p> <p>H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.</p> <p>H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.</p>	<p>Correlation analysis, Multiple Hierarchical Regression analysis, Structural Equation Modeling</p>
<p>QTN 4: What is the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa?</p>	<p>H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa.</p>	<p>Correlation analysis, Multiple Hierarchical Regression analysis, Structural Equation Modeling, Medgraph</p>
	<p>H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p>	<p>Correlation analysis, regression analysis, Structural</p>

<p>QTN 5: What is the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relation between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa?</p>	<p>H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5e: External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5f: Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Saharan Africa.</p>	<p>Equation Modeling, Modgraph, Bootstrapping</p>
---	--	---

3.10 Challenges and limitations faced

Although no hideous challenges were anticipated, just like any other research activity, some unexpected issues emerged during the study. The main challenge for the researcher was insufficient funding to enable timely data collection from all the three countries. The researcher however, used online survey instruments to reach respondents via e-mail compared to the physical administration of questionnaires which proved to be extremely expensive. Further, a research fund was obtained from Makerere University Business School to facilitate the study.

Some target respondents did not fill and return questionnaires in a timely manner. Others just refused to participate.

To address the above challenge, the researcher explained the purpose of the study to the respondents and showed them how important the study was to their work and or health. The researcher also assured respondents that the information they provided would be held with utmost confidentiality and that it shall be used for academic purposes only. Notwithstanding, respondents had a choice to voluntarily participate or refuse to participate in the study. Respondents were also free to not to answer any questions they felt were uncomfortable answering.

3.11 Ethical considerations

According to Resnik (2015) research ethics constitute the acceptable norms of conducting a scientific research. Since they are ubiquitous, most researchers tend to overlook them. However, it is imperative to follow the universally acceptable ethical standards in conducting this kind of study. Walton (2016) argues that research involving human subjects may carry along dare legal and social-cultural issues if ethics are not adhered to. In this study, the following aspects of research ethics were adhered to:-

3.11.1 Acknowledgement of sources and materials

Due acknowledgement of sources and materials and any other support towards this study was done. Acknowledgement this study was done under the acknowledgement subheading and also throughout report through proper citation of the referenced materials in the literature.

3.11.2 Human subjects

Although this study did not involve human experimentation or any activity that may have required the participants to undergo any form of examination, it was imperative that a declaration is made here and also on the research instruments regarding this issue. The respondents for this study voluntarily participate and - if so wish to withdraw, were free to do so, on a voluntary basis. No subjects were coerced to participate. Further, the respondents were not given incentives to participate as this could have biased their responses. The respondents were briefed about the purpose of this study by the researcher or by the researcher's representative (s) before they were given instruments to fill. This way, they participated out of the need to make a contribution towards solving the research problems.

3.11.3 Confidentiality

Similarly, a confidentiality declaration was made on all research instruments that this study was for academic purposes only. All data collected were held in confidence were strictly used for the purpose stated herein.

3.11.4 Approvals and permissions

Prior to implementation, the researcher sought approval of the study proposal and all its accompanying documents and instruments by the University assigned supervisors.

Further, the researcher, provided contact information of study supervisors as well as well as those Ph.D. coordinators to the respondents on research. This was done so as to allow

respondents consult the university officials where necessary if the study had been officially sanctioned ICT University.

CHAPTER FOUR: DESCRIPTIVE STATISTICS, EFA, CORRELATION AND REGRESSION ANALYSIS, CFA AND STRUCTURAL EQUATION MODELLING

4.0 Introduction

The purpose of this study was to investigate the learning process of new health behaviors via social media by users in Sub-Saharan Africa. Previous chapters have presented the study problem, theoretical grounding, hypotheses, and research methods used. As seen in chapter three, a pilot was conducted and results indicated the study instrument was valid and reliable. Consequently, no significant changes were made on the study instrument. Therefore, the instrument was employed in a general survey.

This chapter presents study the first set of study findings. We cover descriptive statistics and exploratory factor analysis, zero level correlation and multiple hierarchical regressions as well as Confirmatory Factor Analysis and development of Structural Equation models for the study.

4.1 Exploratory Factor analysis

EFA is done through a process called factor analysis and also component analysis which is used to reduce a given set of observed variables or factors a reasonable level that best explains latent variable(s) (Spearman, 1904). Some of the important tests conducted during EFA are the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test (KMO), Bartlett's Test of Sphericity (Approx. Chi-Square, Df. Sig.), Communalities, and Principal Component Analysis. KMO is used to test for sample adequacy and should be above 0.5 for the sample to be adequate (Tabachnick & Fidell, 2001; Yong & Pearce, 2013). On the other hand, Bartlett's Test of Sphericity (Approx. Chi-Square, D.f., Sig.) which is used to test for homogeneity of samples. It ensures that there is similarity in the variances of a group of samples (Bartlett, 1937). Communalities show the variance in a latent variable that is explained by a given observed variable (Costello & Osborne,

2005). The higher the communality, the better that observed variable explains its latent variable (Hatcher, 1994), however, a communality of 0.4 and above is generally considered to be good (Costello & Osborne, 2005). Further, Principal Component Analysis is used to orthogonally transform a set of related observed variables in groups of factors, also known as components (Jérôme, 2014; François, Sébastien & Jérôme, 2009; Jolliffe, 2002).

Data were analyzed using exploratory factor analysis with Extraction Method of Principal Component Analysis and Rotation Method of Varimax with Kaiser Normalization in order to extract the most important factors that measured the study variables. Factors with Eigen values >1 and factor loadings >0.5 were retained in the commonality and rotated component matrix. This validated the questionnaire in terms of convergent validity and discriminant validity (Campbell & Fiske, 1959).

For convergent validity, determinant with $\text{sig.} > 0.00$, commonalities loadings >0.5 indicated convergence of items in measuring the same variable.

For discriminant validity, Rotated Component Matrix distinct factors with loadings of above 0.5 indicated discrimination of factors from each other.

In this study, factor analysis was performed on all latent variables as presented in the following section.

4.1.0 Cognitive Factors

A total of 14 items grouped in three constructs including beliefs, knowledge and attitude were listed to measure Cognitive Factors. Item correlation matrix produced a Determinant = .013 meaning that all items converged and were related in measuring Cognitive Factors. The KMO was used to measure sampling adequacy. A KMO = .806 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 1543.429, D.F. =36, Sig=.000

meant that the sample was significant. Table 11 presents KMO and Bartlett's Test results for Cognitive Factors.

Table 11: KMO and Bartlett's Test for Cognitive Factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.806
Bartlett's Test of Sphericity	Approx. Chi-Square	1543.429
	D.f.	36
	Sig.	.000

4.1.1 Descriptive Statistics for Cognitive Factors

Descriptive means were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Cognitive Factors. Table 12 shows the descriptive statistics results for Cognitive Factors.

Table 12: Descriptive Statistics for Cognitive Factors

	Mean	Std. Deviation	Analysis N
I believe using social media can help me improve my Health Behavior	4.3282	.73467	358
I believe using social media can help me improve my knowledge on health related matters	4.5168	.53557	358
I believe social media as a platform for exchanging health related information	4.4413	.55953	358
I believe my cultural norms allow me to use social media on health related matters	4.3366	.68740	358
I believe my position in society allows me to use social media on health related matters	4.3701	.63996	358
I have the necessary knowledge to use social media in sharing health related information	4.1061	1.05383	358

I have the relevant skills for using social media on health matters	4.3003	.87603	358
I have the relevant experience in using social media for health purposes	3.9274	1.18358	358
I encourage my friends to use social media on health related issues	4.0237	.95713	358
Average	4.2612	0.80308	358

The results presented in Table 12 reveal that only 9 out of the 14 items were retained to measure Cognitive Factors. On average, the respondents agreed that the nine items measured Cognitive Factors (Mean=4.2612, SDV=0.80308).

Specifically, respondents strongly believed that using social media can help them improve their knowledge on health related matters (Mean=4.5168, SDV=.53557), social media was an appropriate platform for exchanging health related information (Mean=4.4413, SDV=.55953), their position in society allowed them to use social media on health related matters (Mean=4.3701, SDV=.63996), their cultural norms allowed them to use social media on health related matters (Mean=4.3366, SDV=.68740), using social media can help them improve their Health Behavior (Mean=4.3282, SDV=.73467), they have the relevant skills for using social media on health matters (Mean=4.3003, SDV=.87603), they have the necessary knowledge to use social media in sharing health related information (Mean=4.10611, SDV=.05383) and also that they encouraged their friends to use social media on health related issues (Mean=4.0237, SDV=.95713).

Further, the respondents agreed that they have the relevant experience in using social media for health purposes (Mean=3.9274, SDV=1.18358).

4.1.2 Communalities test for Cognitive Factors

In addition the above descriptive, Communalities and determinant tests were used to examine convergent validity of Cognitive Factors as seen in Table 13.

Table 13: Communalities for Cognitive Factors

	Initial	Extraction
I believe using social media can help me improve my Health Behavior	1.000	.777
I believe using social media can help me improve my knowledge on health related matters	1.000	.758
I believe social media as a platform for exchanging health related information	1.000	.734
I believe my cultural norms allow me to use social media on health related matters	1.000	.737
I believe my position in society allows me to use social media on health related matters	1.000	.703
I have the necessary knowledge to use social media in sharing health related information	1.000	.749
I have the relevant skills for using social media on health matters	1.000	.775
I have the relevant experience in using social media for health purposes	1.000	.753
I encourage my friends to use social media on health related issues	1.000	.767

Results in Table 13 above reveal that all the items measured Cognitive Factors since they all have factor loadings above 0.40 and determinant of 0.13. Hence convergent validity was achieved on Cognitive Factors.

4.1.3 Rotated Component Matrix for Cognitive Factors

Rotated Component Matrix shows that all the three components explained Cognitive Factors namely; beliefs (Percentage Total Variance=29.323), knowledge (Percentage Total

Variance=55.888) and attitude (Percentage Total Variance=75.038). Hence discriminant validity was achieved. Table 14 presents the results.

Table 14: Rotated Component Matrix Cognitive Factors

	Component		
	Beliefs	Knowledge	Attitude
I believe social media as a platform for exchanging health related information	.823		
I believe my cultural norms allow me to use social media on health related matters	.822		
I believe my position in society allows me to use social media on health related matters	.759		
I believe using social media can help me improve my knowledge on health related matters	.726		
I have the relevant skills for using social media on health matters		.834	
I have the relevant experience in using social media for health purposes		.831	
I have the necessary knowledge to use social media in sharing health related information		.798	
I believe using social media can help me improve my Health Behavior			.860
I encourage my friends to use social media on health related issues			.776
Eigen Value	2.639	2.391	1.723
Total variance	29.323	26.565	19.149
Percentage Total Variance	29.323	55.888	75.038

4.2.0 Internal Locus of Control

Only 3 out of 7 items of inquiry under Internal Locus of Control were found to measure the variable (Determinant =.225). Hence only 3 items converged and were related in measuring Internal Locus of Control. The KMO was used to measure sampling adequacy. A KMO = .694 meant that the study sample for this variable was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 530.431, D.F. =3, Sig=.000 meant that the sample was significant. Table 4.9 presents KMO and Bartlett's Test results for Internal Locus of Control.

Table 15: KMO and Bartlett's Test for Internal Locus of Control

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.694
Bartlett's Test of Sphericity	Approx. Chi-Square	530.431
	D.f.	3
	Sig.	.000

4.2.1 Descriptive statistics for Internal Locus of Control

Descriptive statistics were used to analyze the factors under Internal Locus of Control as seen in Table 16.

Table 16: Descriptive statistics for Internal Locus of Control

	Mean	Std. Deviation	Analysis N
I believe I am in charge of my activities while using social media	4.3953	.60419	358
I am directly responsible for the consequences of my actions as a result of using social media	4.3212	.62524	358
I control myself while using social media	4.1229	.70531	358
Average	4.2798	0.64491	358

Results in Table 16 indicate 3 items out of 7 were retained to measure Internal Locus of Control with an average mean of 4.2798 and SDV=0.64491.

The respondents strongly believed that they are in charge of their activities while using social media (Mean=4.3953, SDV=.60419), they are directly responsible for the consequences of their actions as a result of using social media (Mean=4.3212, SDV=.62524) and also that they control themselves while using social media (Mean=4.1229, SDV=.70531).

4.2.2 Communalities test for Internal Locus of Control

Principal Component Analysis method and determinant tests were used to analyze the communalities in order to establish convergent validity of items under Internal Locus of Control. Table 17 presents the results.

Table 17: Communalities test for Internal Locus of Control

	Initial	Extraction
I believe I am in charge of my activities while using social media	1.000	.807
I am directly responsible for the consequences of my actions as a result of using social media	1.000	.845
I control myself while using social media	1.000	.680

Results in Table 17 reveal that 2 items measured Internal Locus of Control since they have factor loadings above 0.40 and determinant of .225. This means that convergent validity was achieved on Internal Locus of Control.

4.2.3 Rotated Component Matrix for Internal Locus of Control

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Internal Locus of Control. The results are presented in Table 18.

Table 18: Component Matrix for Internal Locus of Control

	Component
	Internal Locus of Control
I am directly responsible for the consequences of my actions as a result of using social media	.919
I believe I am in charge of my activities while using social media	.899
I control myself while using social media	.825
Eigen Value	2.333
Total variance	77.761
Percentage Total Variance	77.761

Results in Table 18 show that the most important factor explaining Internal Locus of Control are; I am directly responsible for the consequences of my actions as a result of using social media (Factor loading =.919), I believe I am in charge of my activities while using social media (Factor loading =.899) and I control myself while using social media (Factor loading =.825).

4.3.0 External Locus of Control

Data were collected and analyzed on a total of 8 items listed under External Locus of Control. Item correlation matrix for External Locus of Control produced a Determinant = .035, meaning that all items converged and were related in measuring the variable. The KMO was used to measure sampling adequacy for this variable. A KMO = .754 was obtained, meaning that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 1190.201, D.F.

=10, Sig=.000 meant that the sample was significant. Table 19 presents KMO and Bartlett's Test results for Cognitive Factors.

Table 19: KMO and Bartlett's Test for External Locus of Control

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.754
Bartlett's Test of Sphericity	Approx. Chi-Square	1190.201
	D.f.	10
	Sig.	.000

4.3.1 Descriptive Statistics for External Locus of Control

Descriptive statistics were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring External Locus of Control. Table 20 shows the results.

Table 20: Descriptive Statistics External Locus of Control

	Mean	Std. Deviation	Analysis N
I am not in control of the consequences of my actions while using social media	3.6858	1.04372	358
I achieve less by using social media	3.5684	1.02773	358
I have low morale to learn new things on social media	3.5084	.93106	358
I consider myself lucky to be using social media	4.0628	.80411	358
I am not responsible for the bad things that happen to me while using social media	3.9274	.99876	358
Average	3.7506	0.96108	358

The results in Table 20 reveal that only 5 out of the initial 8 items were found to measure External Locus of Control and retained. On average, the respondents agreed that the 5 items measured Cognitive Factors (Mean=3.7506, SDV=0.96108).

Respondents strongly agreed that they consider themselves lucky to be using social media (Mean=4.0628, SDV=.80411). They also agreed that they are not responsible for the bad things that happen to them while using social media (Mean=3.9274, SDV=.99876), they are not in control of the consequences of their actions while using social media (Mean=3.6858, SDV=1.04372), they achieve less by using social media (Mean=3.5684, SDV=1.02773) and also that they have low morale to learn new things on social media (Mean=3.5084, SDV=.93106).

4.3.2 Communalities test for External Locus of Control

Further, Communalities and determinant tests were used to examine convergent validity of items under External Locus of Control. Table 21 presents the results.

Table 21: Communalities for External Locus of Control

	Initial	Extraction
I am not in control of the consequences of my actions while using social media	1.000	.707
I achieve less by using social media	1.000	.803
I have low morale to learn new things on social media	1.000	.721
I consider myself lucky to be using social media	1.000	.559
I am not responsible for the bad things that happen to me while using social media	1.000	.643

Results in Table 21 reveal that all the items measured External Locus of Control since they all have factor loadings above 0.40 and determinant of .035. This means that convergent validity was achieved on the variable.

4.3.3 Component Matrix for External Locus of Control

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Internal Locus of Control. The results are presented in Table 22.

Table 22: Component External Locus of Control

	Component
	External Locus of Control
I do not maintain good relations on social media	.998
I am unable to help myself when faced with challenging situations on social media even if I possess the ability to do so	.348
I do not think about the consequences of my actions before doing them on social media	.223
I am not responsible for the bad things that happen to me while using social media	.192
I consider myself lucky to be using social media	.130
Eigen Value	22.491
Total variance	70.755
Percentage Total Variance	70.755

Results in Table 22 show that the most important factors explaining External Locus of Control are; I do not maintain good relations on social media (Factor loading =.998), I am unable to help myself when faced with challenging situations on social media even if I possess the ability to do so (Factor loading =.348), I do not think about the consequences of my actions before doing them on social media (Factor loading =.223), I am not responsible for the bad things that happen to me while using social media (Factor loading =.192), I consider myself lucky to be using social media (Factor loading =.130).

4.4.0 Self-Regulation

A total of 16 items were used to measure Self-Regulation. Item correlation matrix produced a Determinant = .000 meaning that all items converged and were related in measuring Self-Regulation. The KMO was used to measure sampling adequacy. A KMO = .767 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 2711.893, D.F. =36, Sig=.000 meant that the sample was significant. Table 23 presents KMO and Bartlett's Test results for Self-Regulation.

Table 23: KMO and Bartlett's Test Self-Regulation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.767
Bartlett's Test of Sphericity	Approx. Chi-Square	2711.893
	D.f.	36
	Sig.	.000

4.4.1 Descriptive Statistics for Self-Regulation

Descriptive statistics were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Self-Regulation. Table 24 shows the results.

Table 24: Descriptive Statistics for Self-Regulation regulation

	Mean	Std. Deviation	Analysis N
I can freely give health related advice to my peers via social media	3.9637	.89588	358
I set my goals while sharing health related information on social media	4.0936	.79585	358
I set my goals while consuming health related	4.2039	.80286	358

information on social media			
I monitor myself while consuming health related information on social media	4.1844	.81277	358
I am cautious about my peers while consuming health related information on social media	3.9693	.90232	358
I am cautious about my family members while share health related information on social media	4.0587	.83728	358
I am cautious about my family members while consuming health related information on social media	4.0880	.85090	358
I can overcome barriers emanating from my sharing of health related information via social media	3.9930	.88756	358
I can overcome barriers emanating from my consumption of health related information via social media	3.7430	1.07213	358
Average	4.0331	0.87306	358

The results in Table 24 reveal that only 9 out of the 16 items were retained to measure Self-Regulation. On average, the respondents strongly agreed that the nine items measured Self-Regulation (Mean=4.0331, SDV=0.87306).

The respondents strongly agreed that they set their goals while consuming health related information on social media (Mean=4.2039, SDV=.80286), they monitor themselves while consuming health related information on social media (Mean=4.1844, SDV=.81277), they set their goals while sharing health related information on social media (Mean=4.0936, SDV=.79585), they are cautious about their family members while consuming health related information on social media (Mean=4.0880, SDV=.85090), and also that they are cautious about their family members while share health related information on social media (Mean=4.0587, SDV=.83728).

Further, the respondents agreed that they can overcome barriers emanating from their sharing of health related information via social media (Mean=3.9930, SDV=.88756), they are cautious about their peers while consuming health related information on social media (Mean=3.9693,

SDV=.90232), they can freely give health related advice to their peers via social media (Mean=3.9637, SDV=.89588) and also that they can overcome barriers emanating from their consumption of health related information via social media (Mean=3.7430, SDV= 1.07213).

4.4.2 Communalities test for Self-Regulation

In addition the above descriptive statistics, Communalities and determinant tests were used to examine convergent validity of Self-Regulation as seen in Table 25.

Table 25: Communalities for Self-Regulation

	Initial	Extraction
I can freely give health related advice to my peers via social media	1.000	.521
I set my goals while sharing health related information on social media	1.000	.590
I set my goals while consuming health related information on social media	1.000	.567
I monitor myself while consuming health related information on social media	1.000	.709
I am cautious about my peers while consuming health related information on social media	1.000	.547
I am cautious about my family members while share health related information on social media	1.000	.530
I am cautious about my family members while consuming health related information on social media	1.000	.513
I can overcome barriers emanating from my sharing of health related information via social media	1.000	.588
I can overcome barriers emanating from my consumption of health related information via social media	1.000	.609

Results in Table 25 show that all the listed items measured Self-Regulation since they have factor loadings above 0.40 and determinant of .00. Hence convergent validity was achieved on Self-Regulation.

4.4.3 Component Matrix for Self-Regulation

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Self-Regulation. The results are presented in Table 26.

Table 26: Component Matrix for Self-Regulation

	Component
	Self-Regulation
I monitor myself while consuming health related information on social media	.842
I can overcome barriers emanating from my consumption of health related information via social media	.780
I set my goals while sharing health related information on social media	.768
I can overcome barriers emanating from my sharing of health related information via social media	.767
I set my goals while consuming health related information on social media	.753
I am cautious about my peers while consuming health related information on social media	.739
I am cautious about my family members while share health related information on social media	.728
I can freely give health related advice to my peers via social media	.722
I am cautious about my family members while consuming health related information on social media	.717

Eigen Value	5.174
Total variance	57.488
Percentage Total Variance	57.488

Rotated Component Matrix results in Table 26 show that 9 factors explain Self-Regulation with (Eigen Value = 5.174, Total Variance = 57.488, Percentage Total Variance = 57.488). The 9 factors include; I monitor myself while consuming health related information on social media (Factor loading=.842); I can overcome barriers emanating from my consumption of health related information via social media (Factor loading=.780); I set my goals while sharing health related information on social media (Factor loading=.768); I can overcome barriers emanating from my sharing of health related information via social media (Factor loading=.767); I set my goals while consuming health related information on social media (Factor loading=.753); I am cautious about my peers while consuming health related information on social media (Factor loading=.739); I am cautious about my family members while share health related information on social media (Factor loading=.728); I can freely give health related advice to my peers via social media (Factor loading=.722); I am cautious about my family members while consuming health related information on social media (Factor loading=.717).

4.5.0 Age Sensitivity

A total of 6 items were used to measure Age Sensitivity. Item correlation matrix produced a Determinant =.013 meaning that all items converged and were related in measuring Age Sensitivity. The KMO was used to measure sampling adequacy. A KMO = .797 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 1093.241, D.F. =36, Sig=.6 meant that the sample was significant. Table 27 presents KMO and Bartlett's Test results for Age Sensitivity.

Table 27: KMO and Bartlett's Test for Age Sensitivity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.797
Bartlett's Test of Sphericity	Approx. Chi-Square	1093.241
	D.f.	6
	Sig.	.000

4.5.1 Descriptive Statistics for Age Sensitivity

Descriptive means were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Age Sensitivity. Table 28 shows the results.

Table 28: Descriptive Statistics for Age Sensitivity

	Mean	Std. Deviation	Analysis N
I freely interact with people of different age groups via social media on health related matters	3.7514	1.14419	358
I freely interact with people of my age group via social media on health related matters	3.6872	1.16251	358
I do not mind learning new Health Behaviors from people of my age via social media	3.8478	.98937	358
I feel I am of the right age to use social media for health purposes	3.9637	.97825	358
Average	3.8125	1.06858	358

The results presented in Table 28 reveal that only 4 out of the 6 items were retained to measure Age Sensitivity. On average, the respondents agreed that the nine items measured Age Sensitivity (Mean=3.8125, SDV=1.06858).

The respondents agreed that they feel they are of the right age to use social media for health purposes (Mean=3.9637, SDV=.97825), they do not mind learning new Health Behaviors from people of their age via social media (Mean=3.8478, SDV=.98937), they freely interact with

people of different age groups via social media on health related matters (Mean=3.7514, SDV=1.14419) and also that they freely interact with people of their age group via social media on health related matters (Mean=3.6872, SDV=1.16251).

4.5.2 Communalities test for Age Sensitivity

Communalities and determinant tests were used to examine convergent validity of Age Sensitivity as seen in Table 29.

Table 29: Communalities for Age Sensitivity

	Initial	Extraction
I freely interact with people of different age groups via social media on health related matters	1.000	.839
I freely interact with people of my age group via social media on health related matters	1.000	.866
I do not mind learning new Health Behaviors from people of my age via social media	1.000	.829
I feel I am of the right age to use social media for health purposes	1.000	.604

Results in Table 29 above reveal that all the items measured Age Sensitivity since they have factor loadings above 0.40 and determinant of .013. Hence convergent validity was achieved.

4.5.3 Component Matrix for Age Sensitivity

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Age Sensitivity. The results are presented in Table 30.

Table 30: Rotated Component Matrix for Age Sensitivity

	Component
	Age Sensitivity
I freely interact with people of my age group via social media on health related matters	.931
I freely interact with people of different age groups via social media on health related matters	.916
I do not mind learning new Health Behaviors from people of my age via social media	.910
I feel I am of the right age to use social media for health purposes	.777
Eigen Value	3.138
Total variance	78.445
Percentage Total Variance	78.445

Rotated Component Matrix results in Table 30 show that 4 factors explain Age Sensitivity with (Eigen Value = 3.138, Total Variance = 78.445, Percentage Total Variance = 78.445). These include; I freely interact with people of my age group via social media on health related matters (Factor loading=.931); I freely interact with people of different age groups via social media on health related matters (Factor loading=.916); I do not mind learning new Health Behaviors from people of my age via social media (Factor loading=.910); I feel I am of the right age to use social media for health purposes (Factor loading=.777).

4.6.0 Outcome Expectations

A total of 7 items were listed to measure Outcome Expectations. Item correlation matrix produced a Determinant = .013 meaning that all items converged and were related in measuring Outcome Expectations. The KMO was used to measure sampling adequacy. A KMO =.809 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was

used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 2085.746, D.F. =10, Sig=.000 meant that the sample was significant. Table 31 presents KMO and Bartlett's Test results for Outcome Expectations.

Table 31: KMO and Bartlett's Test for Outcome Expectations

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.809
Bartlett's Test of Sphericity	Approx. Chi-Square	2085.746
	D.f.	10
	Sig.	.000

4.6.1 Descriptive Statistics for Outcome Expectations

Descriptive means were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Outcome Expectations. Table 32 shows the descriptive statistics results for Outcome Expectations.

Table 32: Descriptive Statistics for Outcome Expectations

	Mean	Std. Deviation	Analysis N
Using social media on health related matters makes me a better person	2.4930	1.54732	358
Using social media on health related matters makes me more acceptable amongst my peers	2.4930	1.56890	358
My peers will trust me if I use social media on health related matters	3.1411	1.40490	358
I will not be rejected by my peers if I use social media on health related matters	2.9693	1.45441	358
I will not be punished by my family if I use social media on health related matters	2.7221	1.54720	358
Average	2.7637	1.50455	358

The results presented in Table 32 reveal that only 5 out of the 7 items were retained to measure Outcome Expectations. On average, the respondents were not sure that the 5 items measured Outcome Expectations (Mean=2.7637, SDV=1.50455).

They agreed that their peers will trust them if they use social media on health related matters (Mean=3.1411, SDV=1.40490).

However, they were not sure if they will not be rejected by their peers if they use social media on health related matters (Mean=2.9693, SDV=1.45441), they will not be punished by their family if they use social media on health related matters (Mean=2.7221, SDV=1.54720), using social media on health related matters makes them a better person (Mean=2.4930, SDV=1.54732) and also if using social media on health related matters makes them more acceptable amongst their peers (Mean=2.4930, SDV=1.56890).

4.6.2 Communalities test for Outcome Expectations

In addition the above descriptive, Communalities and determinant tests were used to examine convergent validity of Outcome Expectations as seen in Table 33.

Table 33: Communalities for Outcome Expectations

	Initial	Extraction
Using social media on health related matters makes me a better person	1.000	.872
Using social media on health related matters makes me more acceptable amongst my peers	1.000	.913
My peers will trust me if I use social media on health related matters	1.000	.638
I will not be rejected by my peers if I use social media on health related matters	1.000	.718
I will not be punished by my family if I use social media on health related matters	1.000	.871

Results in Table 33 above reveal that all the items measured Outcome Expectations since they all have factor loadings above 0.40 and determinant of .013. Hence convergent validity was achieved on Outcome Expectations.

4.6.3 Rotated Component Matrix for Outcome Expectations

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Outcome Expectations. The results are presented in Table 34.

Table 34: Component Matrix for Outcome Expectations

	Component
	Outcome Expectations
Using social media on health related matters makes me more acceptable amongst my peers	.956
Using social media on health related matters makes me a better person	.934
I will not be punished by my family if I use social media on health related matters	.933
I will not be rejected by my peers if I use social media on health related matters	.847
My peers will trust me if I use social media on health related matters	.799
Eigen Value	4.012
Total variance	80.237
Percentage Total Variance	80.237

Rotated Component Matrix results in Table 34 show that 5 factors explain Outcome Expectations with (Eigen Value = 4.012, Total Variance = 80.237, Percentage Total Variance = 80.237). these are; Using social media on health related matters makes me more acceptable

amongst my peers (Factor loading=.956); Using social media on health related matters makes me a better person (Factor loading=.934); I will not be punished by my family if I use social media on health related matters (Factor loading=.933); I will not be rejected by my peers if I use social media on health related matters (Factor loading=.847); My peers will trust me if I use social media on health related matters (Factor loading=.799).

4.7.0 Behavioral Intention

A total of 8 items were listed to measure Behavioral Intention. Item correlation matrix produced a Determinant = .001 meaning that all items converged and were related in measuring Behavioral Intention. The KMO was used to measure sampling adequacy. A KMO = .860 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 2545.867, D.F. =15, Sig=.000 meant that the sample was significant. Table 35 presents KMO and Bartlett's Test results for Behavioral Intention.

Table 35: KMO and Bartlett's Test for Behavioral Intention

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.860
Bartlett's Test of Sphericity	Approx. Chi-Square	2545.867
	D.f.	15
	Sig.	.000

4.7.1 Descriptive Statistics for Cognitive Factors

Descriptive means were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Behavioral Intention. Table 36 shows the descriptive statistics results for Behavioral Intention.

Table 36: Descriptive Statistics for Behavioral Intention

	Mean	Std. Deviation	Analysis N
I intend to do the health issues I observe on social media	2.6145	1.65253	358
I intend to learn how to smoke by observing other people's smoking images or videos via social media	2.1215	1.50579	358
I intend to learn how to use alcohol by observing other people's images or videos drinking alcohol via social media	2.0112	1.34826	358
I intend to consume pornography by observing other people's images or videos of pornography on social media	2.0936	1.48344	358
I intend to do the health issues I see other influential people in society doing via social media	3.0712	1.41117	358
I intend to train myself on doing the health related things that I see and like on social media	3.0447	1.45885	358
Average	2.4928	1.47667	358

The results presented in Table 36 reveal that only 6 out of the 8 items were retained to measure Behavioral Intention. On average, the respondents were not sure that the 6 items measured Behavioral Intention (Mean=2.4928, SDV=1.47667).

Respondents agreed that they intend to do the health issues they see other influential people in society doing via social media (Mean=3.0712, SDV=1.41117) and also that they intend to train themselves on doing the health related things that they see and like on social media (Mean=3.0447, SDV=1.45885).

They however were not sure if they intend to do the health issues they observe on social media (Mean=2.6145, SDV=1.65253), they intend to learn how to smoke by observing other people's smoking images or videos via social media (Mean=2.1215, SDV=1.50579), they intend to consume pornography by observing other people's images or videos of pornography on social

media (Mean=2.0936, SDV=1.48344) and also that they intend to learn how to use alcohol by observing other people’s images or videos drinking alcohol via social media (Mean=2.0112, SDV=1.34826).

4.7.2 Communalities test for Behavioral Intention

In addition the above descriptive, Communalities and determinant tests were used to examine convergent validity of Behavioral Intention as seen in Table 37.

Table 37: Communalities for Behavioral Intention

	Initial	Extraction
I intend to do the health issues I observe on social media	1.000	.783
I intend to learn how to smoke by observing other people’s smoking images or videos via social media	1.000	.865
I intend to learn how to use alcohol by observing other people’s images or videos drinking alcohol via social media	1.000	.888
I intend to consume pornography by observing other people’s images or videos of pornography on social media	1.000	.886
I intend to do the health issues I see other influential people in society doing via social media	1.000	.593
I intend to train myself on doing the health related things that I see and like on social media	1.000	.589

Results in Table 37 above reveal that all the 6 items measured Behavioral Intention since they have factor loadings above 0.40 and determinant of .001. Hence convergent validity was achieved on Behavioral Intention.

4.7.3 Rotated Component Matrix for Behavioral Intention

Data were analyzed using Principal Component Analysis extraction methods with Varimax with Kaiser Normalization rotation method in order to identify the items that most explained Behavioral Intention. The results are presented in Table 38.

Table 38: Rotated Component Matrix for Behavioral Intention

	Component
	Behavioral Intention
I intend to learn how to use alcohol by observing other people’s images or videos drinking alcohol via social media	.942
I intend to consume pornography by observing other people’s images or videos of pornography on social media	.941
I intend to learn how to smoke by observing other people’s smoking images or videos via social media	.930
I intend to do the health issues I observe on social media	.885
I intend to do the health issues I see other influential people in society doing via social media	.770
I intend to train myself on doing the health related things that I see and like on social media	.768
Eigen Value	4.604
Total variance	76.739
Percentage Total Variance	76.739

Rotated Component Matrix results in Table 38 show that 6 factors explain Behavioral Intention with (Eigen Value = 4.604, Total Variance = 76.739, Percentage Total Variance = 76.739). These are; I intend to learn how to use alcohol by observing other people’s images or videos drinking alcohol via social media (Factor loading=.942); I intend to consume pornography by observing other people’s images or videos of pornography on social media (Factor loading=.941); I intend to learn how to smoke by observing other people’s smoking images or videos via social media (Factor loading=.930); I intend to do the health issues I observe on social

media (Factor loading=.885); I intend to do the health issues I see other influential people in society doing via social media (Factor loading=.770); I intend to train myself on doing the health related things that I see and like on social media (Factor loading=.768).

4.8.0 Health Behavior

A total of 25 items grouped in four constructs including skills, practice, observational learning and moral degeneration were listed to measure Health Behavior. Item correlation matrix produced a Determinant =6.806E-011 meaning that all items converged and were related in measuring Health Behavior. The KMO was used to measure sampling adequacy. A KMO =.867 meant that the study sample was adequate. On the other hand, Bartlett's Test of Sphericity was used to measure the significance of the sample. Bartlett's Test of Sphericity Approx. Chi-Square = 8197.645, D.F. =153, Sig=.000 meant that the sample was significant. Table 39 presents KMO and Bartlett's Test results for Health Behavior.

Table 39: KMO and Bartlett's Test for Health Behavior

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.867
Bartlett's Test of Sphericity	Approx. Chi-Square	8197.645
	D.f.	153
	Sig.	.000

4.8.1 Descriptive Statistics for Health Behavior

Descriptive means were used to determine the level of agreement or disagreement that respondents expressed towards the items measuring Health Behavior. Table 40 shows the descriptive statistics results for Health Behavior.

Table 40: Descriptive Statistics for Health Behavior

	Mean	Std. Deviation	Analysis N

I have acquired health skills via social media	2.7528	1.51498	358
I have learned how to treat diseases via social media	3.3911	1.20311	358
I have the desire to do the health issues I see other influential people in society doing via social media	4.3603	.69314	358
I train myself on doing the health related things that I see and like on social media	4.2821	.70613	358
I try to do the health issues as I am told to do via social media	4.2360	.78734	358
I seek sexual pleasures via social media	3.9344	1.11735	358
I have learned how to smoke by observing other people's smoking images or videos via social media	3.6508	1.33458	358
I have learned how to consume alcohol by observing other people's images or videos drinking it via social media	3.5782	1.30910	358
I have learned how to access sexual partners using social media because observing other people doing it	3.4749	1.39102	358
I have learned how to make money by giving sexual pleasures via social media through observing others	3.5712	1.29580	358
I smoke because of the information I have consumed over time via social media	2.9483	1.36050	358
I use drugs because of the information I have consumed over time via social media	3.3994	1.36624	358
I drink alcohol because of the information I have consumed over time via social media	3.5461	1.30125	358
I use pornography because of the information I have consumed over time via social media	3.2430	1.36160	358
I am gay because of the information I have consumed over time via social media	3.8855	1.21245	358
I have multiple sex partners because of the information I consume via social media	4.0265	1.08723	358
I know of someone who obtained sex via social media	3.8897	1.23203	358

I know of someone who engages in commercial sex via social media	4.0321	1.07412	358
Average	3.6779	1.186	358

The results presented in Table 40 reveal that only 18 out of the 25 items were retained to measure Health Behavior. On average, the respondents agreed that the 18 items measured Health Behavior (Mean=3.6779, SDV=1.186).

The respondents strongly agreed that they have the desire to do the health issues they see other influential people in society doing via social media (Mean=4.3603, SDV=0.69314), they train themselves on doing the health related things that they see and like on social media (Mean=4.2821, SDV=0.70613), they try to do the health issues as they are told to do via social media (Mean=4.236, SDV=0.78734), they know of someone who engages in commercial sex via social media (Mean=4.0321, SDV=1.07412) and also that they have multiple sex partners because of the information they consume via social media (Mean=4.0265, SDV=1.08723).

Further, the respondents agreed that they seek sexual pleasures via social media (Mean=3.9344, SDV=1.11735), they know of someone who obtained sex via social media (Mean=3.8897, SDV=1.23203), they are gay because of the information they have consumed over time via social media (Mean=3.8855, SDV=1.21245), they have learned how to smoke by observing other people's smoking images or videos via social media (Mean=3.6508, SDV=1.33458), they have learned how to consume alcohol by observing other people's images or videos drinking it via social media (Mean=3.5782, SDV=1.3091), they have learned how to make money by giving sexual pleasures via social media through observing others (Mean=3.5712, SDV=1.2958), they drink alcohol because of the information they have consumed over time via social media (Mean=3.5461, SDV=1.30125), they have learned how to access sexual partners using social media because of observing other people doing it (Mean=3.4749, SDV=1.39102), they use drugs because of the information they have consumed over time via social media (Mean=3.3994, SDV=1.36624), they have learned how to treat diseases via social media (Mean=3.3911, SDV=1.20311), they use pornography because of the information they have consumed over time via social media (Mean=3.243, SDV=1.3616).

The respondents were however not sure if they smoke because of the information they have consumed over time via social media (Mean=2.9483, SDV=1.3605) and also if they have acquired health skills via social media (Mean=2.7528, SDV=1.51498).

4.8.2 Communalities test for Health Behavior

In addition the above descriptive, Communalities and determinant tests were used to examine convergent validity of Health Behavior as seen in Table 41.

Table 41: Communalities for Health Behavior

	Initial	Extraction
I have acquired health skills via social media	1.000	.819
I have learned how to treat diseases via social media	1.000	.721
I have the desire to do the health issues I see other influential people in society doing via social media	1.000	.802
I train myself on doing the health related things that I see and like on social media	1.000	.847
I try to do the health issues as I am told to do via social media	1.000	.805
I seek sexual pleasures via social media	1.000	.767
I have learned how to smoke by observing other people's smoking images or videos via social media	1.000	.856
I have learned how to consume alcohol by observing other people's images or videos drinking it via social media	1.000	.787
I have learned how to access sexual partners using social media because observing other people doing it	1.000	.585
I have learned how to make money by giving sexual pleasures via social media through observing others	1.000	.831
I smoke because of the information I have consumed over time via	1.000	.831

social media		
I use drugs because of the information I have consumed over time via social media	1.000	.826
I drink alcohol because of the information I have consumed over time via social media	1.000	.744
I use pornography because of the information I have consumed over time via social media	1.000	.643
I am gay because of the information I have consumed over time via social media	1.000	.869
I have multiple sex partners because of the information I consume via social media	1.000	.966
I know of someone who obtained sex via social media	1.000	.818
I know of someone who engages in commercial sex via social media	1.000	.967

Results in Table 41 above reveal that all the items measured Health Behavior since they all have factor loadings above 0.40 and determinant of 6.806E-011. Hence convergent validity was achieved on Health Behavior.

