

**STAKEHOLDER PERSPECTIVES AND IMPLEMENTATION OF TELEMEDICINE  
PROJECTS IN REFERRAL HOSPITALS IN KISUMU CITY, KENYA**

**GOMBE JOASH ODHALO**

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## DECLARATION

This research project report is my original work and has not been presented for any award in any other university.

Signed: .....

Date: .....

**JOASH ODHALO GOMBE**

L50/73285/2014

This research project report has been submitted for examination with our approval as university supervisors.

Signed: .....

Date: .....

**DR. ISAAC ABUYA**  
DEPARTMENT OF MANAGEMENT SCIENCES AND PROJECT PLANNING  
UNIVERSITY OF NAIROBI



## TABLE OF CONTENT

LIST OF FIGURES .....	vii
ABBREVIATIONS AND ACRONYMS .....	x
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the Study .....	1
1.2 Statement of the Problem.....	7
1.3 General Objective .....	7
1.3.1 Specific Objectives .....	7
1.4 Research Questions .....	8
1.5 Value of the Study .....	8
CHAPTER TWO: LITERATURE REVIEW .....	10
2.1 Introduction.....	10
2.2 Theoretical Framework.....	10
2.2.1 Stakeholder Theory .....	10
2.2.3 Unified Theory of Acceptance and Use of Technology .....	13
2.3.1 Implementation of Telemedicine Projects .....	17
2.3.2 Stakeholder Perspectives .....	18
2.3.3 Stakeholder Attitude and Implementation of Telemedicine Projects .....	20
2.3.4 Stakeholder Perception and Implementation of Telemedicine Projects .....	20
2.3.5 Stakeholder Knowledge and Implementation of Telemedicine Projects.....	21
2.3.6 Stakeholder Experience and Implementation of Telemedicine Projects .....	22
2.4 Conceptual Framework.....	23
2.5 Research Hypotheses .....	25
2.6 Summary of literature review .....	25
CHAPTER THREE: RESEARCH METHODOLOGY .....	28
3.1 Introduction.....	28
3.2 Research Design.....	28
3.3 Target Population.....	28
3.4 Sample Size and Sampling Procedure .....	30
3.4.1 Sample Size.....	30
3.4.2 Sampling Procedure .....	30
3.5 Research Instruments .....	30
3.5.1 Pilot Testing of the Research Instruments .....	31
3.5.2 Validity of the Research Instruments.....	31

3.5.3 Reliability of the Research Instruments .....	31
3.6 Data Collection Procedure .....	31
3.7 Data Analysis Techniques.....	32
3.8 Operationalization of the Variables .....	32
CHAPTER FOUR: DATA ANALYSIS, PRESENTATION, INTERPRETATION, AND DISCUSSION OF FINDINGS .....	35
4.1 Introduction.....	35
4.2 Questionnaire Return Rate.....	35
4.3 Demographics of Study Respondents .....	35
4.3.1 Gender Distribution Tally .....	36
4.3.2 Age Distribution Frequencies .....	36
4.3.3 Highest Academic Qualifications Frequencies .....	37
4.3.4 Occupation Distribution Frequencies .....	38
4.4 Descriptive Statistics on Implementation of telemedicine projects .....	38
4.5 Stakeholder attitude and Implementation of telemedicine projects .....	41
4.5.1 Correlation Statistical Analysis Between Stakeholder Attitude and Implementation of Telemedicine Projects.....	43
4.5.2 Model Summary Between Stakeholder Attitude and Implementation of Telemedicine Projects.....	44
4.5.3 Regression ANOVA Analysis of Stakeholder Attitude and Implementation of Telemedicine Projects.....	44
4.5.4 Regression Coefficient Analysis of Stakeholder Attitude and Implementation of Telemedicine Projects.....	45
4.5.5 Hypothesis 1 Testing.....	46
4.6 Stakeholder Perception and Implementation of Telemedicine Projects .....	46
4.6.1 Correlation Statistical Analysis Between Stakeholder Perception and Implementation of Telemedicine Projects.....	48
4.6.2 Model Summary Between Stakeholder Perception and Implementation of telemedicine projects .....	49
4.6.3 Regression ANOVA Analysis of Stakeholder Perception and Implementation of telemedicine projects .....	50
4.6.4 Regression Coefficient Analysis of Stakeholder Perception and Implementation of Telemedicine Projects.....	50
4.6.5 Hypothesis 2 Testing.....	51
4.7 Stakeholder knowledge Implementation of telemedicine projects .....	52
4.7.1 Correlation Statistical Analysis Between Stakeholder knowledge and Implementation of telemedicine projects .....	54

4.7.2 Model Summary Between Stakeholder knowledge and Implementation of Telemedicine Projects .....	54
4.7.3 Regression ANOVA Analysis of Stakeholder knowledge and Implementation of telemedicine projects .....	55
4.7.4 Regression Coefficient Analysis of Stakeholder knowledge and Implementation of Telemedicine Projects .....	56
4.7.5 Hypothesis 3 Testing.....	57
4.8 Stakeholder experience and Implementation of telemedicine projects.....	57
4.8.1 Correlation Statistical Analysis Between Stakeholder experience and Implementation of telemedicine projects .....	59
4.8.3 Regression ANOVA Analysis of Stakeholder experience and Implementation of Telemedicine Projects .....	61
4.8.4 Regression Coefficient Analysis of Stakeholder Experience and Implementation of Telemedicine Projects.....	61
4.8.5 Hypothesis 4 Testing.....	62
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS .....	63
5.1 Introduction.....	63
5.2 Summary of the Study’s Key Findings .....	63
5.2.1 Stakeholder attitude and implementation of telemedicine projects .....	63
5.2.2 Stakeholder Perception and Implementation of Telemedicine Projects .....	64
5.2.3 Stakeholder Knowledge and Implementation of telemedicine projects .....	64
5.2.4 Stakeholder Experience and Implementation of Telemedicine Projects .....	64
5.2.5 Implementation of Telemedicine Projects .....	64
5.3 Conclusions.....	65
5.4 Recommendations.....	65
5.5 Suggestions for Further Research .....	66
5.6 Contribution to the Body of Knowledge.....	66
REFERENCES .....	68
APPENDICES .....	71
Appendix I: Questionnaire .....	71
Appendix II: Interview Schedule .....	77
Appendix III: Research Permit.....	78

## LIST OF TABLES

<b>Table 2: Knowledge gaps identified in existing literature</b> .....	26
<b>Table 3: Target Population</b> .....	29
<b>Table 4: Operationalization of the Variables</b> .....	33
<b>Table 5: Questionnaire Return Rate</b> .....	35
<b>Table 6: Distribution by Gender</b> .....	36
<b>Table 7: Age Distribution Frequencies</b> .....	36
<b>Table 8: Distribution of Respondents by Highest Academic Qualifications</b> .....	37
<b>Table 9: Distribution by Occupation</b> .....	38
<b>Table 10: Descriptive Statistics of Implementation of Telemedicine Projects</b> .....	39
<b>Table 11: Descriptive Statistics of Stakeholder attitude and Implementation of Telemedicine Projects</b> .....	41
<b>Table 12: Analysis of Correlation Between Stakeholder Attitude Implementation of Telemedicine Projects</b> .....	43
<b>Table 13: Analysis of Model Summary Between Stakeholder attitude and Implementation of telemedicine projects</b> .....	44
<b>Table 14: Analysis of Regression ANOVA Between Stakeholder Attitude And Implementation of Telemedicine Projects</b> .....	44
<b>Table 15: Regression Coefficient Between Stakeholder Attitude and Implementation of Telemedicine Projects</b> .....	45
<b>Table 16: Descriptive Statistics of Stakeholder Perception and Implementation of Telemedicine Projects</b> .....	46
<b>Table 17: Analysis of Correlation Between Stakeholder Perception and Implementation of Telemedicine Projects</b> .....	48
<b>Table 18: Model Summary Between Stakeholder Perception and Implementation of Telemedicine Projects</b> .....	49
<b>Table 19: Analysis of Regression ANOVA Between Stakeholder Perception and Implementation of telemedicine projects</b> .....	50
<b>Table 20: Analysis of Regression Coefficients Between Stakeholder Perception and Implementation of telemedicine projects</b> .....	51
<b>Table 21: Descriptive statistics Analysis on Monitoring and Evaluation and Implementation of telemedicine projects</b> .....	52

<b>Table 22: Analysis of Correlation Between Stakeholder Knowledge and Implementation of Telemedicine Projects</b> .....	54
<b>Table 23: Analysis of Model Summary Between Monitoring and Evaluation and Implementation of telemedicine projects</b> .....	55
<b>Table 24: Regression ANOVA Between Stakeholder Knowledge and Implementation of Telemedicine Projects</b> .....	55
<b>Table 25: Regression Coefficients Between Stakeholder Knowledge and Implementation of Telemedicine Projects</b> .....	56
<b>Table 26: Stakeholder Experience and Implementation of Telemedicine Projects</b> .....	57
<b>Table 27: Analysis of Correlation Between Stakeholder experience and Implementation of Telemedicine Projects</b> .....	59
<b>Table 28: Analysis of Model Summary Between Stakeholder Experience and Implementation of Telemedicine Projects</b> .....	60
<b>Table 29: Analysis of Regression ANOVA Between Stakeholder Experience and Implementation of Telemedicine Projects</b> .....	61
<b>Table 30: Regression Coefficient Between Stakeholder Experience and Implementation of Telemedicine Projects</b> .....	62
<b>Table 31: The study’s contribution to the body of knowledge</b> .....	66



## LIST OF FIGURES

<b>Figure 1: The Unified Theory of Acceptance and Use of Technology Model.....</b>	<b>17</b>
<b>Figure 2: The Proposed conceptual framework adapted from the UTAUT model and the Kenya e-Health Policy 2016-2030 telemedicine projects implementation framework .....</b>	<b>24</b>