4.8.3 Rotated Component Matrix for Health Behavior

Rotated Component Matrix shows that all the four components explained Health Behavior namely; observational learning (Percentage Total Variance=37.207), Moral Degeneration (Percentage Total Variance=55.107), Practice (Percentage Total Variance=70.440) and Skills (Percentage Total Variance=80.477). Hence discriminant validity was achieved. Table 42 presents the results.

Table 42: Rotated Component Matrix for Health Behavior

	Component			
	Observational learning	Moral degeneration	Practice	Skills

I have learned how to smoke by observing other people's smoking images or videos via social media	.869			
I use drugs because of the information I have consumed over time via social media	.865			
I have learned how to make money by giving sexual pleasures via social media through observing others	.836			
I smoke because of the information I have consumed over time via social media	.829			
I have learned how to consume alcohol by observing other people's images or videos drinking it via social media	.815			
I seek sexual pleasures via social media	.739			
I use pornography because of the information I have consumed over time via social media	.710			
I drink alcohol because of the information I have consumed over time via social media	.704			
I know of someone who obtained sex via social media	.692			
I have learned how to access sexual partners using social media because observing other people doing it	.632			
I know of someone who engages in commercial sex via social media		.886		
I have multiple sex partners because of the information I		.884		

consume via social media				
I am gay because of the information I have consumed over time via social media		.721		
I train myself on doing the health related things that I see and like on social media			.852	
I have the desire to do the health issues I see other influential people in society doing via social media			.832	
I try to do the health issues as I am told to do via social media			.788	
I have acquired health skills via social media				.901
I have learned how to treat diseases via social media				.820
Eigen Value	6.697	3.222	2.760	1.807
Total variance	37.207	17.900	15.333	10.037
Percentage Total Variance	37.207	55.107	70.440	80.477

The following section presents descriptive statistics of demographics, including gender, age of respondents, levels of education, marital status and country of residence. We also present data on the respondents knowledge and usability of social media in health including, knowledge of social media, usage of social media, social media platforms, social media usage duration, usage of social media to access health related information, purpose of social media use, devices used, and type of information shared and accessed via social media.

4.9.1 Gender

Data were gathered about respondents' gender and analyzed using frequencies and percentages as seen in Table 43:

Table 43: Respondents' gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	136	38.0	38.0	38.0
	Male	222	62.0	62.0	100.0
	Total	358	100.0	100.0	

Results in Table 43 show that most respondents were male (Freq=222, 62%). Only 136 representing 38% were female respondents.

4.9.2 Age group

Descriptive statistics were used to examine the respondents age grouped in five categories as seen in Table 44:

Table 44: Respondents' age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 20 years	4	1.1	1.1	1.1
	20-29 years	125	34.9	34.9	36.0
	30-39 years	174	48.6	48.6	84.6
	40-49 years	53	14.8	14.8	99.4
	50 years and above	2	.6	.6	100.0
	Total	358	100.0	100.0	

Results in Table 44 reveal that most respondents were 30-39 years old (freq=174, 49%). This was followed by age group 20-29 years (freq=125, 35%), and 40-49 years (freq=53, 15%). Only 4 respondents constituting 1% and 2 respondents constituting 0.6% were below 20 years and 50 years and above respectively.

4.9.3 Level of education

Descriptive statistics were used to examine respondents' level of education. Table 45 presents the results.

Table 45: Level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary	8	2.2	2.2	2.2
	Secondary	12	3.4	3.4	5.6
	Certificate	35	9.8	9.8	15.4
	Diploma	40	11.2	11.2	26.5
	Bachelors	120	33.5	33.5	60.1
	Masters	132	36.9	36.9	96.9
	PhD	11	3.1	3.1	100
	Total	358	100	100	

Results in Table 45 show that most respondents had masters degrees (Freq=132, 37%), followed by those with bachelors' degrees (freq=120, 34%). Those with diplomas were 40 (11%), those with certificates were 35 (10%), while those with secondary level education were 12(3%). Only 11(3%) respondents were PhD level while 8 (2%) were primary school level educated.

4.9.4 Marital status

Descriptive statistics were also used to examine the marital status of respondents as seen in Table 4.6.

Table 46: Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	204	57	57	57
	Married	143	39.9	39.9	96.9
	Divorced	11	3.1	3.1	100
	Total	358	100	100	

Results in Table 46 show that most respondents were single (freq=204, 57%), followed by those who were married (freq=143, 40%). Only 11(3%) respondents were divorced.

4.9.5 Country of residence

Descriptive statistics were used to analyze the country where respondents resided. Table 47 presents the results.

Table 47: Country of residence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uganda	129	36.0	36.0	36.0
	Nigeria	125	34.9	34.9	70.9
	Cameroon	102	28.5	28.5	99.4
	Other	2	0.6	0.6	100.0
	Total	358	100	100	

Results in Table 47 reveal that most respondents resided in Uganda (freq=129, 36%). This was followed by Nigeria (freq=125, 35%) and then Cameroon (freq=102, 29%). Some 2 respondents (0.6%) resided elsewhere.

4.9.6 Knowledge of social media

Descriptive statistics were also used to analyze the respondents' knowledge of social media as seen in Table 48.

Table 48: Knowledge of social media

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not knowledgeable	6	1.7	1.7	1.7
	Somewhat knowledgeable	8	2.2	2.2	3.9
	Knowledgeable	51	14.2	14.2	18.2
	Quite knowledgeable	192	53.6	53.6	71.8
	Very knowledgeable	101	28.2	28.2	100.0
	Total	358	100	100	

Results in Table 48 show that most respondents were quite knowledgeable about social media (freq=192, 53.6%). A total of 101 respondents (28.2%) were very knowledgeable while 51 (14.2%) were knowledgeable. On 8 respondents (2.2%) and 6 respondents (1.7%) were somewhat knowledgeable and not knowledgeable respectively.

4.9.7 Usage of social media

Data were analyzed to establish if respondents have ever used social media. Table 49 presents the results.

Table 49: Usage of social media

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	358	100	100	100
	No	0	0	0	100
	Total	358	100	100	

Results in Table 49 show that all respondents had ever used social media (freq=358, 100%).

4.9.8 Social media platforms

Descriptive statistics were used to examine the social media platforms used by the respondents as seen in Table 50.

Table 50: Social media platforms

	N	Min.	Max.	Mean	Std. Deviation
I use and or have ever used Facebook	358	2.00	5.00	4.5028	.65572
I use and or have ever used I use WhatsApp	358	2.00	5.00	4.6061	.60221
I use and or have ever used WordPress (blogs)	358	1.00	5.00	3.3855	1.37688
I use and or have ever used LinkedIn	358	1.00	5.00	3.5698	1.49298
I use and or have ever used Twitter	358	1.00	5.00	3.3944	1.65245
I use and or have ever used Skype	358	1.00	5.00	4.3827	.97672
I use and or have ever used YouTube	358	1.00	5.00	4.5223	.86209

I use and or have ever used Wikipedia	358	2.00	5.00	4.4462	.93768
I use and or have ever used MySpace	358	1.00	5.00	3.9637	1.29482
I use and or have ever used Messenger	358	1.00	5.00	4.1173	1.30188
Valid N (listwise)	358				

Results in Table 50 reveal that respondents strongly agreed that they use and or have ever used WhatsApp (Mean=4.6061, SDV=.60221); they use and or have ever used Facebook (Mean=4.5028, SDV=.65572); they use and or have ever used YouTube (Mean=4.5223, SDV=.86209); they use and or have ever used Wikipedia (Mean=4.4462, SDV=.93768); they use and or have ever used Skype (Mean=4.3827, SDV=.97672); they use and or have ever used Messenger (Mean=4.1173, SDV=1.30188).

Respondents also agreed that they use and or have ever used MySpace (Mean=3.9637, SDV=1.29482); they use and or have ever used LinkedIn (Mean=3.5698, SDV=1.49298); they use and or have ever used Twitter (Mean=3.3944, SDV=1.65245); they use and or have ever used WordPress (blogs) (Mean=3.3855, SDV=1.37688).

4.9.9 Social media usage duration

Descriptive statistics were used to examine the duration that respondents had taken using social media. Table 51 shows the results.

Table 51: Social usage duration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2 years	74	20.7	20.7	20.7
	2 to 4 years	63	17.6	17.6	38.3

	5 years and above	221	61.7	61.7	100.0
	Total	358	100	100	

Results in Table 51 show that most respondents had used social media for a period of 6 years and above (freq=221, 62%). A total of 74 (21%) respondents had used social media for less than 2 years, while 63 (18%) respondents had used social media for 2 to 4 years.

4.9.10 Usage of social media to access health related information

Descriptive statistics were used to determine if respondents used social media to access health related information. Table 52 presents the findings.

Table 52: Usage of social media to access health related information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	320	89.4	89.4	89.4
	No	38	10.6	10.6	100.0
	Total	358	100	100	

Results in Table 42 show that 320 respondents (89%) had ever used social media to access health related information, while only 38 (11%) had never.

4.9.11 Purpose of social media use

Descriptive means were used to examine the purpose of usage of social media by respondents. Table 53 presents the results.

Table 53: Purpose of social media use

	N	Min.	Max.	Mean	Std.
--	---	------	------	------	------

					Deviation
I use social media to socializing with friends	225	1.00	5.00	2.9244	1.72134
I use social media to connecting with new friends	311	1.00	5.00	3.8103	1.23629
I use social media to in business	356	2.00	5.00	4.5899	.52574
I use social media to for leisure and entertainment	356	2.00	5.00	4.7107	.47233
I use social media to for learning	356	1.00	5.00	3.7051	1.05086
I use social media to accessing news	356	1.00	5.00	4.6124	.66397
Valid N (listwise)	225				

Results in Table 53 show that respondents strongly agreed that they use social media for leisure and entertainment (Mean=4.7107, SDV=.47233); they use social media to accessing news (Mean=4.6124, SDV=.66397); they use social media to in business (Mean=4.5899, SDV=.52574).

The respondents agreed that they use social media to connecting with new friends (Mean=3.8103, SDV=1.23629), that they use social media for learning (Mean=3.7051, SDV=1.05086) and also that they were uncertain if they used social media to socializing with friends (Mean=2.9244, SDV=1.72134).

4.9.12 Devices used

Descriptive means were used to examine the devices used to access social media. Table 54 presents the results.

Table 54: Devices used

	N	Min.	Max.	Mean	Std.

					Deviation
I use a Smartphone to access social media	358	1.00	5.00	4.3268	.83139
I use a Laptop computer to access social media	358	4.00	5.00	4.6564	.47557
I use a Desktop computer to access social media	358	1.00	5.00	4.5251	.78728
I use an Ipad to access social media	358	1.00	45.00	4.9804	6.18774
I use a Note pad to access social media	336	1.00	5.00	3.0417	1.41571
I use a Tablet to access social media	358	1.00	5.00	2.5391	1.30390
Valid N (listwise)	336				

Results in Table 54 show that respondents strongly agreed that they used Ipad to access social media (Mean=4.9804, SDV=6.18774); they used laptops computer to access social media (Mean=4.6564, SDV=.47557); they used desktops computer to access social media (Mean=4.5251, SDV=.78728); the used smartphones to access social media (Mean=4.3268, SDV=.83139).

They also agreed that they used note pads to access social media (Mean=3.0417, SDV=1.41571) and also that they used Tablets to access social media (Mean=2.5391, SDV=1.30390).

4.9.13 Type of information

Descriptive means were used to analyze the type of information that respondents accessed via social media. Table 55 presents the results.

Table 55: Type of information

	N	Min.	Max.	Mean	Std.

					Deviation
I get general health information via social media	348	1.00	5.00	4.3678	.85374
I get information on alcohol via social media	348	1.00	5.00	3.3506	1.50430
I get information on sex and sexuality via social media	348	1.00	5.00	4.0029	1.38018
I get information on drugs via social media	348	1.00	5.00	3.8391	1.23469
I get information on diet via social media	348	1.00	5.00	4.2902	1.10759
I get information on treatment of diseases via social media	348	1.00	5.00	3.8736	1.33716
I get information on mental health via social media	348	1.00	5.00	3.3621	1.42677
I get information on HIV/AIDS and other chronic diseases such as cancer via social media	348	1.00	5.00	3.7500	1.41141
Valid N (listwise)	348				

Results in Table 55 show that respondents strongly agreed that they get general health information via social media (Mean=4.3678, SDV=.85374); they get information on diet via social media (Mean=4.2902, SDV=1.10759); they get information on sex and sexuality via social media (Mean=4.0029, SDV=1.38018).

They also agreed that they get information on treatment of diseases via social media (Mean=3.8736, SDV=1.33716); they get information on drugs via social media (Mean=3.8391, SDV=1.23469); they get information on HIV/AIDS and other chronic diseases such as cancer via social media (Mean=3.7500, SDV=1.41141); they get information on mental health via social media (Mean=3.3621, SDV=1.42677); they get information on alcohol via social media (Mean=3.3506, SDV=1.50430).

The following section presents results of correlation and Multiple Hierarchical Regression analysis in trying to investigate objective one to three where different hypotheses on relationships were stated.

4.10 Correlation and regression analysis

Correlation analysis and regression were used to examine objective 1 to 3 as manifested in H1a to H3e listed below:

***H1a:** Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Saharan Africa.*

***H1b:** External Locus of Control positively affects the Health Behavior of social media users in Sub-Saharan Africa.*

***H2a:** Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa.*

***H2b:** Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa.*

***H2c:** Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa.*

***H2d:** Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa.*

***H3a:** Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Saharan Africa.*

***H3b:** Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.*

***H3c:** Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa.*

***H3d:** Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.*

H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa

The results for correlation are presented in Table 56 below.

Table 56: Correlation results

	CF	ILC	ELC	SR	AS	OE	BI	HB
Cognitive Factors (CF)	1							
Internal Locus of Control (ILC)	.351**	1						
External Locus of Control (ELC)	.089	.402**	1					
Self-Regulation (SR)	.245**	.323**	.459**	1				
Age Sensitivity (AS)	.311**	-.021	-.003	.427**	1			
Outcome Expectation (OE)	.162**	.077	-.285**	.010	.385**	1		
Behavioral Intention (BI)	.131*	.043	-.160**	.116*	.399**	.902**	1	
Health Behavior (HB)	.194**	.289**	.336**	.443**	.226**	.297**	.372**	1
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Correlation results in Table 56 reveal that Outcome Expectations has a negative significant relationship with External locus of control ($r=-.285^{**}$); External locus of control has a positive significant relationship with Health behavior ($.336^{**}$); Cognitive factors has a positive significant relationship with Health Behavior ($r=.194^{**}$); Cognitive factors ha a positive significant relationship with Internal Locus of Control ($r=.351^{**}$); Internal Locus of Control has no significant relationship with Behavioral Intention ($r=.043$); Behavioral Intention has a positive significant relationship with Health Behavior ($r=.372^{**}$); Cognitive factors has no significant relationship with External Locus of Control ($r=.089$); Cognitive factors has a positive significant effect on Self-Regulation ($r=.245^{**}$); Self-Regulation has a positive significant effect on External Locus of Control ($r=.459^{**}$); Self-Regulation has a positive significant influence on Health Behavior ($r=.443^{**}$); Age Sensitivity has a positive significant influence on Health Behavior ($r=.226^{**}$).

4.9.11 Multiple hierarchical regressions results

The results for Multiple Hierarchical Regressions models are presented in Tables 57 to 61 as follows:

Table 57: Multiple Hierarchical Regressions for External Locus of Control

Variable	Model 1		Model 2		Model 3		Model 4	
	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	2.943**		3.369**		2.73**		1.517**	
Gender	-0.389**	-0.245**	-0.334**	-0.211**	-0.388**	-0.245**	-0.199*	-0.125*
Age	0.094	0.088	0.049	0.046	0.041	0.038	-0.012	-0.011
Education	0.085**	0.2**	0.07**	0.164**	0.064**	0.149**	0.03	0.07
Marital Status	0.188*	0.132**	0.177*	0.124*	0.114	0.081	0.082	0.058
Country of Residence	0.334**	0.298**	0.318**	0.284**	0.338**	0.301**	0.308**	0.275**
Outcome Expectations			-0.1**	-0.175**	-0.118**	-0.206**	-0.136**	-0.238**
Cognitive Factors					0.215**	0.163**	0.085	0.064
Self-Regulation							0.471**	0.387**
R	.461		.489		.512		.620	
R²	.213		.240		.262		.384	
Adj R²	.202		.227		.248		.370	
R² Change	.213		.027		.023		.122	
F Change	19.029		12.352		10.780		69.202	
Sig. F	.000		.000		.001		.000	
F	19.029		18.428		17.775		27.234	
Sig.	.000		.000		.000		.000	
	** .Significant at 0.01							
	* .Significant at 0.05							

Table 58: Multiple Hierarchical Regressions for Internal Locus of Control

Variable	Model 1		Model 2	
	B	Beta	B	Beta
(Constant)	4.386**		3.193**	
Gender	-0.041	-0.038	-0.148*	-0.134*
Age	-0.156**	-0.211**	-0.157**	-0.212**
Education	-0.004	-0.014	-0.01	-0.034
Marital Status	0.206**	0.209**	0.105	0.107

Country of Residence	0.065	0.084	0.102**	0.132**
Cognitive Factors			0.358**	0.392**
R	.266		.456	
R²	.071		.208	
Adj R²	.058		.194	
R² Change	.071		.137	
F Change	5.376		60.598	
Sig. F	.000		.000	
F	5.376		15.338	
Sig.	.000		.000	
	**Significant at 0.01			
	*Significant at 0.05			

Table 59: Multiple Hierarchical Regressions for Self-Regulation

	Model 1		Model 2	
Variable	B	Beta	B	Beta
(Constant)	3.659**		2.684**	
Gender	-.298**	-.229**	-.385**	-.295**
Age	.094	.107	.094*	.107*
Education	.070**	.201**	.066**	.187**
Marital Status	.142*	.122*	.060	.051
Country of Residence	.029	.031	.059	.064
Cognitive Factors			.293**	.270**
R	.338		.424	
R²	.114		.179	
Adj R²	.102		.165	
R² Change	.114		.065	
F Change	9.103		27.766	
Sig. F	.000		.000	
F	9.103		12.790	
Sig.	.000		.000	

	**. Significant at 0.01
	*. Significant at 0.05

Table 60: Multiple Hierarchical Regressions for Behavioral Intention

Variable	Model 1		Model 2	
	B	Beta	B	Beta
(Constant)	3.629**		3.101**	
Gender	.128	.048	.133	.050
Age	-.198	-.111	-.179	-.100
Education	-.101**	-.142**	-.101**	-.141**
Marital Status	-.196	-.083	-.220	-.093
Country of Residence	.007	.004	.000	.000
Internal Locus of Control			.120	.050
R	.202		.208	
R²	.041		.043	
Adj R²	.027		.027	
R² Change	.041		.002	
F Change	2.996		.851	
Sig. F	.012		.357	
F	2.996		2.637	
Sig.	.012		.016	
	**. Significant at 0.01			
	*. Significant at 0.05			

Table 61: Multiple Hierarchical Regressions for Health Behavior

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	4.037**		3.029**		2.255**		1.547**		1.149**		1.143**	
Gender	-0.328**	-0.221**	-0.418**	-0.282**	-0.277**	-0.187**	-0.252**	-0.17**	-0.195**	-0.132**	-0.182*	-0.123*
Age	0.018	0.018	0.018	0.018	-0.012**	-0.012**	0.03	0.03	0.01	0.01	0.016	0.016
Education	0.03	0.076	0.025	0.063	-0.001	-0.003	0.02	0.049	0.008	0.02	0.006	0.016
Marital Status	0.019	0.015	-0.066	-0.05	-0.112	-0.084	-0.046	-0.035	-0.056	-0.042	-0.069	-0.052
Country of Residence	-0.077	-0.073	-0.045	-0.043	-0.158**	-0.151**	-0.192**	-0.183**	-0.176**	-0.168**	-0.182**	-0.174**
Cognitive Factors			0.303	0.246	0.25**	0.203**	0.144*	0.117*	0.096	0.078	0.113	0.092
External Locus of Control					0.322**	0.345**	0.385**	0.412**	0.301**	0.322**	0.293**	0.314**
Behavioral Intention							0.242**	0.432**	0.219**	0.39**	0.232**	0.414**
Self-Regulation									0.243**	0.213**	0.285**	0.251**
Age Sensitivity											-0.062	-0.082
R	.240		.334		.451		.611		.635		.639	
R²	.058		.111		.203		.373		.404		.408	
Adj R²	.044		.096		.187		.359		.388		.391	
R² Change	.058		.054		.092		.170		.030		.004	
F Change	4.303		21.214		40.460		94.569		17.791		2.388	
Sig. F	.001		.000		.000		.000		.000		.123	
F	4.303		7.328		12.767		25.979		26.180		23.895	
Sig.	.001		.000		.000		.000		.000		.000	
	** .Significant at 0.01											
	* . Significant at 0.05											

4.9.12 The relationship between Outcome Expectations and External Locus of Control

Correlation results in Table 56 reveal that Outcome Expectations has a negative significant relationship with External Locus of Control ($r=-.285^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 57 model 2 show that outcome expectation significantly predicted External Locus of Control (Beta=-0.175**). Outcome expectation together with control variables predicted 22.7% of External Locus of Control (Adjusted $R^2=.227$), while Outcome expectation alone predicted 2.7% of External Locus of Control (R^2 Change=.027). This implies that increasing Outcome Expectations reduces External Locus of Control. This finding is in disagreement with H1a stating that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.

4.9.13 The relationship between External Locus of Control and Health Behavior

Correlation results in Table 56 reveal that External Locus of Control has a positive significant relationship with Health Behavior ($r=.336^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 61, model 3 show that External Locus of Control significantly predicted Health Behavior (Beta=0.345**). External Locus of Control together with control variables and Cognitive Factors explained 18.7% of variance in Health Behavior (Adjusted $R^2=.187$). However, External Locus of Control alone predicted 9.2% of Health Behavior (R^2 Change=.092). This means that increasing External Locus of Control also increases Health Behavior. Therefore H1b which stated that External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa was accepted.

4.9.14 The relationship between Cognitive Factors and Health Behavior

Results in Table 56 also show that Cognitive Factors have a positive significant relationship with Health Behavior ($r=.194^{**}$, $P<.01$). However, Multiple Hierarchical Regressions results in Table 61, model 2 show that Cognitive Factors was not a significant predictor of Health Behavior

(Beta=0.246). Cognitive Factors together with control variables explained 9.6% of variance in Health Behavior (Adjusted $R^2=.096$). However, Cognitive Factors alone predicted only 5.4% of Health Behavior (R^2 Change=.054). This finding reveals that although an increase in Cognitive Factors increased Health Behavior, Cognitive Factors was a weak predictor of Health Behavior. Therefore, H2a stating that Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa was rejected.

4.9.15 The relationship between Cognitive Factors and Internal Locus of Control

Results in Table 56 indicate that Cognitive Factors have a positive significant relationship with Internal Locus of Control ($r=.351^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 58, model 2 show that Cognitive Factors significantly predicted Internal Locus of Control (Beta=0.392**). Cognitive Factors together with control variables explained 19.4% of variance in Internal Locus of Control (Adjusted $R^2=.194$). However, Cognitive Factors alone predicted only 13.7% of Internal Locus of Control (R^2 Change=.137). This finding means that increasing Cognitive Factors also increases Internal Locus of Control. The finding is in line with H2b that Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa.

4.9.16 The relationship between Internal Locus of Control and Behavioral Intention

Results in Table 56 show that Internal Locus of Control has no significant relationship with Behavioral Intention ($r=.043$, $P>.05$). However, Multiple Hierarchical Regressions results in Table 60, model 2 show that Internal Locus of Control was not a significant predictor Behavioral Intention (Beta=.050). Internal Locus of Control together with control variables explained 2.7% of variance in Behavioral Intention (Adjusted $R^2=.027$). Internal Locus of Control alone predicted only 0.2% of Behavioral Intention (R^2 Change=.002). This means a change in Internal Locus of Control had no effect on Behavioral Intention. Therefore H2c stating that Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa was rejected.

4.9.17 The relationship between Behavioral Intention and Health Behavior

The results in Table 56 show that Behavioral Intention has a positive significant relationship with Health Behavior ($r=.372^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 61, model 4 show that Behavioral Intention significantly predicted Health Behavior (Beta=0.432**). Behavioral Intention together with control variables, Cognitive Factors and External Locus of Control explained 35.9% of variance in Health Behavior (Adjusted $R^2=.359$). Behavioral Intention alone predicted 17% of Health Behavior (R^2 Change=.170). This finding implies that a positive change in Behavioral Intention results in a corresponding positive change in Health Behaviors. Therefore H2d stating that Behavioral Intention positively affects Health Behavior of social media users in Sub-Sahara Africa was accepted.

4.9.18 The relationship between Cognitive Factors and External Locus of Control

Results in Table 56 show that Cognitive Factors does not have a significant relationship with External Locus of Control ($r=.089$, $P>.05$). Further, Multiple Hierarchical Regressions results in Table 57, model 3 show that Cognitive Factors significantly predicted External Locus of Control (Beta=0.163**). Cognitive Factors together with control variables and Outcome Expectations explained 24.8% of variance in External Locus of Control (Adjusted $R^2=.248$). However, Cognitive Factors alone predicted only 2.3% of External Locus of Control (R^2 Change=.023). Although the beta value was significant, Pearson correlation coefficient (r) with a P value above 0.5 meant that a change in Cognitive Factors has no effect on External Locus of Control. Further, R^2 Change of .023 meant a contribution of only 2.3, which is insignificant. Therefore H3a stating that Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Sahara Africa was rejected.

4.9.19 The relationship between Cognitive Factors and Self-Regulation

Results in Table 56 show that Cognitive Factors has a significant positive relationship with Self-Regulation ($r=.245^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 59, model 2 show that Cognitive Factors significantly predicted Self-Regulation ($\text{Beta}=.270^{**}$). Cognitive Factors together with control variables explained 16.5% of variance in Self-Regulation (Adjusted $R^2=.165$). Cognitive Factors alone predicted 6.5% of Self-Regulation (R^2 Change=.065). This implies that increasing Cognitive Factors also increases Self-Regulation. Hence, H3b stating that Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa was accepted.

4.9.20 The relationship between Self-Regulation and External Locus of Control

Results in Table 56 show that Self-Regulation has a positive significant relationship with External Locus of Control ($r=.459^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 57, model 4 show that Self-Regulation significantly predicted External Locus of Control ($\text{Beta}=0.387^{**}$). Self-Regulation together with control variables, Outcome Expectations and Cognitive Factors explained 37% of variance in External Locus of Control (Adjusted $R^2=.370$). Self-Regulation alone predicted 12.2% of External Locus of Control (R^2 Change=.122). This finding suggests that increasing Self-Regulation also increases External Locus of Control. Therefore H3c stating that Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa was accepted.

4.9.21 The relationship between Self-Regulation and Health Behavior

Findings in Table 56 show that Self-Regulation has a positive significant relationship with Health Behavior ($r=.443^{**}$, $P<.01$). Further, Multiple Hierarchical Regressions results in Table 61, model 5 show that Self-Regulation significantly predicted Health Behavior ($\text{Beta}=0.213^{**}$). Self-Regulation together with control variables, Cognitive Factors, External Locus of Control and Behavioral Intention explained 38.8% of variance in Health Behavior (Adjusted $R^2=.388$). Self-Regulation alone predicted 3% of Health Behavior (R^2 Change=.030). These findings imply that an increase in Self-Regulation also increases Health Behavior. Therefore H3d that Self-

Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa was accepted.

4.9.22 The relationship between Age Sensitivity and Health Behavior

Results in Table 56 indicated that Age Sensitivity has a positive significant influence on the Health Behavior ($r=.226^{**}$, $P<.01$). However, Multiple Hierarchical Regressions results in Table 61, model 6 show that Age Sensitivity did not significantly predicted Health Behavior (Beta=-0.082). Age Sensitivity together with control variables, Cognitive Factors, External Locus of Control, Behavioral Intention and Self-Regulation explained 39.1% of variance in Health Behavior (Adjusted $R^2=.391$). Age Sensitivity alone predicted 0.4% of Health Behavior (R^2 Change=.004). Although Pearson correlation coefficient (r) indicated a positive significant relationship, Beta value was insignificant. Further, the prediction power of 0.4% is very low. Therefore a change in Age Sensitivity did not cause a significant change in Health Behavior. Hence H3e stating that Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa was rejected.

4.10 Multiple hierarchical regression analysis for answering research questions 1-3

Multiple Hierarchical Regression analysis was used to examine the predicting power of the independent variables on the dependent variable. This was conducted for objective one to three.

Objective 1: *To exam the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa.*

Question 1: *What is the effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa?*

Multiple Hierarchical Regression analysis was used to determine the predicting power of outcome expectation and External Locus of Control on health. Gender, Age, Level of education,

Marital Status, and Country of Residence were treated as extraneous or control variables. Table 62 presents the results.

Table 62: Regression results for objective one

Variable	Model 1		Model 2		Model 3	
	B	Beta	B	Beta	B	Beta
(Constant)	4.037**		3.16**		1.70**	
Gender	-0.33**	-0.22**	-0.44**	-0.30**	-0.30**	-0.20**
Age	0.02	0.02	0.11*	0.11*	0.09	0.09
Education	0.03	0.08	0.06*	0.16*	0.03	0.08
Marital Status	0.02	0.02	0.04	0.03	-0.04	-0.03
Country of Residence	-0.08	-0.07	-0.05	-0.04	-0.18**	-0.18**
Outcome expectation			0.21**	0.39**	0.25**	0.47**
External Locus of Control					0.43**	0.46**
R	.240		.434		.594	
R²	.058		.188		.352	
Adj R²	.044		.175		.339	
R² Change	.058		.131		.164	
F Change	4.303		56.560		88.619	
Sig. F	.001		.000		.000	
F	4.303		13.579		27.204	
Sig.	.001		.000		.000	
	** .Significant at 0.01					
	* . Significant at 0.05					

As seen in Table 62, results in model 1 show that Control variables including Gender, Age, Education, Marital status, and Country of residence predict 4.4% of Health Behavior (Adj R² =0.044). The relationship between Gender and Health Behavior is significant (Beta=-0.22**, P<.01). The relationship between Age and Health Behavior is not significant (Beta=0.02). The relationship between level of education and Health Behavior is not significant (Beta=0.08). The

relationship between, Marital Status and Health Behavior is not significant (Beta=0.02). The relationship between Country of Residence and Health Behavior is not significant (Beta=-0.07).

Results in model 2 reveal that control variables together with Outcome Expectations predict 17.5% of Health Behavior (Adj $R^2=.175$) while Outcome Expectation alone predicts 13.1% of Health Behavior (R^2 Change = .131). Further, the relationship between Outcome Expectation and Health Behavior is significant at 99% confidence level (Beta=0.39**).

Results in model 3 reveal that control variables, Outcome expectation and External Locus of Control combined predict 33.9% of Health Behavior (Adj $R^2=.339$). However, External Locus of Control alone predicts 16.4% of Health Behavior (R^2 Change=.164). The results also show that External Locus of Control has a significant relationship with Health Behavior at 99% confidence level (Beta=0.46**).

The histogram in Appendix III reveals that data for this regression was normally distributed given that the largest area of the chart is under the curve with a Mean of 3.67 and SDV of 0.99. Further, the Normal P-P plot in Appendix IV shows that data were neatly converged along the line- indicating normal distribution.

Given the above, we see that Outcome Expectations and External Locus of Control together with control variables contributed 33.9% of the changes in Health Behavior of social media users in Sub-Sahara Africa.

Objective 2: *To analyze the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Sahara Africa.*

Question 2: *What is the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Sahara Africa?*

Further, Multiple Hierarchical Regression analysis was used to analyze the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior

of social media users in Sub-Sahara Africa. The control variables were also considered in the analysis. Table 63 presents the results.

Table 63: Regression results for objective two

Variable	Model 1		Model 2		Model 3		Model 4	
	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	4.037**		3.029**		2.024**		1.494**	
Gender	-0.328**	-0.221**	-0.418**	-0.282**	-0.371**	-0.250**	-0.372**	-0.251**
Age	0.018	0.018	0.018	0.018	0.067	0.067	0.111*	0.111
Education	0.030	0.076	0.025	0.063	0.028	0.071	0.052**	0.130**
Marital Status	0.019	0.015	-0.066	-0.050	-0.099	-0.074	-0.034	-0.026
Country of Residence	-0.077	-0.073	-0.045	-0.043	-0.078	-0.074	-0.089	-0.085
Cognitive Factors			0.303**	0.246**	0.190**	0.154**	0.102	0.082
Internal Locus of Control					0.315**	0.233**	0.325**	0.241**
Behavioral Intention							0.215**	0.383**
R	.240		.334		.393		0.539	
R²	.058		.111		.154		.291	
Adj R²	.044		.096		.137		.275	
R² Change	.058		.054		.043		.136	
F Change	4.303		21.214		17.819		67.117	
Sig. F	.001		.000		.000		.000	
F	4.303		7.328		9.127		17.885	
Sig.	.001		.000		.000		.000	
	** .Significant at 0.01							
	* . Significant at 0.05							

Results in Table 63, results in model 1 show that Control variables including Gender, Age, Education, Marital status, and Country of residence predict 4.4% of Health Behavior (Adj R² =0.044). The relationship between Gender and Health Behavior is significant (Beta=-0.221**, P<.01). The relationship between Age and Health Behavior is not significant (Beta=0.018). The relationship between level of education and Health Behavior is not significant (Beta=0.076). The relationship between, Marital Status and Health Behavior is not significant (Beta=0.015). The

relationship between Country of Residence and Health Behavior is not significant (Beta=-0.073).

Results in model 2 reveal that control variables together with Cognitive Factors predict 9.6% of Health Behavior (Adj $R^2 = .096$) while Cognitive Factors alone predicts 5.4% of Health Behavior (R^2 Change = .054). Further, the relationship between Cognitive Factors and Health Behavior is significant at 99% confidence level (Beta=0.246**).

Results in model 3 reveal that control variables together with Cognitive Factors and Internal Locus of Control predict 13.7% of Health Behavior (Adj $R^2 = .137$) while Internal Locus of Control alone predicts 4.3% of Health Behavior (R^2 Change = .043). Further, the relationship between Internal Locus of Control and Health Behavior is significant at 99% confidence level (Beta=0.233**).

Results in model 4 reveal that control variables together with Cognitive Factors, Internal Locus of Control and Behavioral Intention predict 28% of Health Behavior (Adj $R^2 = .275$) while Behavioral Intention alone predicts 13.6% of Health Behavior (R^2 Change = .136). Further, the relationship between Behavioral Intention and Health Behavior is significant at 99% confidence level (Beta=0.383**).

The histogram in Appendix V reveals that data for this regression was normally distributed given that the largest area of the chart is under the curve. Further, the Normal P-P plot in Appendix VI shows that data converged along the line- indicating normal distribution.

The above findings suggest that Cognitive Factors, Internal Locus of Control and Behavioral Intentions contributed 27.5% of the changes in the Health Behavior of social media users in Sub-Saharan Africa.

Objective 3: *To examine the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa.*

Question 3: *What is the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa?*

Multiple Hierarchical Regression analysis was used to investigate the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa. Extraneous / control variables included Gender, Age, Education, Marital Status and Country of Residence. Table 64 presents the results.

Table 64: Regression results for objective three

Variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	4.037**		3.029**		2.747**		1.825**		1.558**	
Gender	-0.328**	-0.221**	-0.418**	-0.282**	-0.419**	-0.283**	-0.252**	-0.17**	-0.202*	-0.136*
Age	0.018	0.018	0.018	0.018	0.002	0.002	-0.025	-0.025	-0.038	-0.038
Education	0.03	0.076	0.025	0.063	0.028	0.069	-0.003	-0.007	-0.013	-0.032
Marital Status	0.019	0.015	-0.066	-0.05	-0.027	-0.021	-0.085	-0.064	-0.102	-0.077
Country of Residence	-0.077	-0.073	-0.045	-0.043	-0.032	-0.031	-0.069	-0.066	-0.137**	-0.13**
Cognitive Factors			0.303**	0.246**	0.224**	0.182**	0.164*	0.133*	0.147*	0.119*
Age Sensitivity					0.148**	0.195**	0.024	0.031	0.054	0.071
Self-Regulation							0.432**	0.379**	0.312**	0.274**
External Locus of Control									0.221**	0.236**
R	.240		.334		.380		.489		.525	
R²	.058		.111		.145		.239		.275	
Adj R²	.044		.096		.128		.222		.257	
R² Change	.058		.054		.033		.095		.036	
F Change	4.303		21.214		13.635		43.430		17.279	
Sig. F	.001		.000		.000		.000		.000	
F	4.303		7.328		8.455		13.723		14.687	
Sig.	.001		.000		.000		.000		.000	
	** .Significant at 0.01									
	* . Significant at 0.05									

Results in Table 64, model 1 show that Control variables including Gender, Age, Education, Marital status, and Country of residence predict 4.4% of Health Behavior ($\text{Adj } R^2 = 0.044$). The relationship between Gender and Health Behavior is significant ($\text{Beta} = -0.221^{**}$, $P < .01$). The relationship between Age and Health Behavior is not significant ($\text{Beta} = 0.018$). The relationship between level of education and Health Behavior is not significant ($\text{Beta} = 0.076$). The relationship between Marital Status and Health Behavior is not significant ($\text{Beta} = 0.015$). The relationship between Country of Residence and Health Behavior is not significant ($\text{Beta} = -0.073$).

Results in model 2 reveal that control variables together with Cognitive Factors predict 9.6% of Health Behavior ($\text{Adj } R^2 = .096$) while Cognitive Factors alone predicts 5.4% of Health Behavior ($R^2 \text{ Change} = .054$). Further, the relationship between Cognitive Factors and Health Behavior is significant at 99% confidence level ($\text{Beta} = 0.246^{**}$).

Results in model 3 reveal that control variables together with Cognitive Factors and Age Sensitivity predict 12.8% of Health Behavior ($\text{Adj } R^2 = .128$) while Age Sensitivity alone predicts 3.3% of Health Behavior ($R^2 \text{ Change} = .033$). Further, the relationship between Age Sensitivity and Health Behavior is significant at 99% confidence level ($\text{Beta} = 0.195^{**}$).

Results in model 4 reveal that control variables together with Cognitive Factors, Age Sensitivity and Self-Regulation predict 22% of Health Behavior ($\text{Adj } R^2 = .222$) while Self-Regulation alone predicts 9.5% of Health Behavior ($R^2 \text{ Change} = .095$). Further, the relationship between Self-Regulation and Health Behavior is significant at 99% confidence level ($\text{Beta} = 0.379^{**}$).

Results in model 5 reveal that control variables together with Cognitive Factors, Age Sensitivity, Self-Regulation and External Locus of Control predict 26% of Health Behavior ($\text{Adj } R^2 = .257$) while External Locus of Control alone predicts 3.6% of Health Behavior ($R^2 \text{ Change} = .036$). Further, the relationship between External Locus of Control and Health Behavior is significant at 99% confidence level ($\text{Beta} = 0.236^{**}$).

The histogram in Appendix VII reveals that data for this regression was normally distributed given that the largest area of the chart is under the curve. Further, the Normal P-P plot in Appendix VIII shows that data converged along the line- indicating normal distribution.

The above findings reveal that Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control together with control variables explained 25.7% of the changes in the Health Behavior of social media users in Sub-Sahara Africa.