## ABBREVIATIONS AND ACRONYMS

<b>CFIR</b>	Consolidated Framework for Implementation Research
<b>COVID – 19</b>	Coronavirus disease
<b>e-CHIS</b>	Electronic Community Health Information Services
<b>EHRs</b>	Electronic Health Records
<b>ICTs</b>	Information and Communication Technologies
<b>IHSSP</b>	Integrated Health Systems Strengthening Project
<b>KMPDC</b>	Kenya Medical Practitioners and Dentists Council
<b>KNTP</b>	Kenya National Telemedicine Program
<b>LMICs</b>	Low and Middle Income Countries
<b>NACOSTI</b>	National Commission for Science, Technology and Innovation
<b>NBER</b>	National Bureau of Economic Research
<b>NCK</b>	Nursing Council of Kenya
<b>NHS</b>	National Health Services
<b>PPB</b>	Pharmacy and Poisons Board
<b>RE-AIM</b>	Reach, Effectiveness, Adoption, Implementation, and Maintenance
<b>RHIS</b>	Rwanda Health Information System
<b>TAM</b>	Technology Acceptance Model
<b>THMM</b>	Telehealth Maturity Model
<b>UK</b>	United Kingdom
<b>UNDP</b>	United Nations Development Program
<b>USA</b>	United States of America
<b>USAID</b>	United States Agency for International Development
<b>UTAUT</b>	Unified Technology Implementation and Use Theory

## ABSTRACT

Despite its major economic and health impacts especially following the global COVID-19 pandemic, the degree of telemedicine implementation globally continues to vary widely between and among the developed and the developing countries. Overall, while Kenya has taken some steps towards telemedicine implementation, there is still a long way to go in terms of widespread implementation and integration. Telemedicine implementation is critically hindered by among other factors, a lack of coordinated and comprehensive stakeholder engagement planning resulting in a lack of timely care, long waiting times, lack of continuity of care and preventive care, lack of access to specialists and high cost of health which remain major barriers to health care access. The objective of this study was to explore the perspectives of various stakeholders and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya. The specific objectives were to; evaluate the influence of stakeholder attitudes, to explore the impact of stakeholder perceptions, to examine the effect of stakeholder knowledge and to investigate the role of stakeholder experience on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya. This study allowed the analyzing of stakeholder management strategies, telemedicine implementation risks, change management strategies, and contribution in refining project management practices, fostering ongoing research, and disseminating best practices in telemedicine implementation. The theoretical frameworks underpinning the study were the Freeman's Stakeholder Theory and Venkatesh's Unified Theory of Acceptance and Use of Technology. The study employed a mixed methods approach. The target population was patients and other stakeholders including hospital administrators, healthcare providers, and IT personnel who were in active employ of their various institutions at the time of the study, and who had used telemedicine in the 12 months prior to the start of the study. A sample size of 197 participants was determined using Slovin's Formula. Simple, stratified and purposive sampling procedures were utilized. Study questionnaires were self-administered and quantitative data collected using the RedCap application software. Data was analyzed using SPSS Version 27. Descriptive statistics for each dimension of stakeholder perspectives including frequencies, means, medians, SD and interquartile range was used to describe the central tendency and variability in responses. Spearman's rank correlation was used for the exploration of initial patterns and associations. Ordinal logistic regression was used to predict the impact of stakeholder perspectives on telemedicine implementation and for control of confounders. The alpha value was set at  $\leq 0.05$  for statistical significance. Variables with an alpha value of  $\leq 0.1$  by bivariate analysis were candidates for a multinomial logistic regression model. Qualitative data complementing the quantitative data was used to identify patterns in stakeholder perspectives and telemedicine implementation. The data was presented in tables. The results of the study showed that stakeholder attitude is significant in influencing implementation of telemedicine projects ( $r=0.442$ ;  $P<0.000$ ). Stakeholder perception was determined to be significant in influencing implementation of telemedicine projects ( $r=0.397$ ;  $P<0.000$ ). The study established that stakeholder knowledge is significant in influencing implementation of telemedicine projects ( $r=0.474$ ;  $P<0.000$ ) and that stakeholder experience is significant in influencing implementation of telemedicine projects ( $r=0.376$ ;  $P<0.000$ ). The study concluded that stakeholder attitude, perception, knowledge and experience significantly and positively influence implementation of telemedicine projects in Kisumu City. As a recommendation stakeholder attitude should be positively influenced and if possible changed and perception integrated in all planning to support telemedicine projects implementation. Additionally, stakeholder knowledge should be enhanced through training and capacity building to arm them with the requisite skill-set necessary for the implementation of telemedicine projects. Stakeholder experience should be considered part and parcel in running telemedicine projects to facilitate implementation and performance.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

The World Health Organization (WHO) defines telemedicine as the delivery of health-care services, where distance is a critical factor, by all health-care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment, and prevention of disease and injuries, research and evaluation, and for the continuing education of health-care providers, all in the interests of advancing the health of individuals and their communities.

In economic terms, a recent study by University of California Davis Health, researchers using cost models estimated the mean total cost savings from the use of well implemented telemedicine as ranging from \$147.4 to \$186.1 per visit. It included data from five University of California health care systems over COVID-19 pandemic's first two years. The study showed that telemedicine eliminated the need to commute 53,664,391 miles thereby reducing carbon footprint, eliminated 204 years of travel time, eliminating \$33,540,244 travel-related costs, and preventing 42.4 injuries and 0.7 fatalities. The American Hospital Association (AHA) previously reported about a remote patient monitoring program in Pennsylvania in the US that saved 11% in costs and even increased the return of investment (ROI) by over 300% for the investors. Remote monitoring programs have demonstrated impact on care especially in places where medical providers and/or specialists are not readily accessible. In the same AHA telemedicine program mentioned above, the study found that patients who were enrolled in the remote monitoring program were 23% less likely to be admitted to a hospital; 30-day readmissions were also 44% lower while 90-day readmissions were 38% lower for telemedicine enrolled patients compared to those who were not enrolled. Patient engagement was also shown to be higher.

In view of its major economic and health impacts, there are principles and considerations that guide telehealth implementation. The WHO has identified contextualization, stakeholder engagement, infrastructure and technology, capacity building, and monitoring and evaluation as key principles. There are several frameworks that employ the said principles and they are available to guide the successful implementation of telemedicine.

These frameworks provide a structured approach to planning, implementing, and evaluating telemedicine programs. These frameworks include the Kenya eHealth Policy 2016-2030 implementation framework, the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, RE-AIM framework, the Consolidated Framework for Implementation Research (CFIR) framework, the Clinical, Human and Organizational, Educational, Administrative, Technical, and Social (CHEATS) framework, the Logical (LogFrame) framework, and the Telehealth Maturity Model (THMM).

The degree of telemedicine implementation globally varies widely between and among the developed and the developing countries. In the United States Telemedicine implementation has been steadily increasing in recent years from as low as 1% pre COVID-19 pandemic to a high of 30% of all hospital visits during the pandemic. The Office for Civil Rights cites the rapid institution of changes to relevant regulations allowing for enhanced provision and coverage of telemedicine within the USA as partly responsible for the increased uptake. The Centers for Disease Control and Prevention has reported that 84.5% of hospitals in the U.S. had adopted telemedicine services in some form, with a majority offering video-based consultation. Additionally, they also found that 80% of physicians were using telemedicine to provide patient care. However, the implementation of telemedicine has not been uniform across all populations and regions. The National Bureau of Economic Research found that telemedicine implementation was higher in urban areas and among populations with higher income and education levels. Additionally, The Center for Connected Health Policy found that some states have been more proactive in promoting telemedicine implementation than others, with policies and regulations varying widely across the country.

Norway has been an early adopter of telemedicine and has made significant progress in integrating it into its healthcare system. Telemedicine has been used in Norway since the 1990s, and the country has implemented several large-scale telemedicine projects, particularly in the areas of remote patient monitoring and teleconsultation. One of the most notable telemedicine projects in Norway is the National Telemedicine Service, which provides telemedicine services to patients in remote and rural areas and according to Mastermind Project, is the world's largest center for research and development in telemedicine and eHealth. According to the Norwegian Centre for E-health Research

telemedicine implementation in Norway has been driven by a supportive policy environment, strong leadership, and effective collaboration between healthcare providers and technology companies.

Prior to the COVID-19 pandemic the United Kingdom (UK) was lagging behind in the implementation of telemedicine. However, during the peak of the crisis, the UK Government announced that telemedicine would be the default mode for patients being seen by general practitioners in the NHS. This precipitated a significant leap in the number of virtual general practice appointments from 25% to 71% with telemedicine catering to different clinical settings including chronic obstructive pulmonary disease, heart failure, mental illness and tele pathology, teleradiology, tele dermatology, home based care and remote patient monitoring and have found a positive influence on various health outcomes and a reduction in health care costs upon implementation of telemedicine.

From as early as 1998 the South African ministry of health recognized the benefits of integrating telemedicine into the existing healthcare infrastructure and established a National Telemedicine Task Team to coordinate the introduction and mainstreaming of telemedicine in healthcare delivery and to develop policies and guidelines for telemedicine implementation in the country. The government subsequently launched the National Telemedicine Project in 1999 with the mandate for the phased and scaled setting up of telemedicine centers throughout all the provinces in the country. The project also established the National Telemedicine Research Center and the outcome of this was the increased access to specialist services, reduced patient waiting times, increased trainings for all cadres of practitioners. Current telemedicine projects that are being coordinated by the South African Medical Research Council include the South African-China Bilateral Agreement (the Pan African Telemedicine Network), the Mindset Health Channel and the Rapid Deployment Field Hospital. These initiatives are aimed at increasing transfer of clinical and technological knowhow, increased rural access to health education and provision of clinical services.

Rwanda has been recognized by WHO as a leader in telemedicine implementation in Africa. The government has actively invested in telemedicine infrastructure and partnerships with international organizations to expand its reach. Rwanda has made

remarkable progress in the implementation and implementation of telemedicine, with the government playing a leading role in expanding telemedicine services to rural and remote areas in the country. One significant development is the establishment of a national telemedicine network by the Rwandan Ministry of Health in partnership with USAID in 2010. This network connects over 42 district hospitals, four referral hospitals, and three university hospitals to provide remote consultations and medical advice. Another notable development in Rwanda is the launch of an electronic health records (EHRs) system known as the Rwanda Health Information System (RHIS) established in 2009 with the support of the Integrated Health Systems Strengthening Project (IHSSP). The primary aim of RHIS is to enhance the quality of healthcare services and support telemedicine implementation. In 2020, the Rwandan government launched the "Telemedicine and e-Health Program." This project is aimed at expanding telemedicine services to remote health centers and improving the quality of care. The government partnered with the University of Rwanda and the United Nations Development Programme (UNDP) to establish a telemedicine center in the country. The center provides teleconsultations and e-learning opportunities for healthcare providers, enhancing their technical capacity.