4.11 Testing for moderation

Objective 4: *To analyze the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.*

Question 4: *What is the moderation effect of Age Sensitivity on the relationship between Cognitive factors and Self-Regulation of social media users in Sub-Sahara Africa?*

4.11.1 Age Sensitivity moderating Cognitive Factors and Self-Regulation

Multiple Hierarchical Regression analysis was used to examine the moderating effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation. Table 65 presents the results.

Table 65: Age Sensitivity moderating Cognitive Factors and Self-Regulation

Model	Model 1		Model 2	
	B	Beta	B	Beta
(Constant)	2.489**		4.484**	
Cognitive Factors	0.134*	0.124*	-0.324	-0.299
Age Sensitivity	0.26**	0.388**	-0.277	-0.414
Cognitive Factors * Age Sensitivity			0.122*	1.021*

R	.443	.454^b
R²	.196	.206
Adj R²	.192	.199
R² Change	.196	.010
F Change	43.303	4.468
Sig. F	.000	.035
F	43.303	30.640
Sig.	.000	.000
	** .Significant at 0.01	
	* . Significant at 0.05	

Results in Table 65, model 1 reveal that the relationship between Cognitive Factors and Self-Regulation is significant at 95% confidence level (Beta=0.124*, P<0.5). Further, the relationship between Age Sensitivity and Self-Regulation is significant at 99% confidence level (Beta=0.388**). The predicting power of Cognitive Factors and Age Sensitivity on Self-Regulation is 19% (Adj R²= .192).

In model 2, the product of Cognitive Factors and Age Sensitivity contributes 19.9% of Self-Regulation (Adj R²=.199). However, Age Sensitivity has no significant relationship with Self-Regulation (Beta= 1.021*). Cognitive Factors also has no significant relationship with Self-Regulation (Beta= -0.299). There is also no significant relationship between Age Sensitivity and Self-Regulation (Beta=-0.414). However, Cognitive Factors * Age Sensitivity has a significant relationship with Self-Regulation (Beta=1.021*). This means that Age Sensitivity does not moderate the relationship between Cognitive Factors and Self-Regulation. For moderation to manifest, all the above relationships should be present and significant.

4.11.2 Testing for moderation effect using modgraph

To further examine the moderating effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation, Jose (2013) Modgraph was used. Results are presented in Table 66 and Figure 2.

Table 66: Coordinates for Age Sensitivity

3 x 3 Table Continuous			
	low	Med	high
Age Sensitivity			
High	6.31266	6.73045	7.14825
Med	5.64733	5.99747	6.34762
Low	4.98199	5.26449	5.54699

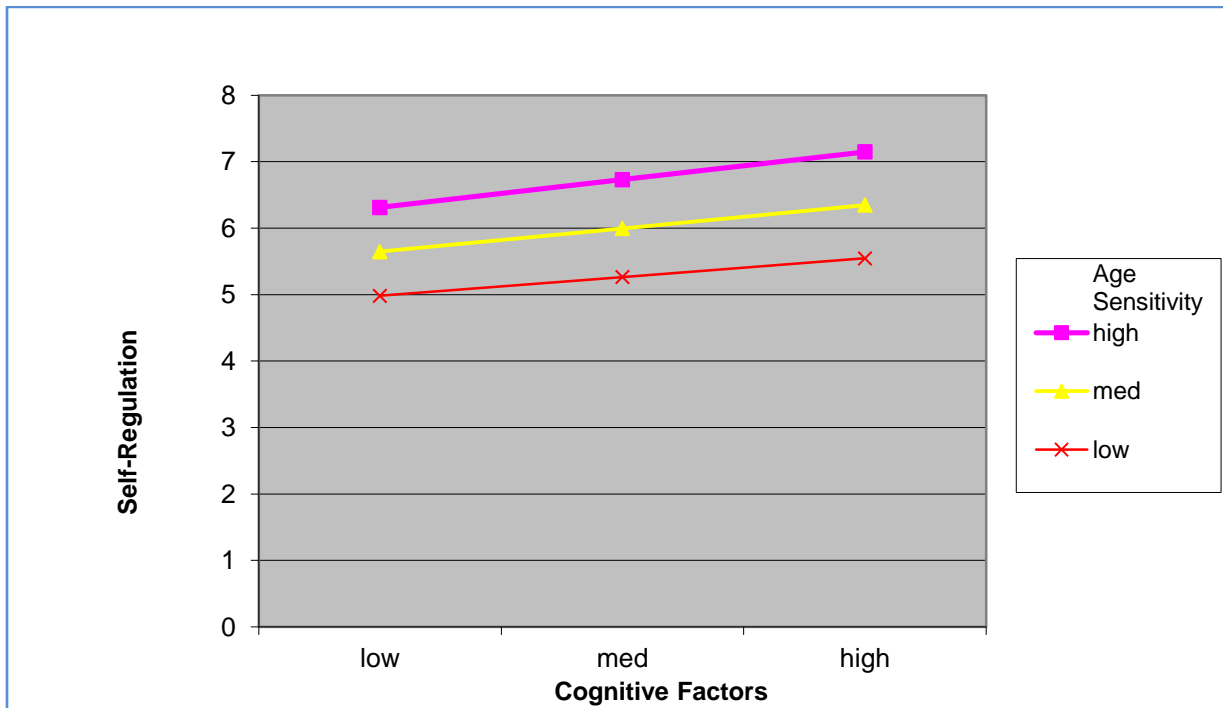


Figure 2: Moderation effect of Age Sensitivity

Since low, medium and high coordinates of Age Sensitivity do not intersect, the resultant lines representing Age Sensitivity moderation effect are parallel although they are moving towards

intersection. This is an indication that Age Sensitivity does not moderate the relationship between Cognitive Factors and Self-Regulation as shown in the Figure and Table above. However, a further examination of Figure 2 reveals that the moderation effect is high when Age Sensitivity is high. Inversely, the moderation effect is low when Age Sensitivity is low. Therefore, high Age Sensitivity will lead to Cognitive Factors to create high Self-Regulation.

4.12 Testing for Mediation

Objective 5 was to study the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relation between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa. In order to investigate this objective, six hypotheses were formulated as seen below:

H5a: *Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Since this hypothesis had two mediators, it was skipped because Baron and Kenny procedure does not cater for two variable mediations (Jose, 2013; Baron & Kenny, 1986). The mediation effects of the hypothesis were tested using SEM Bootstrap mediation effects as seen chapter seven.

H5b: *Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Sahara Africa.*

Baron and Kenny (1986) procedure was used to test for mediation of effect of Self-Regulation in the relationship between Cognitive Factors and External Locus of Control as seen in Figure 3 medgraph.

Type of mediation		Significant	
Sobel z-value		2.045447	$p = 0.040811$
95% Symmetrical Confidence Interval			
	Lower	0.00103	
	Higher	0.04826	
Unstandardized indirect effect			
	a*b	0.02464	
	se	0.01205	
Effective Size measures			
<u>Standardised Coefficients</u>			<u>R² Measures (Variance)</u>
Total:		0.089	0.093
Direct:		0.276	0.076
Indirect:		0.03	0.017
Indirect to Total ratio		0.338	0.187

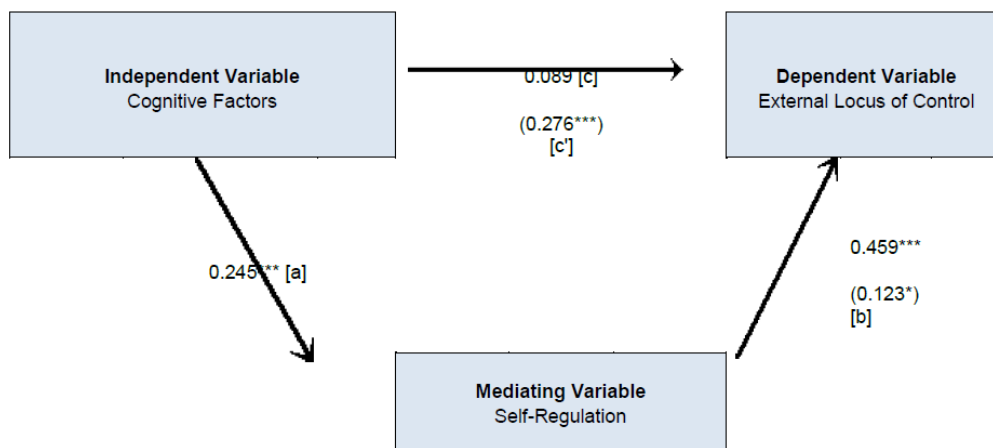


Figure 3: MedGraph Self-Regulation in Cognitive Factors and External Locus of Control

The results presented in Figure 3 above reveal that Self-Regulation mediates the relationship between Cognitive Factors and External Locus of Control (Sobel z-value $P=0.040811$). The mediation is significant at 95% confidence level. For there to be mediation, P value must be less than 0.05 (Jose, 2013; Baron and Kenny, 1986). Therefore H5b was accepted.

H5c: *External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.*

Since this hypothesis had two mediators i.e. Self-Regulation and External Locus of Control, it was also skipped because Baron and Kenny (1986) procedure does not cater for two mediator

variables. The mediation effects of this hypothesis were tested using SEM Bootstrap mediation effects as seen chapter seven.

H5d: *Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Baron and Kenny (1986) procedure was used to test for mediation of effect of Self-Regulation in the relationship between Cognitive Factors and Health Behavior as seen in Figure 4 medgraph.

Type of mediation	Significant	
Sobel z-value	4.138678	$p = 0.000035$
95% Symmetrical Confidence interval		
Lower	0.06668	
Higher	0.18666	
Unstandardized indirect effect		
a*b	0.12667	
se	0.03061	
Effective Size measures		
Standardised Coefficients		<u>R² Measures (Variance)</u>
Total:	0.194	0.037
Direct:	0.091	0.007
Indirect:	0.102	0.029
Indirect to Total ratio	0.53	0.789

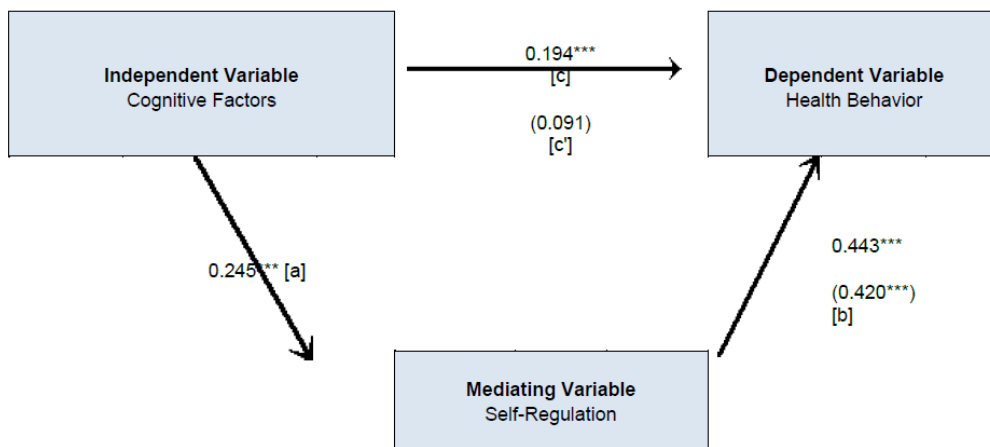


Figure 4: MedGraph Self-Regulation in Cognitive Factors and Health Behavior

The results presented in Figure 4 above reveal that Self-Regulation mediates the relationship between Cognitive Factors and Health Behavior (Sobel z-value $P=0.000035$). The mediation is

significant at 95% confidence level. For there to be mediation, P value must be less than 0.05 (Jose, 2013; Baron and Kenny, 1986). Therefore H5d was accepted.

H5e: *External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Baron and Kenny (1986) procedure was used to test for mediation of effect of External Locus of Control in the relationship between Cognitive Factors and Health Behavior as seen in Figure 5 medgraph.

Type of mediation	Null	
Sobel z-value	1.619432	p = 0.105354
95% Symmetrical Confidence interval		
Lower	-0.00741	
Higher	0.07784	
Unstandardized indirect effect		
a*b	0.03522	
se	0.02175	
Effective Size measures		
<u>Standardised</u>		
Coefficients		R ² Measures (Variance)
Total:	0.194	0.037
Direct:	0.166	0.027
Indirect:	0.028	0.010
Indirect to Total ratio	0.147	0.281

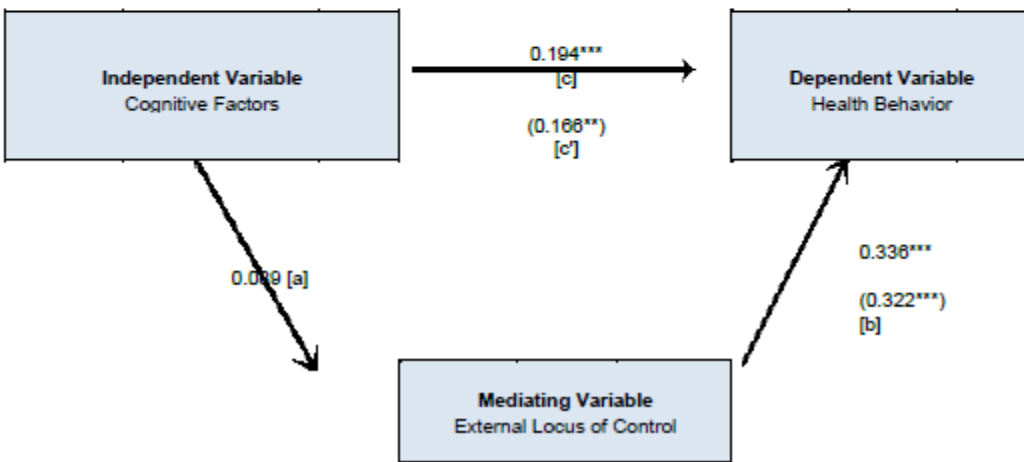


Figure 5: MedGraph External Locus of Control in Cognitive Factors and Health Behavior

The results presented in Figure 5 above reveal that External Locus of Control does not mediate the relationship between Cognitive Factors and Health Behavior (Sobel z-value $P=0.105354$). This is because Sobel z-value P of 0.105354 is above 0.05 (Jose, 2013; Baron and Kenny, 1986). Therefore H_5e was rejected.

H5f: *Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Sahara Africa.*

Baron and Kenny (1986) procedure was used to test for mediation of effect of Self-Regulation in the relationship between Age Sensitivity and Health Behavior as seen in Figure 6 medgraph.

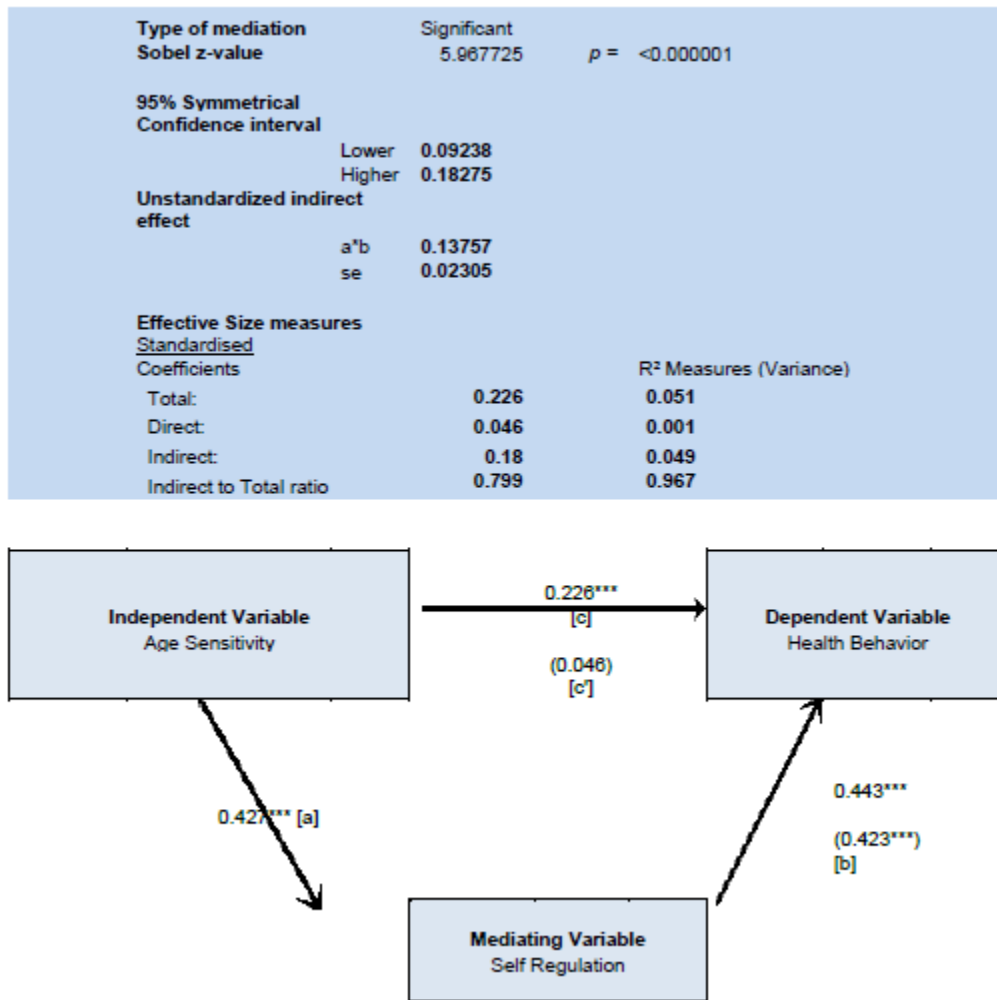


Figure 6: MedGraph Self-Regulation in Age Sensitivity and Health Behavior

The results presented in Figure 6 above reveal that Self-Regulation mediates the relationship between Age Sensitivity and Health Behavior (Sobel z-value $P=0.000001$). This is because Sobel z-value P of 0.000001 is less than 0.05 (Jose, 2013; Baron and Kenny, 1986). Therefore H5f was accepted. Table 67 presents a summary of chapter five.

Table 67: Summary of correlation and regression findings

Hypothesis	Finding	Accepted / Rejected
H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Saharan Africa.	$r=-.285^{**}$, $P<.01$, $Beta=-0.175^{**}$, Adjusted $R^2=.227$, R^2 Change=.027	Rejected
H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Saharan Africa.	$r=.336^{**}$, $P<.01$, $Beta=0.345^{**}$, Adjusted $R^2=.187$, R^2 Change=.092	Accepted
H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa.	$r=.194^{**}$, $P<.01$, $Beta=0.246$, Adjusted $R^2=.096$, R^2 Change=.054	Rejected
H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa.	$r=.351^{**}$, $P<.01$, $Beta=0.392^{**}$, Adjusted $R^2=.194$, R^2 Change=.137	Accepted
H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa.	$r=.043$, $P>.05$, $Beta=.050$, Adjusted $R^2=.027$, R^2 Change=.002	Rejected
H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa.	$r=.372^{**}$, $P<.01$, $Beta=0.432^{**}$, Adjusted $R^2=.359$, R^2 Change=.170	Accepted
H3a: Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Saharan Africa.	$r=.089$, $P>.05$, $Beta=0.163^{**}$, Adjusted $R^2=.248$, R^2 Change=.023	Rejected
H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.	$r=.245^{**}$, $P<.01$, $Beta=.270^{**}$, Adjusted $R^2=.165$, R^2 Change=.065	Accepted
H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-	$r=.459^{**}$, $P<.01$, $Beta=0.387^{**}$, Adjusted $R^2=.370$, R^2 Change=.122	Accepted

Sahara Africa.		
H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.	$r=.443^{**}$, $P<.01$, $Beta=0.213^{**}$, Adjusted $R^2=.388$, R^2 Change=.030	Accepted
H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.	$r=.226^{**}$, $P<.01$, $Beta=-0.082$, Adjusted $R^2=.391$, R^2 Change=.004	Rejected
H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.	Beta= 1.021*, -0.299, & -0.414	Rejected
H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa	No results	See SEM results
H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.040811$	Accepted
H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.	No results	See SEM results
H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.000035$	Accepted
H5e: External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.105354$	Rejected
H5f: Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.000001$	Accepted

4.13 Confirmatory Factor Analysis

This section presents the confirmatory factor analysis results that were conducted in AMOS software.

4.12.1 Confirmatory Factor Analysis Explained

Confirmatory factor analysis (CFA) is a statistical procedure that is used to test the hypothesized set of observed variables and confirm if they measured the latent variable (Suhr, 2017). CFA in social sciences is used to determine if the observed measurement variables are in-line with the researcher's hypothesized measurement variables. CFA for this study was done using Analysis of a Moment Structures (AMOS), which is an add-on for the Statistical Package for the Social Sciences (SPSS) software. During the analysis, Standardized path estimates, also known as Beta are used to eliminate observed variables that have weak relationships with their latent variables

In order for a measurement model to be fit, it must meet the goodness of fit acceptable indices. For example, the Nonnormed Fit Index (NNFI), also known as Tucker Lewis index (TLI) which is used to measure for parsimony by comparing degree of freedom for observed variables to the degrees of freedom of the hypothesized variables (Hoe, 2008). Other indices include the Comparative Fit Index (CFI) and Root Mean Squared Approximation of Error (RMSEA), Chi-square (X^2) and P-values. CFI is used to control for sample errors (Hoe, 2008), while RMSEA is used to measure the differences in covariance matrices per degree of freedom for the hypothesized and observed model variables (Garver & Mentzer, 1999; Steiger, 1990). On the other hand, the Chi-square (X^2) is the sum of squared correlations between model matrices and P-value is a statistical value used to determine whether the null hypothesis is significantly different from the proposed model. Chi-square (X^2) is used concurrently with X^2/DF and P value.

Generally, a model is fit if $X^2/D.F. \leq 3$ and $P > 0.5$ (Kline, 1998). The model should also have $NNFI > 0.9$, $TLI > 0.9$, $CFI > 0.9$ and $RMSEA < 0.08$ (Hoe, 2008; MacLean & Gray, 1998; Chin, 1998; Joreskog & Sorbom, 1993).

Exploratory Factor Analysis (EFA) is a statistical technique use to analyze and determine a set of interrelated observed variables or factors that measure a given latent variable (Suhr, 2017). It can also be used to test the data against hypothetical variable structures and establish their suitability, although the outcome of EFA is noncommittal to such structures (Child, 1990). The CFA for the study follows:

4.12.2 CFA for Cognitive Factors

Cognitive Factors variable had three hypothesized constructs namely; 1) Beliefs, Knowledge and 3) Attitude. Beliefs had a 6 of six measurement items; Knowledge and Attitude had 4 items each. CFA was conducted to validate these constructs and factors that measured Cognitive Factors as seen in Figure 7.

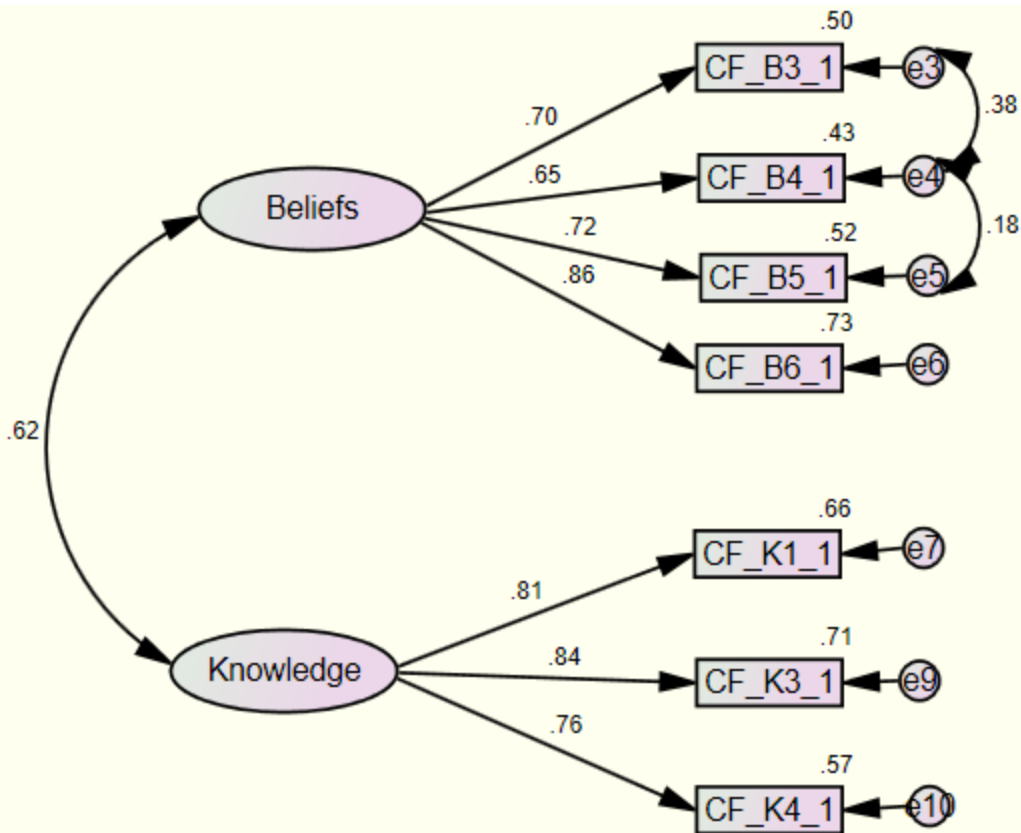


Figure 7: Measurement model for Cognitive Factors

Out of the 3 constructs, only Beliefs and Knowledge were found to measure Cognitive Factors. Beliefs had 4 items retained, while Knowledge retained 3. Through a systematic elimination method, those factors with low factors loadings were deleted from the model. On the other hand, those items whose error terms exhibited high modification indices and covariances were regressed. For example, e3 was regressed with e4 and e5 was regressed with e4. The observed variable in this model is significantly different from the hypothesized. This is because Attitude as a construct was dropped from the model in addition to a few measurement items that were dropped from the retained constructs. Further, we observe that these CFA results differ from the EFA findings where all constructs were retained to measure Cognitive Factors. Table 68 presents the model statistics for Cognitive Factors.

Table 68: Model Fit Summary for Cognitive Factors

χ^2	DF	P	χ^2/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
----------	----	---	-------------	-----	------	-----	-----	-----	-----	-----	-------

38.508	11	.000	3.501	.971	.925	.968	.939	.977	.956	.977	.084
			Estimate	S.E.	C.R.	P	Beta	AVE	R²		
CF_B3_1	<---	F1	1.000				.705	0.588	0.38		
CF_B4_1	<---	F1	.971	.071	13.630	***	.655				
CF_B5_1	<---	F1	1.308	.111	11.817	***	.718				
CF_B6_1	<---	F1	1.453	.114	12.729	***	.857				
CF_K1_1	<---	F2	1.000				.812				
CF_K3_1	<---	F2	.860	.055	15.735	***	.841				
CF_K4_1	<---	F2	1.048	.072	14.534	***	.758				

Results in Table 68 indicate that the model is not fit based on the Chi-square obtained and a P-value of 0 ($\chi^2=38.508$, $DF=11$, $P=.000$, $\chi^2/DF=3.501$). However, most of the measurement indices indicate that the mode was fit. For instance, $GFI=.971$, $AGFI=.925$, $NFI=.968$, $RFI=.939$, $IFI=.939$, $TLI=.956$, and $CFI=.977$ are all above the threshold of 0.9. The $RMSEA=.08$, also meets the threshold of 0.8.

Further, we observe that the Average Variance Explained (AVE) for this variable was 0.588, which above the required 0.5. This implies that there was convergent validity, i.e. the measurement items for each construct converged to measure their respective constructs. This is supported by the fact that each retained observed variable had a significant relationship with its parent construct as all P-values were below 0.001.

The obtained squared correlation of the two constructs (R^2) was 0.38. This Figure is below the obtained AVE which was 0.588. The current finding implies that there was discriminant validity between the two constructs of Beliefs and Knowledge. Each of these two was unique and its measurement items measured only that construct.

Based on the above findings, it was concluded that Beliefs with its 4 measurement variables and Knowledge with its 3 measurement items adequately measured Cognitive Factors.

4.12.3 CFA for Internal Locus of Control

The observed variable Internal Locus of Control had 7 hypothesized measurement items. CFA was used to examine and confirm the factors that measured Internal Locus of Control. Figure 8 presents the findings.

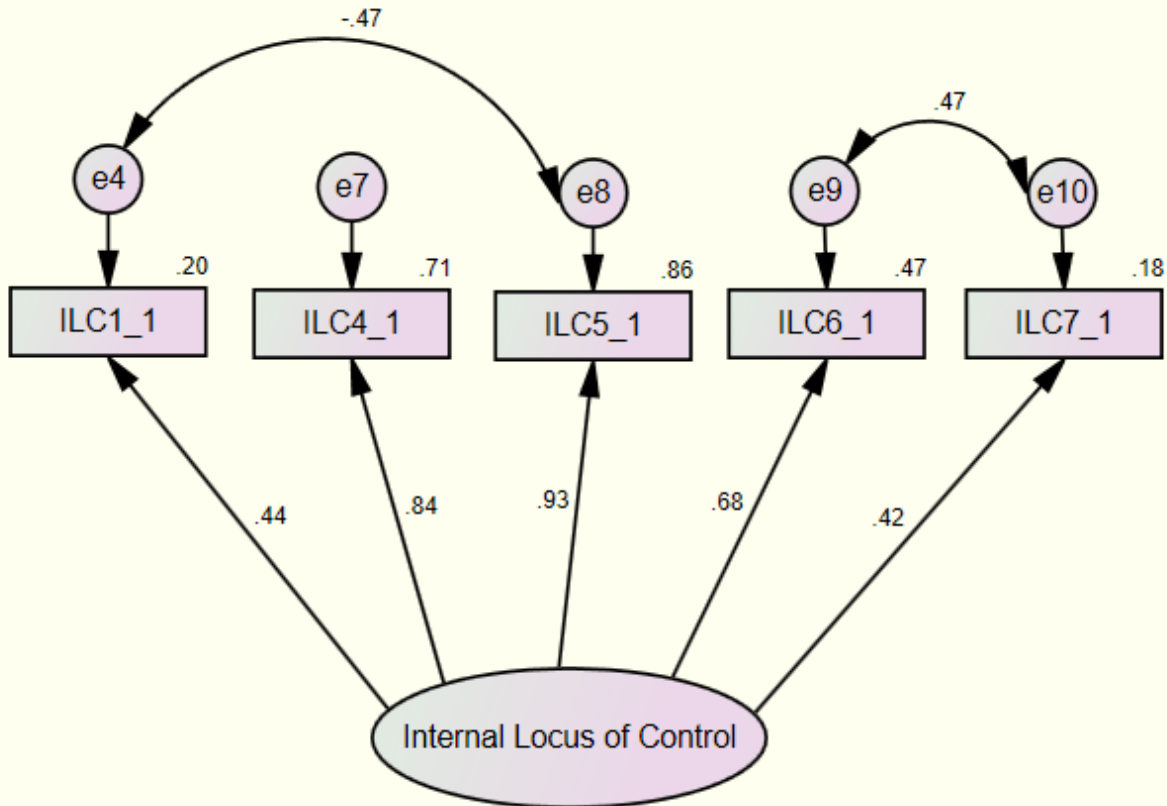


Figure 8: CFA model for Internal Locus of Control

It was observed that 5 measurement variables measured Internal Locus of Control. The factors with low factors loadings were deleted from the model, while those items whose error terms exhibited high modification indices and covariances were regressed. In this case, e4 and e8 had high covariances and were regressed. The same was e9 and e10. The observed variable in this model is not significantly different from the hypothesized. This is because only 2 measurement items were dropped. Compared to the EFA results, there is a significant difference since EFA retained only three factors on this variable. Table 69 presents the statistics for Internal Locus of Control.

Table 69: Table Model Fit Summary for Internal Locus of Control

χ^2	DF	P	χ^2/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
.769	3	.857	.256	.999	.996	.999	.997	1.003	1.010	1.000	.000
			Estimate	S.E.	C.R.	P	Beta	AVE			
ILC1_1	<---	F1	1.000				.443	0.50			
ILC4_1	<---	F1	.826	.109	7.545	***	.843				
ILC5_1	<---	F1	.940	.127	7.396	***	.928				
ILC6_1	<---	F1	.782	.109	7.180	***	.685				
ILC7_1	<---	F1	.485	.084	5.787	***	.423				

Results in Table 69 indicate the model for Internal Locus of Control was fit because all the measurement indices exhibit great goodness-of-fit. The Chi-square $\chi^2=.769$ at 3 degrees of freedom with $\chi^2/DF=.256$ at $P=.857$ indicate good fitness. More indices including $GFI=.999$, $AGFI=.996$, $NFI=.999$, $RFI=.997$, $IFI=1.003$, $TLI=1.010$, and $CFI=1.000$ are all indicators a good model fit. The $RMSEA=.000$, which is far below the threshold of 0.8. It is on this basis that Internal Locus of Control was confirmed as one of the study variables.

4.12.4 CFA for External Locus of Control

External Locus of Control had 8 hypothesized measurement factors out of which 5 were retained to by the AFE. CFA was conducted to examine and confirm these factors. Figure 9 show the results.

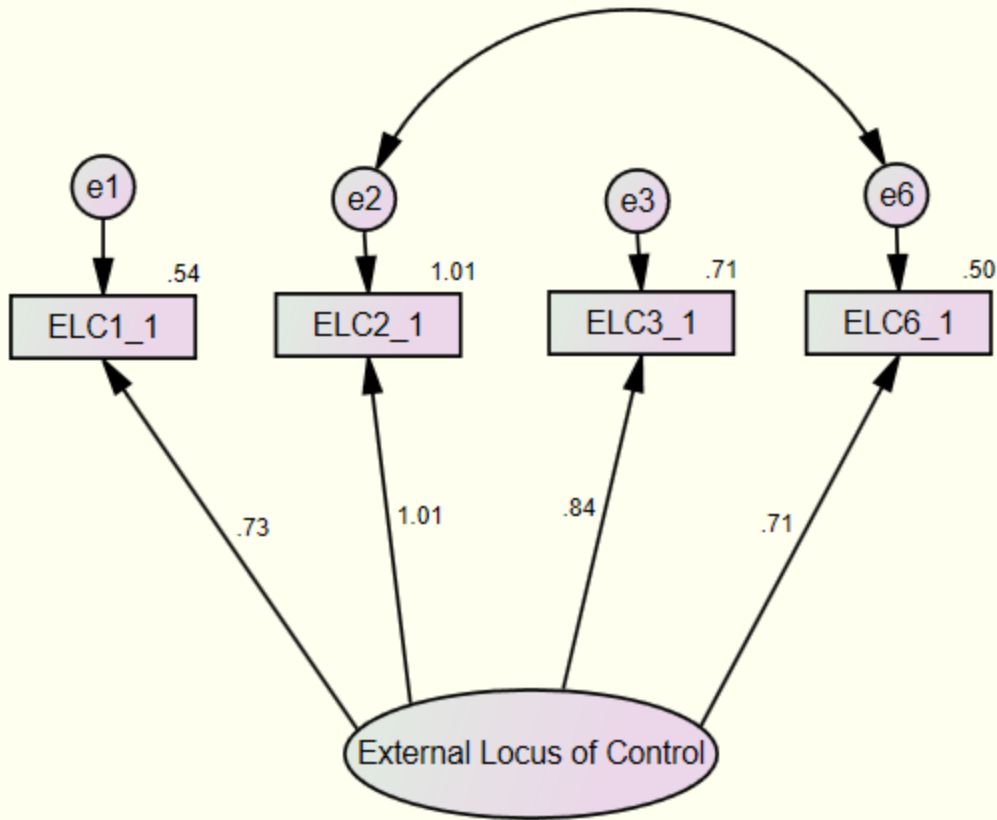


Figure 9: CFA model for External Locus of Control

Figure 9 reveals that out of the 8 predicted factors measuring External Locus of Control, only 4 were retained in the CFA. A regression was done on error term e2 and e6 because they had high modification indices. Although these are closely related to those of the EFA, the observed variable in this model is significantly different from the one hypothesized in the study. This is because half of the measurement factors were dropped for having weak loadings. The statistics for External Locus of Control are presented in Table 70.

Table 70: Model Fit Summary for External Locus of Control

X ²	DF	P	X ² /DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
.279	1	.597	.279	1.000	.996	1.000	.998	1.001	1.005	1.000	.000
			Estimate	S.E.	C.R.	P	Beta	AVE			
ELC1_1	<---	F1	1.000				.733	0.69			
ELC3_1	<---	F1	1.027	.060	17.047	***	.844				

ELC2_1	<---	F1	1.352	.078	17.306	***	1.006	
ELC6_1	<---	F1	.921	.077	11.954	***	.705	

Results in Table 70 reveal that model was fit ($\chi^2=.279$, $DF=1$, $P=.597$, $\chi^2/DF=.279$). The Chi-square is below 20, χ^2/DF is less than 3, and P-value is above 0.5 indicating good model fit. In addition, $GFI=1.000$, $AGFI=.996$, $NFI=1.000$, $RFI=.998$, $IFI=1.001$, $TLI=1.005$, and $CFI=1.000$ are all above the threshold of 0.9. The $RMSEA=.000$ is below the required maximum threshold of 0.8. Therefore, this model was found to be fit and used to measure External Locus of Control.

Further, we observe that the Average Variance Explained (AVE) for this variable was 0.69, which above the required 0.5. This revelation, coupled with all significant P-values between each factor and External Locus of Control, indicate that there was convergent validity. In other words, all the measurement items converged to measure External Locus of Control.

4.12.5 CFA for Self-Regulation

Self-Regulation had a total of 16 measurement variables out of which 9 were retained by the EFA. CFA was conducted to examine and confirm the measurement variables for Self-Regulation. Figure 10 reveals the results.

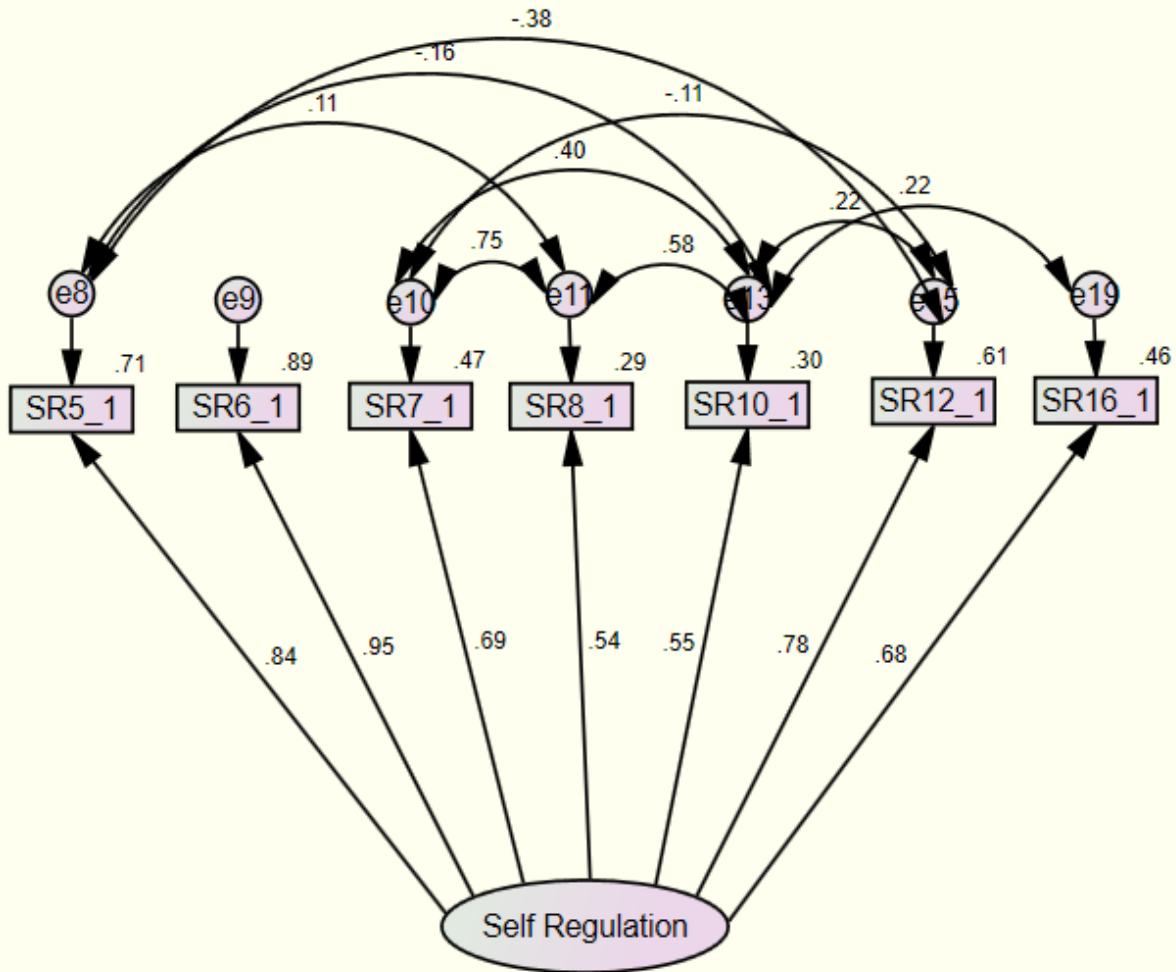


Figure 10: Measurement model for Self-Regulation

Figure 10 reveals that out of the 16 hypothesized factors measuring Self-Regulation; only 7 were retained in the CFA. Regressions were done on all error terms because they had high covariances. Although these are closely related to those of the EFA, the observed variable in this model is significantly different from the one hypothesized in the study. This is because more than half of the measurement factors were dropped for having weak factor loadings. The statistics for External Locus of Control are presented in Table 71.