There are several laws in Kenya that impact telemedicine implementation. Some of the key laws include:

The Health Act (2017): This act provides a legal framework for the regulation and provision of healthcare services in Kenya. It sets standards for the delivery of healthcare, including telemedicine services; The Pharmacy and Poisons Act (Cap 244): This act governs the regulation of pharmaceutical products and services in Kenya. It includes provisions related to the sale, distribution, and dispensing of drugs, including those used in telemedicine.

The Kenya Information and Communications Act (1998): This act regulates the telecommunications and information technology sector in Kenya. It provides the legal framework for the use of electronic communication in healthcare, including telemedicine services.

The Data Protection Act (2019): This act regulates the collection, processing, and storage of personal data in Kenya. It includes provisions to ensure the privacy and security of patient information in telemedicine practices.

The Medical Practitioners and Dentists Act (Cap 253): This act governs the practice of medicine and dentistry in Kenya. It sets out the qualifications and licensing requirements for healthcare professionals, including those involved in telemedicine.

It's important to note that the legal landscape surrounding telemedicine in Kenya is evolving, and additional regulations or guidelines may be introduced to address the specific challenges and considerations of telemedicine implementation in the country. The government nevertheless has been leading efforts to expand telemedicine services in the country, especially in remote and underserved areas. Some of the initiatives and developments in Kenya include the Kenyan government led national telemedicine program established in 2012, which aims to provide healthcare services to remote and underserved areas using telemedicine technology. The Kenya National Telemedicine Program (KNTP), launched in 2015, is a government led initiative that aims to improve access to quality healthcare in rural communities in Kenya through the use of telemedicine to access specialist doctors and other healthcare providers in urban areas. It is a program being implemented in partnership with the Ministry of Health, Kenya Medical Research Institute and the Kenya Private Sector Alliance. The program has demonstrated improved quality of care, reduced healthcare costs and improved patient experience. The National e-Health Strategy and Policy launched by the Kenyan Ministry of Health in 2016 (aligned with Kenya Vision 2030 which aims to make Kenya a middle income country by 2030) prioritizes the use of ICTs to improve healthcare delivery in the country. In 2018, the Government of Kenya and a mobile network operator launched the M-TIBA platform, which is a mobile health wallet that enables patients to save, send, and receive money for healthcare services. In attaining the achievements mentioned above, the Kenyan government has partnered with various organizations and other stakeholders among them the United Nations Development Program (UNDP) and Safaricom to support telemedicine implementation in the country. Additionally, some private healthcare providers in Kenya have started offering telemedicine services, including video consultations and remote



patient. Overall, while Kenya has taken some steps towards telemedicine implementation, there is still a long way to go in terms of widespread implementation and integration into the healthcare system.

Public Level Five hospitals in Kenya and their private counterparts play a critical role in the country's health referral system, serving as the second highest level of care for patients in their respective regions and providing specialized services such as surgery, obstetrics, gynecology, pediatrics, oncology and mental health services. These hospitals serve as referral centers for lower-level health facilities, including health centers, dispensaries, and sub county hospitals, and are responsible for providing specialized care for complex medical conditions and emergencies that cannot be managed at lower levels. These hospitals also provide training and mentorship to health workers at lower-level facilities, contributing to the capacity building of the health workforce. Overall, these hospitals play a vital role in the Kenyan health system, ensuring that patients receive appropriate and timely care for their medical needs.

Kisumu County launched digitized community health services known as eCHIS. The interactive application helps in household registration, patient screening, treatment, referrals, data capture, and aggregation. It is a joint effort of the County government and various implementing partners. The county Government also made use of telemedicine during the COVID-19 pandemic by launching a centralized County Response Call Center at the peak of the pandemic providing vital information and referral services. Various hospitals have also set up individual telemedicine systems, notably The Aga Khan Hospital, Avenue Hospital, Kisumu Specialist Hospital and Inuka Africa Hospital.

Despite these efforts, there are still significant challenges to the implementation and implementation of telemedicine in Kenya. Telemedicine implementation is hindered by a lack of appropriate ICT infrastructure, inadequate staff capacity, resources scarcity, a lack of strategic planning at the organizational level, and most critically, lack of coordinated and comprehensive stakeholder engagement planning.

## **1.2 Statement of the Problem**

Kenya Vision 2030 is a long-term development blueprint for Kenya that was launched in 2008. It aims to transform Kenya into a newly industrializing, middle-income country by the year 2030. The Vision is centered around three pillars: Economic, Social, and Political. The social pillar aims to achieve a high-quality of life for all Kenyans through improvements in education, healthcare, social security, housing, and other social services. It seeks to provide equal opportunities for all citizens, promote social equity, and build a cohesive society. Telemedicine is an integral part of Kenya Vision 2030's social pillar, aiming to improve healthcare access and services for all. By using technology to provide remote healthcare, telemedicine expands access in underserved areas, enhances efficiency, and reduces barriers. It extends services to remote populations, supports specialized care in lacking regions, and saves time and resources by reducing physical visits. A lack of implementation and integration of telemedicine and its alignment with Vision 2030's objective of equitable and inclusive development will greatly hinder the improvement of healthcare access, efficient Country, County, Community and Donor resource utilization, and also hinder the enhancement of the quality of life and cohesiveness of the society.

## **1.3 General Objective**

The general objective is to explore the perspectives of various stakeholders and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

### **1.3.1 Specific Objectives**

The specific objectives of the study are as outlined;

- i. To evaluate the influence of stakeholder attitudes on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya
- ii. To assess the impact of stakeholder perceptions on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya
- iii. To examine the effect of stakeholder knowledge on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya
- iv. To investigate the role of stakeholder experience on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

## **1.4 Research Questions**

The research questions the study seeks to answer are as outlined;

- i. How does stakeholder attitudes influence implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- ii. How does stakeholder perception influence implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- iii. How does stakeholder knowledge influence implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- iv. How does stakeholder experience influence implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?

## **1.5 Value of the Study**

The study will offer insights into the understanding of stakeholder management strategies, including stakeholder identification, engagement, communication, and alignment of project goals with stakeholder needs. By understanding telemedicine implementation risks, project managers will be able to develop risk management strategies and mitigation plans tailored to the unique challenges of telemedicine projects. The study will provide insights into the attitudes, acceptance, and readiness of stakeholders towards change management and inform strategies, including communication, training, and organizational readiness activities. The study will document lessons learned from the stakeholder perspectives during telemedicine implementation. It will capture success stories, challenges faced, and recommendations for future projects. The sharing of this information within the project management community will contribute to the continuous improvement of project management practices, further research, the dissemination of best practices, and knowledge sharing, and improve future telemedicine initiatives.

At the policy level, authors who have critically analyzed the Health Act 2017 have identified potential areas of conflict between the national regulator KMPDC on one hand and the County Executive Committee Members for Health, the Chief Officers for Health, and the County Directors for Health on the other hand. Issues that have been noted are an atmosphere of over-regulation of health care workforce and providers and jurisdictional

confusion between the two arms of government. There are also mandatory obligations placed on providers to provide emergency care under the Health Act 2017 without a clear compensation plan in place. These are critical issues that impact telemedicine implementation for which this study will provide insights and share recommendations on potential solutions.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter will critically analyze extant empirical literature on the influence of stakeholder perspectives on telemedicine implementation. Focus was given to the theoretical framework underpinning the study alongside conceptual framework that was proposed that visually represents the relationship interplay between the variables of interest based on the relevant theoretical framework. A summary of the literature review has been provided as well as a knowledge gap analysis done to further ensure that the study is relevant, focused, and logical based on established theory and research.

### **2.2 Theoretical Framework**

Two theoretical frameworks have been considered as underpinnings for this research

#### **2.2.1 Stakeholder Theory**

The theory is accredited Freeman R. Edwards propounded in 1984. It presupposes that a company should not only consider the interests of its shareholders, but also the interests of all its stakeholders. Stakeholders are defined as any individuals, entities or groups whose action influence or are variedly affected by the actions of the company, such as employees, customers, local communities, suppliers, and the environment.

The theory is based on several key assumptions that shape its perspective on business and organizational management. These assumptions include:

**Stakeholder Interdependence:** The stakeholder theory assumes that organizations are interconnected and interdependent with various stakeholders, including employees, customers, suppliers, communities, and shareholders. It recognizes that the actions and decisions of an organization affect and are affected by these stakeholders. In the context of telemedicine implementation, stakeholder interdependence means that the success and effectiveness of telemedicine initiatives depend on the collaboration, cooperation, and engagement of different stakeholders. Their actions, attitudes, and perceptions can significantly influence the adoption, acceptance, and sustainability of telemedicine services. By understanding the stakeholder interdependence, the study can explore how

various stakeholders perceive and understand telemedicine, their roles and responsibilities, and the impact of their attitudes and perspectives on the implementation process.

**Multiple Stakeholder Interests:** The theory assumes that stakeholders have diverse and sometimes conflicting interests and goals. Stakeholders may have different expectations, values, and priorities, and organizations need to consider and balance these interests in their decision-making processes. In the context of telemedicine implementation, different stakeholders, such as healthcare providers, patients, policymakers, technology vendors, and regulatory bodies, may have varying perspectives, goals, and expectations. They may have different levels of knowledge, expertise, and experience with telemedicine, and their interests may range from improving healthcare access and quality to ensuring financial sustainability, privacy protection, or regulatory compliance. Understanding the assumption of multiple stakeholder interests is crucial in the study as it allows for the exploration and analysis of the various perspectives and priorities of different stakeholders. It helps to identify potential conflicts, trade-offs, and areas of convergence or divergence in stakeholders' interests regarding telemedicine implementation. This understanding can inform strategies to engage and involve stakeholders effectively, address their concerns, and find common ground to support the successful implementation of telemedicine projects.