Table 71: Model Fit Summary for Self-Regulation

X^2	DF	P	X^2/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
22.467	5	.000	4.493	.983	.904	.988	.950	.991	.960	.991	.099

			Estimate	S.E.	C.R.	P	Beta	AVE
SR5_1	<---	F1	1.000				.840	0.535
SR16_1	<---	F1	.831	.058	14.431	***	.681	
SR8_1	<---	F1	.494	.044	11.190	***	.540	
SR7_1	<---	F1	.621	.043	14.587	***	.688	
SR6_1	<---	F1	.963	.043	22.255	***	.945	
SR10_1	<---	F1	.501	.049	10.320	***	.550	
SR12_1	<---	F1	.804	.053	15.055	***	.783	

Results in Table 71 reveal that model was fit ($\chi^2=22.467$, $DF=5$, $P=.000$, $\chi^2/DF=4.493$). The Chi-square is above 20, χ^2/DF is above 3, and P-value is below 0.5 indicating bad model fit. Despite this, all other goodness of fit indices indicate that the model was fit. The GFI=.983, AGFI=.904, NFI=.988, RFI=.950, IFI=.991, TLI=.960, and CFI=.991 are all above the threshold of 0.9. The RMSEA=.099 is slightly above the required maximum threshold of 0.8. Given the fact that this study had a high sample of 358, even if the RMSEA is above 0.8, this model is fit since other goodness of fit indices indicates good model fit.

The Average Variance Explained (AVE) for this variable was 0.535, which is above the required 0.5 and all P-values were significant at $P<0.001$. This implies that there was convergent validity. All the retained variables converged to measure Self-Regulation.

4.12.6 CFA for Age Sensitivity

This variable had 6 hypothesized factors. Out the 6, 4 were retained by the results of EFA. CFA was conducted to examine and confirm the measurement variables for Age Sensitivity. Figure 11 reveals the results.

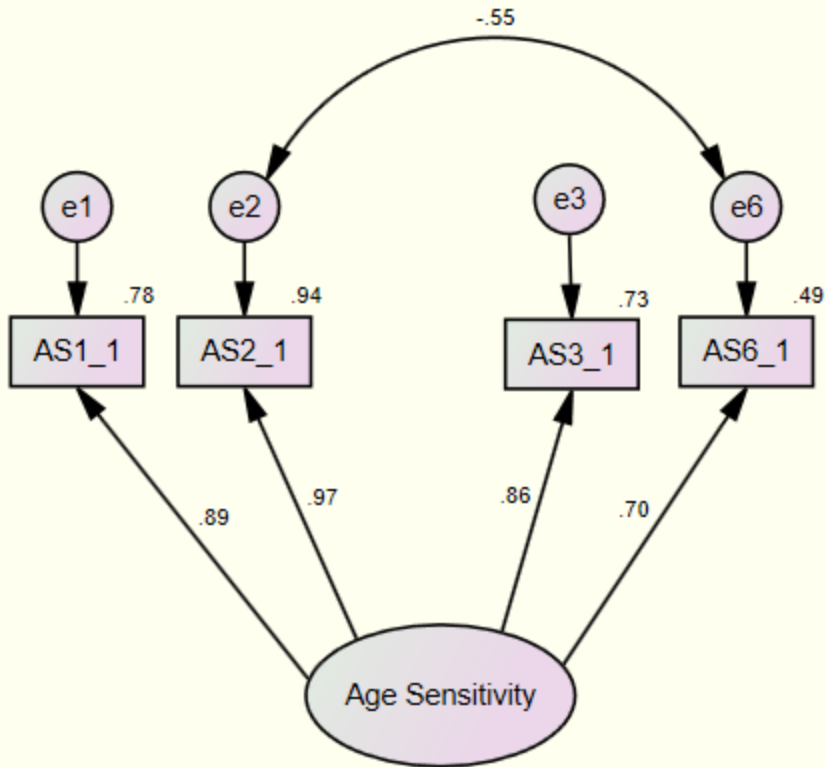


Figure 11: Measurement model for Age Sensitivity

CFA results in Figure 11 indicate that 4 items were retained to explain Age Sensitivity. This finding is agreement with the results of EFA. The only variables with high covariances were e2 and e6. These were regressed in order to minimize the unexplained errors between the two observed variables.

Both the EFA and CFA findings are not significantly different from the hypothesized variable Age Sensitivity since only 2 factors were dropped. Hence, they retained factors were confirmed to measure Age Sensitivity. Table 72 shows the goodness-of-fit indices for Age Sensitivity.

Table 72: Model Fit Summary Age Sensitivity

χ^2	DF	P	χ^2/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
3.816	1	.051	3.816	.995	.947	.997	.979	.997	.985	.997	.089
			Estimate	S.E.	C.R.	P		Beta	AVE		

AS1_1	<---	F1	1.000				.886	0.737
AS6_1	<---	F1	.677	.045	15.039	***	.701	
AS3_1	<---	F1	.835	.036	23.201	***	.855	
AS2_1	<---	F1	1.111	.040	27.884	***	.968	

Some parts of the results in Table 72 indicate that the model is not fit. The statistics obtained including $\chi^2=3.816$ and $\chi^2/DF=3.816$ at $P=.051$ and $RMSEA=.089$ do not meet the required thresholds for good model fit. However, the remaining measurement indices indicate that the mode was fit. For instance, $GFI=.995$, $AGFI=.947$, $NFI=.997$, $RFI=.979$, $IFI=.997$, $TLI=.985$, and $CFI=.997$ are all above the threshold of 0.9. Given that the study sample of 358 was way above the recommended sample of 200 for SEM, this model can be accepted. This is because chi-square is sensitive to samples – such that once the sample is above 200, it may not be very reliable (Kline, 1998).

Further, we observe that the Average Variance Explained (AVE) for this variable was 0.737, which above the required 0.5 and also that all observed variables had significant relationships with the unobserved variable at $P<0.001$. This implies that there was convergent validity, i.e. the observed variables converged to measure their unobserved variable Age Sensitivity.

4.12.7 CFA for Outcome Expectation

This variable Outcome Expectations had 7 hypothesized factors. Out the 7, 5 were retained by the results of EFA. CFA was conducted to examine and confirm the measurement variables for Outcome Expectations. Figure 12 presents the results.

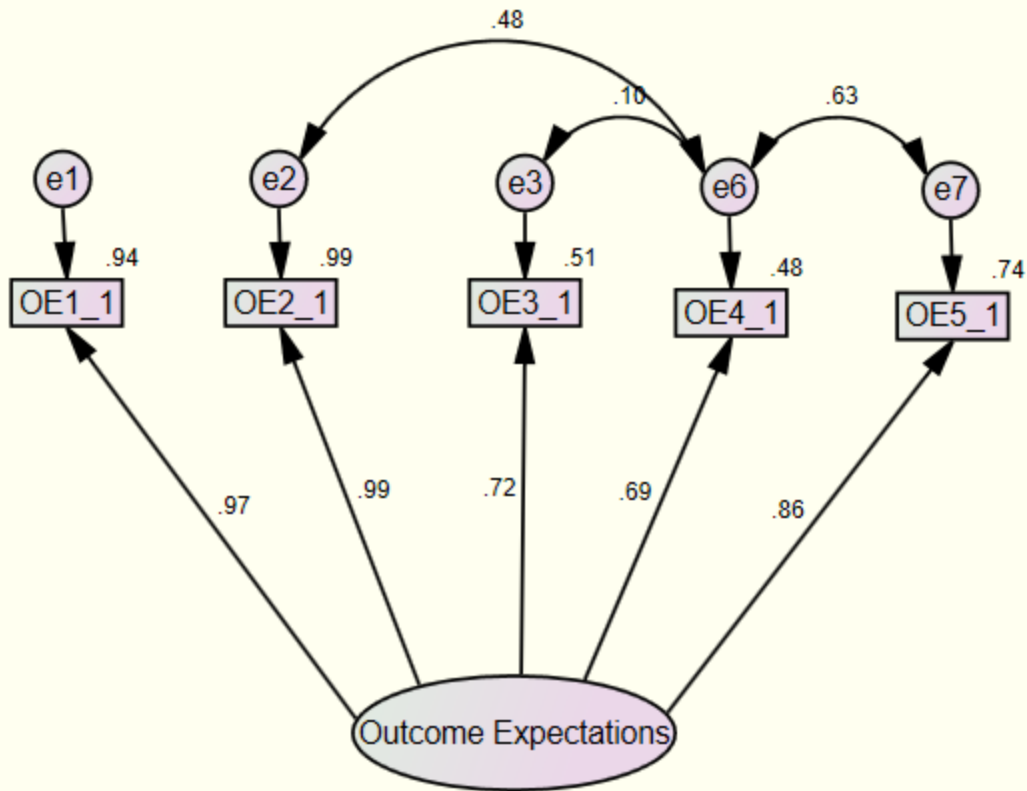


Figure 12: Measurement model for Outcome Expectations

CFA results in Figure 12 indicate that 5 items were retained to measure Outcome Expectations. This finding is in agreement with the results of the EFA where 5 factors were found to measure Outcome Expectations. Four error terms were found to have high covariances and were regressed in order to minimize the unexplained errors between those that were highly related. These were e2-e6, e3-e6, and e6-e7.

Both the EFA and CFA findings were in agreement and did not significantly differ from the hypothesized factors measuring Outcome Expectations since only 2 factors were dropped. Hence, the retained factors were confirmed to measure Outcome Expectations. Table 73 shows the goodness-of-fit indices for Outcome Expectations.

Table 73: Model Fit Summary Outcome Expectations

X ²	DF	P	X ² /DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
----------------	----	---	--------------------	-----	------	-----	-----	-----	-----	-----	-------

6.253	2	.044	3.126	.993	.950	.997	.985	.998	.990	.998	.077
			Estimate	S.E.	C.R.	P		Beta	AVE		
OE1_1	<---	F1	1.000					.970	0.731		
OE5_1	<---	F1	.886	.031	29.018	***		.859			
OE4_1	<---	F1	.669	.039	17.209	***		.690			
OE3_1	<---	F1	.670	.036	18.632	***		.716			
OE2_1	<---	F1	1.039	.017	60.709	***		.993			

The first set of results in Table 73 suggests that the model is not fit. Statistics obtained including $\chi^2=6.253$ and $\chi^2/DF=3.126$ at $P=.044$ do not meet the required thresholds for good model fit (Hoe, 2008; MacLean & Gray, 1998; Kline, 1998). However, the remaining measurement indices indicate that the mode was fit. For instance, GFI=.993, AGFI=.950, NFI=.997, RFI=.985, IFI=.998, TLI=.990, and CFI=.998 are all above the threshold of 0.9. Given that the study sample of 358 was way above the recommended sample of 200 for SEM, this model can be accepted. This is because chi-square is sensitive to samples – such that once the sample is above 200, it may not be very reliable (Kline, 1998). Further, the RMSEA was .077, which is below 0.8. Hence the model was fit.

The Average Variance Explained (AVE) for this variable was 0.731, which is above the required 0.5 and also that all observed variables had significant relationships with the unobserved variable at $P<0.001$. This implies that there was convergent validity, i.e. the observed variables converged to measure their unobserved variable Outcome Expectations.

4.12.8 CFA for Behavioral Intention

Behavioral Intention had 8 hypothesized factors. Out of these, 6 were retained by the EFA. CFA was conducted to validate these constructs and factors that measured Behavioral Intention as seen in Figure 13.

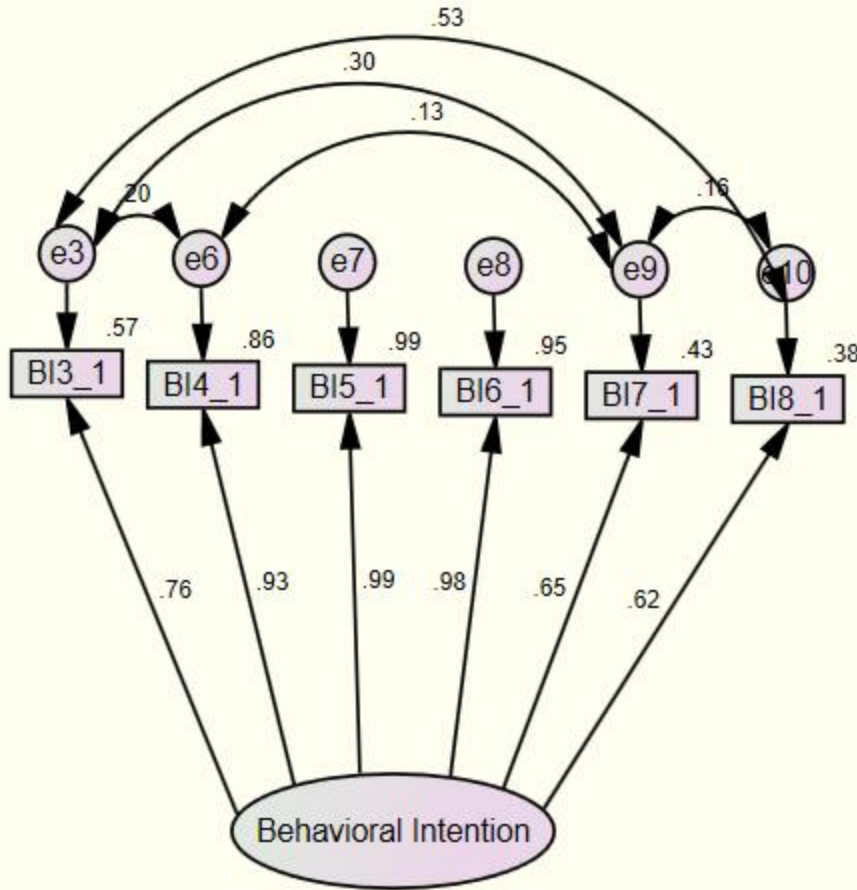


Figure 13: Measurement model for Behavioral Intention

Six out of 8 items were retained to measure Behavioral Intention. Through a systematic elimination method, 2 items were eliminated. Error terms e3, e6, e9, and e10 were found to have high covariances. The unobserved variable is not significantly different from the hypothesized. This is because only 3 observed variables were dropped. Further, we observe that these CFA results did not differ so much from the EFA findings where 6 items were retained to measure Behavioral Intention. Table 74 presents statistics for Behavioral Intention.

Table 74: Model Fit Summary for Behavioral Intention

χ^2	DF	P	χ^2/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
13.797	4	.008	3.449	.988	.936	.995	.980	.996	.986	.996	.083
			Estimate	S.E.	C.R.	P		Beta	AVE		

BI8_1	<---	F1	.724	.042	17.243	***	.619	0.698
BI3_1	<---	F1	1.000				.758	
BI4_1	<---	F1	1.121	.052	21.514	***	.929	
BI5_1	<---	F1	1.074	.050	21.584	***	.994	
BI6_1	<---	F1	1.161	.055	21.153	***	.976	
BI7_1	<---	F1	.738	.048	15.427	***	.653	

The first set of results in Table 74 suggests that the model was not fit. Results obtained including $\chi^2=13.797$ and $\chi^2/DF=3.449$ at $P=.008$, and $RMSEA=.083$ did not meet the required thresholds for good model fit (Hoe, 2008; MacLean & Gray, 1998; Kline, 1998). However, the remaining measurement indices indicate that the mode was fit. For instance, $GFI=.988$, $AGFI=.936$, $NFI=.995$, $RFI=.980$, $IFI=.996$, $TLI=.986$, and $CFI=.996$ are all above the threshold of 0.9. Given that the study sample was way above the recommended sample of 200 for SEM, this model can be accepted on the basis that a chi-square is sensitive to sample size (Kline, 1998).

The Average Variance Explained (AVE) for this variable was 0.698, which is above the required 0.5 and also that all observed variables had significant relationships with the unobserved variable at $P<0.001$. This implies that there was convergent validity, i.e. the observed variables converged to measure their unobserved variable Behavioral.

4.12.9 CFA for Health Behavior

Health Behavior variable had 4 hypothesized constructs namely; 1) Skills with 4 items, 2) Practice with 5 measurement items, 3) Observational learning, with 8 measurement items, and 4) Moral degeneration which had 8 measurement items. All the 4 constructs were retained by EFA results seen in Table 4.24. CFA was conducted to validate the constructs and factors that measured Health Behavior as seen in Figure 14.

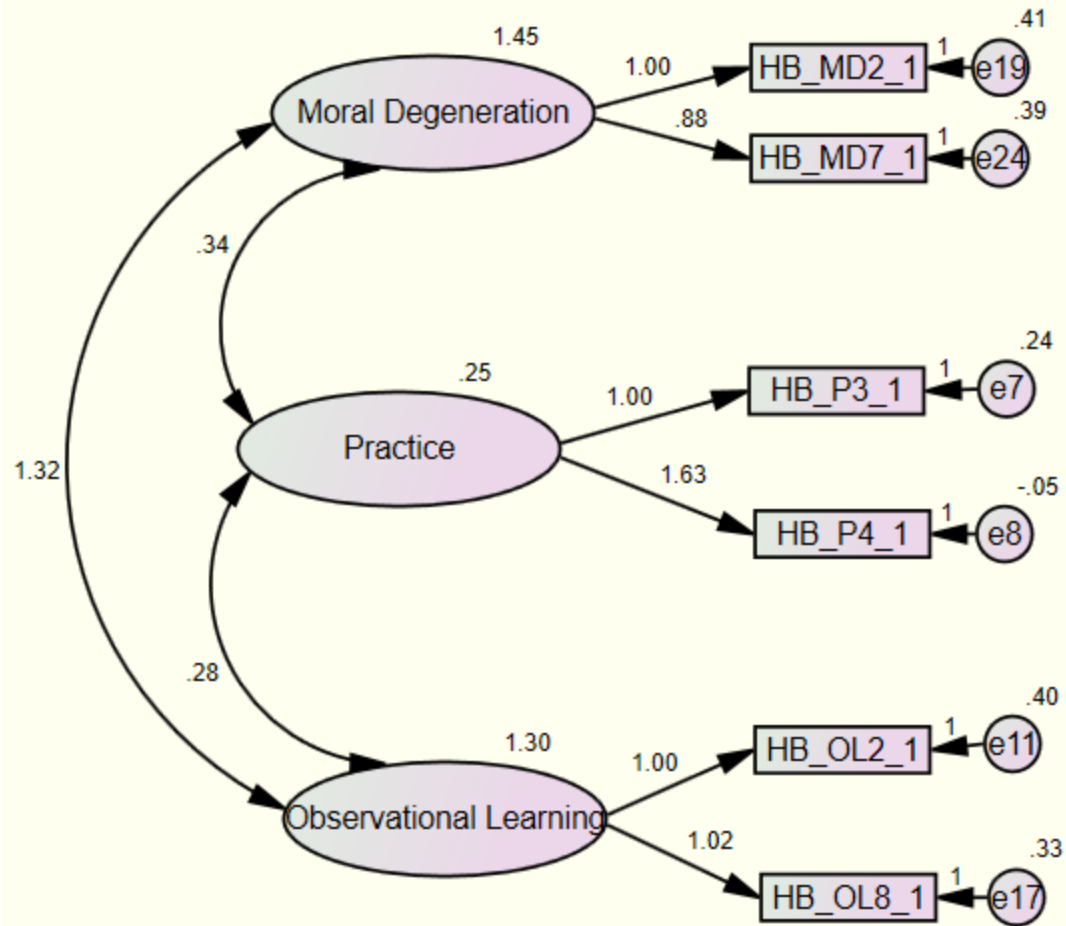


Figure 14: CFA model for Health Behavior

Out of the 4 constructs, 3 were retained, including 1) Practice with 2 observed variables, 2) Practice with 2 observed variables and 3) Observational learning with 2 observed variables. Through a systematic elimination method, observed variables with low standardized estimates were deleted from the model. The unobserved variable Health Behavior in this model is significantly different from the hypothesized variable. This is because Skills as a construct was dropped from the model, In addition, 3 observed variables were removed from Practice, 6 observed variables were deleted from Observational learning, and 6 observed variables were deleted from Moral degeneration. Table 75 presents the model statistics.

Table 75: Model Fit Summary for Health Behavior

X²	DF	P	X²/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
39.061	6	.000	6.510	.964	.872	.975	.936	.978	.946	.978	.124
				Estimate	S.E.	C.R.	P	Beta	AVE	R²	
HB_P3_1	<---	F2	1.000					.714	0.782	0.49	
HB_P4_1	<---	F2	1.628	.157	10.402	***	1.043				
HB_OL2_1	<---	F3	1.000					.874			
HB_OL8_1	<---	F3	1.015	.045	22.663	***	.896				
HB_MD2_1	<---	F4	1.000					.884			
HB_MD7_1	<---	F4	.881	.040	21.996	***	.863				

Results in Table 75 reveal that the model is not fit based on the Chi-square obtained and a P-value of 0 ($\chi^2=39.061$, $DF=6$, $P=.000$, $\chi^2/DF=6.510$) (Hoe, 2008; MacLean & Gray, 1998; Kline, 1998). The obtained RMSEA of .124 is also above 0.8. However, most of the measurement indices indicate that the mode was fit. For instance, $GFI=.964$, $AGFI=.872$, $NFI=.975$, $RFI=.936$, $IFI=.978$, $TLI=.946$, and $CFI=.978$ are all above or equal to the threshold of 0.9.

Further, we observe that the Average Variance Explained (AVE) for this variable was 0.782, which above the required 0.5. This implies that there was convergent validity, i.e. the measurement items for each construct converged to measure their respective constructs. This is supported by the fact that each retained observed had a significant relationship with its parent construct as all P-values were below 0.001.

The obtained squared correlation of the two constructs (R^2) was 0.49, which is below the obtained AVE of 0.782. This finding implies that there was discriminant validity between the three constructs of Skills, Practice and Observational learning. Each of these three was unique and its measurement items measured only that construct.

Based on the above findings, it was concluded that Skills, Practice and Observational learning measured Health Behavior.

4.13 Structural Equation Models

This section presents the structural equation models for both the hypothetical model and the final model explaining social media and Health Behavior.

4.13.1 Using Structural Equation Modeling to test research hypothesis

Structural Equation Modeling (SEM) is a powerful scientific analysis tool that helps to confirm factors measure individual variables while at the same time build Structural Equation Models for testing research hypotheses (Hoe, 2008). SEM helps to show the relationships between multiple constructs in paths as well as inferential statistics (Hoe, 2008; Chin, 1998) and is most appropriate for testing of hypothesis with prior a model.

SEM was chosen because of its ability to test for mediation, moderation as well as the predicting power of independent variables to the independent variable. Further, the sample taken in this study was appropriate for the use of SEM, given that the required minimum sample is 200. Hence, with a sample of 450 SEM would compute results with a good statistical power (Hoelter, 1983). SEM uses the following indices to analyze data.

The Chi-square (X^2) is the sum of squared alterations between model matrices. Its function is $\chi^2 = F*(N-1)$ - where F is the value of the fitting function and N is the sample size. The Chi-square (X^2) is used to measure actual and estimated model matrices. A low X^2 implies nonsignificance in difference hence the model is fit. A high X^2 implies a significant difference between actual and predicted models. The Chi-square and degree of freedom ($X^2/D.F.$) ration should be less ≤ 3 (Kline, 1998). Chi-square is very sensitive where the sample size is greater than 200, making it inappropriate for model evaluation. Where the sample is very high there is need to look at other indices (Hoe, 2008; Joreskog & Sorbom, 1993).

Nonnormed fit index (NNFI), also known as Tucker Lewis index (TLI) is used to compare the model's fit to a "nested baseline or null model" and also measures parsimony by comparing df of proposed model to df of null model (Hoe, 2008 pp77). NNFI should be >0.9 for the model to fit.

Comparative fit index (CFI) is noncentrality measurement index used to control for the errors due to a very low or high to sample size (Hoe, 2008). CFI of 0.9 indicates good model fitness.

Root mean squared approximation of error (RMSEA) is used to measure the differences in covariance matrices per DF for the proposed and observed model (Garver & Mentzer, 1999; Steiger, 1990). RMSEA<0.05 is deal, while RMSEA<=0.08 is acceptable, while RMSEA above 0.08 is mediocre fit.

P-value is a statistical value used to determine whether the null model is significantly different from the proposed model. It is used to reject the null hypothesis that $X^2=0$. A low p-value indicates significance, while a high p-value indicates that there is no significance. Hence, for model good fitness, p-value should be high – indicating there is no significant difference between the null and proposed models (Hoe, 2008; MacLean & Gray, 1998).

Standardized path estimates help to show the strength of relationships between model variables. Higher Standardized path estimates are desirable. A Standardized path estimate below 0.2 means the relationship between variables is weak and adds little value to the model. The ideal path estimate should be 0.3 and above- however, 0.2 is acceptable (Chin, 1998).

4.13.2 The hypothesized model

In this study, the hypothesized model was developed using Structural Equation Modeling in order to test for research hypotheses 1 to 25. Figure 15 presents the hypothetical structural equation model with its associated statistics in Table 76.

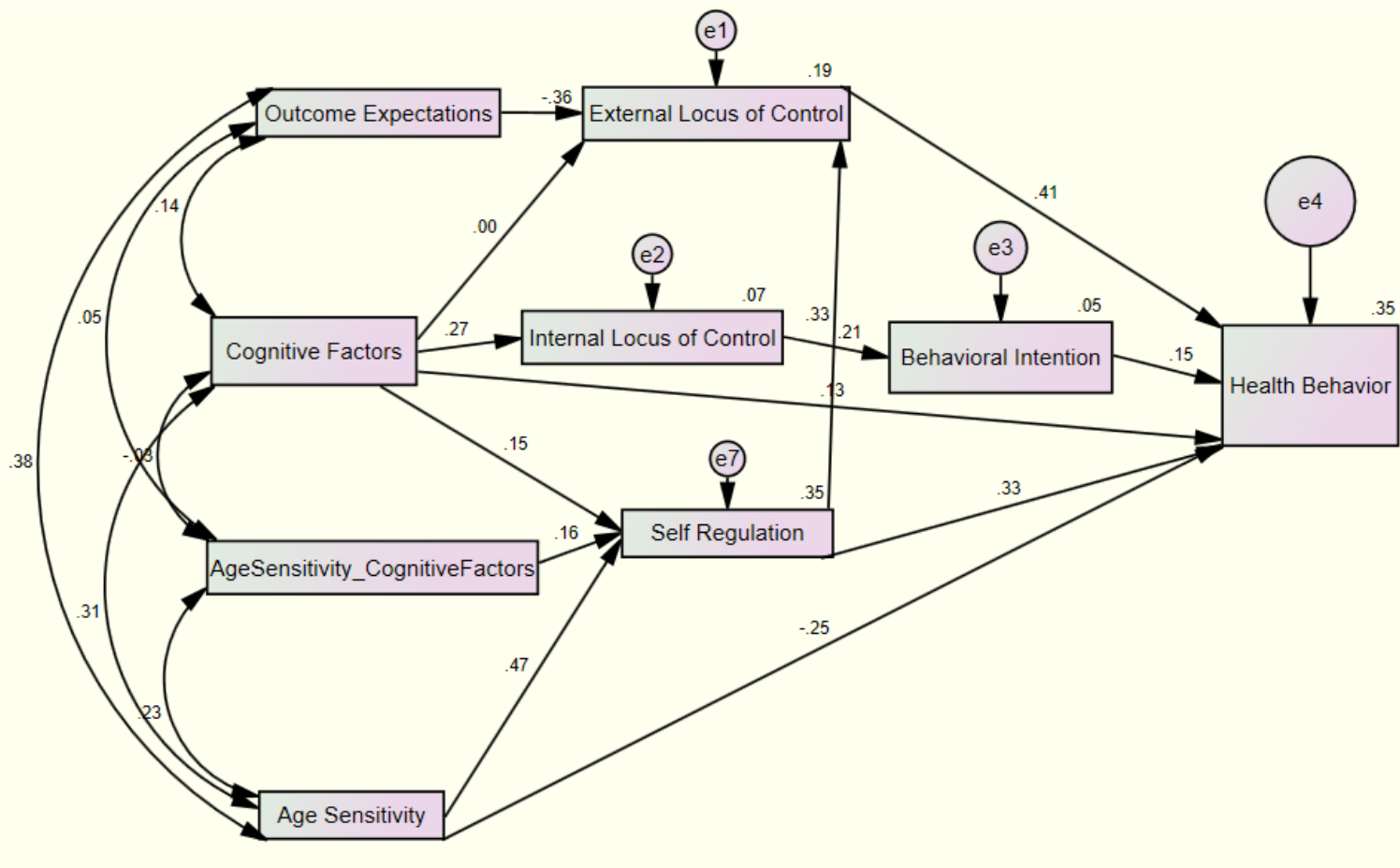


Figure 15: Hypothesized structural equation model

Table 76: Model Fit Summary for the hypothesized model

X²	DF	P	X²/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
724.240	17	.000	42.602	.820	.523	.431	-.205	.437	-.211	.428	.341
						Estimate	S.E.	C.R.	Estimate	P	Hypothesis
External Locus of Control	<---		Outcome Expectations			-.229	.031	-7.465	-.362	***	H1a is rejected
Health Behavior	<---		External Locus of Control			.438	.049	8.883	.402	***	H1b is accepted
Health Behavior	<---		Cognitive Factors			.206	.071	2.903	.131	.004	H2a is accepted
Internal Locus of Control	<---		Cognitive Factors			.272	.051	5.363	.273	***	H2b is accepted
Behavioral Intention	<---		Internal Locus of Control			.393	.114	3.445	.180	***	H2c is accepted
Health Behavior	<---		Behavioral Intention			.110	.034	3.263	.152	.001	H2d is accepted
External Locus of Control	<---		Cognitive Factors			-.005	.073	-.063	-.003	.950	H3a is rejected
Self-Regulation	<---		Cognitive Factors			.185	.055	3.332	.151	***	H3b is accepted
External Locus of Control	<---		Self-Regulation			.391	.059	6.584	.331	***	H3c is accepted
Health Behavior	<---		Self-Regulation			.416	.070	5.915	.323	***	H3d
Health Behavior	<---		Age Sensitivity			-.240	.055	-4.400	-.245	***	H3e is rejected
Self-Regulation	<---		Cognitive Factors			.185	.055	3.332	.151	***	H4 is accepted
Self-Regulation	<---		Age Sensitivity * Cognitive Factors			.105	.030	3.561	.157	***	
Self-Regulation	<---		Age Sensitivity			.360	.035	10.174	.473	***	

In terms of model fitness, all indices of goodness-of-fit seen in Table 76 reveal that the model in Figure 15 is not fit. The obtained chi-square (χ^2) of 724.240, $P=.000$, and χ^2/DF of 42.602 are very high. According to (Kline, 1998) for a model to be acceptable, χ^2/DF ratio should be ≤ 3 . Further, the GFI (.820), AGFI (.523), NFI (.431), RFI (-.205), IFI (.437), TLI (-.211), and CFI (.428) were all below the 0.9 which was below the recommended threshold of 0.9 (Hoe, 2008). The RMSEA of .341 is far above the recommended maximum of 0.08 for model fitness (Garver & Mentzer, 1999; Steiger, 1990).

4.13.3 Testing of research hypotheses on the hypothetical structural equation model

H1a: *Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.*

Results in Table 76 show that the relationship between Outcome Expectations and External Locus of Control was negative and significant (Beta=-.362, $P<0.001$). This finding leads to a suggestion that a positive change in Outcome Expectations will a negative change or reduction on the External Locus of Control of social media users. Thus, H1a that stated that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa was rejected.

H1b: *External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.*

Results in Table 76 show that the relationship between External Locus of Control and Health Behavior was positive and significant (Beta=.402, $P<0.001$). This finding leads to a suggestion that a positive change in External Locus of Control leads to a corresponding positive change or increase in the Health Behavior of social media users in Sub-Saharan Africa. This finding is in agreement with H1b that External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.

H2a: *Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa.*

Results in Table 76 also reveal that Cognitive Factors and Health Behavior is significant (Beta=.131, P=.004). This finding indicates that a change in the Cognitive Factors such as knowledge and beliefs among social media users leads to a positive change in Health Behavior of social media users. Therefore, this result upholds H2a hypothesis that states that Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa.

H2b: *Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa.*

Results in Table 76 reveal that there is a significant positive relationship between Cognitive Factors and Internal Locus of Control (Beta=.273, P<0.001). This means that a change in the Cognitive Factors such as skills, knowledge and experience will improve the internal locus of the social media users. This finding is in agreement with hypothesis one that Cognitive Factors have a positive effect on the Internal Locus of Control of social media users in Sub-Saharan Africa.

H2c: *Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa.*

Results in Table 76 further show that the relationship between Internal Locus of Control and Behavioral Intention was positive and significant (Beta=.180, P<0.001). Since the relationship implies a positive effect of the independent on the dependent variable. This finding means that an increase in the Internal Locus of Control of social media users will increase their Behavioral Intention to learn new Health Behaviors. This finding is in-line with H2c which postulates that Internal Locus of Control positively affects Behavioral Intention of social media users in Sub-Saharan Africa.

H2d: *Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa.*

Findings in Table 76 reveal that the relationship between Behavioral Intention and Health Behavior is positive and significant (Beta=.152, P=.001). This means that an increase in Behavioral Intention increases the learning of Health Behaviors. The finding is in agreement with H2d that Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa.

H3a: *Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Saharan Africa.*

The results in Table 76 however show that the relationship between Cognitive Factors and External Locus of Control was not significant (Beta=-.003, P=.950). This finding means that an increase in Cognitive Factors such as skills will not necessarily lead to a change in the external locus of social media users. The finding here is in disagreement with hypothesis two, which stated that Cognitive Factors have a positive impact on the External Locus of Control of social media users in Sub-Saharan Africa. Therefore hypothesis H3a was rejected.

H3b: *Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.*

The results in Table 76 also show that the relationship between Cognitive Factors and Self-Regulation is positive and significant (Beta=.151, P<0.001). This indicates that a positive change in the Cognitive Factors of social media users leads to a positive change in their Self-Regulation. This finding is in line with H₉ which states that Cognitive Factors have a positive impact on Self-Regulation of social media users in Sub-Saharan Africa. Basing on this finding, H₉ was also accepted.

H3c: *Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa.*

The results in Table 76 also show that the relationship between Self-Regulation and External Locus of Control was positive and significant (Beta=.331, P<0.001). This indicates that a

positive change in the Self-Regulation of social media users leads to a positive change in their External Locus of Control. This finding is in line with H3c which states that Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa. Basing on this finding, H3c was also accepted.

H3d: *Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.*

Further, the results in Table 76 reveal that the relationship between Self-Regulation and Health Behavior was positive and significant (Beta=.323, $P < 0.001$). This indicates that a positive change in the Self-Regulation of social media users leads to a positive change in their Health Behavior of social media users. This finding is in line with H3d which states that Self-Regulation positively affects the Health Behavior of social media users in Sub-Saharan Africa. Basing on this finding, H3d was also accepted.

H3e: *Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.*

Results in Table 76 reveal that the relationship between Age Sensitivity and Health Behavior was negative and significant (Beta=-.245, $P < 0.001$). This means that an increase in Age Sensitivity also increases Health Behavior. This finding is in agreement with H3e that Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa. Therefore, H3a was accepted.

H4: *Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa.*

Results in Table 76 reveal that the relationship between Cognitive Factors and Self-Regulation was positive and significant (Beta=.151, $P < 0.001$). Further the relationship between the interaction term Age Sensitivity * Cognitive Factors and the dependent variable Self-Regulation was also positive and significant (Beta=.157, $P < 0.001$). In addition, the relationship between the

moderator variable Age Sensitivity and the dependent variable Self-Regulation was significant and positive (Beta=.473, $P < 0.001$).

Basing on the above findings, where all the three relationships were significant, we suggest that Age Sensitivity moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa as stated in H4.

4.13.4 Testing for Mediation effects

In order to test for hypotheses 18 to 24, mediation tests were run on the model. This is done through analyzing the direct and indirect effects and their significance levels by running the AMOS bootstrap procedure. The mediation effects are as presented in Table 77.

Table 77: Bootstrap Mediation effects

Dependent variable		Mediating variable		Independent variable	DE	P	IE	P	Mediation effect	Hypothesis
Health Behavior	<---	Internal Locus of Control and Behavioral Intention	<---	Cognitive Factors	.152	.019	.008	.026	Partial mediation	H5a
External Locus of Control	<---	Self-Regulation	<---	Cognitive Factors	- .060	.433	.121	.001	Full mediation	H5b
Health Behavior	<---	External Locus of Control	<---	Self-Regulation	.329	.001	.142	.001	Partial mediation	H5c
Health Behavior	<---	Self-Regulation	<---	Cognitive Factors	.135	.069	.158	.001	Full mediation	H5d
Health Behavior	<---	External Locus of Control	<---	Cognitive Factors	.262	.001	.031	.454	No mediation	H5e

H5a: *Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.*

Results in Table 77 show that the direct effect of the relationship between Cognitive Factors and Health Behavior was significant (Beta=.152, P=.019). At the same time, the indirect effect of the relationship between Cognitive Factors and Health Behavior was also significant (Beta=.008, P=.026). Given that both the direct and indirect effects were significant, there is partial. This implies that Internal Locus of Control and Behavioral Intention partially mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa. Hence H5a was accepted.

H5b: *Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Saharan Africa.*

Results in Table 77 reveal that the direct effect of the relationship between Cognitive Factors and External Locus of Control is not significant (Beta=-.060, P=.433). The results however show that the indirect relationship between Cognitive Factors and External Locus of Control was significant (Beta=.121, P=.001). This means that there is full mediation of Self-Regulation in the relationship between Cognitive Factors and External Locus of Control. Since the introduction of Self-Regulation in the relationship renders the direct effect insignificant, it can be concluded that Self-Regulation fully mediates the relationship between Cognitive Factors and External Locus of Control. Therefore H5b was accepted.

H5c: *External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa.*

As seen in Table 77, the direct effect of the relationship between Self-Regulation and Health Behavior was significant (Beta=.329, P=.001). The direct effect of the relationship between Self-Regulation and Health Behavior via External Locus of Control was also significant (Beta=.142, P=.001). This is in-line with H5c that External Locus of Control positively mediates the

relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.

H5d: *Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Further, in Table 77 the results show that the relationship between Cognitive Factors and Health Behavior direct effect was not significant (Beta=.135, P=.069). However, the relationship between Cognitive Factors and Health Behavior via Self-Regulation was significant (Beta=.158, P=.001). This means that Self-Regulation fully mediates the relationship between Cognitive Factors and Health Behavior. Thus H5d that stated that Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa was accepted.

H5e: *External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Results in Table 77 reveal that direct effect of the relationship between Cognitive Factors and Health Behavior was significant (Beta=.262, P=.001). However, the indirect effect of the relationship between Cognitive Factors and Health Behavior via External Locus of Control was not significant (Beta=.031, P=.454). This means that External Locus of Control does not mediate the relationship between Cognitive Factors and Health Behavior via External Locus of Control. Therefore H5e which stated that External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa was rejected. Table 78 presents a summary of accepted and rejected hypotheses.

Table 78: Summary of hypotheses accepted and rejected by the hypothetical model

Accepted hypothesis	Rejected
H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.	H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.

<p>H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa.</p> <p>H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.</p> <p>H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa.</p> <p>H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p>	<p>H3a: Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Saharan Africa.</p> <p>H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.</p> <p>H5e: External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.</p>
---	--

4.14 Development of the final structural equation model for social media and Health Behavior

Given that the hypothesized model in Figure 15 was not fitting the data well, having obtained a χ^2 of 724.240, χ^2/DF of 42.602, GFI of .820, AGFI of .523, NFI of .431, RFI of -.205, IFI of .437, TLI of -.211, CFI of .428 and RMSEA of .341 were all bad model fit indices. Consequently, AMOS rules were followed in building a new structural model that explains social media and Health Behavior. This was done by eliminating weak and insignificant relationships. Hence a good number of the hypotheses explained above were dropped. Figure 16 presents the final structural equation model for social media and Health Behavior in Sub-Saharan Africa.

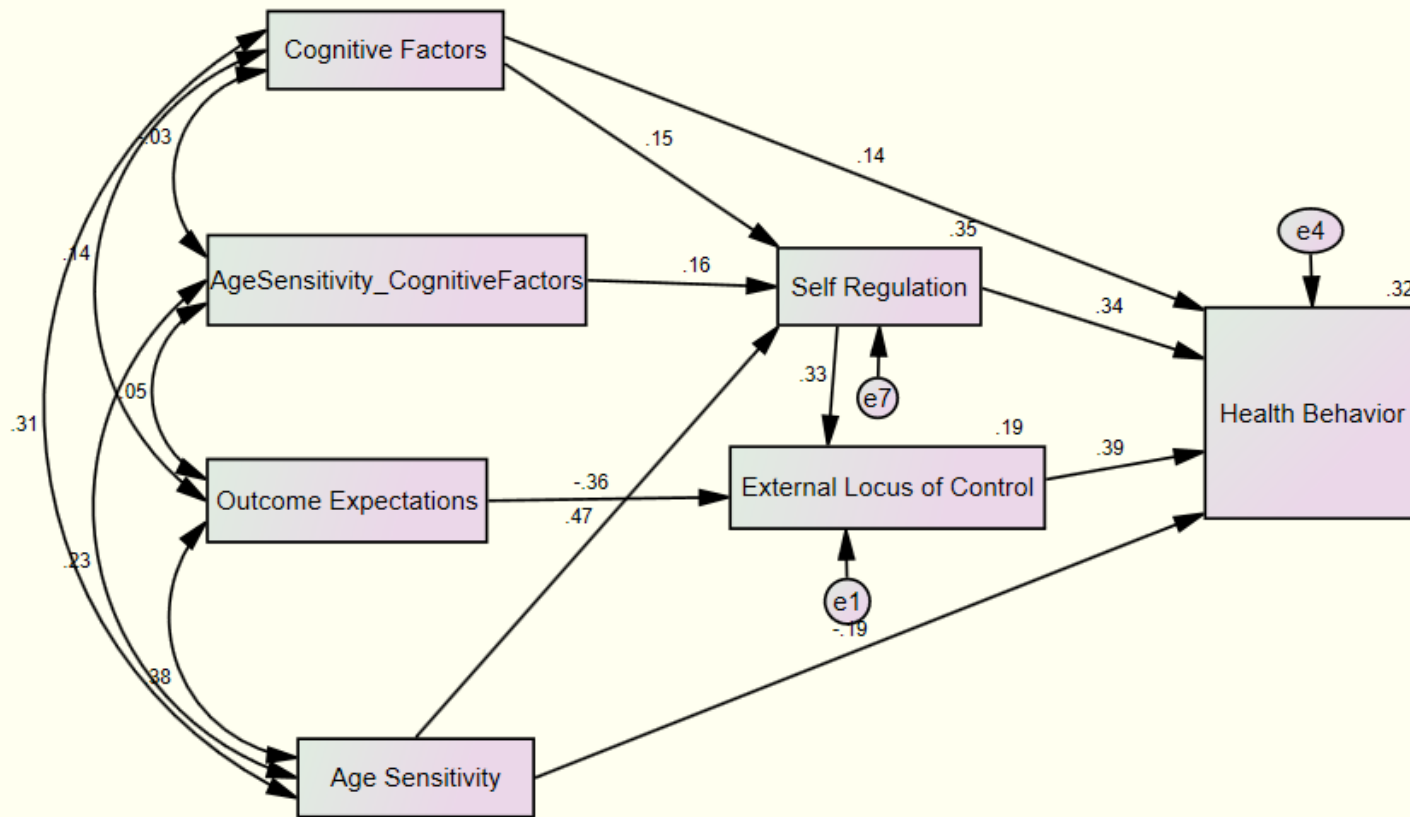


Figure 16: Model for social media and Health Behavior

Compared to the hypothetical model in Figure 15, latent variables; Internal Locus of Control Behavioral Intention were dropped since they did not fit the model. This led to elimination of the relationship between Cognitive Factors and Internal Locus of Control, Internal Locus of Control, and Behavioral Intention, Behavioral Intention and Health Behavior, and their mediation effects from the model.

The relationships that were retained are those between Cognitive Factors and Health Behavior; Cognitive Factors and Self-Regulation; Self-Regulation and Health Behavior; External Locus of Control and Health Behavior; Self-Regulation and External Locus of Control; Age Sensitivity and Health Behavior; Age Sensitivity and Self-Regulation; and Outcome Expectations and External Locus of Control. Table 79 presents the list of retained hypotheses and those that were dropped in the final model, while Table 80 shows model statistics.

Table 79: Hypotheses in the proposed

Accepted hypothesis	Drooped hypothesis
<p>H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Sahara Africa.</p> <p>H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H3e: Age Sensitivity has a positive influence on the Health Behavior of social</p>	<p>H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Sahara Africa.</p> <p>H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H3a: Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Sahara Africa.</p> <p>H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Sahara Africa.</p>

<p>media users in Sub-Sahara Africa.</p> <p>H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.</p> <p>H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p> <p>H5f: Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Sahara Africa.</p>	<p>H5e: External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.</p>
--	---

Table 80: Social media and Health Behavior Model Fit Summary

X²	DF	P	X²/DF	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
8.653	6	.194	1.442	.993	.968	.983	.940	.995	.981	.994	.035
						Estimate	S.E.	C.R.	Beta	P	Hypothesis
External Locus of Control	<---		Outcome Expectations	-.230	.031	-7.511	-.363	***	H1a -rejected		
Health Behavior	<---		External Locus of Control	.411	.049	8.336	.385	***	H1b –accepted		
Health Behavior	<---		Cognitive Factors	.209	.072	2.905	.135	.004	H2a –accepted		
Self-Regulation	<---		Cognitive Factors	.185	.055	3.332	.151	***	H3b –accepted		
External Locus of Control	<---		Self-Regulation	.390	.057	6.834	.330	***	H3c –accepted		
Health Behavior	<---		Self-Regulation	.425	.071	5.961	.337	***	H3d –accepted		
Health Behavior	<---		Age Sensitivity	-.186	.053	-3.525	-.193	***	H3e –rejected		
Self-Regulation	<---		Cognitive Factors	.185	.055	3.332	.151	***	H4 –accepted		
Self-Regulation	<---		Age Sensitivity	.360	.035	10.174	.473	***			
Self-Regulation	<---		Age Sensitivity * Cognitive Factors	.105	.030	3.561	.157	***			

Table 81: Squared Multiple Correlations for the proposed model

	Estimate
Self-Regulation	.349
External Locus of Control	.190
Health Behavior	.319

Results in Table 80 reveal that the model was fit. For example the obtained $\chi^2=8.653$ is below 20, $\chi^2/DF=1.442$ is below 3, $P=.194$ is above the recommended minimum of 0.5. The GFI=.993, AGFI=.968, NFI=.983, RFI=.940, IFI=.995, TLI=.981, and CFI=.994 were all above the threshold of 0.9 (Hoe, 2008). The obtained RMSEA of .035 was also far below the recommended maximum threshold of 0.08 for a model to be fit. Based on these indices, we conclude that the proposed model explains social media and Health Behavior of social media users in Sub-Saharan Africa.

The squared correlations seen in Table 81 reveal that Cognitive Factors, Age Sensitivity * Cognitive Factors and Age Sensitivity predicted 35% of Self-Regulation (Beta=.349). Outcome expectation explained 19% of the changes in External Locus of Control (Beta=.190). On the other hand, Cognitive Factors, Age Sensitivity * Cognitive Factors, Age Sensitivity, Self-Regulation and External Locus of Control predicted 32% of variance in Health Behavior (Beta=.319).

The proposed model is made up of six variables including 1) Cognitive Factors, 2) Outcome Expectations, 3) Age Sensitivity, 4) Self-Regulation, 5) External Locus of Control and 6) Health Behaviors. The first 3 variables i.e. Cognitive Factors, Outcome Expectations and Age Sensitivity are independent variables - though Age Sensitivity also doubles as a moderators variable. Self-Regulation and External Locus of Control are mediators while Health Behavior is the dependent variable.

For enhanced learning of new behaviors by social media users, increase Outcome Expectations, increase External Locus of Control, increase Cognitive Factors, increase Self-Regulation, and reduce Age Sensitivity

4.14.1 Testing of research hypotheses on the final structural model

H2a: *Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Sahara Africa.*

The results in Table 80 reveal a significant positive relationship between Cognitive Factors and Health Behaviors (Beta=.135, P=.004). This implies that a high level of Cognitive Factors correspond with better Health Behavior of social media users. Therefore H2a that stated that Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa was accepted and confirmed. This finding informs that social media users with high levels of cognitive abilities such as knowledge and beliefs will have high amenability to certain Health Behaviors by virtue of using social media platforms.

H3b: *Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa.*

Further, the results in Table 80 show that Cognitive Factors had a positive and significant relationship with Self-Regulation (Beta=.151, P<0.001). This finding means that a change that increases Cognitive Factors also increases Self-Regulation of social media users. The result implies further that the higher the cognitive attributes of the social media users, the higher their tendency to self-regulate and on the other side, the lower level of cognitive abilities in relation to knowledge and beliefs, the less they will self-regulate.

The current funding is in agreement with H3b that Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa. Hence it was accepted and confirmed.

H3d: *Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa.*

It was observed in Table 80 that Self-Regulation had a significant positive relationship with Health Behavior (Beta=.337, P<0.001). This means that the level of Self-Regulation has a direct effect on Health Behavior. In essence highly self-regulated social media users will most likely learn new Health Behaviors like health practices and morals from the social media platforms than their counterparts that are lowly self-regulated. Therefore H3d stating that Self-Regulation

has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa was accepted.

H3c: *Self-Regulation positively affects the External Locus of Control of social media users in Sub-Sahara Africa.*

Further, it was observed in Table 80 that Self-Regulation had a positive significant relationship with External Locus of Control at 99.9% confidence level (Beta=.330, $P < 0.001$). This means that the level of Self-Regulation of the social media users in Sub-Saharan Africa is directly related with their External Locus of Control. More so, the results show that highly self-regulated social media users had a high level External Locus of Control and users with a low level of Self-Regulation had a low level External Locus of Control. This finding is agreement with H3c that Self-Regulation positively affects the External Locus of Control of social media users in Sub-Sahara Africa. Therefore, it was accepted.

H1b: *External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.*

As seen in Table 80, the relationship between External Locus of Control and Health Behavior was also found to be positive and significant at 99% confidence level (Beta=.385, $P < 0.001$). This indicated that there is a high certainty of the existence of a relationship between External Locus of Control and Health Behavior. More to the relationship between External Locus of Control and Health Behavior, it suffices to mention that, social media users who are highly influenced by external factors such as social influence from friends and family are more likely to learn new Health Behaviors from social media platforms. This finding is in support of the hypothesis H1b that External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.

H1a: *Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.*

Further, results in Table 80 reveal that the relationship between Outcome Expectations and External Locus of Control was significant and negative at 1% level of significance (Beta=-.363, $P < 0.001$). This implies that an increase in the Outcome Expectations of social media users will reduce their External Locus of Control. In other words, if the expected outcome from learning new Health Behaviors via social media are high then the reliance on others to learn the behavior reduces. This relationship could probably be attributed to the confidential nature of health related information which most people do not want to share easily via social media. Therefore H1a that stated that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa was rejected.

H3e: *Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.*

Similarly, as seen in Table 80, the relationship between Age Sensitivity and Health Behavior was found to be negative but significant (Beta=-.193, $P < 0.001$). This relationship meant that an increase in the Age Sensitivity reduced the learning of Health Behaviors by social media users in Sub-Saharan Africa. This result implies further that the social media users who are highly mindful of the age of the online community providing health related information for their consumption, are less likely to learn new Health Behaviors, conversely, if the social media users who not highly sensitive about the age of the online community providing health related information then they would easily learn new health related behaviors. The current finding is in disagreement with H3e that Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa. Therefore H3e was rejected.

H4: *Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.*

Further, results in Table 80 reveal a significant positive relationship between the moderator variable Age Sensitivity and Self-Regulation (Beta=.473, $P < 0.001$). At the same time, there was a significant positive relationship between the interaction variable Age Sensitivity * Cognitive Factors and the dependent variable Self-Regulation (Beta=.157, $P < 0.001$). Given that the

independent variable Cognitive Factors had a positive significant relationship with its dependent variable Self-Regulation (Beta=.151, $P < 0.001$), it was suggested that Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation. This implies that Age Sensitivity enhances the relationship between Cognitive Factors and Self-Regulation. Looking at the modgraph in Figure 17, we observe that the effect of Cognitive Factors on Self-Regulation is more at higher levels of Age Sensitivity. In other words the more age sensitive the social media users are the more their cognitive attributes such as knowledge and skills will increase their level of Self-Regulation. Conversely the less age sensitive the social media users are the less their cognitive attributes will increase their level of Self-Regulation. It is however worth noting that the moderation effect of Age Sensitivity the on the relationship between Cognitive Factors and Self-Regulation is weak owing to slight difference in the slopes at the different levels of Age Sensitivity.

Based on the above finding, H4 was accepted. Therefore, Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa.

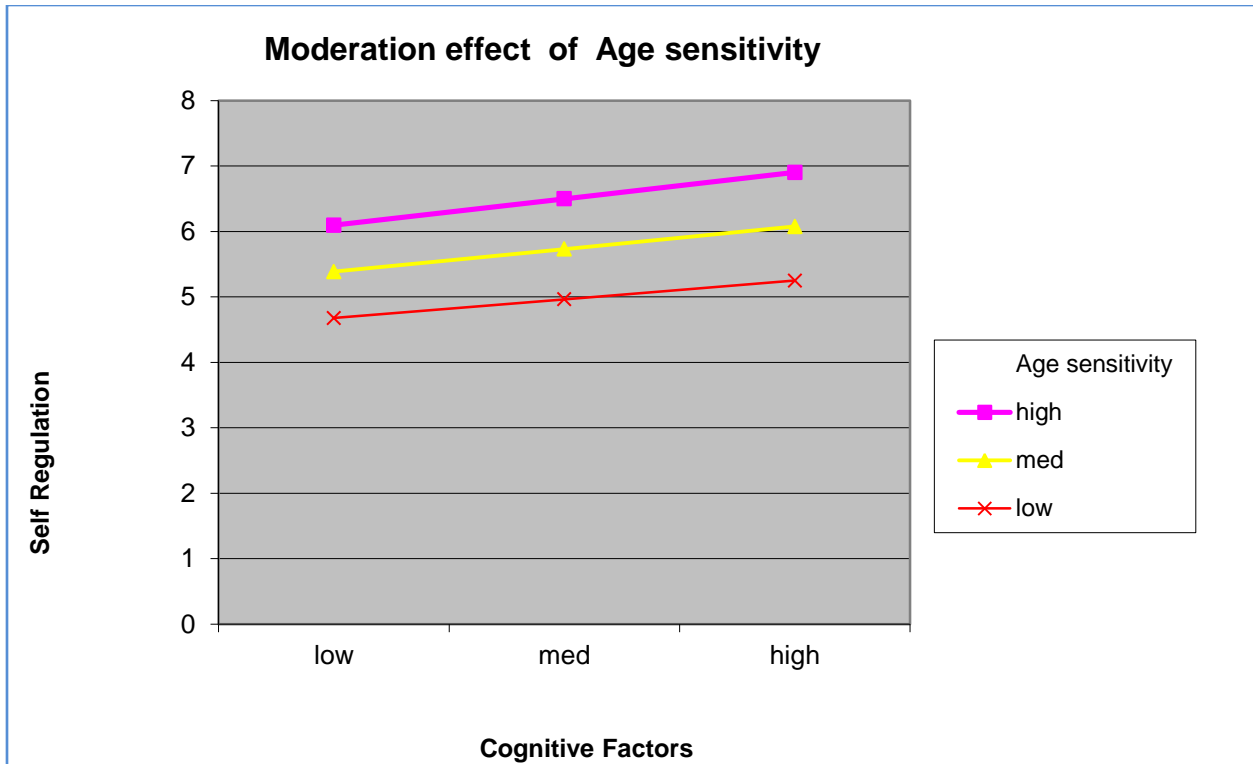


Figure 17: Age Sensitivity moderating Cognitive Factors and Self-Regulation

4.14.2 Testing for mediation effects

Given that Self-Regulation and External Locus of Control were mediating several relationships in the model as seen in Figure 17, bootstrap mediation tests were conducted to validate these relationships. Table 82 shows the results.

Table 82: Mediation results for the proposed model

Dependent variable	Mediating variable		Independent variable		Direct Effect		Indirect Effect		Mediation effect
					DE	P	IE	P	
Health Behavior	<---	External Locus of Control	<---	Self-Regulation	.425	.002	.132	.000	H5c: Partial mediation
Health Behavior	<---	Self-Regulation	<---	Cognitive Factors	.209	.004	.153	.001	H5d: Partial mediation
Health Behavior	<---	Self-Regulation & External Locus of Control	<---	Cognitive Factors	.270	.001	.072	.001	H5e: Partial mediation
Health Behavior	<---	Self-Regulation	<---	Age Sensitivity	-.186	.002	.167	.001	H5f: Partial mediation

H5d: *Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

As seen in Table 82, the direct effect for the relationship between Cognitive Factors and Health Behavior was found to be significant (Beta=.209, P=.004). The indirect effect of the relationship between Cognitive Factors and Health Behavior via Self-Regulation was also significant (Beta=.153, P=.001). Given that both direct and indirect effects are significant, it means then that Self-Regulation has a partial mediation effect on the relationship between Cognitive Factors and Health Behavior. The influence of Cognitive Factors of the social media users on the amenability to learn Health related behaviors is partly direct and partly indirect through Self-Regulation, in the sense that Cognitive Factors of the social media users affect their level Self-Regulation and in turn the Self-Regulation affects their willingness to learn health related behavior.

This finding is in agreement with H5d that Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa. Hence H5d was accepted.

H5e: *Self-Regulation and External Locus of Control positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.*

Further, as seen in Table 82, the direct effect for the relationship between Cognitive Factors and Health Behavior was significant (Beta=.262, P=.006). The indirect effect of the relationship between Cognitive Factors and Health Behavior through Self-Regulation and External Locus of Control was also significant (Beta=.059, P=.010). Given that both direct and indirect effects were significant, Self-Regulation and External Locus of Control had a partial mediation effect in the relationship between Cognitive Factors and Health Behavior. In other words, the influence of the social media users' Cognitive Factors on the amenability to learn new Health Behaviors was partly direct and partly due to Self-Regulation and External Locus of Control.

This finding is in agreement with H5e that Self-Regulation and External Locus of Control positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.

H5f: *Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Saharan Africa.*

According to results in Table 82, the direct effect for the relationship between Age Sensitivity and Health Behavior was significant (Beta=-.186, P=.002). The indirect effect of the relationship between Age Sensitivity and Health Behavior via Self-Regulation was also significant (Beta=.167, P=.001). Given that both direct and indirect effects are significant, Self-Regulation has a partial mediation effect in the relationship between Age Sensitivity and Health Behavior. If the health related information is coming from a favorable age group, and also if the social media user is highly mindful of his/her actions, consumption of health related information on social media are likely to influence their Health Behavior. But if the health related information is coming from an online community whose age group is not liked by the social media user, and also if the social media user does not take due diligence in consuming health-related information via social media, then there will be no learning of new behaviors.

The above finding is in disagreement with H5e that Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Saharan Africa.

H5c: *External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa.*

Further, as seen in Table 82, the direct effect for the relationship between Self-Regulation and Health Behavior was significant (Beta=.425, P=.002). The indirect effect of the relationship between Self-Regulation and Health Behavior via External Locus of Control was also significant (Beta=.132, P=.000). Given that both direct and indirect effects are significant, External Locus of

Control has a partial mediation effect in the relationship between Self-Regulation and Health Behavior.

This finding implies that the tendency of relying on online communities for learning new behaviors, coupled with the level of carefulness that one has both positively influence their learning of new health related behaviors via social media. For example, of a social media user a type of person who seeks solutions to his/her problems from online communities via social media platforms, he/she is likely to learn new health related behavior via such platforms. At the same time, if one is mindful and calculative of his/her actions in terms consuming and sharing health-related information via social media, he/she is also likely to learn new behaviors. The inverse is true.

The above finding indicates that H5c stating that External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa was accepted.

4.15 Summary of findings

H1a stating that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Saharan Africa was rejected because the relationship was negative. H1b stating that External Locus of Control positively affects the Health Behavior of social media users in Sub-Saharan Africa was accepted having obtained a significant positive relationship. H2a stating that Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Saharan Africa was accepted since the relationship was positive and significant. H2b stating that Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa was confirmed with a positive significant relationship. H2c stating that Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Saharan Africa was confirmed since it had a positive significant relationship in the Structural Equation Model. H2d stating that Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa was also confirmed since there was a positive significant relationship. H3a stating that Cognitive Factors have a positive effect on

External Locus of Control of social media users in Sub-Saharan Africa was rejected since there was no significant relationship between the two variables. H3b stating that Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Saharan Africa was confirmed with a significant positive relationship. H3c stating that Self-Regulation positively affects the External Locus of Control of social media users in Sub-Saharan Africa was also confirmed with a positive significant relationship. H3d stating that Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa was confirmed with a positive significant relationship. H3e stating that Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Saharan Africa was rejected given that the relationship was negative. H4 stating that Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa was rejected by hierarchical regression but confirmed by SEM results. H5a stating that Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa was confirmed since there was partial mediation. H5b stating that Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Saharan Africa was confirmed with a full mediation effect. H5c stating that External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Saharan Africa was confirmed with a partial mediation effect. H5d stating that Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa was confirmed with a partial mediation effect. H5e stating that External Locus of Control positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa was also confirmed with a partial mediation effect. H5f stating that Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Saharan Africa was also confirmed with a partial mediation effect. The following chapter presents a discussion of these findings in relation to literature.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

Chapter four presented findings of Exploratory Factor Analysis, Confirmatory Factor Analysis, Correlation and Regression results as well as Structural Equation Models. In this chapter, we present a discussion of findings starting with exploratory and confirmatory factor analysis. We then proceed by making conclusions on each finding. The chapter ends with a description of the study implications to methodology, theory, practice, policy and recommendations. Table 83 presents a summary of findings for which a discussion is being made.

Table 83: Summary of findings

Hypothesis	Correlation and regression		SEM	
	Finding	Accepted / Rejected	Beta (P - value)	Confirmed / Not confirmed
H1a: Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa.	$r=-.285^{**}$, $P<.01$, Beta=-0.175**, Adjusted $R^2=.227$, R^2 Change=.027	Rejected	-.363 (P<0.001)	Not confirmed
H1b: External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa.	$r=.336^{**}$, $P<.01$, Beta=0.345**, Adjusted $R^2=.187$, R^2 Change=.092	Accepted	.385 (P<0.001)	Confirmed
H2a: Cognitive Factors have a positive effect on the Health Behavior of social media users in Sub-Sahara Africa.	$r=.194^{**}$, $P<.01$, Beta=0.246, Adjusted $R^2=.096$, R^2 Change=.054	Rejected	.135 (P=.004)	Confirmed
H2b: Cognitive Factors have a positive impact on Internal Locus of Control of social media users in Sub-Sahara Africa.	$r=.351^{**}$, $P<.01$, Beta=0.392**, Adjusted $R^2=.194$, R^2 Change=.137	Accepted	.273 (P<0.001)	Confirmed
H2c: Internal Locus of Control positively affects the Behavioral Intention of social media users in Sub-Sahara	$r=.043$, $P>.05$, Beta=.050,	Rejected	.180 (P<0.001)	Confirmed

Africa.	Adjusted R ² =.027, R ² Change=.002			
H2d: Behavioral Intention positively affects Health Behavior of social media users in Sub-Sahara Africa.	r=.372 ^{**} , P<.01, Beta=0.432 ^{**} , Adjusted R ² =.359, R ² Change=.170	Accepted	.152 (P=.001)	Confirmed
H3a: Cognitive Factors have a positive effect on External Locus of Control of social media users in Sub-Sahara Africa.	r=.089, P>.05, Beta=0.163 ^{**} , Adjusted R ² =.248, R ² Change=.023	Rejected	-.003 (P=.950)	Not confirmed
H3b: Cognitive Factors have a positive effect on Self-Regulation of social media users in Sub-Sahara Africa.	r=.245 ^{**} , P<.01, Beta=.270 ^{**} , Adjusted R ² =.165, R ² Change=.065	Accepted	.151 (P<0.001)	Confirmed
H3c: Self-Regulation positively affects the External Locus of Control of social media users in Sub-Sahara Africa.	r=.459 ^{**} , P<.01, Beta=0.387 ^{**} , Adjusted R ² =.370, R ² Change=.122	Accepted	.330 (P<0.001)	Confirmed
H3d: Self-Regulation has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.	r=.443 ^{**} , P<.01, Beta=0.213 ^{**} , Adjusted R ² =.388, R ² Change=.030	Accepted	.337 (P<0.001)	Confirmed

H3e: Age Sensitivity has a positive influence on the Health Behavior of social media users in Sub-Sahara Africa.	$r=.226^{**}$, $P<.01$, Beta=-0.082, Adjusted $R^2= .391$, R^2 Change=.004	Rejected	-.193 ($P<0.001$)	Not confirmed
H4: Age Sensitivity positively moderates the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Sahara Africa.	Beta= 1.021*, - 0.299, & -0.414	Rejected	.151 ($P<0.001$), .473 ($P<0.001$) & .157 ($P<0.001$)	Confirmed
H5a: Internal Locus of Control and Behavioral Intention positively mediate the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.	No results	See next column	.152 ($P=.019$) & .008 ($P=.026$)	Confirmed
H5b: Self-Regulation positively mediates the relationship between Cognitive Factors and External Locus of Control of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.040811$	Accepted	-.060 ($P=.433$) & .121 ($P=.001$)	Confirmed
H5c: External Locus of Control positively mediates the relationship between Self-Regulation and Health Behavior of social media users in Sub-Sahara Africa.	No results	See next column	.425 ($P=.002$) & .132 ($P=.000$)	Confirmed
H5d: Self-Regulation positively mediates the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.	Sobel z-value $P=0.000035$	Accepted	.209 ($P=.004$) & .153 ($P=.001$)	Confirmed
H5e: External Locus of Control positively mediates the	Sobel z-value	Rejected	.270 ($P=.001$) &	Confirmed

relationship between Cognitive Factors and Health Behavior of social media users in Sub-Sahara Africa.	P=0.105354		.072 (P=.001)	
H5f: Self-Regulation positively mediates the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Sahara Africa.	Sobel z-value P=0.000001	Accepted	-.186 (P=.002) & .167 (P=.001)	Confirmed

5.1 Discussion of findings

5.1.1 Cognitive Factors

Whereas the EFA retained all the three hypothesized constructs of Cognitive Factors i.e. Beliefs, Knowledge and Attitude with a total variance explained of 75%, CFA retained only two – Beliefs and Knowledge. Compared to the hypothesized observed variables, CFA results were significantly different from the EFA findings given that only 2 constructs for Cognitive Factors were retained by the CFA. Therefore only beliefs and knowledge were considered in the final model for social media and Health Behavior. The elimination of attitude was digressed from what the social cognitive theory (Bandura, 1990; Bandura, 1986) and the factors proposed by Bayrón (2013). This suggestion that attitudes of social media users do not determine their Health Behavioral learning patterns could be attributed to the fact that there is no physical interaction between the parties in the process of learning. Whereas attitudes may easily be recognized in the physical learning process, it may be hard to recognize via social media – hence little or no impact.

5.1.2 Internal Locus of Control

Whereas the EFA retained only 3 observed variables for Internal Locus of Control with a total variance explained of 78%, CFA retained 5 out of the hypothesized 7. A comparison of EFA and CFA finding revealed a significant difference. However, given that CFA retained 5, it can be concluded that no much difference was observed between the hypothesized variable and the one confirmed by the CFA results. Hence, the results to a higher extent agree with literature of Rotter (1966) and Boundless (2016) on the measurement variables for Internal Locus of Control.

5.1.3 External Locus of Control

The EFA results on external locus of indicated that a set of 5 observed variables measured or explained 71% of variance in the latent variable. Closely related, the CFA retained 4 observed variables for the same. Given that External Locus of Control had a set of 8 hypothesized

measurement variables, half were eliminated. This is a significant alteration. Thus the confirmed latent variable External Locus of Control that was used in the final model was significantly different from the one hypothesized in the literature (Boundless, 2016; Rotter, 1966).

5.1.4 Self-Regulation

With a total variance explained of 57%, EFA results indicated that 9 items helped measure Self-Regulation out of the predicted 16. On the other hand, the CFA confirmed 7 items for Self-Regulation. Given that more than half of the hypothesized observed variables were dropped in trimming the latent variable, there was significant variation between hypothesized and confirmed measurement variables. Hence a disagreement with literature (Blalock et al. 2016; Bandura, 1988; 1986; Winters et al. 2003)

5.1.5 Age Sensitivity

Findings of the EFA retained 4 measurement items for Age Sensitivity out of the hypothesized 6. The 4 retained items explained 78% of variance in Age Sensitivity. Further, the results of CFA confirmed that 4 items explained the latent variable Age Sensitivity. Therefore, both the EFA and CFA findings were in agreement in this respect. Also given that only 2 observed variables were dropped in the analysis, we conclude that there was no significant difference in the hypothesized and confirmed latent variable Age Sensitivity as had been suggested by literature (NIHCE, 2007; WHO, 2000).

5.1.6 Outcome Expectations

The literature of Blalock et al. (2016); Buck (2010); Bandura, (2000); Bandura (1986); Rotter (1966) suggested 7 measurement items for outcome expectation. Results from EFA indicated that 5 items were responsible 80% total variance in outcome expectation. Similarly, the results of CFA confirmed 5 items as the ideal measurement observed variables for outcome expectation. We observe that the results of the CFA and EFA were in agreement at the same time compliment

with literature given that the discrepancy between the hypothesized observed variables and those confirmed in the EFA and CFA was not significant.

5.1.7 Behavioral Intention

Behavioral Intention was originally measured by 8 observed variables. However, 2 were dropped in the EFA and CFA. The EFA total variance explained by 6 retained items was 77%. The obtained average variance explained by the 6 measurement items in the CFA was greater than 0.5. This finding indicates that 6 observed variables converged to measure Behavioral Intention. The confirmed measurement variables were inline literature of (Venkatesh et al., 2003).

5.1.8 Health Behavior

Health Behavior was hypothetically measured by 4 constructs including Practice, skills, observational learning and moral degeneration. All the 4 were retained by the EFA with a total variance explained of 80%. Practice had 5 observed variables out of which 3 were maintained by the EFA. Skills had 4 observed variables out of which 2 were retained. Moral degeneration had 8 items, out of which 3 were retained. Finally, observational learning had 8 measurement items, but only 10 items were retained on the variable.

The CFA results confirmed 3 constructs out of the 4. These were observational learning with 2 measurement items, Practice with 2 measurement items and moral degeneration, also with 2 measurement variables. The CFA results significant depart from both the EFA and hypothesized measurements. Thereby also suggesting a significant disagreement with literature (Blalock et al. 2016; Kane, 2004; Winett et al. 1999; Bandura 1990; Bandura, 1986)

5.2.0 Outcome Expectations and External Locus of Control of social media users

Hypothesis H1a stated that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Saharan Africa. However, correlation and Multiple

Hierarchical Regressions results revealed that a negative significant relationship existed between Outcome Expectations and External Locus of Control. The SEM results also revealed a significant but negative effect of Outcome Expectations on the External Locus of Control of social media users. Both results rejected H1a.

The above findings disagree with literature. The literature had suggest that increasing Outcome Expectations such as the benefits in terms of becoming a better person, becoming more acceptable to others, becoming more trustworthy among peers (Blalock et al. 2016; Buck, 2010; Bandura, 2000) increased External Locus of Control. This made farmers unaccountable of their decisions, having low morale, achieving less, feeling lucky about their achievements and being unable to help themselves (Boundless, 2016; Rotter, 1966).

This finding is useful to the study in the sense that, even if social media users anticipate several benefits from using the technology, they remain in control of and responsible for their actions. Social media users who expect high benefits in terms learning new useful health related behaviors do not blame others for their shortcomings. Even if they eventually fail to yield any benefits, they will not blame it others but themselves.

Low External Locus of Control is desirable given the nature of information and behaviors to be learned via. Most people in Sub-Saharan Africa consider health matters private due to socio-culture constraints such as stigmatization. For example a person suffering from a give disease such as tuberculosis, drug abuse, HIV/AIDS among will not wish for information about this ailment to reach their communities, and even worse, the online community via social media. Such information is held with utmost privacy. This leads them to access health related information via social secretly.

5.2.1 External Locus of Control and Health Behavior

Correlation and regression findings revealed that External Locus of Control positively influenced Health Behavior. Similarly, the SEM results indicated that External Locus of Control significantly predicted Health Behavior of social media users in Sub-Saharan Africa. The finding

infer that social media users who are willing to rely on others for their Health Behavioral learning needs have high chances of learning new Health Behaviors. According to Rotter (1966) social learning theory, individuals with high External Locus of Control rely mainly on others for achieving their goals. They also attribute their failures to others. They are more outgoing, friendly and free with information sharing. The current finding indicates that such individuals are more likely to learn new Health Behaviors via social media.

The social cognitive theory (Bandura, 1990) suggests that through observational learning, individual who rely on others – role models, can easily learn new behaviors by observing them convey such information through actions. This enables them to learn new skills, practices, but often times, their morals are affected. For example if a youth has a high level of External Locus of Control, he/she is likely to trust and rely on the information posted by someone influential in their community. This, in the long run affects him or her behavior. For the case of practice, if an individual consumes information about exercising for physical fitness and health-wellbeing, the individual is likely to start physical exercises in the hope that they probably cut weight or reduce their blood pressure. In the long run, this becomes a routine practice, thereby changing the individual's Health Behavior. For the case of moral degeneration, assuming the role model shares information about pornography or drug abuse, an individual with high External Locus of Control will trust and rely on such information for their sexual and psychological wellbeing. Hence, they will begin practicing what they have observed from the role model (Blalock et al. 2016; Kane, 2004; Bandura, 1990). These two scenarios point the effect that social media may influence an individual with a high external locus of in a positive as well as negative way.

5.2.2 Cognitive Factors and Health Behavior of control of social media users

Although correlation and regression results indicated that no significant relationship existed between Cognitive Factors and Health Behavior, SEM results revealed a significant positive relationship between Cognitive Factors and Health Behaviors. In this situation, we consider SEM results because hierarchical results were controlled by extraneous variables such as age, gender, country of residence and level of education. Further, the proposed model is based on SEM.

However, this discrepancy poses questions for further investigation in order to discover the role played by those extraneous variables in this relationship.

The SEM finding implies that a positive change in the Cognitive Factors of social media users such as improved knowledge and beliefs facilitated the learning of new Health Behaviors via social media.

Bayrón (2013) argues that Cognitive Factors or personal factors are instrumental in the learning process. They shape the learner, help him or identify the learning or knowledge gap for which information should be sought. Therefore people with high Cognitive Factors are target learners. They are selective on the subjects of their interest on which they wish to learn about. For example, an individual who is knowledgeable and believes that seeking information about drug abuse or alcoholism via social media can help them solve their health related problem through behavioral change, will join a given social media community that specifically discuss that particular problem. This, in the long run enhances the learning and behavioral change through observational learning (Bandura, 1986) and practice (Blalock *et al.*, 2016).

On the other hand, an individual with lower Cognitive Factors such as low knowledge and beliefs is likely to access health information randomly. This is so because such individuals do not set their learning goals and have no specific sources of information from where to learn new Health Behaviors. Therefore, given that goals are not set prior to learning, there is limited behavioral change through observational learning and practice. Instead, given the randomness of information consumption, these kind of individuals may be vulnerable to information upsurge leading behavioral change in terms of moral degeneration once fully engaged on social media.

For example, a Muslim may observe their role model eating pork, but because of his religious beliefs, such a person may not start eating pork. Similarly, for an individual having knowledge of the consequences of eating pork as a Muslim, they will unlikely imitate the act. Hence, there will be no behavioral change. However, if the subject's beliefs are similar to the role model – in this he is not Muslim and his religious beliefs permit him to eat pork, such a person will learn the observed act and do it through imitation. This causes behavioral change.

5.2.3 Cognitive Factors and Internal Locus of Control of control of social media users

Both findings correlation and Multiple Hierarchical Regressions and those of SEM suggested that Cognitive Factors had a significant positive relationship with Internal Locus of Control. The finding for H2b was in agreement with literature that suggested that individuals whose beliefs allowed them to use social media to access and share health information, and also who were knowledgeable about usage of social media were likely to be self-reliant, independent and make greater efforts to learn new Health Behaviors via social media platforms (Boundless, 2016, Bayrón, 2013).

According to Rotter (1966) an individual with high Internal Locus of Control controls the consequences of his behavior and always seek better results from what they engage in. according to Boundless (2016), individuals with high Internal Locus of Control belief strongly in their cultural values and they tend to cultivate good interpersonal relations with others. They are inherently problem solvers and are always willing to enhance their knowledge and skills through learning (Boundless, 2016; Rotter, 1966). Internal Locus of Control therefore is a facilitating condition in the learning process. Given that older people are more knowledgeable and have strong beliefs in their actions, they are more likely to control their actions, seek learning and eventually learn new Health Behaviors via social media compared to the young people who, in most case are very doubtful of their beliefs and are less knowledgeable.

5.2.4 Internal Locus of Control and Behavioral Intention of control of social media users

Correlation and regression analysis revealed that no significant relationship existed between Internal Locus of Control and Behavioral Intention. However, SEM results revealed that individual with high Internal Locus of Control also have high Behavioral Intention to learn new Health Behaviors via social media. This finding is in-line with literature (Boundless, 2016; Rotter, 1966). According to Rotter (1966), Internal Locus of Control is where an individual controls the consequences of his / her actions. The individual is calculative and acts in anticipation of some achievement. This enables such an individual achieve greater performance

in terms of achievement. Further, individuals with high Internal Locus of Control have better interpersonal relations and make greater efforts to learn new behaviors (Boundless, 2016). These attributes increase their Behavioral Intentions to learn new behaviors (Venkatesh et al. 20030).