**Normative Ethical Perspective:** The stakeholder theory assumes a normative ethical perspective, emphasizing that organizations have a moral and social responsibility to consider and address the interests of all relevant stakeholders. It suggests that businesses should strive for long-term sustainability and develop value addition streams not just for the shareholders but also for other stakeholders. In the context of telemedicine implementation, stakeholders may have ethical concerns and considerations related to privacy, security, informed consent, data protection, equity, and the quality of care. They may have different perspectives on the ethical implications of using technology in healthcare delivery and may prioritize certain ethical principles over others. Understanding the normative ethical perspective is crucial in the study as it allows for the exploration and analysis of the ethical dimensions of stakeholder perspectives on telemedicine. It helps to identify ethical challenges, dilemmas, and potential conflicts among stakeholders, as well

as areas of ethical alignment and agreement. By engaging stakeholders in ethical discussions and incorporating ethical considerations into telemedicine implementation, the study can help identify best practices, guidelines, and policies that align with stakeholders' ethical values and ensure responsible and ethical use of telemedicine technologies.

**Long-Term Orientation:** The stakeholder theory recognizes the importance of long-term relationships and sustainability. It emphasizes the need for organizations to build and maintain positive relationships with stakeholders over time, as these relationships contribute to organizational success and stability. This assumption is relevant to the study on stakeholder perspectives and telemedicine implementation as it acknowledges the importance of considering the long-term consequences and sustainability of telemedicine initiatives. Telemedicine implementation involves significant investments in terms of infrastructure, technology, training, and policy development. It is crucial to assess stakeholders' perspectives on the long-term benefits, risks, and challenges associated with telemedicine and how these factors influence their attitudes and behaviors. By considering the long-term orientation, the study can explore stakeholders' perspectives on the potential impact of telemedicine on healthcare access, quality of care, patient outcomes, healthcare costs, and overall healthcare system sustainability. It allows for the examination of stakeholders' concerns regarding the long-term viability, scalability, and integration of telemedicine into existing healthcare systems. Understanding stakeholders' long-term orientation helps identify pros and cons to sustainable telemedicine implementation. It enables the study to assess stakeholders' readiness to invest in long-term telemedicine strategies, such as infrastructure development, capacity building, and policy frameworks. It can also shed light on stakeholders' expectations for long-term benefits, such as improved healthcare delivery efficiency, reduced healthcare costs, and enhanced patient outcomes. Considering the long-term orientation also allows for the examination of stakeholders' views on the potential disruptive effects of telemedicine on existing healthcare practices, workforce dynamics, and patient-provider relationships. It helps identify strategies to address potential resistance or challenges associated with long-term changes in healthcare delivery models. Furthermore, the long-term orientation assumption facilitates discussions on sustainability, collaboration, and stakeholder engagement beyond the initial implementation phase. It highlights the need for ongoing evaluation, monitoring, and

adaptation of telemedicine initiatives to ensure long-term success and positive impacts on healthcare delivery.

Dynamic Environment: The theory acknowledges that stakeholders and their interests can change over time due to various internal and external factors. It assumes that organizations must adapt and respond to these changes, engaging stakeholders and addressing their evolving needs and concerns. is highly relevant to the study on stakeholder perspectives and telemedicine implementation as it recognizes the ever-changing nature of the healthcare landscape and the need to adapt to emerging trends and challenges. In the context of telemedicine implementation, the healthcare environment is subject to various dynamics such as technological advancements, regulatory changes, evolving patient needs, and shifting healthcare policies. These dynamics can significantly impact stakeholders' perspectives, attitudes, and behaviors towards telemedicine. The assumption of a dynamic environment allows the study to explore how stakeholders perceive and respond to these changes. It enables the examination of stakeholders' awareness of technological advancements in telemedicine, their understanding of regulatory frameworks, and their ability to adapt to new care delivery models. Understanding stakeholders' perspectives in a dynamic environment helps identify opportunities and challenges for telemedicine implementation. It allows for the assessment of stakeholders' readiness to embrace and utilize new technologies, their capacity to navigate changing regulatory landscapes, and their ability to address emerging ethical, legal, and privacy concerns. Considering the dynamic environment assumption helps the study identify strategies for effective change management, continuous improvement, and future readiness in telemedicine implementation. It enables the exploration of stakeholders' perspectives on the agility, flexibility, and scalability of telemedicine initiatives to respond to emerging healthcare needs and capitalize on new opportunities.

### **2.2.3 Unified Theory of Acceptance and Use of Technology**

The theory was formulated by Venkatesh in 2003, which aimed to offer explanation on user behavior towards information technology. The theory integrates several previously established theories, including the social cognitive theory and the Theory of Reasoned Action. UTAUT emphasizes on constructs that influence technology use and acceptance;



which are; effort expectancy, performance expectancy, facilitating conditions and social influence. (UTAUT) proposes several key assumptions that shape individuals' use and acceptance of technology. These assumptions include; performance expectancy where users are convinced that by adopting technology job performance is enhanced and tasks performed more efficiently. This assumption suggests that stakeholders' beliefs about the potential benefits and improvements in performance that telemedicine can bring will influence their use and acceptance of the technology. In application in telemedicine implementation, stakeholders such as healthcare providers, patients, policymakers, and administrators may have different expectations regarding the performance of telemedicine in delivering healthcare services. For example, healthcare providers may perceive that telemedicine can enhance their ability to reach and provide care to a larger number of patients, improve efficiency in managing patient consultations, or enable remote monitoring of patients' health conditions. By assessing stakeholders' performance expectations, the study can gain insights into their perceptions of the potential advantages and improvements that telemedicine can bring to healthcare delivery. Understanding these expectations is crucial for effectively addressing stakeholder concerns, designing appropriate implementation strategies, and ensuring the successful adoption and utilization of telemedicine technology.

**Effort Expectancy:** Users perceive that the technology requires minimal effort, easy to use and with less cognitive load. This assumption suggests that stakeholders' perceptions of the ease of applicability and the required effort to use telemedicine technology will influence their use and acceptance of the technology. In the application to telemedicine implementation, stakeholders such as healthcare providers, patients, and administrators may have varying perceptions of the effort required to use telemedicine. For example, healthcare providers may perceive that using telemedicine requires additional training, changes in workflow, or the need to learn new technology platforms. Similarly, patients may have concerns about the complexity of using telemedicine applications, the need for reliable internet connectivity, or the level of technical skills required. By assessing stakeholders' effort expectations, the study can gain insights into their usability perceptions and ease of applicability of telemedicine technology. Understanding these expectations is important for addressing potential barriers and challenges associated with technology

adoption. It can inform the design and implementation of user-friendly telemedicine systems, training programs, and support mechanisms to enhance stakeholders' experience and reduce perceived effort.

**Social Influence:** Users are influenced by the opinions and experiences of others, such as colleagues, supervisors, or friends, regarding the use of the technology. In the context of telemedicine implementation, stakeholders' perceptions of social influence can play a significant role in shaping their attitudes and behaviors towards adopting and using telemedicine. For example, healthcare providers may be influenced by the opinions and experiences of their colleagues or professional networks regarding the benefits, effectiveness, and appropriateness of telemedicine. Patients, on the other hand, may be influenced by the recommendations or experiences shared by their family members, friends, or trusted healthcare providers. By exploring the "Social Influence" assumption, the study can gain insights into the social dynamics surrounding telemedicine adoption. It can identify the key sources of influence and the extent to which stakeholders' decisions are influenced by others. Understanding these social dynamics is crucial for designing targeted strategies to promote telemedicine acceptance and engagement.

**Facilitating Conditions:** Users perceive that the necessary technical infrastructure, support, and resources are available to facilitate the use of the technology. This assumption suggests that stakeholders' perception of the availability of resources, support, and infrastructure necessary for using telemedicine technology will influence their use and acceptance of the technology. In its applicability in telemedicine implementation, stakeholders' perception of facilitating conditions is crucial in determining their willingness and ability to adopt and use telemedicine. Stakeholders, such as healthcare providers and patients, need access to appropriate technological infrastructure, such as reliable internet connectivity, devices, and software, to effectively engage in telemedicine services. Additionally, stakeholders may require training, technical support, and guidance to navigate and utilize the telemedicine platforms. By exploring the "Facilitating Conditions" assumption, the study can assess the stakeholders' perception extent of the adequacy and availability of necessary infrastructure and support for telemedicine implementation. It can identify barriers or gaps in

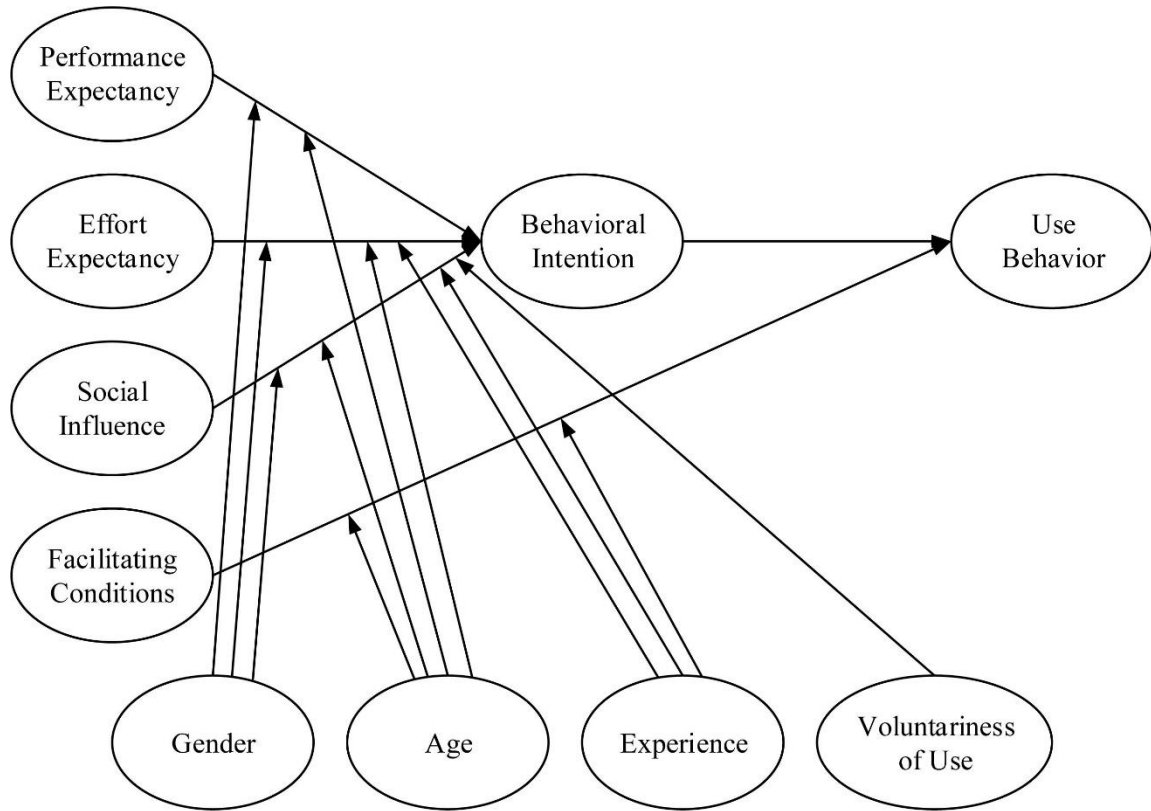
infrastructure, training, or technical assistance that hinder stakeholders' acceptance and use of telemedicine.