On the other hand, if an individual's Internal Locus of Control is low, he / she will have no much control over their actions and will not accept the consequences of their actions. Such individual tend to blame their mistakes on others (Boundless, 2016; Rotter, 1966). They also heavily rely on others for their own achievements, to the extent that they are nonperformers. Worse still, individual with low Internal Locus of Control have poor interpersonal relations, making it hard for them to create synergy and learn from others. Therefore, their Behavioral Intention to learn new Health Behaviors is lower compared to their counterparts with high Internal Locus of Control (Venkatesh et al. 20030).

5.2.5 Behavioral Intention and Health Behavior of control of social media users

Correlation and regression results revealed a significant positive relationship between Behavioral Intention and Health Behavior. SEM findings also revealed a positive significant relationship between Behavioral Intention and Health Behavior, implying that when you increase the Behavioral Intention of social media users, the learning of new Health Behaviors via social media also increases. This finding helps to support that argues that Behavioral Intention facilitates the process of learning by projecting the learner's level of willingness the conditions under which they are willing to learn new behaviors (Venkatesh et al. 20030). In this study, social media users were willing to learn if they anticipated that learning new behaviors would help them acquire new health skills and practices that would enable them transform the health wellbeing (Blalock et al. 2016; Bandura, 1986). Through observational learning, the users intended to acquire new health practices self-management of diseases, especially the chronicle disease such as cancers, HIV/AIDS, diabetes among others. Social media users intended join online forums where they would obtain information about how to manage these ailments.

However, other than learning the useful practices for improving their health wellbeing, social media users intended to access and consume health related information on dangerous substances

such alcoholism, smoking, pornography, homosexuality among others. For example, they intended to learn how to smoke, use drugs, alcohol, and pornography by observing images and videos of influential people in the online community doing it via social media. This was prevalent among the young respondents who were greatly affected by role modeling and observational learning compared to the mature adults.

5.2.6 Cognitive Factors and External Locus of Control of social media users

Correlation and regression results revealed a positive significant relationship between Cognitive Factors and External Locus of Control. The SEM results however revealed that Cognitive Factors negatively affected the External Locus of Control of social media users in Sub-Saharan Africa. As already noted, Multiple Hierarchical Regressions results were partly influenced by extraneous variable. Therefore, wherever the findings disagreed, we considered SEM results in our discussion while noting the possible causes of the discrepancy.

The SEM findings imply that when you increase Cognitive Factors of social media users, their External Locus of Control reduces. This finding was in disagreement with literature that had indicated that Cognitive Factors positively influenced the External Locus of Control (Boundless, 2016; Bayrón, 2013; Rotter, 1966). According (Bayrón, 2013), Cognitive Factors of form of beliefs and knowledge influenced them to exploit the environment and people around them to solve their problems. However, the current finding reveals otherwise. In trying to digest this finding, we realized that individuals who had strong beliefs their religion, cultural norms and were highly knowledgeable tended be self-reliant. They were inherently motivated to learn and cultivated good interpersonal relations.

5.2.7 Cognitive Factors and Self-Regulation of social media users

Correlation and regression findings revealed a positive significant relationship between Cognitive Factors and Self-Regulation. SEM Findings on the relationship between Cognitive Factors and Self-Regulation also revealed a positive significant relationship implying that high Cognitive Factors made social media users more self-regulated in the learning course of learning

new Health Behaviors via social media. This finding was in-line literature of Blalock et al. (2016), Bayrón (2013), Winters et al. (2003) and Bandura (1988; 1986) who argued that individuals who had strong beliefs in themselves, their religious and cultural norms were careful in and highly controlled their actions in the learning process.

This finding helps us to understand the need for careful learning of new Health Behaviors. Social media users exhibiting high Cognitive Factors recognized that social media was a powerful tool for learning via – however, it could easily lead to learning of negative Health Behaviors such as drug abuse, smoking, prostitution and alcoholism. Therefore, in order to ensure learning of only useful Health Behaviors, there was need to selectively consume information and carefully practice those behaviors while in control of their actions.

5.2.8 Self-Regulation and External Locus of Control of social media

Correlation and regression findings revealed a positive significant relationship between Self-Regulation and External Locus of Control. Further, it was revealed by SEM results that Self-Regulation had a positive significant effect on the External Locus of Control of social media users. This finding suggested that social media users who were highly self-regulated tended achieved less in terms of learning new Health Behaviors via social media. This finding is in agreement with the theories of social learning Bandura (1988; 1986) as well as Rotter (1966) study on locus of control studies that indicated that individual with high External Locus of Control were inherently uninterested in learning.

Social media users who had high External Locus of Control expressed no desire in learning new things. They had no motivation to improve their health skills and practices through observational learning via social media. However, given their nature of being reliant on others, complacent, and non-problem solvers (Boundless, 2016; Rotter, 1966), such individuals were likely to consume information randomly – thereby increasing their chances of consuming negative health information, hence the learning of undesired Health Behaviors such addiction to pornography among others.

5.2.9 Self-Regulation and Health Behavior of social media users

Correlation and regression findings revealed a positive significant relationship between Self-Regulation and Health Behavior. Similarly, SEM findings reveal that Self-Regulation positively influenced the learning of Health Behavior implying that highly self-regulated social media users were likely to learn new Health Behaviors. This finding helped to enhance the literature of Blalock et al. (2016), Winters et al. (2003) and Bandura (1988; 1986).

Social media users who were highly Self-Regulation carefully chose the type information to share via social media; shunned discussing their health related issue with peers, friends and relatives and were exceedingly careful in choosing the health related content to consume. These attributes helped such users to learn only the behaviors that were beneficial to the wellbeing of their health (Blalock et al. 2016; Winters et al. (2003).

5.2.10 Age Sensitivity and Health Behavior of social media users

Correlation and regression findings revealed no significant relationship existed between Age Sensitivity and Health Behavior. The SEM findings also revealed that Age Sensitivity had a significant but negative relationship with Health Behavior of social media users, meaning that social media users are mindful of the ages of online communities where they seek health-related information. Both findings disagree with literature.

Given that the relationship between Age Sensitivity and Health Behavior was negative; where Age Sensitivity is high, social media users are not likely to learn new behaviors. Inversely, where Age Sensitivity is low, the social media users are willing to learn new Health Behaviors via social media. This finding diverts from the literature that had indicated otherwise. WHO (2000) and NIHCE (2007) had indicated that individuals learn new behaviors if the originators of the information were in their preferred age groups. For example, a young person would be willing to learn new Health Behaviors from a social media platform of young people, while older people preferred learning from their age groups (Cahill & Coffey, 2013; ACMA, 2013). Further, depending on the desired outcome, a young person would join an older online community to

learn given behavioral patterns if they felt that such information was available in that community.

Paradoxically, this revelation by data suggests that where social media users' Age Sensitivity is high, there would be little learning of new behaviors irrespective of the desired need. Therefore, for there to be behavioral change, Age Sensitivity has to be kept low.

5.2.11 The moderation effect of Age Sensitivity in the relationship between Cognitive Factors and Self-Regulation of social media users

Correlation and regression findings rejected this hypothesis that Age Sensitivity moderated the relationship between Cognitive Factors and Self-Regulation. However, SEM results revealed that the moderation effect of Age Sensitivity in the relationship between Cognitive Factors and Self-Regulation of social media users was positive and significant. This finding suggests that where Age Sensitivity is high, the relationship between Cognitive Factors and Self-Regulation is also high. The current finding confirm suggestions by literature that Age Sensitivity moderates an individual's knowledge, beliefs thereby making them more self-regulated in terms of controlling one's actions, setting one's learning goals, among others (NIHCE, 2007; WHO, 2000).

We learn from his finding that social media users who are highly knowledgeable and possess strong beliefs in their cultural norms and religion, coupled with their beliefs towards certain age groups are more reserved in terms of sharing and consuming health related information via social media platforms. The higher one's Age Sensitivity towards social media participants, the more his or her knowledge and personal beliefs will influence that person to become more self-regulated.

This finding can facilitate the learning process in the sense that individual who are knowledgeable with strong beliefs and base their learning on age groups where information emanates from are likely employ selective learning. This helps them to consume only desired information which will benefit their health and positively change their Health Behaviors. For example, an older person who is highly knowledgeable and with strong religious beliefs while

searching for information about sexual pleasure may avoid visiting pornographic pages and or communities in favor of a religious or scientific page or online community for learning. This enables them to learn without distortion.

5.2.12 The mediation effect of Internal Locus of Control and Behavioral Intention in the relationship between Cognitive Factors and Health Behavior of social media users

Findings revealed that Internal Locus of Control and Behavioral Intention partially mediated the relationship between Cognitive Factors and Health Behavior of social media users. Whereas there was a positive significant relationship between Cognitive Factors and Health Behavior, the introduction of Internal Locus of Control and Behavioral Intention as mediators also yielded a positive significant relationship between Cognitive Factors and Health Behavior. This meant that Internal Locus of Control and Behavioral Intention enhanced the relationship between Cognitive Factors and Health Behavior.

The above finding resonates to Rotter (1966) theory that argues that individuals who control the consequences of their actions, exhibit high interpersonal relations, and make greater efforts to learn, if knowledgeable and possesses strong beliefs, they are likely to learn new Health Behaviors via social through observational learning and practice. Further, the finding is in agreement with Venkatesh et al. (20030) that Behavioral Intention facilitates behavioral learning.

5.2.13 The mediation effect of Self-Regulation in the relationship between Cognitive Factors and External Locus of Control of social media users

Sobel test z-value results revealed that Self-Regulation significantly mediated the relationship between Cognitive Factors and External Locus of Control. SEM findings also indicated that Self-Regulation had a partial positive mediation effect on the relationship between Cognitive Factors and External Locus of Control. Meanwhile the relationship between Cognitive Factors and External Locus of Control was negative. The introduction of Self-Regulation as a mediator created a positive relationship between Cognitive Factors and External Locus of Control which was previously negative via direct path. Hence, where there is no Self-Regulation, an increase in

Cognitive Factors reduced External Locus of Control of social media users which is in contravention with Boundless (2016) and Rotter (1966).

However, once Self-Regulation is introduced as a mediator, the indirect relationship between Cognitive Factors and External Locus of Control through Self-Regulation becomes positive – implying that an increase in Cognitive Factors as well as Self-Regulation also increases External Locus of Control of social media users. This confirms the literature that argues that Cognitive Factors improve External Locus of Control (Boundless, 2016 & Rotter, 1966).

5.2.14 The mediation effect of External Locus of Control in the relationship between Self-Regulation and Health Behavior of social media users

Findings divulged a partial mediation effect caused by External Locus of Control in the relationship between Self-Regulation and Health Behavior implying that social media users' tendency of relying on online communities for learning new behaviors, facilitated the level of carefulness and control they had in process of learning new Health Behaviors via social media. This finding is in-line with literature of (Blalock et al. 2016; Boundless, 2016; Kane, 2004; Winett et al. 1999; Bandura, 1988; 1986; Rotter, 1966)

Individuals with high Self-Regulation learn selectively. They control the consequences of their actions and are likely to access information from trusted sources. Therefore, introducing External Locus of Control helps to ease up Self-Regulation in the learning. An individual becomes more open to various sources of information via social media. According to Boundless (2016), an individual with External Locus of Control seeks solutions to his / her problems from people surrounding him / her. In this case social media users with External Locus of Control tend to ask for counseling and guidance from online communities about their problems. This helps them get solutions which if practiced, gradually change their Health Behaviors.

5.2.15 The mediation effect of Self-Regulation in the relationship between Cognitive Factors and Health Behavior of social media users

Sobel test z-value results revealed that Self-Regulation significantly mediated the relationship between Cognitive Factors and Health Behavior. SEM findings also revealed that Self-Regulation partially mediated the relationship between Cognitive Factors and Health Behavior. This finding helps to suggest that social media users who set goals, freely discussed their health issues via social media, and were control of their health affairs were likely to learn new Health Behaviors if they were knowledgeable and had strong beliefs in their culture and religious norms. This finding was in-line with literature (Blalock et al. 2016; Bayrón, 2013; Kane 2004; Bandura, 1988; 1986).

The learning of new Health Behavior through observation and practice can be attributed to social media users' knowledge, beliefs as well as their level of Self-Regulation. Individual with strong beliefs, good knowledge, and are likely to earn new health related behaviors. This can also happen if an individual is freer to handle their health related problems via social media.

5.2.16 The mediation effect of External Locus of Control in the relationship between Cognitive Factors and Health Behavior of social media users

Sobel test z-value results revealed that External Locus of Control did not significantly mediate the relationship between Cognitive Factors and Health Behavior. Whereas there was a significant relationship between Cognitive Factors and Health Behavior in SEM, an introduction of External Locus of Control revealed that the relationship became positive and significant. This finding indicated that External Locus of Control helped to mediate the relationship between Cognitive Factors and Health Behavior of social media users. This finding supports the literature arguing that knowledgeable individuals who were in control of their actions during online engagements were better learners of new Health Behaviors (Blalock et al. 2016; Bayrón, 2013). The findings also support an argument that knowledgeable individual with strong beliefs who seek solutions to their health problems form online communities learned new Health Behaviors (Boundless, 2016; Rotter, 1966)

5.2.17 The mediation effect of Self-Regulation in the relationship between Age Sensitivity and Health Behavior of social media users

Sobel test z-value results revealed that Self-Regulation significantly mediated the relationship between Age Sensitivity and Health Behavior. Whereas it was revealed that Age Sensitivity had a negative significant relationship with Health Behavior in SEM, an introduction of Self-Regulation as a mediator in this relationship caused it to become positive and significant. This finding suggest that without Self-Regulation in terms of self-control, self-management and being charge of one's affairs, social media users who are age sensitive were unlikely to learn. However, those social media users who minded the age groups of online platforms where health related information emanated from and were in charge of their actions in online engagements were likely to learn new Health Behaviors. This finding is in-line with NIHCE (2007) and WHO (2000) who acclaim the role played by age in affecting the learning process. Age Sensitivity can delay or speedup the learning process. In this case for example, we discover that Age Sensitivity delays learning where there is no self- regulation (Blalock et al. 2016; Bayrón, 2013).

5.3 Conclusions, contributions and recommendations

This section presents a conclusion, implications and recommendations of the study. We also highlight the study limitations and suggest areas for future research.

5.3.1 Conclusions

The first objective sought to investigate effect of Outcome Expectations and External Locus of Control on the Health Behavior of social media users in Sub-Sahara Africa. This was accomplished through two hypotheses - H1a and H1b. H1a stated that Outcome Expectations have a positive effect on the External Locus of Control of social media users in Sub-Sahara Africa, while H1b stated that External Locus of Control positively affects the Health Behavior of social media users in Sub-Sahara Africa. The study findings on H1a revealed a negative significant relationship between Outcome Expectations and External Locus of Control – meaning

that individuals with high Outcome Expectations had low External Locus of Control. On the other hand, H1b findings revealed a positive significant relationship between External Locus of Control and Health Behavior- implying that individuals with External Locus of Control were likely to learn new Health Behaviors.

Given the above findings, we conclude that both Outcome Expectations and External Locus of Control significantly contributed to the Health Behavioral change of social media users in Sub-Saharan Africa. Whereas the contribution of External Locus of Control was positive, Outcome Expectations made a negative contribution.

The second objective of the study was to analyze the influence of Cognitive Factors, Internal Locus of Control and Behavioral Intentions on the Health Behavior of social media users in Sub-Saharan Africa. This objective was investigated through a set of four hypotheses – H2a, H2b, H2c and H2d. H2a hypothesized that Cognitive Factors had a positive effect on the Health Behavior of social media users in Sub-Saharan Africa. The findings confirmed this hypothesis given that Cognitive Factors was found to have a positive significant relationship with Health Behaviors. Findings also confirmed H2b which posited that Cognitive Factors had a positive impact on Internal Locus of Control of social media users in Sub-Saharan Africa. Further, it was found that Internal Locus of Control positively affected the Behavioral Intention of social media users in Sub-Saharan Africa, meaning that H2c was accepted. Finally, H2d which stated that Behavioral Intention positively affects Health Behavior of social media users in Sub-Saharan Africa was also confirmed. These findings suggested that higher values of each of Cognitive Factors, Internal Locus of Control and Behavioral Intention increased the chances of learning new Health Behaviors by social media users. Inversely, lower values of these variables reduced the chances of learning new Health Behaviors of social media users in Sub-Saharan Africa.

With the above findings therefore, we conclude that Cognitive Factors, Internal Locus of Control and Behavioral Intentions positively significantly influenced the leaning of Health Behaviors by social media users in Sub-Saharan Africa.

The third objective was to examine the influence of Cognitive Factors, Age Sensitivity, Self-Regulation, and External Locus of Control on the Health Behavior of social media users in Sub-Saharan Africa. This objective was implemented through an investigation of five hypotheses namely H3a, H3b, H3c, H3d and H3e. Finding on H3a revealed an insignificant relationship between Cognitive Factors and External Locus of Control, while findings on H3b revealed a positive significant relationship between Cognitive Factors and Self-Regulation. Further, the findings accepted H3c since there was a positive significant relationship between Self-Regulation and External Locus of Control. H3d was also accepted given that Self-Regulation had a positive significant relationship with Health Behavior. The results however revealed a negative significant relationship between Age Sensitivity and Health Behavior, thereby rejecting H3e.

Whereas H3b, H3c and H3d were accepted, H3a and H3e were rejected. However, given that H3e had a significant relationship – though negative, that relationship is important and therefore was considered for further examination. Hence, we conclude that whereas, Cognitive Factors had no significant relationship with External Locus of Control, Cognitive Factors and Self-Regulation, Self-Regulation and External Locus of Control, Age Sensitivity significantly explained Health Behaviors of social media users in Sub-Saharan Africa.

The fourth objective sought to analyze the moderation effect of Age Sensitivity on the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa. Findings revealed a positive and significant moderation effect of Age Sensitivity in the relationship between Cognitive Factors and Self-Regulation of social media users. Therefore, we conclude that the interaction of Age Sensitivity helped to improve the relationship between Cognitive Factors and Self-Regulation of social media users in Sub-Saharan Africa.

The fifth and last objective sought to study the mediation effect of External Locus of Control, Internal Locus of Control, Self-Regulation, and Behavioral Intention in the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa. This was digested into six hypotheses including H5a, H5b, H5c, H5d, H5e and H5f. Findings accepted H5a that Internal Locus of Control and Behavioral Intention partially and positively mediated the relationship between Cognitive Factors and Health Behavior of social media users. The findings

also accepted H5b since Self-Regulation fully mediated the relationship between Cognitive Factors and External Locus of Control of social media users. On H5c, the finding revealed that Self-Regulation and External Locus of Control partially mediated the relationship between Self-Regulation and Health Behavior of social media users. Findings also accepted H5d where Self-Regulation was found to partially mediate the relationship between Cognitive Factors and Health Behavior. Further, H5e was accepted whereby External Locus of Control partially mediated the relationship between Cognitive Factors and Health Behavior. Finally, on H5f, although both direct and indirect effects were significant suggesting partial mediation, the direct effect was negative while indirect effect was positive. This implied that Self-Regulation as a mediator transformed a negative relationship to positive. Therefore H5f was also accepted that Self-Regulation partially mediated the relationship between Age Sensitivity and Health Behavior of social media users in Sub-Saharan Africa.

The above findings lead us to a concluded that all the mediator variables including External Locus of Control, Internal Locus of Control, Self-Regulation and Behavioral Intention played significant roles in mediating the relationship between Cognitive Factors and Health Behavior of social media users in Sub-Saharan Africa.

While we expound the importance of all study hypotheses, as seen in chapter seven, the hypothetical model testing all hypotheses was not fit. Therefore a systematic elimination method was employed to remove weak relationships – one at a time while observing changes in the indices. In the end, the model was fit with acceptable goodness of fit indices. The hypotheses retained by the final model were H1a showing the influence of Outcome Expectations on External Locus of Control as negative; H1b showing that External Locus of Control positively influenced Health Behavior; H2a showing that Cognitive Factors helped improve Health Behavior; H3b indicating that Cognitive Factors positively affects Self-Regulation; H3c indicating that Self-Regulation positively affects External Locus of Control; H3d indicating that Self-Regulation positively affects Health Behavior; H3e revealing that Age Sensitivity negatively influenced Health Behavior; H4 showing that Age Sensitivity positively moderated the relationship between Cognitive Factors and Self-Regulation; H5c showing that External Locus of Control partially mediated the relationship between Self-Regulation and Health

Behavior; H5d indicating that Self-Regulation partially mediated the relationship between Cognitive Factors and Health Behavior; H5e showing that Self-Regulation together with External Locus of Control partially mediated the relationship between Cognitive Factors and Health Behavior; H5f indicating that Self-Regulation partially mediated the relationship between Age Sensitivity and Health Behavior of social media users. Therefore, operationalization and application of the proposed model should be limited only those hypotheses in the final model enumerated here.

5.3.2 Theoretical implications and contributions

Generally, the current study provides empirical evidence in examining the cognitive and social learning theories on Health Behavioral change. The three theories were triangulated and tested to see how bet they explained the learning of new Health Behaviors by social media users in Sub-Saharan Africa. This was probably the first study that investigated social media and Health Behavioral change in the region. As had been indicated in chapter one, most studies on e-health concentrated mainly technology transfer, adoption and sustainability. Little or nothing had been done on investigating the Health Behavioral implications caused by adoption and usage of technology especially social media.

Specifically, this study makes a contribution to the body of knowledge on social media and Health Behavior by proposing a model for social media and Health Behavior. The proposed model was tested on empirical data and found to adequately explain how and why individuals learned new Health Behaviors via social media.

Triangulation of the social learning theory (Bandura, 1965) together with social cognitive theory by Bandura (1986) and the social learning theory by Rotter (1966) helped to solve the theoretical gap that existed in explaining behavioral change via social media. For instance, whereas Bandura (1965) ably explained observational learning through role modeling, this theory falls short in explaining the Cognitive Factors, Outcome Expectations and Self-Regulation influence on learning of new behaviors as seen in Bandura (1986). Further, both (Bandura, 1965) and Bandura (1986) did not explain the influence of External Locus of Control that was found to influence

behavior (Bandura, 1986). Yet still none of the three theories explained the role that age played in the learning process as had been argued by WHO (2000), NIHCE (2007), and Totter *et al.* (1966).

The proposed model converges all the above constructs in trying to show how new Health Behaviors are learned via social media platforms. Specifically, it espouses the influence that people's knowledge and beliefs have on their Health Behavior and how they control themselves while interacting via social media. Further, the model shows how individuals' Outcome Expectations motivate them to seek help from online communities, thereby learning new Health Behavior. The model also explains how an individual's level of Age Sensitivity influences the way they control themselves while learning from people of different age groups via social media online communities.

5.3.3 Methodological implications

Prior research on social media and also that on behavioral change in general contexts used both qualitative and quantitative research methods. However, none used the Structural Equation Modeling technique. Most of the studies used descriptive statistics, correlations and regression analysis as seen in chapter four and chapter in this study. The qualitative methods applied were interviews and content analysis leading to development of frameworks formulated on the basis of untested and unverifiable hypotheses. Whereas these approaches helped highlight some of the challenges faced by e-health generally, it was difficult to establish the magnitude of the problems, given that measurement indices were uncertain. As seen in this study, descriptive statistics, correlation and regression analysis alone leaves a lot to be desired. While it shows the relationships exist, these relationships are treated in isolation. Moreover, in the end, they all have to work together towards achieving the main goal.

In this study, using Structural Equation Modeling techniques, we were able to first of all, test and confirm the factors that measure the constructs in the proposed model. The confirmed constructs were then modeled as a whole. Those that exhibited bad fit indices were eliminated until acceptable goodness of fit indices were obtained. Further, as seen in chapter six and seven, all model hypotheses were tested and the magnitude of each hypothesis' influence is known and

can be verified. The structural model gives clear mapping of the interaction between all model variables. Further, through bootstrapping, we were able to establish the significance of each mediation effect in the model.

Given the above therefore, we hope that, having gone through rigorous research methods, including data analysis using different approaches, testing of hypotheses through both data analysis as well as modeling techniques, we argue that the proposed model and all its findings is reliable and can be used to understand how new Health Behaviors are learned via social media. It is in this spirit that we recommend further studies adopting Structural Equation Modeling techniques in order understand social media and Health Behavior better.

5.3.4 Implications and recommendations to practice

Drawing from the findings, we make some recommendations relevant to practice in health and social media. Recommendations under this section are aimed at the individuals who develop, run, monitor and users of social media platforms. They may include health service providers, parents, counselors, teachers, marriage doctors, bloggers, social media users, social media content developers among others. It hoped that once they adopt these recommendations, they will be able to self-regulate their actions while using social media, access, share and consume health related information in a selective manner, as well as know what is required for one to learn only Health Behaviors that will positively change in their lives.

Since Outcome Expectations were found to positively affect External Locus of Control of social media users, it is important for social media platforms to be designed in such a way that they will make its users better and more acceptable people in society. To achieve this, social media developers should be mindful of the difference in cultures of its users and preferably provide content which promotes local cultures. This way, individuals using social media will not be rejected by their communities. Most rejections come in when social media users consume information that alters their Health Behaviors centrally to what is generally known and acceptable by their communities. For example, whereas smoking maybe prestigious in one community, it is taboo in another. Therefore if social media promotes content on smoking in a

community that desists the act, if one in that community begins smoking, they will be rejected due to the newly learned behavior. However, if such content is promoted in a community where smoking is generally acceptable, individual will not be rejected for learning how to smoke and eventually starting to smoke.

Further, since the results revealed a positive significant relationship between External Locus of Control and Health Behavior, it implies that social media users relied mainly on online communities for health problem solving. Moreover, they did not take responsibility of the consequences of their actions while using social media. Further, social media users cared less in creating and maintaining good relations on social media. This finding points to a notion that social media users were irresponsible, lazy and careless learners. Such individuals were likely to learn negative Health Behaviors such as sexting, drug abuse, among other.

Therefore, it is on this basis the study recommends online community education, sensitization and policing. This would help educate the careless learners on the dangers of learning bad Health Behaviors. For example sensitization programs showing images of bedridden patients of sexually transmitted diseases, or diseases caused by smoking giving their experiences to scare the would be learning of such behaviors. Another example is sharing the lungs of smokers compared to the lungs of nonsmokers.

In terms of policing, parents, teachers, and elders in the community can take keen interest in monitoring the activities of their young one online. Where for example, a young one is found on wrong online communities such as porn websites, or online dating sites, such individuals should be reprimanded by the relevant authorities in the community. This would scare away young people with high External Locus of Control from learning negative Health Behaviors.

Given that Cognitive Factors positively influenced Health Behavior, we recommend that communities implement knowledge enhancement programs such as trainings, education, and sensitization among others. Social media users should be taught on the benefits of using social media for positive health gain. For example, patients in cancer ward can be shown how to access cancer blogs and other online cancer resource centers. This way, they will be able to join such

communities of common interest and share their experiences as well as be educated by their fellow patients on how to manage the disease. More importantly, such platforms should have trained medical personnel and counselors who should come in and offer technical advice to the users.

Further, as regards beliefs- since it was established that individuals with strong beliefs in their cultures, religion, and traditional were likely to learn new Health Behaviors, it is recommended that cultural institutions, religious institutions join social media platforms and moderate the learning process. This will enable learns to learn new Health Behaviors that positively affect the health. Otherwise, without proper guidance, such individuals will not learn beneficial Health Behaviors.

Improving on the knowledge and beliefs of social media users will not only help them learn new Health Behaviors but will go a long way in ensuring that social media users learn how to regulate themselves while using online platforms. This is very important given that Cognitive Factors positively influenced Self-Regulation, which in turn positively affects Health Behavior. More self-regulated social media users are selective in their actions and will not access or share information randomly. This promotes maturity in the learning process, thereby promoting positive Health Behavioral learning.

The role of Age Sensitivity was found to influence Health Behaviors in two ways, 1) by negatively affecting health, and 2) by positively moderating Cognitive Factors and Self-Regulation. These findings point to two suggestions. In the first instance, we learn that individuals with high sensitivity to age groups where health information is coming will not learn from it. This situation is prevalent because most young people prefer learning from the fellow young, while mature people also prefer learning from adults. We therefore recommend that social media developers be mindful of the age groups of their audience when developing health related content. Content for the young people should be directed or channeled through online communities of the youths such as schools, sports clubs among others. This will facilitate acceptability by such users, thereby influencing their behavior in the long run.

For the case of Age Sensitivity positively moderating Cognitive Factors and Self-Regulation, we learn that individuals who knowledgeable with strong beliefs, once they become age sensitive, they also become more self-regulated. Given that Self-Regulation had a positive influence on Health Behavior, we are certain that the moderation effect of Age Sensitivity in the relationship between Cognitive Factors and Self-Regulation results into positive learning. Therefore, it important for social media developers to enhance the knowledge of their users, and at the same time they should be mindful of users' beliefs and ages in packaging health related content. This will promote information acceptance and consumptions thereby helping to positively change Health Behaviors of social media users.

Lastly, given that all the mediator variables partially mediated their respective relationships, it is pertinent that these mediators including Self-Regulation and External Locus of Control are enhance in order to promote positive Health Behavioral change via social media platforms.

5.3.5 Implications and recommendations to policy

Recommendations to policy makers target government institutions charged with authority to formulate national and regional policies on social media, health and behavioral change. These institutions include parliament, senate, local governments, ministries of Information Communication Technology, Gender and Culture, Education, Health, Trade, Youth affairs and their agencies in respective countries.

In respect to Outcome Expectations, parliaments of affected countries should enact laws that force social media developers to use local content. Using local content will ensure that only appropriate information is consumed by citizens via social media. Content from foreign sources especially the developed world should be discouraged because most of the content is contaminated with wrong messages. For example, many times, information on drug abuse, pornography, sexting and nudity, violence comes from social media contents developed outside Africa. Whereas such information has become in norm in western countries, it is considered taboo in many African communities to watch pornographic materials, have online sexual partners, smoke, especially among the youths. Once this is implemented, it is very likely that

people will be encouraged to join social media platforms for purposes of learning new useful Health Behaviors.

Relevant institutions such as ministries and communication commissions of African countries should then transform the enacted laws into policy that should be implemented by all media houses. Media houses found circulating information that is harmful to health of users should be penalized accordingly. Similarly, media houses that adhere to the policy framework should be encouraged and where possible can be rewarded through public recognition and / or awards.

As was already observed, External Locus of Control created a social media user group that was so reliant on the online communities as the main source of solutions to their health related problems. It was also observed that this category of users was careless, irresponsible and minded less about the consequences of their actions while using social media. Therefore, they were likely to share harmful information to the health of other users. They were also likely to access health related information randomly without regard to the sources and motive behind such information. The end results would be negative Health Behaviors exhibited inform of drug abuse, homosexuality, pornography and nudity, sexting among others.

Given the above, we recommend that ministries of education, youth, gender and culture come up with online educational programs which could be incorporated in the mainstream education system. The purpose of this curriculum will be to educate young people in schools, churches, mosques and other avenues about the dangers of reckless consumption of online health related materials such as pornography to their health. The young people should know that not all that comes from developed countries is good. Therefore they should not embrace foreign ideals in their way they handle their health related problems.

It is also hoped that health education programs once incorporated in schools, churches and mosques will help improve the knowledge of social media users. This, coupled with strong cultural and religious beliefs will help social media users to sources health related information from rightful channels. Once this is done well, the chances of learning positive Health Behaviors among the youth will increase.

It is also important for government to enact laws and policies that prohibit child abuse pornography, prostitution, bestiality in all forms of media including social media, children games, television programs, churches, mosques, schools among other avenues. This is because, in recent times health related information that can be learnt and gradually transform somebody's behaviors is diffused through different media and channels. Some of these acts in recent days have been found to occur even in schools and places of worship. Therefore restricting such information via social alone may not yield the best results. A more holistic approach to eradicating immorality and moral degeneration should be adopted. Individuals who are found circulation harmful information via social media and those found inducting children in acts of immorality, upon conviction should be punished severely in order to discourage others from doing it.

Regarding Age Sensitivity, governments and relevant regulatory institutions should prohibit children from accessing adult content via social media. An age limit requirement could be placed on different online content such that individuals below that age are not eligible to access or watch such information. For example online channels that teach people how to sexually satisfy their partners should not be accessible to children below the legal age of marriage in the respective countries. This can be enforced through national Information Communication Technology regulatory institutions.

5.4 Limitations of the study

This study was conducted in three Sub-Saharan countries including Nigeria, Cameroon and Uganda. Given the uniqueness people and cultures in Sub-Saharan Africa countries, it may be difficult to generalize these findings. For example, what is considered acceptable in Uganda may not be acceptable in Sudan because of the cultural-religious differences between them.

Secondly, the study adopted a quantitative research design whereby data were gathered using questionnaires and analyzed purely using quantitative techniques. Whereas quantitative research techniques are praised for handling large samples as well objectivity, accuracy, reliability and

verifiability, it is also faulted for not being able to handle subjective attributes of the study such as innermost feelings and perceptions (Given, 2008; Hunter & Leahey, 2008).

5.5 Future research

Given the above limitations, we recommend further research on social media and Health Behavior different countries of Sub-Saharan Africa. National researches could be helpful in generating comparative indices.

Further, there is need for more research adopting a qualitative approach such as focus groups and case studies. This will help obtain in-depth understanding of social media and Health Behavior.

References

- Abbasi M., Chai S., Liu H., and Sagoo K. (2016) Real-World Behavior Analysis through a SM Lens, *Arizona State University*. Retrieved on 26th March 2016 from: <http://www.public.asu.edu/~mabbasi2/papers/SBP12Lens.pdf>
- Abeyasekera S. (2016) Quantitative analysis approaches to qualitative data: why, when and how, *University of Reading*. Retrieved on 27th march 2016 from: http://www.reading.ac.uk/ssc/resources/Docs/Quantitative_analysis_approaches_to_qualitative_data.pdf
- ACMA (2013) Like, post, share: Young Australians' experience of social media, *Australian Communications and Media Authority*
- Akers R.L., Krohn M. D., Lanza-Kaduce L., Radosevich M. (1979) Social Learning and Deviant Behavior: A Specific Test of a General Theory, *American Sociological Association*, Vol. 44, No. 4, pp. 636-655
- Alison D. (2011). Few Businesses Use SM For Disaster Recovery, UBM TechWeb Reader Services, February 23, 2014
- Anderson, A. (2005). An introduction to theory of change. Evaluation Exchange, Summer, Volume XI, 2. <http://www.hfrp.org/evaluation/the-evaluation-exchange/issue-archive/evaluation-methodology/an-introduction-to-theory-of-change>.
- Bachar K. J. (2016) An Overview of Social Learning Theory (SLT), *College of Public Health, University of Arizona*
- Blalock S. J., Bone L., Brewer N. T., Butterfoss F. D., Champion V. L., Epstein R. E.,... (2016) Health Behavior and Health education: Theory, Research and Practice. Karen G., Rimer B. K., Viswanath K. (Ed.), Perelman School of Medicine, University of Pennsylvania, Retrieved on March 3rd 2016 from: <http://www.med.upenn.edu/hbhe4>
- Bandura, A. (1990). Mechanisms of moral disengagement. In W. Reich (Ed.), *Origins of terrorism: Psychologies, ideologies, theologies, states of mind* (pp. 161-191). *Cambridge: Cambridge University Press*.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (Ed.) (1995), *Self-efficacy in changing societies*. *New York: Cambridge University*

- Press.*
- Bandura A. (2001) Social Cognitive Theory of Mass Communication, *Mediapsychology*, 3, 265–299
- Bandura, A. (1982). The psychology of chance encounters and life paths. *American Psychologist*, 37, 747–755.
- Bandura, A. (1988) Self-efficacy of anxiety, *Anxiety research*, VI, 77 – 98.
- Bandura, A. (2000) Health promotion, *New York: Norton.*
- Bartlett, M. S. (1937) Properties of sufficiency and statistical tests. *Proceedings of the Royal Statistical Society*, Series A 160, 268–282
- Bollen, K. A. (1989) Structural equations with latent variables. *NY: Wiley.*
- Bulsara C. (2016) Using a Mixed Methods Approach to Enhance and Validate Your Research, The University of Notre Dame. Retrieved on 27th march 2016 from: https://www.nd.edu.au/downloads/research/ihr/using_mixed_methods_approach_to_enhance_and_validate_your_research.pdf
- Bayrón, C.E (2013) Social Cognitive Theory, Entrepreneurial Self-Efficacy and Entrepreneurial Intentions: Tools to Maximize the Effectiveness of Formal Entrepreneurship Education and Address the Decline in Entrepreneurial Activity, *Revista Griot*. Vol. 6, 1, Pg 66-77
- BBC (2008) Social Networking A quantitative and qualitative research report into attitudes, behaviors and use, *BBC Office of communications*
- Benevenuto F., Rodrigues T., Cha M., and Almeida V. (2016) Characterizing User Behavior in Online Social Networks, *University of Wisconsin-Madison*; Retrieved on 25th March 2016 from: <http://pages.cs.wisc.edu/~akella/CS740/S12/740-Papers/BEN+09.pdf>
- Boyd B. M., and Ellison N. B. (2016) SM sites: definition, History and scholarship, *Journal of mediated computer communications*. Retrieve on 25th march 2016 from : <http://www.danah.org/papers/JCMCIntro.pdf>
- Boundless (2016). “Bandura's and Rotter's Social-Cognitive Theories of Personality.” *Boundless Psychology*. Boundless, 08 Jan. 2016. Retrieved 21 Mar. 2016 from <https://www.boundless.com/psychology/textbooks/boundless-psychology-textbook/personality-16/social-cognitive-perspectives-on-personality-81/bandura-s-and-rotter-s-social-cognitive-theories-of-personality-314-12849/>
- Boyd D. M., and Michigan N. B. E. (2007) Social Network Sites: Definition, History, and

- Scholarship, *State University*. Retrieved on 26th march 2016 from:
<http://mimosa.pntic.mec.es/mvera1/textos/redessociales.pdf>
- Browne, M. W., and Cudeck, R. (1993) Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). *Newsbury Park, CA: Sage*.
- Buck M. (2010) Dysfunctional Behaviours from the Social – Cognitive Learning Theory Perspective, *Health Education: International Experiences*
- Liang Y., Zheng X., Zeng D. D., Zhou X., Leischow S. J., and Chung W., (2015) Exploring How the Tobacco Industry Presents and Promotes Itself in SM, *Journal of medical internet research*, Vol. 17(1): e24
- Byrne, B. M. (1994) *Structural Equation Modeling with EQS and EQS/Windows*, *Thousand Oaks, CA: Sage Publications*.
- BYU (2016) Variables, *Brigham Young University*. Retrieved on 26th march from:
http://linguistics.byu.edu/faculty/henrichsenl/ResearchMethods/RM_2_14.html
- Cahill, H. and Coffey, J. (2013) Learning partnerships, *the University of Melbourne*, retrieved on 29th March 2017 from
http://education.unimelb.edu.au/_data/assets/pdf_file/0007/1338469/YRC_ResearchReport38.pdf
- Campell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multi method matrix, *Psychological Bulletin*, 56, 81-105
- Carton, S. (2009) Defining SM. Retrieved December 05, 2010,
<http://www.clickz.com/clickz/column/1703507/defining-social-media>
- Child, D. (1990) *The essentials of factor analysis*, second edition. *London: Cassel Educational Limited*
- Chin, W. W (1998) Issues and opinion on Structural Equation Modeling, *MS Quarterly*, 22, 1 pp. 7-16
- CPII (2008). *Communicating with Patients Electronically Via Telephone, Email, & Web Sites*, *American College of Physicians*
- Cui P. (2016) Behavioral Analysis and Prediction in Social Networks, *Tsinghua University*. Retrieved on 26th March 2016 from:
http://centres.smu.edu.sg/larc/files/2013/03/Peng_Cui_slides.pdf

- Das S., Lavoie A. (2014) The Effects of Feedback on Human Behavior in SM: An Inverse Reinforcement Learning Model, in: Alessio Lomuscio, Paul Scerri, Ana Bazzan, and Michael Huhns (eds.), Proceedings of the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2014), May 5-9, 2014, Paris, France, *International Foundation for Autonomous Agents and Multiagent Systems*
- De Lisle J. (2016) The Benefits And Challenges Of Mixing Methods And Methodologies: Lessons Learnt From Implementing Qualitatively Led Mixed Methods Research Designs in Trinidad and Tobago, *Caribbean Curriculum* Vol. 18, 2011, 87–120.
- Dewing M. (2012) SM: An introduction, *Library of parliament, Ottawa, Canada*, Publication No. 2010-03-E
- Drost E. A. (2016) Validity and Reliability in Social Science Research, *Education Research and Perspectives*, Vol.38, No.1 105, retrieved on 20th August 2016 from <http://www.erpjournal.net/wp-content/uploads/2012/07/ERP38-1.-Drost-E.-2011.-Validity-and-Reliability-in-Social-Science-Research.pdf>
- Dretske F. (2016) Epistemology and Information, *UVA*, retrieved on 19th July 2016 from http://www.ilic.uva.nl/HPI/Draft_Epistemology_and_Information.pdf
- Edmonds, W. A., & Kennedy, T. D. (2010). A reference guide to basic research design for education and the social and behavioral sciences. *New York, NY: Pearson*.
- Edosomwan S., Prakasan S. K., Kouame D., Watson J., and Seymour T (2011) The History of SM and its Impact on Business, *The Journal of Applied Management and Entrepreneurship*, Vol. 16, No.3
- Ejughemre U. J (2013). The Impacts of User Fees on Health Services in Sub-Saharan African Countries: A Critical Analysis of the Evidence, *American Journal of Public Health Research*, Vol. 1, No. 8, 196-202
- Elo S. and Kynga S H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing* 62(1), 107–115
- Flandorfer P., Wegner C., and Buber I. (2010) Gender Roles and Smoking Behaviour; Working paper, *Vienna Institute of Democracy*
- Fottrell Q. (2013) Friends, prostitutes commingle on social networks, *MarketWatch*. Retrieved on 26th March, 2016 from: <http://www.marketwatch.com/story/friends-prostitutes-comingle-on-social-networks-2013-05-16>

- François, H, Sébastien L, and Jérôme, P. (2009) Exploratory Multivariate Analysis by Example Using R. *Chapman & Hall/CRC The R Series, London*. 224p.
- Frey, L., Botan, C., & Kreps, G. (1999) *Investigating communication: An introduction to research methods*. (2nd ed.) Boston: Allyn & Bacon.
- Garver M. S. and Mentzer, J. T. (1999) Logistics research methods: employing structural equation modeling to test for validity, *Journal of Business Logistics*, 20, 1 pp. 33-57
- Given, L. M. (2008) *The Sage encyclopedia of qualitative research methods*, Los Angeles, Calif, Sage Publication
- Google (2016) Map of Sub-Sahara Africa, *Google*, Retrieved on 26th March 2016 from: https://www.google.com/?gws_rd=ssl#q=map+of+sub+saharan+africa
- Grosshans W. and Chelimsky E. (1992) Quantitative data analysis: an introduction: Report to the program evaluation and methodology division, *Unites States General Office*
- GSMA Intelligence (2014) The mobile economy: Sub Sahara Africa 2014, *GSMA Intelligence*, Retrieved on 26th March 2016 from: http://www.gsmamobileeconomyafrica.com/GSMA_ME_SubSaharanAfrica_Web_Singles.pdf
- Guarino N., Oberle D., and Staab S. (2009) What Is an Ontology? Handbook on Ontologies, International Handbooks on Information Systems, *Springer-Verlag Berlin Heidelberg*, DOI 10.1007/978-3-540-92673-3
- Han Y., and Tang J. (2015) Probabilistic Community and Role Model for Social Networks, *ACM*.
- Hartley W. K., Tatum K, Gatto P., eds (2013). Raising the alarm: Patients, Providers & the Social Network making sense of meaningful use, *Health Journal of Little Rock*
- Hatcher, L. (1994) A step-by-step approach to using the SAS® System for factor analysis and Structural Equation Modeling. *Cary, NC: SAS Institute Inc.*
- Hilliard C. (2012). SM for Healthcare: A Content Analysis of M.D. Anderson's Facebook Presence and its Contribution to Cancer Support Systems, *The Elon Journal of Undergraduate Research in Communications*, Vol. 3, No. 1
- Hoe S. L. (2008) Issues and Procedures in adopting Structural Equation Modeling Technique, Quantitative methods inquiry, *Journal of applied quantitative methods*
- Hoelter D. R (1983) The analysis of convariance structures: goodness-of-fit indices, *Sociological*

- methods and research* 11, pp. 325-344
- Holme P. (2014) The Social, Economic and Sexual Networks of Prostitution, *ACM*, 978-1-4503-2745-9/14/04
- Hox J. J. (2016) An introduction to Structural Equation Modeling, *Family science review*, 11,354,-373. Retrieved on 27th march 2016 from: <http://joophox.net/publist/semfamre.pdf>
- Hsieh H. and Sarah E. Shannon (2005) Qualitative Health Research, *Qualitative Health Research*
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). *Thousand Oaks, CA: Sage*.
- Hunter, L. and Leahey, E. (2008) Collaborative Research in Sociology: Trends and Contributing Factors. *The American Sociologist*, 39 (4): 290–306.
- IGI (2016) What is Positivist Epistemology, *IGI*, retrieved on August 7th 2016 from <http://www.igi-global.com/dictionary/positivist-epistemology/23062>
- Ingram L., Hussey L., Tigani M., and Hemmelgarn M. (2006) Writing A Literature Review and Using a Synthesis Matrix, NC State University. Retrieved on 28 March 2016 from: <https://writingcenter.fiu.edu/resources/synthesis-matrix-2.pdf>
- Internet World Statistics (2015) Africa 2015 population and internet users statistics for 2015, *Internet World Statistics*, Retrieved on 26 March, 2016 from: <http://www.internetworldstats.com/stats1.htm>
- Ioanăs E., Stoica I. (2014) SM and its Impact on Consumers Behavior, *International Journal of Economic Practices and Theories*, Vol. 4, No. 2,
- Isabalija R., Mbarika V., and Kituyi G. M. (2013). A Framework for Sustainable Implementation of E-Medicine in Transitioning Countries, *International Journal of Telemedicine and Applications*, Volume 2013, Article ID 615617, 12 pages
- Isabalija S., Kituyi G. M., Rwashana A.S., and Mbarika V. (2011). Factors affecting the adoption, implementation and sustainability of telemedicine information systems in Uganda. *Journal of Health Informatics in Developing Countries*, Vol. 5, No 2 (2011)
- Jérôme P. (2014) Multiple Factor Analysis by Example Using R. *Chapman & Hall/CRC The R Series London* 272 p
- Jin L., Chen S. D. Y., Wang T., Hui P., and Vasilakos A. V. (2013) Understanding User

- Behavior in Online Social Networks: A Survey, *IEEE Communications Magazine*
- Jolliffe, I.T. (2002). Principal Component Analysis, second edition, *Springer*.
- Junco, R., Heiberger, G., and Loken, E. (2011). The effect of Twitter on college student engagement and grades, *Journal of Computer Assisted Learning*, 27, 119-132
- Joreskog K. G and Sorbom D (1993) LISREL6 – Computer program, *Moorseville, IN, Scientific Software*
- Kane RL, Johnson PE, Town RJ, Butler M. A, (2004) Structured Review of the Effect of Economic Incentives on Consumers ‘Preventive Behavior, *American Journal of Preventive Medicine* 27:4, 327-352
- Kaur SP (2013) Variables in research, *Indian Journal of Research and Reports in Medical Sciences*, VOL-3, No.4 pg 36-38
- Kifle, M., V. Mbarika, P. Datta (2006a). Interplay of Cost and Adoption of Tele-medicine in Sub-Saharan Africa: The Case of Tele-Cardiology in Ethiopia. *IS Frontiers*, (8:3), pp. 211-223.
- Kifle, M., V. Mbarika & F. Shiferaw (2006b) 'Ethiopia's Medical Challenges: Telemedicine as a Possible Solution', *Proceedings of the 6th Nordic International Conference on eHealth and Telemedicine*, Helsinki, Finland.
- Kifle, M., V. Mbarika, P. Datta (2008). Telemedicine in Sub-Saharan Africa: The Case of Teleophthalmology and Eye Care in Ethiopia. *Journal of the American Society for Information Sciences and Technology*.
- Kifle, M., V. Mbarika, F. Payton (2005). Testing integrative technology (Telemedicine) Acceptance Models among Ethiopian Physicians. *Proceedings of the 2005 Southeast Decision Sciences Institute (DSI) Conference*, Raleigh, NC.
- Kifle, M., A. Solomon, V. Mbarika, & C. Okoli (2004). Telemedicine endeavors in Ethiopia: potential benefits, present challenges, and potential factors. *Proceedings of the Fifth Annual Global Information Technology Management (GITM) World Conference*, San Diego, CA
- Kituyi G. M., Rwashana A. S., Mbarika V. and Isabalija S. (2012). A Framework for Designing Sustainable Telemedicine Information Systems in Developing Countries. *Emerald Journal of Systems and Information Technology*, Volume 14 issue 3
- Kituyi G. M. and Amulen C (2012). A Software Capability Maturity Adoption Model for Small

- and Medium Enterprises, *The Electronic Journal of Information Systems in Developing Countries*
- Kituyi G. Mayoka and Charles Olupot (2012). Factors Affecting Electronic Customer Relationship Management Information Systems Adoption in Ugandan SMEs, *Electronic Customer Relationship Management Journal*
- Klement C. K. (2016) What is axiology? UMassAmherst, retrieved on August 7th 2016 from <http://people.umass.edu/klement/160/axiology.pdf>
- Kline, R. B. (1998) Principles and practice of Structural Equation Modeling, *New York, Guilford Press*
- Kodym P., Flegr J. (2006) Gender differences in behavioral changes induced by latent toxoplasmosis, *International Journal for Parasitology* 36 (2006) 1485–1492
- Krishnaveni R. and Deepa R. (2011). Development and validation of an Instrument for measuring the Emotional Intelligence of Individuals in the Work Environment – In the Indian Context. *The International Journal of Educational and Psychological Assessment*
- Langlois M, Petosa R, Hallam J. (1999) Why do effective smoking prevention programs work? Student changes in social cognitive theory constructs, *Journal of School Health* 69(8), 326-331.
- Lawson T. (2014) A Conception of Ontology, *Cambridge*
- Leonardi P. M. and Huysman M. (2013) Enterprise SM: Definition, History, and Prospects for the Study of Social Technologies in Organizations, *Journal of mediated computer communications*, Vol. 19 (2013)
- Levine D. (2009) Using New Media to Promote Adolescent Sexual Health: Examples from the Field, *Act Youth Center of Excellence*
- Lindova J., Novotna M., Havlíček J., Jožífkova E., Skallová A., Kolbekova P., Hodný Z., Livingston G., Minushkin S., Cohn D (2014). Hispanics and Health Care in the United States: Access, Information and Knowledge, *Robert Wood Johnson Foundation*
- Lozoff T. (2016) 4 Beer Companies With SM On Tap, *Mashable*. Retrieved On 26th March, 2016 From: <Http://Mashable.Com/2010/08/27/Beer-Social-Media/>
- MacLean, S. and Gray, K. (1998) Structural Equation Modeling in market research, *Journal of the Australian market research society*
- Miles, M & Huberman, A (1994) – Qualitative Data Analysis, *Thousand Oaks, Sage*

Publications

- Mills, C (1994) – Phenomenological, *Surgical Nurse* Pp27-29
- Mcquiston T. (2013) The Ultimate Guide To Craft Beer SM Marketing, *PorTable Bar Company*. Retrieved On 26th March, 2016 From: <https://TheporTablebarcompany.Com/Craft-Beer-Social-Media-Marketing/>
- Rocha L. E. C , Liljeros F. and Holme P. (2016) Information Dynamics Shape The Sexual Ne T Works Of Interne T-Mediated Prostitution, Sungkyunkwan University, Retrieved on 25th March 2016 from: <http://arxiv.org/ftp/arxiv/papers/1003/1003.3089.pdf>
- Morrison R. S., Joan D., Brian J.C., Caust-Ellenbogen M., Litke A, Spragens L., Meier D.E. (2008). Cost Savings Associated With US Hospital Palliative Care Consultation Programs, *American Medical Association*
- Moorhead A, Hazlett D.E, Harrison L, Carroll J.K, Irwin A., Hoving C. (2014). A New Dimension of Health Care: Systematic Review of the Uses, Benefits, and Limitations of SM for Health Communication, *Journal of Medical Internet Research*
- Martinasek M.P, Panzera A.D, Schneider T., Lindenberger J.H, Bryant C.A, McDermott R and Couluris M. (2011). Benefits and Barriers of Pediatric Healthcare Providers toward Using SM in Asthma Care, *American Journal of Health Education*
- Namakula S. and Kituyi G. M (2014). Examining Health Information Systems Success Factors in Uganda’s Healthcare System, *Journal Of Global Health Care Systems/Volume 4, Number 1, 2014*
- NIHCE (2007) Behaviour change at population, community and individual levels, *National Institute for Health and Clinical Excellence*
- ORI (2016) Elements of Research, *San Diego State University* retrieved on 7th March 2016 at <https://ori.hhs.gov/education/products/sdsu/variables.htm>
- Orji R. (2014) Exploring the Persuasiveness of Behavior Change Support Strategies and Possible Gender Differences, *University of Saskatchewan*
- Purdy H. C. (2011) Using the Internet and SM to promote condom use in Turkey, *Reproductive Health Matters*, Vol. 19(37):157–165
- Protalinki E. (2015) Facebook passes 1.44B monthly active users and 1.25B mobile users; 65%

- are now daily users, VenterBeat. Retrieved on 26th March from: <http://venturebeat.com/2015/04/22/facebook-passes-1-44b-monthly-active-users-1-25b-mobile-users-and-936-million-daily-users/>
- PWC Health Research Institute (2012) SM “likes” healthcare from marketing to social business, *PWC*
- Resnik D. B. (2015) What is Ethics in Research & Why is it Important? National institute of environmental sciences. Retrieved on 27th march 2016 from: <http://www.niehs.nih.gov/research/resources/bioethics/whatis/>
- Roscoe, J.T. (1975). *Fundamental Research Statistics for the Behavioural Sciences*, 2nd edition. *New York: Holt Rinehart & Winston*
- Rotter, J. B. (1993). Expectancies. In C. E. Walker (Ed.), *The history of clinical psychology in autobiography* (vol. II) (pp. 273-284). *Pacific Grove, CA: Brooks/Cole*
- Rouse M. (2014) ICT (Information And Communications Technology - Or Technologies), Techtarget, Retrieved On 26 March, 2016 From: <Http://Searchcio.Techtarget.Com/Definition/Ict-Information-And-Communications-Technology-Or-Technologies>
- Saleh J., Robinson B., Kugler N., Illingworth K., Patel P., and Saleh K. (2012). Effect of Social Media in Health Care and Orthopedic Surgery, *The cutting edge*, Volume 35 • Number 4, pg 294
- Schumacker, R. E., & Lomax, R. G. (2004) *A beginner's guide to Structural Equation Modeling*, Second edition. Mahwah, NJ: *Lawrence Erlbaum Associates*.
- Sebstad J., and Manfre C. (2011) Behavior Change Perspectives on Gender and Value Chain Development, *United States Agency for International Development*, FIELD Report No. xx:
- Statistica (2014a) Share of mobile internet users in selected countries who are active WhatsApp users as of 4th quarter 2014, *Statistica*, Retrieved on 26th March, 2016 from: <http://www.statista.com/statistics/291540/mobile-internet-user-whatsapp/>
- Statistica (2016b) Number of monthly active WhatsApp users worldwide from April 2013 to February 2016 (in millions), *Statistica*, Retrieved on 26th March, 2016 from: <http://www.statista.com/statistics/260819/number-of-monthly-active-whatsapp-users/>
- Statistic Brain (2016) Skype Company Statistics, Statistic Brain. Retrieved on 26th March, 2016

- from: <http://www.statisticbrain.com/skype-statistics/>
- Statistics solution (2016) Moderator variable, retrieved on 7th March 2016 at <https://www.statisticssolutions.com/directory-of-statistical-analyses-general-moderator-variable/>
- Steiger, J. H. (1990) Structural model evaluation and modification: an interval estimation approach, *Multivariate behavioral research*, 25 pp. 173-180
- Suhr, D. D. (2017) Exploratory or Confirmatory Factor Analysis? *Sas*, Retrieved on March 20th 2017 from <http://www2.sas.com/proceedings/sugi31/200-31.pdf>
- Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in the social and behavioral sciences*. Thousand Oaks, CA: Sage.
- Taylor H. (2002). If Genetic Tests Were Available for Diseases Which Could be Treated or Prevented, Many People Would Pay to Have Them, *The Harris Poll*
- Tennis, J. T. (2008) Epistemology, Theory, and Methodology in Knowledge Organization: Toward a Classification, Metatheory, and Research Framework, *In Knowledge Organization*, 35(2/3): 102-112.
- The Harris Poll (2010). Cyberchondriacs on the Rise? Those who go online for healthcare information continues to increase, *The Harris Poll*
- Tomar B. (2014) Axiology in Teacher Education: Implementation and Challenges, *IOSR Journal of Research & Method in Education*, Vol. 4;2, PP 51-54
- Ullman, J. B. (2001) Structural Equation Modeling. In B. G. Tabachnick & L. S. Fidell (2001) Using Multivariate Statistics (4th ed& pp 653- 771). *Needham Heights, MA: Allyn & Bacon*.
- UN (2013) Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings, The United Nations Statistics Division, Retrieved on 26th March, 2016 from: <http://unstats.un.org/unsd/methods/m49/m49regin.htm>
- Venkatesh V., Morris, M. G., Davis, G. B., and Davis. D. (2003) User Acceptance of Information Technology: Toward a Unified View, *MIS Quarterly*. Vol. 27, No. 3, pp. 425-478
- Walton N. (2016) What Is Research Ethics? *Research Ethics.Ca*. Retrieved On 27th March 2016 From: <https://Researchethics.Ca/What-Is-Research-Ethics/>

- VanVoorhis C. R. W. and Morgan B. L. (2007) Understanding Power and Rules of Thumb for Determining Sample Sizes, *Tutorials in Quantitative Methods for Psychology*, vol. 3 (2), p. 43- 50.
- Wandersman Abraham (2009) Four Keys to Success (Theory, Implementation, Evaluation, and Resource/System Support): High Hopes and Challenges in Participation. *Springer Science Business Media, LLC* 2009
- Ware. C. M., and Goodmanson D. (2009) The Church & Social Networking: Industry Study, *Church Tech Review*. Retrieved on 26th march 2016 from: <http://www.churchtechreview.com/wp-content/uploads/2009/04/churchesandsocialmedia.pdf>
- Weiss R. (2010) Smart Phones, Social Networking, Sexting and Problematic Sexual Behaviors— A Call for Research, *Sexual Addiction & Compulsivity*, 17:241–246
- Whichard J. A. (2006) Reliability and Validity of True Colors, *True Colors Association*, Retrieved on August 20th 2016 from <http://truecolorsassociation.org/Reliability-Validity%20tests%20-%20Whichard.pdf>
- WHO (2000) Health and Health Behaviour among Young People, *World Health Organization Policy Series: Health policy for children and adolescents Issue 1; International Report*
- Wikipedia (2016a) Genetic epistemology, *Wikipedia*, retrieved on August 7th 2016 from https://en.wikipedia.org/wiki/Genetic_epistemology
- Wikipedia (2016b) Feminist epistemology, *Wikipedia*, retrieved on August 7th 2016 from https://en.wikipedia.org/wiki/Feminist_epistemology
- Wikipedia (2016c) Social epistemology, *Wikipedia*, retrieved on August 7th 2016 from https://en.wikipedia.org/wiki/Social_epistemology
- Wikipedia (2016d) Constructivist epistemology, *Wikipedia*, retrieved on August 7th 2016 from https://en.wikipedia.org/wiki/Constructivist_epistemology
- Winett R. A., Anderson E. S., Whiteley J. A., Wojcik J. R., Rovniak L. S., Graves K. D., Galper D. I., Winett S. G. (1999) Church-based Health Behavior programs: Using Social Cognitive Theory to formulate interventions for at-risk populations, *Applied & Preventive Psychology* 8:129-142.
- Winters E, Petosa R, Charleton T. (2003) Using Social Cognitive Theory to explain discretionary

- "Leisure-time" physical exercise among high school students. *Journal of Adolescent Health* Vol. 32:436-442.
- Wrzosiński P., (2015) Tobacco in SM K-Message. Retrieved on 26th march, 2016 from:
<http://www.k-message.com/tobacco-in-social-media/>
- Yong, A. G., and Pearce, S. (2013) A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis, *Tutorials in Quantitative Methods for Psychology*, Vol. 9(2), p. 79-94
- Zarate, L. E, Nogueira, B. M, Santos, T. R, Song, M. A. (2006). Techniques for missing value recovering in imbalanced databases: Application in a marketing database with massive missing data, *IEEE International Conference on Systems, Man and Cybernetics*, 2006. SMC '06. 3. pp. 26 58–64.

APPENDIX I – SURVEY QUESTIONNAIRE



DATA COLLECTION QUESTIONNAIRE FOR SOCIAL MEDIA USERS

Dear Respondents

I am a doctoral student at The ICT University, Yaoundé, Cameroon. We are investigating the effect of social media on health behavior in a study titled “Social Media and Health Behavior in Sub-Saharan Africa”. Social Media is a wide range of internet_based applications and mobile platforms that allow users to create public or semi_public profiles for purposes of participating in online exchanges, contributing user_created content, and or joining online communities. They include blogs such as WordPress; wikis such as Wikipedia; social network sites such as Facebook, MySpace, Bobo; status update services such as Twitter; social bookmarking sites such as LinkedIn; virtual word content such as avatars; media sharing sites such as YouTube, message applications such as WhatsApp, messenger among others. The study aims to understand the learning process and the pertinent factors that influence learning of new health behaviors via these social media platforms.

You have been carefully selected to participate in this survey by filling in the survey form. Please be informed that your participation is voluntary and you are at free will to leave in case you feel uncomforTable continuing in the survey. You are also requested to share this invitation with other social media users in your organization so that they can participate in the survey.

Your responses will be treated with utmost confidentiality and shall be used for academic purposes only. As a participant, you will not receive any financial compensation and / or incur any costs for participating in this study apart from your time. We will be glad to share with you our findings with interested participants. Please let us know by sending an e_mail to kituyi@ictuniversity.org. The survey should take about 10 minutes to complete.

In case you have any questions, please contact the researcher on kituyi@ictuniversity.org or Thesis Chair, Prof. Victor Mbarika on victor@mbarika.com or the PhD Program Coordinator, Dr. Clive Tsuma on ctsuma@ictuniversity.org.

Kindly complete and submit the survey to the researcher as soon as possible. Thank you for accepting to participate in this survey.

SECTION A: BACKGROUND CHARACTERISTICS

Part I: Demographics

For questions under this section, please tick the choice(s) that apply to you.

1. What is your gender?

Female	<input type="checkbox"/>
Male	<input type="checkbox"/>

2. What is your age group?

Below 20 years	<input type="checkbox"/>
20_29 years	<input type="checkbox"/>
30_39 years	<input type="checkbox"/>
40_49 years	<input type="checkbox"/>
50 years and above	<input type="checkbox"/>

3. What is your highest level of education?

Primary	<input type="checkbox"/>
---------	--------------------------

Secondary	
Certificate	
Diploma	
Bachelors	
Masters	
PhD	
Others (please specify)	

4. What is your marital status?

Single	
Married	
Divorced	
Others (please specify)	

5. What is your country of residence?

Uganda	
Nigeria	
Cameroon	
Others (please specify)	

Part II: Social Media

6. How would you describe your knowledge about social media?

Not knowledgeable	
Somewhat knowledgeable	
Knowledgeable	
Quite knowledgeable	
Very knowledgeable	

7. Have you ever used social media?

Yes	
No	

8. If your response in 7 above is Yes, to what extent do you agree or disagree with the following statements about **social media platforms you have used?**

Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA)	SD	D	NS	A	SA
I use and or have ever used Facebook					
I use and or have ever used I use WhatsApp					
I use and or have ever used WordPress (blogs)					
I use and or have ever used LinkedIn					
I use and or have ever used Twitter					
I use and or have ever used Skype					
I use and or have ever used YouTube					
I use and or have ever used Wikipedia					
I use and or have ever used MySpace					
I use and or have ever used Messenger					
Others (please specify)					

9. For how long have you used the above social media?

Less than 2 years	
2 to 4 years	
5 years and above	

10. How often do you use the following social media platforms? For each item, tick one option.

Platform	Very rarely	Rarely	Occasionally	Frequently	Very frequently
Usage of Facebook					
Usage of WhatsApp					
Usage of WordPress (blogs)					

Usage of LinkedIn					
Usage of Twitter					
Usage of Skype					
Usage of YouTube					
Usage of Wikipedia					
Usage of MySpace					
Usage of Messenger					
Others (please specify)					

11. For what purpose do you use social media? Please tick one option on each item.

Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA)	SD	D	NS	A	SA
I use social media to socializing with friends					
I use social media to connecting with new friends					
I use social media to in business					
I use social media to for leisure and entertainment					
I use social media to for learning					
I use social media to accessing news					
Others (please specify)					

12. Which of the following devices do you use to access social media? Please tick one option on each item.

Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA)	SD	D	NS	A	SA
I use a Smartphone to access social media					
I use a Laptop computer to access social media					
I use a Desktop computer to access social media					
I use an Ipad to access social media					
I use a Note pad to access social media					
I use a Tablet to access social media					

Other (please specify)					
------------------------	--	--	--	--	--

Part III: Social media in health

13. Do you use social media to access health related information?

Yes	
No	

14. If your answer in 13 above is Yes, what type of health information do you receive or share via social media? Please tick one option on each item.

Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA)	SD	D	NS	A	SA
I get general health information via social media					
I get information on alcohol via social media					
I get information on sex and sexuality via social media					
I get information on drugs via social media					
I get information on diet via social media					
I get information on treatment of diseases via social media					
I get information on mental health via social media					
I get information on HIV/AIDS and other chronic diseases such as cancer via social media					
Others (please specify)					

SECTION B: SOCIAL MEDIA AND HEALTH BEHAVIOR

15. Please indicate how much you agree or disagree with the following responses on **social media and health behavior** by ticking an appropriate box against each item. The responses are arranged as follows; Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA).

Strongly Disagree (SD); Disagree (D), Not Sure (NS); Agree (A); Strongly Agree (SA)						
No	COGNITIVE FACTORS	SD	D	NS	A	SA
	<i>Beliefs</i>					
CF_B1	I believe using social media to share health related information is a good thing					
CF_B2	I believe using social media can help me improve my health behavior					
CF_B3	I believe using social media can help me improve my knowledge on health related matters					
CF_B4	I believe social media as a platform for exchanging health related information					
CF_B5	I believe my cultural norms allow me to use social media on health related matters					
CF_B6	I believe my position in society allows me to use social media on health related matters					
	<i>Knowledge</i>					
CF_K1	I have the necessary knowledge to use social media in sharing health related information					
CF_K2	I know the importance using social media for health related purposes					
CF_K3	I have the relevant skills for using social media on health matters					
CF_K4	I have the relevant experience in using social media for health purposes					
	<i>Attitude</i>					
CF_A1	I have a positive attitude towards using social media on health related matters					
CF_A2	I encourage my friends to use social media on health related issues					
CF_A3	I promote usage of social media on health related issues					

CF_A4	I teach other people how to use social media on health related issues					
No	INTERNAL LOCUS OF CONTROL	SD	D	NS	A	SA
ILC1	I can control the consequences emanating out of my using social media					
ILC2	I believe I maintain good interpersonal relations while using social media					
ILC3	I make greater efforts to learn while using social media					
ILC4	I believe I am in charge of my activities while using social media					
ILC5	I am directly responsible for the consequences of my actions as a result of using social media					
ILC6	I control myself while using social media					
ILC7	I can assume success or failure before taking action while using social media					
No	EXTERNAL LOCUS OF CONTROL	SD	D	NS	A	SA
ELC1	I am not in control of the consequences of my actions while using social media					
ELC2	I achieve less by using social media					
ELC3	I have low morale to learn new things on social media					
ELC4	I do not maintain good relations on social media					
ELC5	I consider myself lucky to be using social media					
ELC6	I am not responsible for the bad things that happen to me while using social media					
ELC7	I do not think about the consequences of my actions before doing them on social media					
ELC8	I am unable to help myself when faced with challenging situations on social media even if I possess the ability to do so					

No	SELF-REGULATION	SD	D	NS	A	SA
SR1	I can bring up a health related issue to my peers via social media.					
SR2	I can disclose my health related problems to peers via social media					
SR3	I freely consume health related information from social media					
SR4	I look to the positive side while using social media					
SR5	I can freely challenge my peers on health issues via social media					
SR6	I can freely give health related advice to my peers via social media					
SR7	I set my goals while sharing health related information on social media					
SR8	I set my goals while consuming health related information on social media					
SR9	I monitor myself while sharing health related information on social media					
SR10	I monitor myself while consuming health related information on social media					
SR11	I am cautious about my peers while sharing health related information on social media					
SR12	I am cautious about my peers while consuming health related information on social media					
SR13	I am cautious about my family members while share health related information on social media					
SR14	I am cautious about my family members while consuming health related information on social media					
SR15	I can overcome barriers emanating from my sharing of health related information via social media					
SR16	I can overcome barriers emanating from my consumption of					

	health related information via social media					
No	AGE SENSITIVITY	SD	D	NS	A	SA
AB1	I freely interact with people of different age groups via social media on health related matters					
AB2	I freely interact with people of my age group via social media on health related matters					
AB3	I do not mind learning new health behaviors from people of my age via social media					
AB4	I do not mind learning new health behaviors from people older than me via social media					
AB5	I do not mind learning new health behaviors from people younger than me via social media					
AB6	I feel I am of the right age to use social media for health purposes					
No	OUTCOME EXPECTATIONS	SD	D	NS	A	SA
OE1	Using social media on health related matters makes me a better person					
OE2	Using social media on health related matters makes me more acceptable amongst my peers					
OE3	My peers will trust me if I use social media on health related matters					
OE4	I will not be rejected by my peers if I use social media on health related matters					
OE5	I will not be punished by my family if I use social media on health related matters					
OE6	I will not be punished by my elders if I use social media on health related matters					
OE7	I believe that my peers will trust me if I share my health related					

	information via social media					
No	BEHAVIORAL INTENTION	SD	D	NS	A	SA
BI1	I intend to acquire new health skills via social media					
BI2	I intend to learn new health practices via social media					
BI3	I intend to do the health issues I observe on social media					
BI4	I intend to learn how to smoke by observing other people's smoking images or videos via social media					
BI5	I intend to learn how to use alcohol by observing other people's images or videos drinking alcohol via social media					
BI6	I intend to consume pornography by observing other people's images or videos of pornography on social media					
BI7	I intend to do the health issues I see other influential people in society doing via social media					
BI8	I intend to train myself on doing the health related things that I see and like on social media					
No	HEALTH BEHAVIOR	SD	D	NS	A	SA
	<i>Skills</i>					
HB_S1	I have acquired health skills via social media					
HB_S2	I have learned how to treat diseases via social media					
HB_S3	I have learned how to manage chronic diseases via social media					
HB_S4	I have learned to look after patients via social media					
	<i>Practice</i>					
HB_P1	I have learned new health practices via social media					
HB_P2	I have the desire to do the health issues I see other influential people in society doing via social media					
HB_P3	I train myself on doing the health related things that I see and like on social media					

HB_P4	I try to do the health issues as I am told to do via social media					
HB_P5	I seek sexual pleasures via social media					
	Observational learning					
HB_OL1	I have learned how to smoke by observing other people's smoking images or videos via social media					
HB_OL2	I have learned how to consume alcohol by observing other people's images or videos drinking it via social media					
HB_OL3	I have learned how to smoke by observing other people's images or videos smoking it via social media					
HB_OL4	I have learned some health manners by seeing influential people in the community showing them via social media					
HB_OL5	I learned how to consume pornography by observing other people's images or videos of pornography on social media					
HB_OL6	I have consumed pornography by observing other people's images or videos of pornography on social media					
HB_OL7	I have learned how to access sexual partners using social media because observing other people doing it					
HB_OL8	I have learned how to make money by giving sexual pleasures via social media through observing others					
	Moral degeneration					
HB_MD1	I smoke because of the information I have consumed over time via social media					
HB_MD2	I use drugs because of the information I have consumed over time via social media					
HB_MD3	I drink alcohol because of the information I have consumed over time via social media					
HB_MD4	I use pornography because of the information I have consumed over time via social media					
HB_MD5	I am gay because of the information I have consumed over time via social media					

HB_MD6	I have multiple sex partners because of the information I consume via social media					
HB_MD7	I know of someone who obtained sex via social media					
HB_MD8	I know of someone who engages in commercial sex via social media					

Thank you

APPENDIX II – RESULTS OF THE PILOT STUDY

Crombach Alpha Coefficients

Variable	No of items	CAC
Cognitive Factors	8	.804
Internal Locus of Control	7	.805
External Locus of Control	8	.894
Self-Regulation	16	.890
Age Sensitivity	6	.869
Outcome Expectations	7	.873
Behavioral Intention	8	.827
Health Behavior	12	.883

Content Validity Index for all variables

Experts	CVI
Expert 1	0.955882
Expert 2	0.772059
Expert 3	0.389706
Expert 4	0.963235
Expert 5	0.389706
Expert 6	0.485294
Expert 7	0.757353
Average CVI	0.673319

Exploratory factor analysis (EFA) results

Summary of findings

Commonalities are >0.4 indicating items were measuring the same variable

KMO >0.7 indicating that the sample was adequate hence valid

Total Variance Explained >0.7 indicating that the items and constructs largely explained the variables

Rotated Component Matrix Factor Loadings were > 0.5 and items were distributed independently into different constructs. This means that there was discriminant validity within the variable and convergent validity within the construct.

Convergent and discriminant validity

KMO test results for Cognitive factors

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.732
Bartlett's Test of Sphericity	Approx. Chi-Square	143.323
	df	28
	Sig.	.000

Commonalities for Cognitive Factors

Communalities

	Initial	Extraction
I believe using social media to share health related information is a good thing	1.000	.838

I have the necessary knowledge to use social media in sharing health related information	1.000	.376
I value social media as a platform for exchanging health related information	1.000	.744
I have a positive attitude towards using social media on health related matters	1.000	.607
I believe using social media can help me improve my health behavior	1.000	.713
I believe using social media can help me improve my knowledge on health related matters	1.000	.401
My cultural norms allow me to use social media on health related matters	1.000	.556
My position in society allows me to use social media on health related matters	1.000	.721

Extraction Method: Principal Component Analysis.

Total Variance Explained for Cognitive factors

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	3.805	47.568	47.568	3.805	47.568	47.568	3.358	41.974	41.974
2	1.151	14.383	61.951	1.151	14.383	61.951	1.598	19.976	61.951
3	.951	11.884	73.835						
4	.690	8.623	82.459						
5	.627	7.843	90.301						
6	.334	4.179	94.480						
7	.244	3.048	97.529						
8	.198	2.471	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix for Cognitive factors

Rotated Component Matrix^a

	Component	
	1	2
I believe using social media can help me improve my health behavior	.844	

My position in society allows me to use social media on health related matters	.842	
My cultural norms allow me to use social media on health related matters	.706	
I have a positive attitude towards using social media on health related matters	.655	.421
I value social media as a platform for exchanging health related information	.641	.577
I have the necessary knowledge to use social media in sharing health related information	.588	
I believe using social media can help me improve my knowledge on health related matters	.499	.390
I believe using social media to share health related information is a good thing		.914

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

KMO for Health behavior

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.739
Bartlett's Test of Sphericity	560.597
df	66
Sig.	.000

Commonalities for Health behavior

Communalities

	Initial	Extractio n
I have acquired health skills via social media	1.000	.861
I have learned new health practices via social media	1.000	.874
I try to do the health issues I observe on social media	1.000	.794
I have learned how to smoke by observing other people's smoking images or videos via social media	1.000	.861
I have come to like smoking by observing other people's smoking images or videos via social media	1.000	.894
I have learned how to take alcohol by observing other people's images or videos drinking alcohol via social media	1.000	.906
I have come to like alcohol by observing other people's images or videos drinking it via social media	1.000	.903
I have learned some health manners by seeing influential people in the community showing them via social media	1.000	.482
I have consumed pornography by observing other people's images or videos of pornography on social media	1.000	.634
I have come to like pornography by observing other people's images or videos of pornography on social media	1.000	.816
I have the desire to do the health issues I see other influential people in society doing via social media	1.000	.914
I train myself on doing the health related things that I see and like on social media	1.000	.575

Extraction Method: Principal Component Analysis.

Total Variance Explained for Health behavior

Total Variance Explained

Compone nt	Initial Eigenvalues	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings

	Total	% of Variance	Cum %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	5.598	46.648	46.648	5.59	46.648	46.648	5.03	41.978	41.978
2	2.819	23.495	70.143	8	2.81	23.495	7	23.674	65.652
3	1.096	9.132	79.275	9	1.09	9.132	1	13.624	79.275
4	.775	6.458	85.734	6			5		
5	.573	4.777	90.511						
6	.458	3.815	94.326						
7	.254	2.115	96.440						
8	.181	1.505	97.946						
9	.133	1.107	99.053						
10	.056	.468	99.521						
11	.047	.389	99.910						
12	.011	.090	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component matrix for Health behavior

Rotated Component Matrix^a

	Component		
	1	2	3
I have learned how to take alcohol by observing other people's images or videos drinking alcohol via social media	.934		
I have come to like smoking by observing other people's smoking images or videos via social media	.930		

I have come to like alcohol by observing other people's images or videos drinking it via social media	.928		
I have learned how to smoke by observing other people's smoking images or videos via social media	.901		
I have come to like pornography by observing other people's images or videos of pornography on social media	.814		.350
I have consumed pornography by observing other people's images or videos of pornography on social media	.794		
I have learned some health manners by seeing influential people in the community showing them via social media	.489		.477
I have learned new health practices via social media		.922	
I have acquired health skills via social media		.918	
I try to do the health issues I observe on social media		.866	
I have the desire to do the health issues I see other influential people in society doing via social media			.937
I train myself on doing the health related things that I see and like on social media		.523	.535

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

KMO for Outcome Expectations

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.741
Bartlett's Test of Sphericity	Approx. Chi-Square	233.722
	Df	21
	Sig.	.000

Commonalities for Outcome Expectations

Communalities

	Initial	Extraction
		n
Using social media on health related matters makes me a better person	1.000	.635
Using social media on health related matters makes me more acceptable amongst my peers	1.000	.800
My peers will trust me if I use social media on health related matters	1.000	.865
I will not be rejected by my peers if I use social media on health related matters	1.000	.840
I will not be punished by my family if I use social media on health related matters	1.000	.862
I will not be punished by my elders if I use social media on health related matters	1.000	.900
I believe that my peers will trust me if I share my health related information via social media	1.000	.697

Extraction Method: Principal Component Analysis.

Total Variance Explained for Outcome Expectations

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	3.985	56.931	56.931	3.985	56.931	56.931	3.753	53.617	53.617

2	1.61 5	23.070	80.001	1.61 5	23.070	80.001	1.84 7	26.383	80.001
3	.645	9.217	89.218						
4	.326	4.653	93.871						
5	.218	3.117	96.988						
6	.112	1.596	98.584						
7	.099	1.416	100.00 0						

Extraction Method: Principal Component Analysis.