**Hedonic Motivation:** Users perceive that using the technology will provide them with enjoyment, pleasure, or positive experiences. This assumption suggests that stakeholders' motivation to use technology is influenced by the enjoyment, pleasure, or emotional gratification they derive from using the technology. In the context of telemedicine implementation, stakeholders' hedonic motivation has a role in their use and acceptance of telemedicine services. Telemedicine can offer various benefits and advantages that enhance stakeholders' experience and satisfaction. For example, patients may appreciate the convenience of accessing healthcare services from their homes, avoiding the need for travel and waiting times. Healthcare providers may find telemedicine technology enjoyable to use, enabling them to deliver care more efficiently and remotely. By examining the "Hedonic Motivation" assumption, the study can explore stakeholders' attitudes and emotional responses towards telemedicine. It can assess their perceived enjoyment, pleasure, or satisfaction in using telemedicine, as well as their perception of the positive emotions associated with its use. Understanding stakeholders' hedonic motivation can provide valuable insights for telemedicine implementation. Positive emotional experiences and enjoyment can contribute to increased acceptance, adoption, and sustained use of telemedicine services. It can also influence stakeholders' word-of-mouth recommendations and advocacy for telemedicine, leading to greater awareness and adoption in the broader healthcare community.

**Price Value:** Users perceive that the benefits derived from using the technology outweigh the costs, both monetary and non-monetary. This assumption suggests that stakeholders' perception of the value they receive in relation to the price or cost they incur influences their acceptance and use of technology both in terms of monetary expenses and non-monetary factors such as time and effort. For patients, the price value of telemedicine services can be evaluated based on factors such as the affordability of virtual consultations compared to in-person visits, the convenience of accessing healthcare remotely, and the potential cost savings from reduced travel expenses or time off work. Healthcare providers, on the other hand, may assess the price value of telemedicine based on factors such as the

return on investment, cost-effectiveness, and the impact on their workflow and productivity.

**Figure 1: The Unified Theory of Acceptance and Use of Technology Model**



### 2.3.1 Implementation of Telemedicine Projects

According to a study in 2016, telemedicine implementation refers to the acceptance, integration, and adoption of telemedicine technologies in healthcare (Bashur *et al.*, 2016). This involves the decision-making process of various stakeholders, including patients, healthcare providers, policymakers, and payers. Other factors that can influence telemedicine implementation include the perceived advantages and ease of adoption of the technology, the availability and accessibility of telemedicine services, the support and training provided to users, the cost-effectiveness of telemedicine, and the cultural and organizational factors of the healthcare system (Mars *et al.*, 2018) (Whitten *et al.*, 2010).

Understanding the concept of telemedicine implementation is important for identifying the pros and cons to the successful implementation and integration of telemedicine into healthcare systems (Bashur *et al.*, 2016). It can also help in the development of strategies and interventions to enhance the implementation and effective use of telemedicine technologies (Mars *et al.*, 2018). There are several indicators of telemedicine implementation, with some possible measures of telemedicine implementation being: usage rates or the frequency and extent of telemedicine usage can be used as an indicator of implementation. According to a study by Whitten *et al.* (2010), usage rates are a common indicator of telemedicine implementation and can be used to measure the level of telemedicine integration into clinical practice; user satisfaction is another indicator of telemedicine implementation. It reflects the extent to which users find telemedicine technology useful and acceptable. As noted by Bashshur *et al.* (2016), user satisfaction can influence the implementation and sustainability of telemedicine programs; reduction of healthcare costs can be an important indicator of the implementation of telemedicine. As noted by the American Telemedicine Association, telemedicine can downscale cost of healthcare through improved access and reduced in-person visits, hospitalizations, and emergency department visits (America Telemedicine Association, 2014); the integration of telemedicine into existing workflows can be used as an indicator of implementation. The integration of telemedicine into clinical workflows can enhance healthcare efficiency and promote the implementation of telemedicine technologies (Latifi, *et al.*, 2015); policy and regulatory support can as well be used as an indicator of telemedicine implementation. As noted by the World Health Organization (2010), supportive policies and regulations can facilitate the implementation and implementation of telemedicine programs.

### **2.3.2 Stakeholder Perspectives**

In Kenya, public health facilities have a wide range of stakeholders involved in their operations and management. These stakeholders include: The Ministry of Health which is the government body responsible for setting policies and regulations for public health facilities in Kenya. It provides guidance on healthcare service delivery, oversees training and development of healthcare personnel, and coordinates health programs and projects; County Governments: In Kenya, healthcare is devolved to the county level, with each county government responsible for the management and provision of healthcare services

within their jurisdiction. County governments own and operate numerous healthcare facilities, including health centers, hospitals, dispensaries. Healthcare providers are a critical stakeholder group in public health facilities. They include doctors, nurses, clinical officers, pharmacists, laboratory technologists, and other healthcare professionals who provide services to patients in public health facilities; patients are the primary beneficiaries of healthcare services. They have a stake in the quality, affordability and accessibility of the services provided in health facilities; CBOs play an important role in supporting public health facilities in Kenya. They provide services such as health education, advocacy, and outreach programs to enhance the health of their communities; donors and development partners provide financial and technical support to public health facilities in Kenya. They fund projects, provide equipment and supplies, and offer technical expertise to help improve the quality and availability of the services; regulatory bodies such as the KHPOA, KMPDC, COC and the NCK provide oversight and regulation of healthcare providers in public health facilities. They ensure that healthcare providers are licensed and adhere to professional standards of practice; health insurance providers are an important stakeholder group in public health facilities. They provide coverage for medical expenses, including hospitalization and treatment, for patients who are insured. Overall, these stakeholders work together to ensure that public health facilities in Kenya provide quality, accessible, and affordable healthcare services to the population. According to the study by Bashshur *et al.* (2016), telemedicine implementation is dependent on myriad of factors, ranging from perceived applicability and ease of adoption of the technology, the availability and accessibility of telemedicine services, the support and training provided to users, the cost-effectiveness of telemedicine, and the cultural and organizational factors of the healthcare system. Mars *et al.* (2018) also found that stakeholder perspectives are critical to the success of telemedicine programs. If stakeholders perceive telemedicine as useful and beneficial to patient care, they are more likely to adopt and use the technology. Therefore, understanding stakeholder perspectives is important for identifying the pros and cons to the implementation and implementation of telemedicine technologies (Mars *et al.*, 2018; Bashshur *et al.*, 2016).

### **2.3.3 Stakeholder Attitude and Implementation of Telemedicine Projects**

Kituyi and Isabija (2011) examined telemedicine implementation in Uganda. The authors examined factors affecting and the requisite drivers of the telemedicine implementation. The research approach was case study utilizing both qualitative and quantitative techniques for data collection. Purposive sampling was used. A total of 160 stakeholders including ICT staff, hospital administrators, healthcare providers were selected. In one private and one public health facility. Number of respondents were at 160. The authors used Roscoe's (1970) rule of thumb to determine sample size. The response rate was 91%. The study identified change resistance by members of staff as the most significant factor affecting the implementation of telemedicine in Uganda.

Holman *et al.* (2023) looked at the telemedicine implementation during the COVID-19 pandemic by obstetrics. Their aim was to evaluate the adapting to telehealth experience among obstetrics in the West of Rocky Mountain. The investigators collected qualitative data on health policy domains, and healthcare system utilization by the risk population. Recording, transcription and coding of the data was followed by thematic analysis. Patients who had a positive attitude towards telemedicine as a useful tool reported an intention to continue using telemedicine after the pandemic. A positive experience beyond COVID-19 safety also positively influenced the intention to continue using telemedicine.

### **2.3.4 Stakeholder Perception and Implementation of Telemedicine Projects**

Dietzen, *et al.* (2020) conducted a study whose main objective was to evaluate utilization of telehealth services and pediatric psychiatrists satisfaction. The research methodology was quantitative with google forms used to create the survey questionnaire. A facebook group and email was used to disseminate the questionnaire to participating pediatric psychiatrists. The study surveyed 78 respondents. The results showed that there was a positive influence on telemedicine implementation by the near universal perceptions of comfort and confidence in the quality of and satisfaction with the use of telemedicine among paediatric psychiatrists.

Hall *et al.* (2021) conducted a study with the focus on physical therapy among paediatric patients in the USA. This was a quantitative research with an online survey, anonymously distributed to pediatrics who succeeded to telemedicine during COVID-19. They had 250

respondents completing all the quantitative survey questions. Their results showed that despite the forced transition to telemedicine there was a positive influence of perceptions of effectiveness of and confidence in telemedicine on its implementation by physical therapists and patients.

Gagnon *et al.* (2012 ) examined the use of a modified TAM to evaluate healthcare professionals' implementation of telemedicine. They examined factors influencing the healthcare professionals' decisions to adopt telemonitoring system. A quantitative approach was used. The authors identified perceived applicability as the driving factor for increasing nurses' and doctors' intention to adopt new technology.

### **2.3.5 Stakeholder Knowledge and Implementation of Telemedicine Projects**

Miller *et al.* (2021) evaluated the implementation of telemedicine with a focus on physical therapy services at a large urban academic medical center in the months of March to May, 2020 during the COVID-19 pandemic. Their main objective was to evaluate implementation of telehealth physical therapy in response to COVID-19 and identify implementation strategies to maintain and scale up telehealth physical therapy within a large urban academic medical center. This was a mixed method study. Quantitative data was gathered using a 5 point Likert and also from patient level data captured in electronic medical records. Qualitative data was captured through in depth interviews with patient and clinician and data analysed to identify emergent perspective themes. Clinician education (dynamic, ongoing training) was identified as one of the major factors determining adoption and implementation of telemedicine.

Madden *et al.* (2020) examined provider attitudes towards telemedicine in a perinatal care setting. The study aimed at determining telemedicine adoption during the pandemic and to describe provider attitudes during the COVID-19 pandemic transition at Columbia University in New York City. It was a mixed method study utilizing both a questionnaire and semi structured interviews. The study determined that additional training for office staff resulted in greater telemedicine utilization. Additionally, reaching out proactively to patient to identify user difficulties and to provide on demand training telehealth use.



Mallampati *et al.*(2023) telemedicine use during the COVID-19 for obstetrical care. Their main objective was to determine whether location of practice was a determinant of telemedicine adoption. This study employed a quantitative approach. 295 survey questionnaires were sent out. The response rate was 33%. The main finding of the study was a 6 fold increase of telemedicine use with the advent of the pandemic. Though not the study's main objective, technology knowledge and access was identified by the authors as the modal need for continued adoption of telemedicine.

### **2.3.6 Stakeholder Experience and Implementation of Telemedicine Projects**

Mark *et al.* (2023) undertook a study to examine patient and service provider perspectives on telemedicine projects implementation and whose focus was patients utilizing care at outpatient clinics in California during the US stay at home and social distancing executive orders occasioned by the COVID-19 pandemic. This was a prospective cohort study in which utilization data was collected and compared to a similar period in the preceding year. A survey tool was used at the end of every visit for all patients and caregivers and the results analyzed for trends in perspectives on future use by stakeholders. The study showed that a higher proportion of study participants with prior exposure to telemedicine were more likely to choose telemedicine as the preferred mode for their next appointment.

Tozour *et al.* (2021) examined the application of telemedicine in maternal-fetal health care provision during the COVID-19 pandemic at the New York University. The main objective of their study was to identify the factors that positively influence patients' desire for future utilization of obstetrical telemedicine services. The study utilized a quantitative approach using a 10 point survey questionnaire with a Likert scale with a response rate of 65%. The median scores were compared using appropriate tests. A P value of <.05 was considered significant. The desire for future telemedicine was significantly associated with a positive user experience and perception.

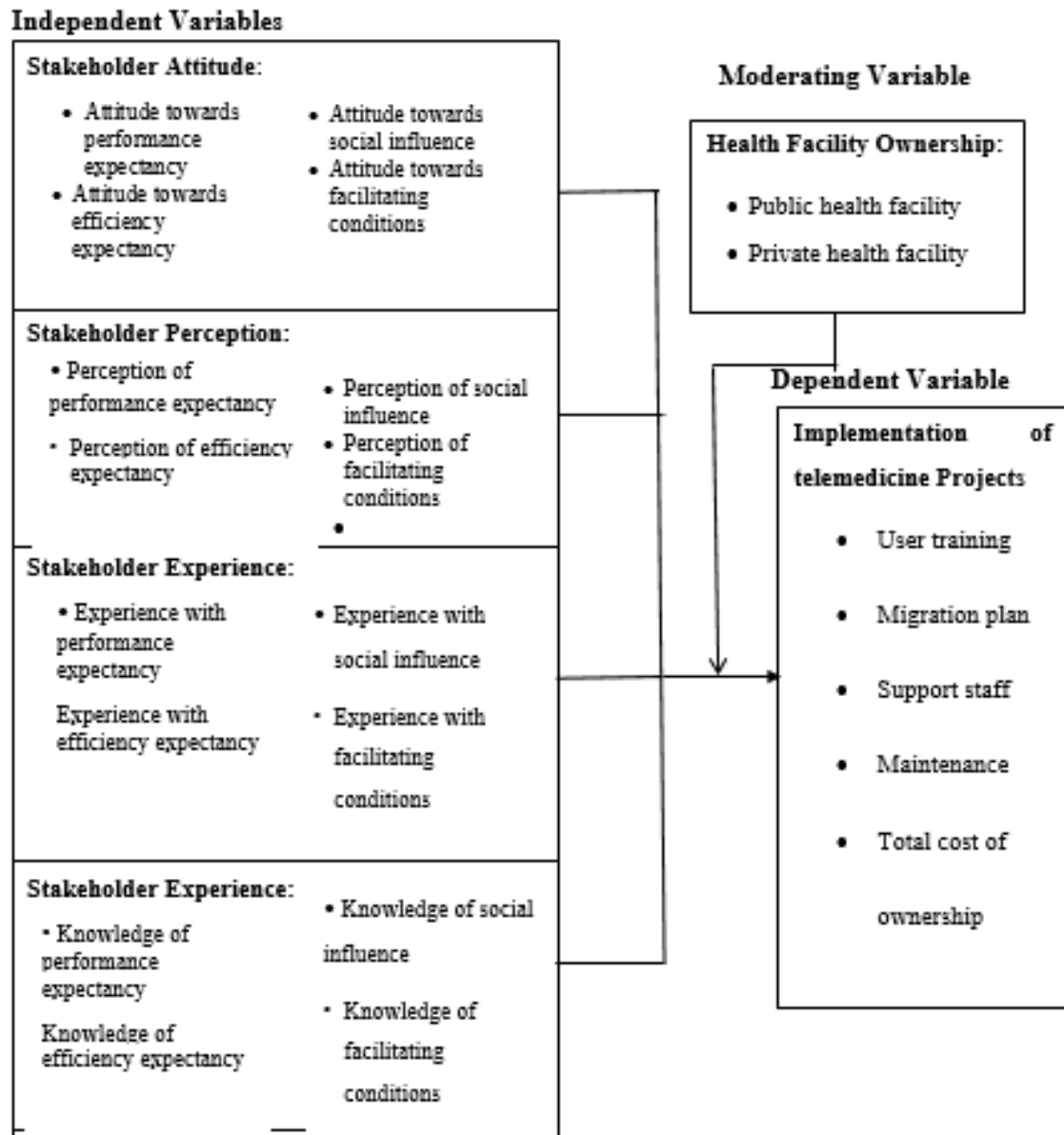
Bruno *et al.* (2023) studied the satisfaction and experience among average-risk perinatal patients. The main objective was to evaluate average-risk among pregnant women's virtual experiences compared to in-person visits. This was a prospective cohort study. Survey was undertaken and thereafter a subset of the same were identified using purposive sampling technique for follow up interviews. Additionally, a comparison control group was

identified and data from them captured. Logistic regression controlling for moderating variables compared satisfaction between in-person visits and virtual. Content analysis was used for qualitative data. Completion rates were 95% and 90% for the survey and the interviews respectively. 69% of the respondents agreed that the experience of their virtual engagement was as good as in-person and that their next appointment would be virtual.

## **2.4 Conceptual Framework**

The proposed conceptual framework for this study identifies the key independent, dependable, and moderating variables and their relationship as underpinned by the UTAUT as the model of best fit.

Figure 2: The Proposed conceptual framework adapted from the UTAUT model and the Kenya e-Health Policy 2016-2030 telemedicine projects implementation framework



## **2.5 Research Hypotheses**

The research hypotheses of the study stated as follows was tested at 95% level of significance

H<sub>0</sub>1: There is no significant relationship between stakeholder attitudes and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

H<sub>0</sub>2: There is no significant relationship between stakeholder perception and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

H<sub>0</sub>3: There is no significant relationship between stakeholder knowledge and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

H<sub>0</sub>4: There is no significant relationship between stakeholder experience and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

## **2.6 Summary of literature review**

Most studies on telemedicine implementation and implementation have focused on the developed world, particularly the United States, Canada, Europe, and Australia. This definitely limits the generalization of their findings to LMICs. Most of published studies are narrow in focus concentrating mostly on health care providers, more so specialists. There is also a lack of studies employing both qualitative and quantitative methods. This limits the depth of data that can be captured and consequently the strength of conclusions that can be drawn from these studies. Quite a number of studies lacked sufficient sample sizes with a likelihood of the introduction of bias and limiting generalizability of study findings. There is a relative lack of research on telemedicine implementation in developing countries, where healthcare infrastructure and resources are limited and where rural access to quality healthcare, affordable health care and specialist services are most needed (Bruna *et al.*, 2023). This is an important research gap that needs to be addressed to understand the potential for telemedicine to improve healthcare access and outcomes in these settings.