Rotated Component matrix for Outcome Expectations

Rotated Component Matrix^a

	Component	
	1	2
I will not be rejected by my peers if I use social media on health related matters	.917	
My peers will trust me if I use social media on health related matters	.912	
Using social media on health related matters makes me more acceptable amongst my peers	.866	
I believe that my peers will trust me if I share my health related information via social media	.817	
Using social media on health related matters makes me a better person	.797	
I will not be punished by my elders if I use social media on health related matters		.935
I will not be punished by my family if I use social media on health related matters		.926

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

KMO for Internal Locus of Control

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.691
Bartlett's Test of Sphericity	Approx. Chi-Square	110.555
	Df	21
	Sig.	.000

Commonalities for Internal Locus of Control

Communalities

	Initial	Extraction
		n
I can control the consequences emanating out of my using social media	1.000	.709
I believe I maintain good interpersonal relations while using social media	1.000	.663
I make greater efforts to learn while using social media	1.000	.658
I believe I am in charge of my activities while using social media	1.000	.759
I am directly responsible for the consequences of my actions as a result of using social media	1.000	.625
I control myself while using social media	1.000	.516
I can assume success or failure before taking action while using social media	1.000	.589

Extraction Method: Principal Component Analysis.

Total Variance Explained for Internal Locus of Control

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	3.450	49.282	49.282	3.450	49.282	49.282	2.493	35.620	35.620
2	1.070	15.285	64.567	1.070	15.285	64.567	2.026	28.947	64.567
3	.730	10.431	74.997						
4	.640	9.137	84.134						
5	.510	7.289	91.423						
6	.420	5.995	97.418						
7	.181	2.582	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix for Internal Locus of Control

Rotated Component Matrix^a

	Component	
	1	2
I make greater efforts to learn while using social media	.803	
I believe I maintain good interpersonal relations while using social media	.787	
I believe I am in charge of my activities while using social media	.769	.410
I control myself while using social media	.696	
I can control the consequences emanating out of my using social media		.836
I can assume success or failure before taking action while using social media		.733

I am directly responsible for the consequences of my actions as a result of using social media	.303	.730
--	------	------

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

KMO for External Locus of Control

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.826
Bartlett's Test of Sphericity	Approx. Chi-Square 229.314
	Df 28
	Sig. .000

Commonalities for External Locus of Control

Communalities

	Initial	Extraction
I am not in control of the consequences of my actions while using social media	1.000	.685
I achieve less by using social media	1.000	.667
I have low morale to learn new things on social media	1.000	.754
I do not maintain good relations on social media	1.000	.694
I consider myself lucky to be using social media	1.000	.283
I am not responsible for the bad things that happen to me while using social media	1.000	.236

I do not think about the consequences of my actions before doing them on social media	1.000	.735
I am unable to help myself when faced with challenging situations on social media even if I possess the ability to do so	1.000	.775

Extraction Method: Principal Component Analysis.

Total Variance Explained for External Locus of Control

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.828	60.354	60.354	4.828	60.354	60.354
2	.932	11.646	72.000			
3	.800	10.004	82.004			
4	.570	7.121	89.125			
5	.308	3.851	92.976			
6	.266	3.321	96.297			
7	.183	2.292	98.588			
8	.113	1.412	100.000			

Extraction Method: Principal Component Analysis.

KMO for Self-Regulation

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.778
Bartlett's Test of Approx. Chi-Square	487.065
Sphericity Df	136

Sig.

.000

Commonalities for Self-Regulation**Communalities**

	Initial	Extraction
		n
I can bring up a health related issue to my peers via social media.	1.000	.694
I can disclose my health related problems to peers via social media	1.000	.712
I freely consume health related information from social media	1.000	.480
I look to the positive side while using social media	1.000	.736
I can freely challenge my peers on health issues via social media	1.000	.564
I can freely give health related advice to my peers via social media	1.000	.559
I set my goals while sharing health related information on social media	1.000	.867
I set my goals while consuming health related information on social media	1.000	.802
I monitor myself while sharing health related information on social media	1.000	.761
I monitor myself while consuming health related information on social media	1.000	.666
I am cautious about my peers while sharing health related information on social media	1.000	.723
I am cautious about my peers while consuming health related information on social media	1.000	.732
I am cautious about my family members while share health related information on social media	1.000	.863
I am cautious about my family members while consuming health related information on social media	1.000	.754
I can overcome barriers emanating from my sharing of health related information via social media	1.000	.714
I can overcome barriers emanating from my consumption of health related information via social media	1.000	.813

I freely interact with people of different age groups via social media on health related matters	1.000	.722
--	-------	------

Extraction Method: Principal Component Analysis.

Total Variance Explained for Self-Regulation

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum %	Total	% of Variance	Cum %	Total	% of Variance	Cum %
1	7.007	41.217	41.217	7.007	41.217	41.217	3.552	20.897	20.897
2	2.349	13.817	55.034	2.349	13.817	55.034	3.307	19.455	40.352
3	1.451	8.533	63.567	1.451	8.533	63.567	3.186	18.738	59.091
4	1.355	7.969	71.536	1.355	7.969	71.536	2.116	12.445	71.536
5	.917	5.392	76.928						
6	.805	4.736	81.664						
7	.648	3.810	85.475						
8	.484	2.846	88.321						
9	.433	2.546	90.867						
10	.356	2.093	92.960						
11	.294	1.728	94.687						
12	.238	1.397	96.085						
13	.204	1.198	97.282						
14	.162	.953	98.235						

15	.136	.801	99.036					
16	.101	.596	99.632					
17	.062	.368	100.000					

Extraction Method: Principal Component Analysis.

Rotated Component Matrix for Self-Regulation

Rotated Component Matrix^a

	Component			
	1	2	3	4
I set my goals while consuming health related information on social media	.863			
I set my goals while sharing health related information on social media	.833	.304		
I monitor myself while consuming health related information on social media	.748			
I monitor myself while sharing health related information on social media	.738		.373	
I can freely challenge my peers on health issues via social media	.486		.306	.481
I am cautious about my family members while share health related information on social media		.912		
I am cautious about my family members while consuming health related information on social media		.829		
I am cautious about my peers while sharing health related information on social media		.779		
I am cautious about my peers while consuming health related information on social media	.488	.672		

I freely interact with people of different age groups via social media on health related matters			.840	
I can overcome barriers emanating from my consumption of health related information via social media	.329		.807	
I can overcome barriers emanating from my sharing of health related information via social media			.773	
I look to the positive side while using social media	.301	.467	.651	
I can freely give health related advice to my peers via social media		.396	.570	
I can disclose my health related problems to peers via social media				.813
I can bring up a health related issue to my peers via social media.				.779
I freely consume health related information from social media		.330		.571

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

KMO for Age Sensitivity

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.778
Bartlett's Test of Sphericity	Approx. Chi-Square 168.979
	df 15
	Sig. .000

Commonalities for Age Sensitivity

Communalities

	Initial	Extraction
		n
I freely interact with people of different age groups via social media on health related matters	1.000	.586
I freely interact with people of my age group via social media on health related matters	1.000	.759
I do not mind learning new health behaviors from people of my age via social media	1.000	.824
I do not mind learning new health behaviors from people older than me via social media	1.000	.759
I do not mind learning new health behaviors from people younger than me via social media	1.000	.316
I feel I am of the right age to use social media for health purposes	1.000	.674

Extraction Method: Principal Component Analysis.

Total Variance Explained for Age Sensitivity

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.918	65.297	65.297	3.918	65.297	65.297
2	.792	13.201	78.498			
3	.647	10.777	89.274			
4	.279	4.658	93.932			
5	.243	4.051	97.983			
6	.121	2.017	100.000			

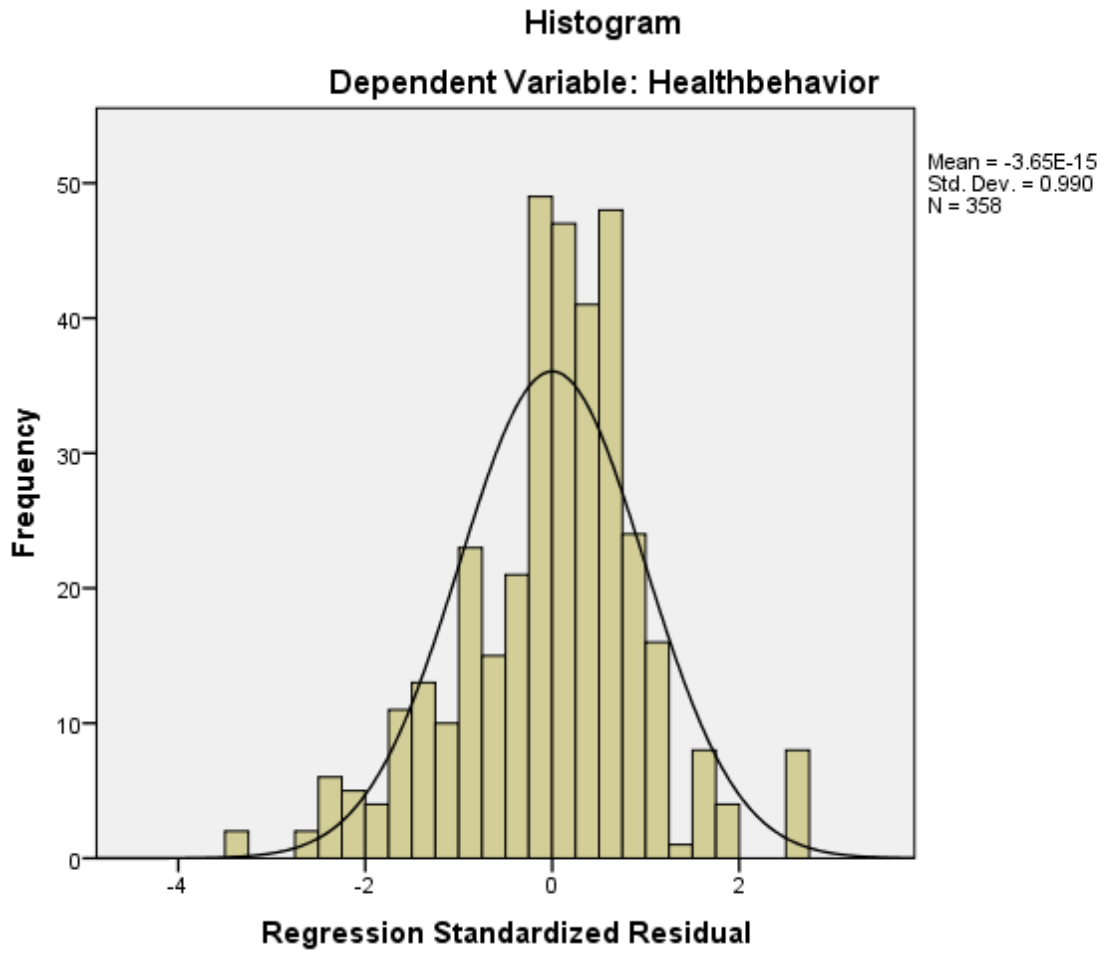
Extraction Method: Principal Component Analysis.

KMO for Gender Sensitivity

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.681
Bartlett's Test of Sphericity	Approx. Chi-Square	86.505
	df	10
	Sig.	.000

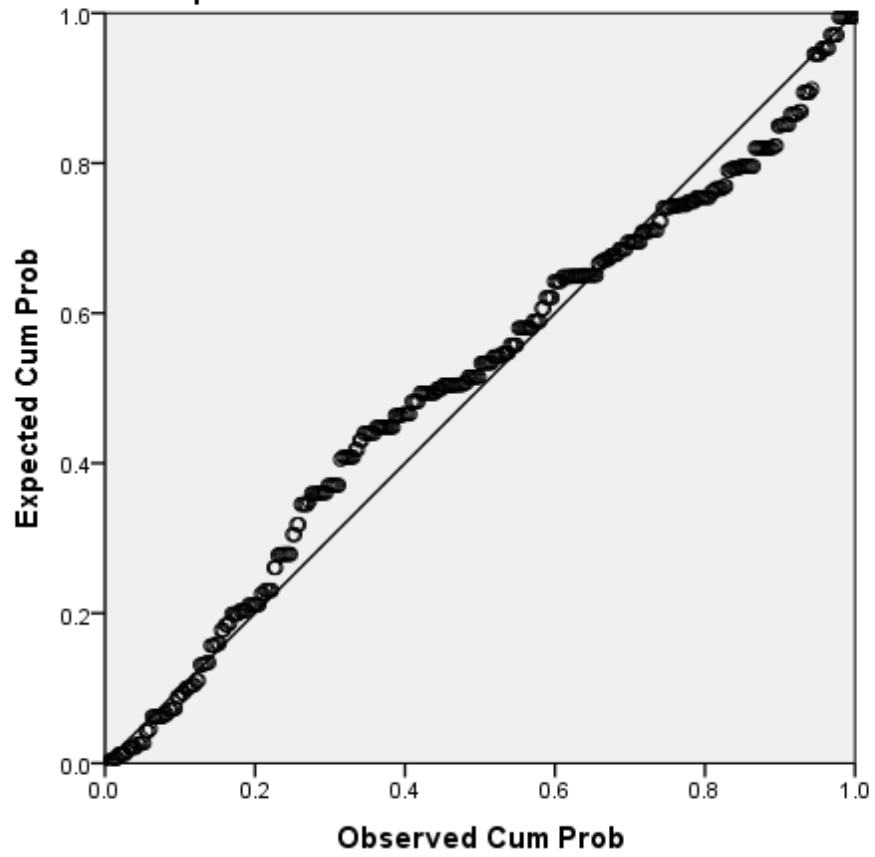
APPENDIX III- HISTOGRAM FOR OBJECTIVE ONE



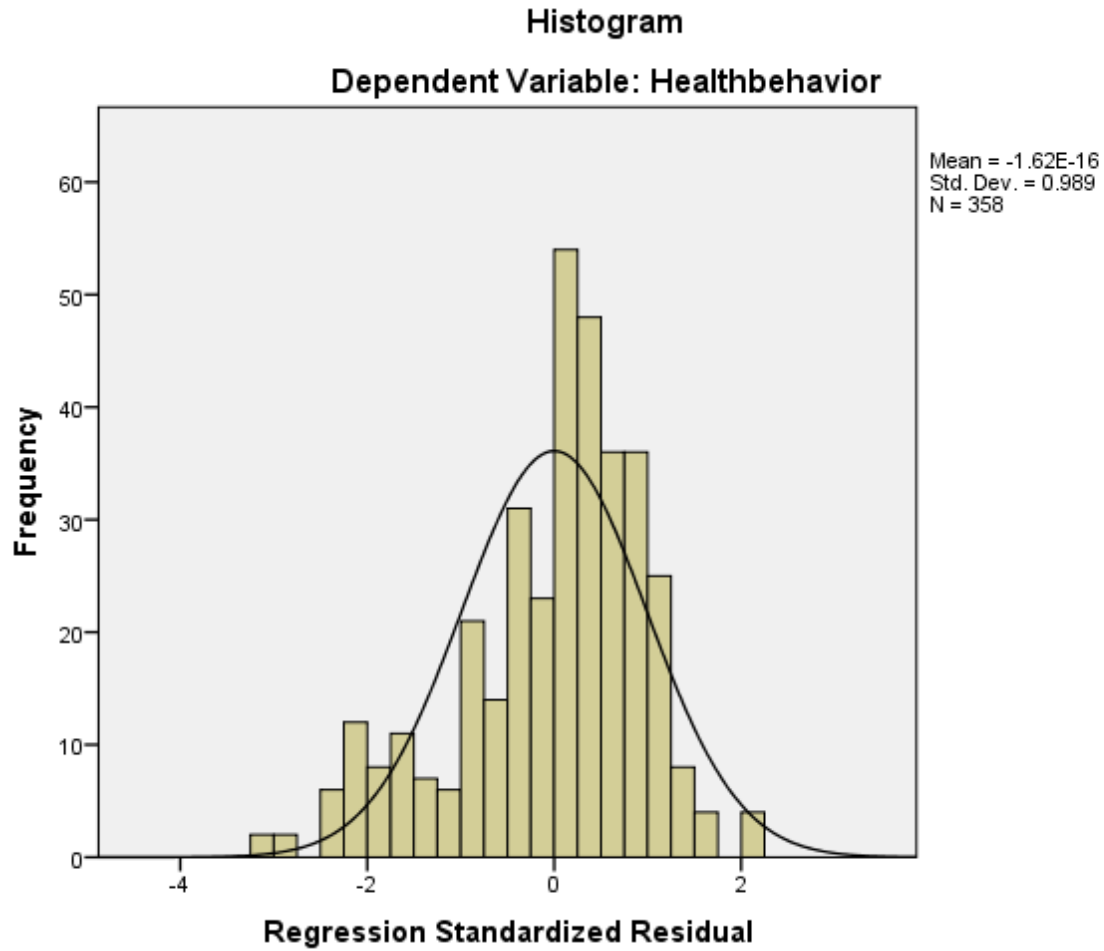
APPENDIX IV- NORMAL P-P PLOT FOR OBJECTIVE ONE

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Healthbehavior



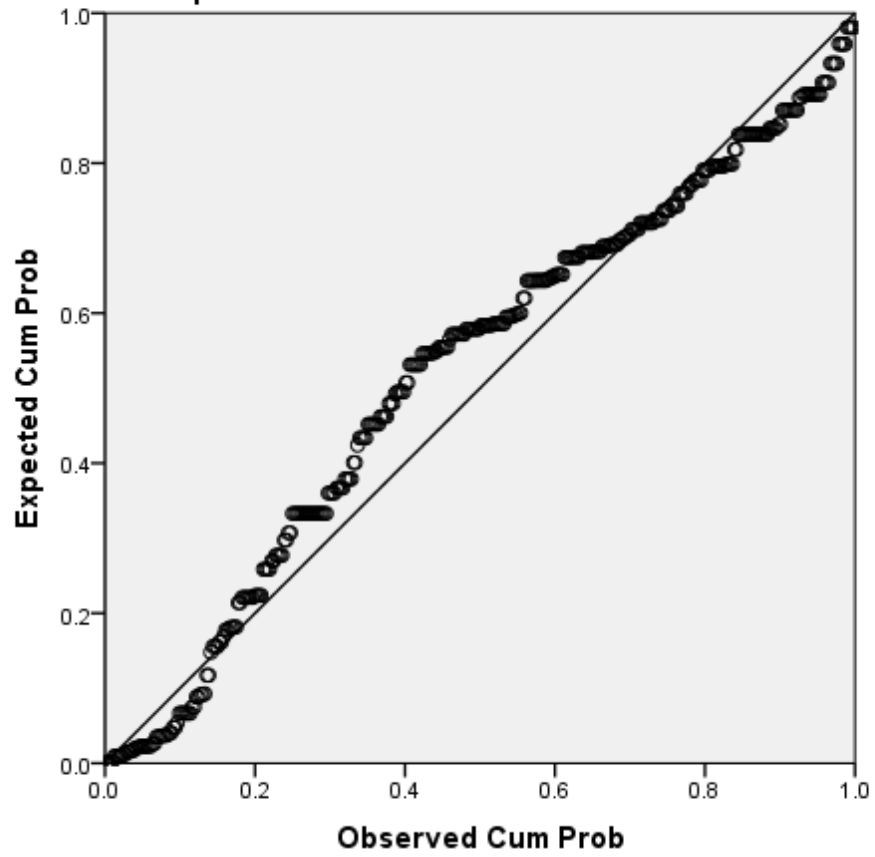
APPENDIX V – HISTOGRAM FOR OBJECTIVE TWO



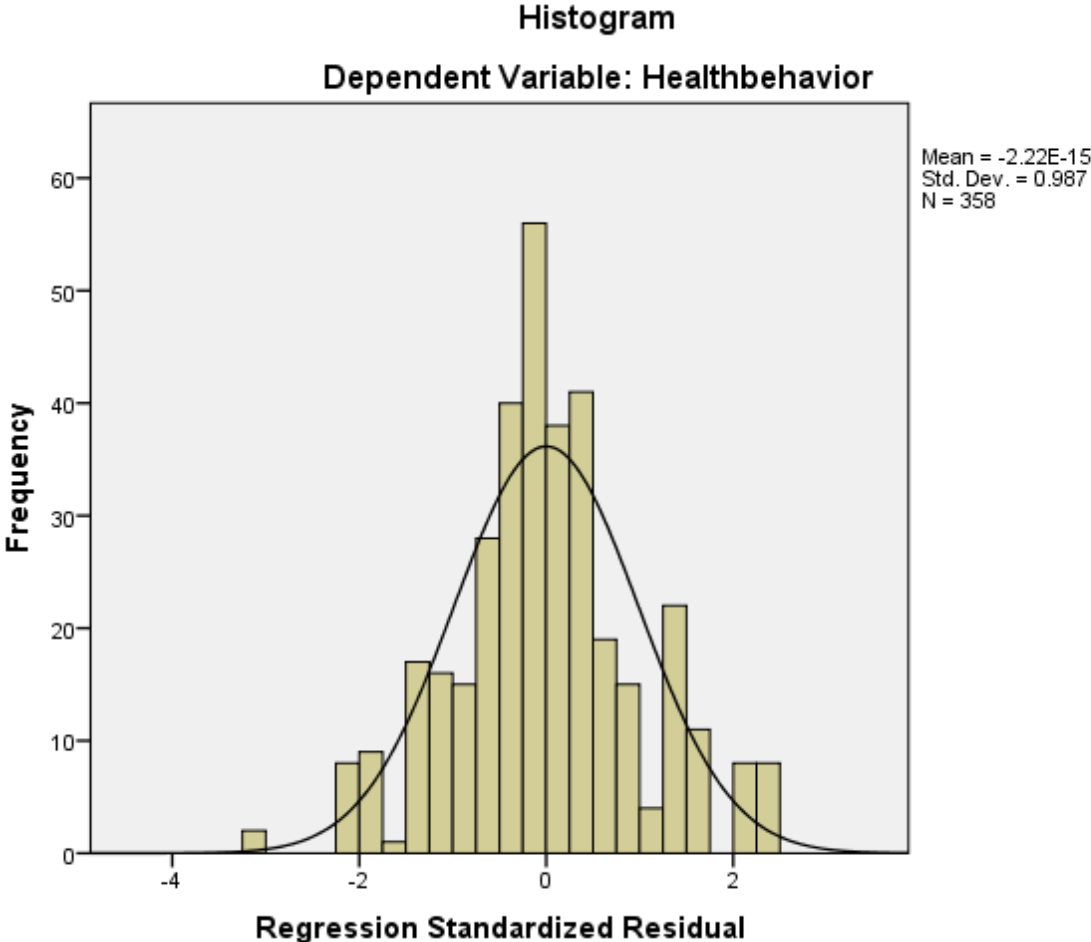
APPENDIX VI – NORMAL P-P PLOT FOR OBJECTIVE TWO

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Healthbehavior



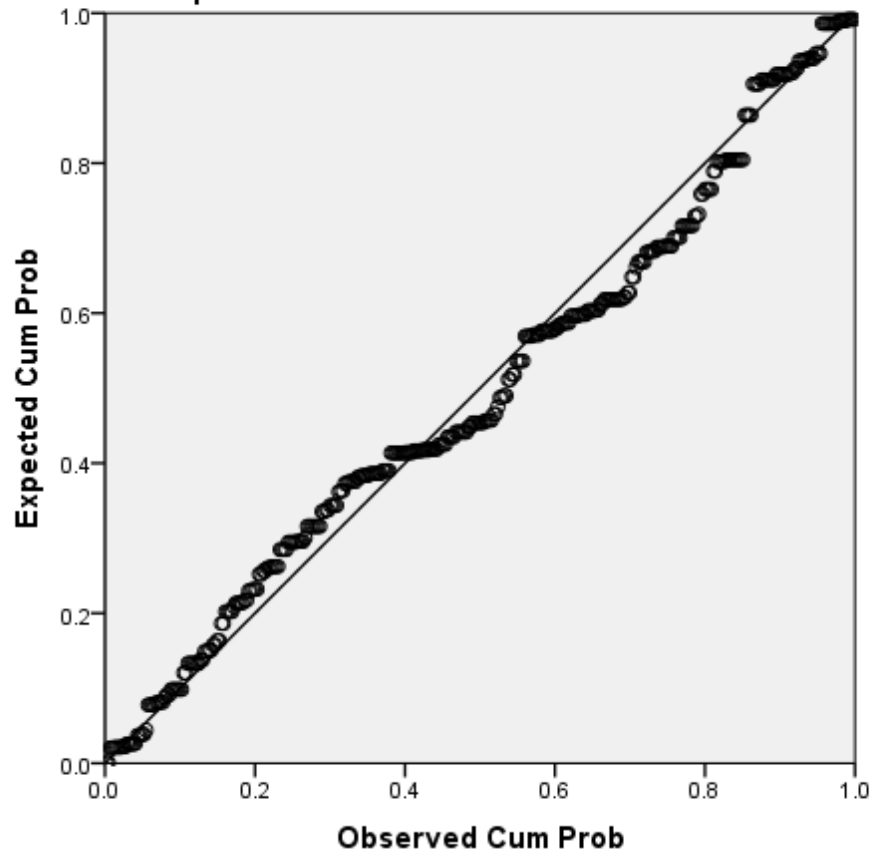
APPENDIX VII- HISTOGRAM FOR OBJECTIVE 3



APPENDIX VIII- NORMAL P-P PLOT FOR OBJECTIVE THREE

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Healthbehavior



VITA

PROFESSIONAL PROFILE

Kituyi is a Senior Lecture in the Department of Business Computing, Makerere University Business School (MUBS) where he has taught since 2006. He is also an Assistant Professor of ICT at the ICT University, Cameroon and also a Deputy Director of the International Center for Information Technology and Development, Southern University USA. He formerly served as Adjunct Professor at Southern University, Baton Rouge, USA.

Kituyi has over 45 peer-reviewed publications in the area of information systems, information technology and business management. He has published 2 textbooks on database programming, computerized accounting and finance. Kituyi has presented a number of papers in international conferences and is also a co-chair of the annual ICT for Africa Conferences. He is the Editor of the ICT for Africa Conference Book of Proceedings which is published annually. His research interest is in the area of information systems design for sustainability in resource constrained environments. He has a Bachelor of Business Computing, PGD ICT Policy and Regulation, MSc. Information Systems, and a PhD in ICT ending 2016.

Kituyi founded Digitex Business Solutions Ltd, a consultancy firm that offers superior consultancy services in ICT training and Business Finance. Through Digitex, he has designed Business Information Systems and business websites for a number of SMEs around the country. He serves in this company as Executive Director. He is also a founding member and Director of Garden of Eden Nursery and Primary School- located in Mbale town, Eastern Uganda.

Kituyi has experience in curriculum development having been a member on the Course Review Committee at Makerere University Business School and also at the ICT University. Over the years, he has developed several diploma, undergraduate and post graduate programs both at MUBS and at the ICT University.

RESEARCH AND PUBLICATIONS

BOOK PUBLICATIONS

1. **Kituyi G. Mayoka**, Moya Musa and Kasse J.P (2010). Database Programming; Theory and Practice. *Makerere University Business School*.
2. **Kituyi G. Mayoka**, Moya Musa and Victor Mbarika (2013). Computerized Accounting and Finance: Applications in Business. *Makerere University Business School*

PAPERS PUBLISHED

3. Mubuke, F., Kutosi, A. M., **Kituyi, G. M.**, Ogenmungu, C., and Kimono, L. (2017) Self-Management of learning as a key predictor of Students Intention to Use M-Learning in Ugandan Universities, *International Journal of Innovative and Applied Research* , Volume 5, Issue (1): 9- 15
4. Engotoit, B., **Kituyi, G. M.**, and Moya, M. B. (2017) Behavioral intentions: Mediator of Performance Expectancy and Adoption of Mobile Communication Technologies by Ugandan Commercial Farmers, *Journal of Systems and Information Technology* (accepted for publication in 2017)
5. Mubuke, F., Kutosi, A. M., Ogen, C. and **Kituyi G. M.** (2017) Examining the Effect of Facilitating Conditions as an imperative input in enhancing the intention to use Mobile Learning systems in Universities, *Global Journal of Computers & Technology*, Vol. 6, No. 1, pp 336 – 343
6. Mubuke, F., **Kituyi G. M.**, and Ogenmungu, C. (2016) A Model to Enhance Students Intention to Adopt and use Mobile Learning in Ugandan Universities, *Global Journal of Management and Business Research: G Interdisciplinary*, Volume 16 Issue 3
7. Bwiino, K., **Kituyi, G. M.**, Musenze, I. A. (2016) Perceived Ease of Use as a Predictor of Social Networking Technologies Adoption in Institutions of Higher Learning in Uganda, *Global Journal of Computers & Technology*, Vol. 5, No. 1 pp241-248
8. Engotoit, B., Moya, M. B., **Kituyi, G. M.**, Abima, B. (2016) A Mobile-Based Communication Adoption Model for agricultural market information dissemination in Uganda, *Global Journal of Computers & Technology*, Vol. 5, No. 1, pp. 249-265

9. Bwiino, K., **Kituyi, G. M.**, and Musenze, I. A. (2016) Enhancing Social Networking Technologies Adoption through Perceived Usefulness: The setting of Ugandan Institutions of Higher Learning, *Asian Journal of Computer and Information Systems*, Volume 04– Issue 05, pp. 169-176
10. Anjoga, H. and **Kituyi, G. M.** (2016) A Framework for Usability of e-Government Services in Developing Countries, *Global Advanced Research Journal of Social Science*, Vol. 5(1) pp. 001-010
11. Anjoga, H., Kasse, J. P. and **Kituyi, G. M.** (2016) Factors Affecting E-Government Service Utilization in Developing Countries, *Global Advanced Research Journal of Social Science*, Vol. 5(1) pp. 011-019
12. Amulen, C., **Kituyi, G. M.** and Kabaale, E. (2016) Critical parameters for the adoption of software capability maturity model by small and medium enterprises, *Int. J. Agile Systems and Management*, Vol. 9, No. 1
13. Engotoit, B., **Kituyi, G. M.**, and Moya, M. B. (2016) Influence of performance expectancy on commercial farmers' intention to use mobile-based communication technologies for agricultural market information dissemination in Uganda, *Journal of Systems and Information Technology*, Vol. 18 No. 4 pp. 347-363
14. Kabaale E. and **Kituyi G. M.** (2015) A Theoretical Framework for Requirements Engineering and Process Improvement in Small and Medium Software Companies, *Emerald Business Process Management Journal*
15. Odit M., Semwanga A and **Kituyi G. M.** (2014) Antecedents And Dynamics For Strategic Alignment Of Health Information Systems In Uganda, *The Electronic Journal of Information Systems in Developing Countries*, Vol 64, 6, 1-20
16. Olupot C., **Kituyi G. M.** and Noguera J. (2014) Factors Affecting Electronic Customer Relationship Management Information Systems Adoption in Ugandan SMEs, *Journal of Studies in Social Sciences*
17. **Kituyi G. M.**, Mbarika I. Balunywa L. and Mbarika V. (2014) The Digital Divide in India: Which Universality Approach for Gujarat State of India? *International Journal of Humanities and Social Science*

18. Kabaale E., **Kituyi G. M.**, and Mbarika I. (2014). Requirements Engineering Process Improvement Challenges faced by Software SMEs in Uganda, *International Journal of Computer Applications (0975 – 8887) Volume 88 – No.5*
19. Namakula S. and **Kituyi G. M.** (2014) Examining Health Information Systems Success Factors in Uganda's Healthcare System, *Journal of Global Healthcare Systems*, Volume 4, Number 1, 2014
20. Waswa Balunywa, Nangoli Sudi, George Mugerwa, Juma Teko and **Kituyi Mayoka** (2014). An Analysis of Fiscal Decentralization as a Strategy for Improving Revenue Performance in Local Governments, *Journal of Research in International Business and Management* (ISSN: 2251-0028) Vol. 4(2) pp. 28-36
21. **Mayoka Kituyi**, Kehbuma Langmia, Musa Moya, Clive Tsuma AND Victor Mbarika (2014) Towards a framework for the adoption of Social Media in Health in Sub-Saharan Africa, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*
22. Byomire Gorretti, Fatuma Namisango, Miuro Maria and **Mayoka Kituyi** (2014) An Investigation on Physician Acceptance and Use of Mobile Phones for Maternal Healthcare: A Task Technology Fit Perspective, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*
23. Christine Amulen, **Mayoka G. Kituyi**, Irene Mbarika, Lukman Balunywa, Victor W. Mbarika and Edward Kabaale (2014) Adoption of the Software Capability Maturity Model by Small and Medium Enterprises, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*
24. Samali V. Mlay, Humphrey Sabi, Clive K. Tsuma, Kehbuma Langmia, Victor W.A. Mbarika and **Mayoka Kituyi** (2014) Towards an Improved Reading Habit of University Students: The Impact of ICT, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*
25. Edward Kabaale and **Geoffrey Mayoka Kituyi** (2014) Requirements Engineering and Process Improvement in Small Software Companies, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*
26. Peter M. Ogedebe, A.H. Alaku and **Geoffrey Mayoka Kituyi** (2014) The Design and Implementation of a Cloud-Based Application Demonstrating the Use of Sticky Policies and

Encryption to Enforce Users' Privacy and Access Constraints, *Proceedings of the 6th Annual International Conference on ICT for Africa 2014, 1-4th October, Yaoundé – Cameroon*

27. Dumas B.K, Jones C., Mbarika V., and **Kituyi G.M.** (2014) Budgetary Decision-Making Practices and Styles of College Presidents: The Case of Historically Black Colleges and Universities, *Educational Research*, Vol. 5(4) pp. 131-142
28. Dumas B.K, Jones C., Mbarika V., and **Kituyi G.M.** (2014) Financial Aid in Historically Black Colleges and Universities: Challenges and the Way Forward, *Educational Research*, Vol. 5(4) pp. 131-142
29. Dumas B.K, Jones C., Mbarika V., and **Kituyi G.M.** (2014) Accreditation Challenges of Historically Black Colleges and Universities in the United States of America, *Global Advanced Research Journal of Educational Research and Review*, Vol. 3(3)
30. Dumas B.K, Jones C., Mbarika V., and **Kituyi G.M.** (2014) Decision-Making Practices of Presidents at Historically Black Colleges and Universities in the United States of America, *Global Advanced Research Journal of Educational Research and Review*, Vol. 3(3)
31. Dumas B.K, Jones C., Mbarika V., and **Kituyi G.M.** (2014) Leadership Styles Employed by Presidents of Historically Black Colleges and Universities in the United States of America, *Global Advanced Research Journal of Educational Research and Review*, Vol. 3(3)
32. Nyeko S., Kabaale E., Moya M., Amulen C., and **Kituyi G. M.** (2013). The role of information communication technology (ICT) small and medium enterprises (SMEs) in job creation in Kampala, Uganda, *Journal of Business Management and Administration* Vol. 1(5), pp.75-82
33. **Kituyi G. M.** and Anjoga H. (2013). Improvement of E-Government Service Usability in Developing Countries: Empirical Experiences of Uganda, *Journal of Emerging Trends in Computing and Information Sciences*, Vol. 4, No. 3
34. **Kituyi G. M.** and Tusubira I. (2013). A framework for the integration of e-learning in higher education institutions in developing countries, *International Journal of Education and Development using Information and Communication Technology*, Vol. 9, Issue 2, pp. 19-36
35. Isabalija R., Mbarika V., and **Kituyi G. M.** (2013). A Framework for Sustainable Implementation of E-Medicine in Transitioning Countries, *International Journal of Telemedicine and Applications*, Volume 2013, Article ID 615617, 12 pages

36. Tusubira I. P, **Kituyi G. M.**, and Nyeko S (2013). How can e-learning integration be realized? An exploratory study in Higher Education Institutions, *Asian Journal of Computer Science and Information Technology* 3 : 12(2013) 162 - 172.
37. Olupot C. and **Kituyi G. M.** (2013). A Framework for the Adoption of Electronic Customer Relationship Management Information Systems in Developing Countries, *Electronic Journal of Information Systems in Uganda*, Vol. 58
38. **Kituyi G. M.** and Amulen C. (2012). A Software Capability Maturity Adoption Model for Small and Medium Enterprises, *The Electronic Journal of Information Systems in Developing Countries*
39. **Kituyi G. M.**, Rwashana A. S., Mbarika V. and Isabalija S. (2012). A Framework for Designing Sustainable Telemedicine Information Systems in Developing Countries. *Emerald Journal of Systems and Information Technology*, Volume 14 issue 3
40. **Kituyi G. M.** and Balunywa W. (2012). Why Do Nascent ICT Businesses Die Young?, *Journal of Research in International Business and Management* (Formerly, International Research Journal of Management and Business Studies), Vol. 2(5), pp. 117-127
41. **Kituyi, G. M.**; Moya, M. and Kyeyune, R. (2012). A Framework for Implementing Sustainable E-learning Information Systems in Developing Countries: A Case of Africa. *Journal of the Management University of Africa*, Vol. 6.
42. **Kituyi G. M.** and Kyeyune R. (2012). An Analysis of E-learning Information System Adoption in Ugandan Universities: Case of Makerere University Business School. *Information Technology Research Journal* Vol. 2(1), pp. 1 - 7, April 2012
43. **Kituyi G. M.**, Moya M., Rwashana A.S (2012). A System Dynamics Pricing Model for Stabilizing Prices for Telecommunication Products and Services in Uganda. *International Scientific Research Journal*, Volume 1, issue 1, pp 07-14
44. Kyeyune R., **Kituyi G. M.**, Miiro E. (2012). ICT Infrastructure, Mobile Money Systems and Customer Satisfaction in Uganda. *International Scientific Research Journal*, Volume 1, issue 1, pp 19-26
45. **Kituyi G. M.** and Moya M. (2012). Factors Affecting the Pricing of Telecommunication Products and Services in Uganda, *Information Technology Research Journal*

46. Isabalija S., **Kituyi G. M.**, Rwashana A.S., and Mbarika V. (2011). Factors affecting the adoption, implementation and sustainability of telemedicine information systems in Uganda. *Journal of Health Informatics in Developing Countries*, Vol 5, No 2 (2011)

PAPERS ACCEPTED AND DUE FOR PUBLICATION

47. **Kituyi G. M.**, Isabalija R.S, Kvasny L. and Byaruhanga R. (2014) A Comparative Study of e-Medicine Uptake in Uganda, Nigeria and Ethiopia, *Journal of Health Informatics in Developing Countries*

PAPERS SUBMITTED TO JOURNALS FOR PUBLICATION AWAITING DECISION

48. Namakula S., **Kituyi G. M** and Maiga G. (2014) Towards a Model for Information Systems Success in Small and Medium Enterprises, *International Journal of Healthcare Technology and Management*
49. **Kituyi G. M**, Namakula S. (2014) A Model of Health Information Systems Success, *MIS Quarterly*
50. Namakula S., Maiga G. and **Kituyi G. M** (2014) Health Information Systems in Small Health Units: An Exploratory Study in Uganda, *Information Technology for Development*
51. Odit M., Semwanga A. and **Kituyi G. M.** (2014) Alignment of Information Systems to Strategy in the Health Sector using a Systems Dynamics Approach, *International Journal of Healthcare Information Systems and Informatics*
52. **Kituyi G. M.**, Odit M. and Semwanga A. (2014) A Model for Strategic Alignment of Health Information Systems in Health Facilities, *The International Journal of Healthcare Information Systems and Informatics*
53. Isabalija S, Ejigiri D and **Kituyi G.M** (2013), A theoretical model for the transfer and diffusion of sustainable e-medicine to Sub-Saharan Africa, *Health and Human Rights: An International Journal*

54. Isabalija S, **Kituyi G.M** and Mbarika V. (2014) Towards A Framework for E-Medicine Knowledge Management in Uganda, Nigeria and Ethiopia, *International Journal of Health Care Quality Assurance*