**Table 1: Knowledge gaps identified in existing literature**

<b>Objectives</b>	<b>Focus</b>	<b>Researcher</b>	<b>Methodology</b>	<b>Findings</b>	<b>Research Gaps</b>
Telemedicine implementation, implementation and sustainability factors	Tertiary hospitals in Uganda	Kituyi and Isabija (2011)	Case study with quantitative and qualitative	Most significant factor is resistance to change by staff	Did not analyze patients' perspectives
Determination of telemedicine implementation experience and implications for policy and practice	Obstetric health workers and patients during COVID-19 in USA	Holman <i>et al.</i> (2023)	Qualitative	Positive influence of patient	Small sample size. Not generalizable to LMICs
Determination of telehealth utilization and satisfaction	Pediatric physiatrists	Dietzen, A. <i>et al.</i> (2020)	Quantitative	Positive influence of perceptions	Narrow focus on pediatric physiatrists... Lacks a qualitative component
Description of characteristics of telehealth	Pediatric physical therapists during COVID-19 in USA	Hall <i>et al.</i> (2021)	Quantitative	Positive influence of provider perceptions	Narrow focus on pediatric physiatrists. Lacks a qualitative component. Not generalizable to LMICs
Determination of telemedicine implementation factors	Use of a modified TAM based questionnaire as a data collection tool	Gagnon <i>et al.</i> (2012 )	Quantitative	Positive influence of provider perceptions	Low response rate. Recruitment limited to healthcare providers
Determination of telemedicine implementation strategies	Physical therapy in a large academic hospital during COVID-19	Miller <i>et al.</i> (2021)	Quantitative and qualitative	Positive influence of clinician knowledge	Narrow focus on physical therapy. Not generalizable to LMICs

Determination of provider attitudes	Perinatal care at Columbia University Hospital during COVID-19	Madden <i>et al.</i> (2020)	Quantitative and qualitative	Positive influence of clinician knowledge	Narrow focus on perinatal care. Not generalizable to LMICs
Determination of telemedicine needs and preferences and influence of practice location	Obstetric care in North Carolina during COVID-19	Mallampati <i>et al.</i> (2023)	Quantitative	Knowledge and access to telemedicine most important factors	Low response rate. Not generalizable to LMICs. Narrow focus on obstetrics
Perspectives of telemedicine implementation	Outpatient clinics in the USA during COVID-19	Mark, <i>et al.</i> (2023)	Prospective cohort study utilizing quantitative methodology	Positive influence of prior experience with telemedicine	Lack of a qualitative component. Not generalizable to LMICs
Identification of positive influencers on telemedicine implementation	Maternal fetal medicine at New York University Hospital during COVID-19	Tozour, <i>et al.</i> (2021)	Quantitative	Positive influence of prior experience with telemedicine	Lack of a qualitative component. Not generalizable to LMICs
Determination of satisfaction levels with telemedicine	Average risk perinatal patients	Bruno, <i>et al.</i> (2023)	Prospective cohort study utilizing quantitative methodology		Lack of a qualitative component. Not generalizable to LMICs

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter focuses on the methodology adopted to investigate the influence of stakeholder perspectives on telemedicine implementation. It thus details the description of the design adopted, methods data acquisition and techniques analysis, and operationalization of the variables. This chapter will also discuss the sampling strategy and the rationale for selecting the sample population. The goal is to obtain a diverse range of perspectives that will provide a comprehensive understanding of the influence of stakeholder perspectives on telemedicine implementation.

### **3.2 Research Design**

Descriptive survey design is the preferred design to anchor the study. The design has been deemed appropriate as it provides the investigator with the ability to undertake an inquiry into the relationship between the variable and describe the current telemedicine project implementation situation as it is manifested in referral hospitals in Kisumu County. According to Kothari (2014), research design entails the basic structure and strategy for data collection and analysis whereas descriptive survey entails data gathering and events description through organization and tabulation to depict and describe the phenomena as correctly manifested.

### **3.3 Target Population**

The target population of the study is 388. Table 3.1 presents the relevant study population targeted for the study;

**Table 2: Target Population**

<b>Telemedicine Project</b>	<b>Target Population</b>	<b>Responsibility</b>	<b>Sample size</b>
JOOTRH	40	patients	20
	42	nursing staff	21
	27	doctors	14
	2	administrators	1
	2	ICT staff	1
Kisumu County Referral Hospital	15	patients	7
	21	nursing staff	10
	13	doctors	7
	2	administrators	1
	2	ICT staff	1
Ahero County Hospital	7	patients	4
	9	nursing staff	5
	6	doctors	3
	1	administrators	1
	2	ICT staff	1
Kisumu Specialist	10	patients	5
	17	nursing staff	9
	10	doctors	5
	2	administrators	1
	1	ICT staff	1
Inuka Africa Hospital	10	patients	5
	17	nursing staff	9
	8	doctors	4
	2	administrators	1
	2	ICT staff	1
Avenue Hospital Kisumu	20	patients	10
	20	nursing staff	10
	10	doctors	5
	2	administrators	1
	2	ICT staff	1
Aga Khan Hospital Kisumu	20	patients	11
	25	nursing staff	12
	13	doctors	6
	4	administrators	2
	2	ICT staff	1
<b>TOTAL</b>	<b>388</b>		<b>197</b>

**Source: Kisumu County Government**



### **3.4 Sample Size and Sampling Procedure**

The selection of the sample size along with the sampling procedure are described in this section.

#### **3.4.1 Sample Size**

Slovin's formula was used to determine the sample size of 197 respondents

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size

N = total population

e = Epsilon Naught

#### **3.4.2 Sampling Procedure**

The sampling procedures to be used in this study are as follows;

Simple random sampling procedure to reduce sampling bias by ensuring every subject in the target population can be selected with an equal chance. Stratified random sampling was applied to ensure homogeneity that the sample accurately represents the population in terms of important variables such as size of the health facility and responsibility. Each stratum will contribute to the final sample in proportion to its representation in the population. Purposive sampling procedure will allow the author to deliberately select participants who can provide rich and detailed information that aligns with the research focus. By targeting specific individuals with relevant knowledge, experiences, or expertise, in-depth and insightful data can be gathered

### **3.5 Research Instruments**

The two research instruments for this study were;

A survey questionnaire were self-administered and KII interviews conducted

An interview schedule which included a mix of open-ended, closed-ended, and probing questions covering all the variables captured in the conceptual framework.

### **3.5.1 Pilot Testing of the Research Instruments**

Pilot testing of research instruments was done at Kombewa County Hospital which is outside of Kisumu City where the actual research will be conducted. This served purpose to minimize bias that may arise from actual study participants having familiarity with study procedures and as a result forming preconceived ideas and biases. It will also aid in the testing of generalizability of the study procedures and instruments, their applicability and acceptance in a broader context

### **3.5.2 Validity of the Research Instruments**

Content validity was enforced by the detailed involvement of the study supervisor who has provided review as a subject matter expert and professional. Additionally, a comprehensive review of existing literature has been conducted to identify relevant theories, concepts, and previous measurement instruments related to the construct. This will help ensure that the s are adequate with important covered in their construct. Finally, pilot testing with iterations and refinement will also be carried out.

Each construct of interest has been assigned measurements indicators. These measurements indicators were administered to study participants and descriptive statistics calculated. Next the inter-item correlation and the total score of the construct computed using Pearson's coefficient of correlation given that the study will generate continuous data and the expected relationship between the variables is linear.

### **3.5.3 Reliability of the Research Instruments**

Cronbach's alpha, originally described by Cronbach in 1951 (Cronbach, 1951), is a statistical measure that is commonly used to assess the internal consistency reliability of a research instrument. For this study a Cronbach's alpha value of 0.7 was considered as an acceptable measure of internal consistency of the research instrument due to its wide acceptability and use in social science research (DeVillis, 2017), the reasonable degree of balance it provides in terms of reliability and precision, and the study's contextual considerations.

## **3.6 Data Collection Procedure**

The study was presented before a panel of university examiners who will give their recommendation for changes. After the recommended changes are effected, the researcher will

proceed to seek clearance from National Commission for Science Technology and Innovations (NACOSTI). Once the clearance is obtained the researcher shall proceed to get further clearance from both the County Commissioner and County Director of Education for Kisumu County. Upon being cleared by Kisumu County Authorities, the researcher shall present the clearances to the administration of the referral hospitals to duly inform them when the data collection exercise shall commence. After all these modalities are adhered to, data collection shall then commence in earnest.

### **3.7 Data Analysis Techniques**

Data was sorted, verified, cleaned to rid potential outliers and entered into SPSS V.27 as a tool for analysis. The software will then be used to generate inferential statistics of regression and correlation analyses. Descriptive statistical analysis will then generate Mean, SD, percent and frequencies of the measures.

The inferential statistic, Correlation analysis, applied to examine the influence of stakeholder perspectives and telemedicine implementation and to test the hypothesis. Regression analysis was applied to establish the degree of linear relationships between predictor and criterion variable.

The qualitative data collected from the interviews were thematic organized and presented to complement the quantitative data to identify patterns in stakeholder perspectives and telemedicine implementation.

### **3.8 Operationalization of the Variables**

Operationalization of variables clearly and systematically helps to ensure that all relevant variables are identified and included in the study, and that they are accurately labeled and categorized (Creswell, 2014).

**Table 3: Operationalization of the Variables**

<b>Objective</b>	<b>Variable</b>	<b>Indicator</b>	<b>Measuring scale</b>	<b>Research approach</b>	<b>Tools of analysis</b>
To evaluate the influence of stakeholder attitude on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya	Stakeholder attitude	<ul style="list-style-type: none"> <li>• Likelihood of adoption</li> <li>• Belief in efficacy</li> <li>• Expressed concerns</li> <li>• Willingness for recommend</li> </ul>	Ordinal	Descriptive survey design	Inferential and descriptive statistics
To assess the impact of stakeholder perceptions on the telemedicine projects in referral hospitals in Kisumu City, Kenya	Stakeholder perceptions	<ul style="list-style-type: none"> <li>• Acceptance</li> <li>• Perceived risks</li> <li>• Perceived usability</li> <li>• Perceived impact on healthcare delivery</li> <li>• Perceived privacy and security</li> </ul>	Ordinal	Descriptive survey design	Inferential and descriptive statistics
To examine the effect of stakeholder knowledge on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya	Stakeholder knowledge	<ul style="list-style-type: none"> <li>• Understanding of telemedicine</li> <li>• Knowledge of telemedicine technologies</li> <li>• Awareness of telemedicine applications</li> <li>• Regulatory and legal knowledge</li> <li>• Evidence based knowledge</li> </ul>	Ordinal	Descriptive survey design	Inferential and descriptive statistics

<p>To investigate the role of stakeholder experience on the telemedicine projects in referral hospitals in Kisumu City, Kenya</p>	<p>Stakeholder experience</p>	<ul style="list-style-type: none"> <li>• Understanding of telemedicine</li> <li>• Knowledge of telemedicine technologies</li> <li>• Awareness of telemedicine applications</li> <li>• Regulatory and legal knowledge</li> <li>• Evidence based knowledge</li> </ul>	<p>Ordinal</p>	<p>Descriptive survey design</p>	<p>Inferential and descriptive statistics</p>
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## CHAPTER FOUR: DATA ANALYSIS, PRESENTATION, INTERPRETATION, AND DISCUSSION OF FINDINGS

### 4.1 Introduction

The chapter presents analysed data's findings, interpretation of the descriptive and inferential analyses and their discussions alongside inferences based on the themes of objectives the study set out to achieve. The rate of return on the questionnaire and the demographics have been presented and discussed.

### 4.2 Questionnaire Return Rate

The achieved response rate is tabulated in Table 4

**Table 4: Questionnaire Return Rate**

<b>Questionnaire</b>	<b>Frequency(f)</b>	<b>Percent (%)</b>
Completed and Collected for Analysis	169	85.79
Unresponsive	28	14.21
<b>Total Administered</b>	<b>197</b>	<b>100.00</b>

From the tabulated results in Table 4; study's sample size was 197 and that implies that 197questionnaire were administered 197(100%) out of which 169(90.84%) were completed and re-collected for entry and subsequent analysis giving a non-return rate of 28(14.21%). According Cooper and Schindler (2015) survey responses are critically low and when over 50% is achieved the basic threshold for analysis was thus by study which had a return rate of over 85% and therefore errors due to non-response were minimal

### 4.3 Demographics of Study Respondents

The sought and recorded respondents' demographics relating to gender, age, highest level of academic achievement and designation. The response tallies are presented in demographic parameter tables as given;

### 4.3.1 Gender Distribution Tally

The study profiled the respondents as per their gender, this was considered of value to the study to ascertain the gender distribution and to limit any bias attributed to the gender sampling. The frequencies outlined in Table 5;

**Table 5: Distribution by Gender**

<b>Respondents' Gender</b>	<b>Frequency</b>	<b>Percent(%)</b>
Male	88	52.07%
Female	81	47.93%
<b>Total</b>	<b>169</b>	<b>100.00%</b>

The frequency results outlined in Table 5 suggest that 88(52.07%) were male and 81(47.93%) were female. The results suggest that both gender was proportionately sampled and this limited any due to gender sampling bias.

### 4.3.2 Age Distribution Frequencies

The study profiled the respondents according to their ages, which was critical value to the study to in order to ensure that different cohorts were enrolled to ensure wider triangulation across different ages groups in telemedicine projects. The frequency outcomes are outlined in Table 6;

**Table 6: Age Distribution Frequencies**

<b>Age of Respondents in Years</b>	<b>Frequency</b>	<b>Percent</b>
23 and Below	16	9.47%
24...33	36	21.30%
34...43	41	24.26%
44...53	44	26.04%
54...63	22	13.02%
Above 63	10	5.92%
<b>Total</b>	<b>169</b>	<b>100.00%</b>

The frequency results outlined in Table 6 suggest that those 23 years and below were 16(9.47%), between 24 and 33 years were 36(21.30%), between 34 and 43 were 26(24.26%) between 44 and 53 were 44(26.04%), between 54 and 63 were 22(13.02%) while those over 63 years were 10(5.92%). The results suggest that the sampling proportionately covered different cohorts.

### 4.3.3 Highest Academic Qualifications Frequencies

The study profiled the respondents according to their highest academic qualification levels achieved, which was of critical importance to the study as literacy levels determined the respondents' ability to fill-in the questionnaires and subsequently the return rate. The frequency outcome is outlined in Table 7

**Table 7: Distribution of Respondents by Highest Academic Qualifications**

<b>Respondents' Highest Academic Qualification</b>	<b>Frequency</b>	<b>Percent</b>
Primary	12	7.10%
Secondary	30	17.75%
TIVETs	36	21.30%
Diploma	43	25.44%
Graduate	34	20.12%
Postgraduate	14	8.28%
Other	0	0.00%
<b>Total</b>	<b>169</b>	<b>100.00%</b>

The frequency outcome in Table 8 suggest that 12(7.10%), had a primary level of education, 30(17.75%), had secondary certificates; 36(21.30%), had TIVET trainings, 43(25.44%), had Diplomas; 34(20.12%), were graduates; 14(12.61%), had postgraduate achievements. The frequencies were testament to a highly literate sample population who had no difficulties navigating through the questionnaires statements.



#### 4.3.4 Occupation Distribution Frequencies

The study profiled the respondents according to their occupations. This was of critical value to the study in order to gauge whether the right practitioners were sampled. The outcome frequencies are outlined in Table 8;

**Table 8: Distribution by Occupation**

<b>Distribution by Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Doctor	27	15.98%
Nurse	41	24.26%
Beneficiary	39	23.08%
Pharmacist	28	16.57%
Lab-Technologist	15	8.88%
Administrator	16	9.47%
Other	3	1.78%
<b>Total</b>	<b>169</b>	<b>100.00%</b>

The frequency results in Table 8 suggest that; 27(15.98%) were doctors, 41(24.26%) were nurses 39(23.08%) were beneficiaries, 28(16.57%) were pharmacists, 15(8.88%) were lab technologists 16(9.47%) were administrators while 3(1.78%) were ICT system admins. The outcomes resoundingly suggest that the sampled respondent designation were a true reflection of those implementing telemedicine projects in Kisumu County.

#### 4.4 Descriptive Statistics on Implementation of telemedicine projects

This study had sought to reveal the extent and level of implementation of telemedicine projects. The findings of descriptive statistics on implementation of telemedicine projects are as enlisted in Table: 9

**Table 9: Descriptive Statistics of Implementation of Telemedicine Projects**

Item	Statements on implementation of telemedicine projects	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Mean	S.D
B1	User training enhances the implementation of telemedicine projects	85(50.30%)	25(14.79%)	17(10.06%)	27(15.98%)	15(8.88%)	3.82	1.421
B2	Elaborate migration plan to implementation of telemedicine projects promotes success of the projects	47(27.81%)	76(44.97%)	15(8.88%)	17(10.06%)	14(8.28%)	3.74	1.206
B3	Well trained projects support staff promotes the implementation of telemedicine projects	64(37.87%)	48(28.40%)	26(15.38%)	15(8.88%)	16(9.47%)	3.76	1.301
B4	Regular service and maintenance of telemedicine equipment enhances implementation of telemedicine projects	49(28.99%)	54(31.95%)	31(18.34%)	19(11.24%)	16(9.47%)	3.60	1.274
B5	Total cost of ownership of telemedicine projects determines the level of implementation of telemedicine projects	62(36.69%)	47(27.81%)	28(16.57%)	14(8.28%)	18(10.65%)	3.72	1.324
<b>Composite (average) Mean and S.D</b>							<b>3.73</b>	<b>1.305</b>

The statistical descriptive analysis results outlined in Table 9 suggest that that implementation of telemedicine projects is generally good with recorded composites mean that is =3.73 and composite S.D=1.305. The statements tallies contributed to the composites as follows;

The first item was to establish whether user training enhances the implementation of telemedicine projects. The 169 weighted responses were distributed as outlined; 85(50.30%) strongly-agreed, 25(14.79%) agreed, 17(10.06%) neutral, 27(15.98%) disagreed and 15(8.88%) disagreed strongly with the item statement. The mean score for the item statement was 3.82 and 1.421 S.D. The distribution across the five weights as scored suggest that user training highly enhances the implementation of telemedicine projects

The second item was to establish whether elaborate migration plan to implementation of telemedicine projects promotes success of the projects. The 169 weighted responses were distributed as outlined; 47(27.81%) strongly-agreed, 76(44.97%) agreed, 15(8.88%) neutral, 17(10.06%) disagreed and 14(8.28%) disagreed strongly with the item statement. The mean score

for the item statement was 3.74 and 1.206 S.D. The distribution across the five weights as scored suggest that elaborate migration plan to implementation of telemedicine projects indeed promotes success of the projects

The third item was to establish whether well trained projects support staff promotes the implementation of telemedicine projects. The 169 weighted responses were distributed as outlined; 64(37.87%) strongly-agreed, 48(28.40%) agreed, 26(15.38%) neutral, 15(8.88%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.76 and 1.301 S.D. The distribution across the five weights as scored suggest that well trained projects support staff indeed promotes the implementation of telemedicine projects.

The fourth item was to establish whether regular service and maintenance of telemedicine equipment enhances implementation of telemedicine projects. The 169 weighted responses were distributed as outlined; 49(28.99%) strongly-agreed, 54(31.95%) agreed, 31(18.34%) neutral, 19(11.24%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.60 and 1.274 S.D. The distribution across the five weights as scored suggest that regular service and maintenance of telemedicine equipment is very critical as it enhances implementation of telemedicine projects

The fifth item was to establish whether total cost of ownership of telemedicine projects determines the level of implementation of telemedicine projects. The 169 weighted responses were distributed as outlined; 62(36.69%) strongly-agreed, 47(27.81%) agreed, 28(16.57%) neutral, 14(8.28%) disagreed and 18(10.65%) disagreed strongly with the item statement. The mean score for the item statement was 3.72 and 1.324 S.D. The distribution across the five weights as scored suggest that total cost of ownership of telemedicine projects is an important factor that determines the level of implementation of telemedicine projects

Qualitative data collected on implementation of telemedicine projects revealed that;

*“Telemedicine is a fairly new concept in Kenya that is fact growing and there has been a good interaction between patients and physicians actively engaging remotely with a lot of success in prescription and expert advice. It has really a good bearing in decongesting our health facilities and the patient once seen can easily be monitored without having to travel to the hospital”*. KIII

#### 4.5 Stakeholder attitude and Implementation of telemedicine projects

The theme of the study's first objective was to establish the influence of stakeholder attitude on implementation of telemedicine projects. The results are outlined in Table 10

**Table 10: Descriptive Statistics of Stakeholder attitude and Implementation of Telemedicine Projects**

Item	Statements on Attitude	Strongly Agree (4) A.g.r.e.e (5)	Agree (5)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	M.e.a.n	S.D
C1	Stakeholders attitude towards performance expectancy is positive	68(40.24%)	45(26.63%)	25(14.79%)	21(12.43%)	10(5.92%)	3.83	1.249
C2	Stakeholders attitude towards efficiency promotes telemedicine adoption	56(33.14%)	63(37.28%)	22(13.02%)	16(9.47%)	12(7.10%)	3.80	1.203
C3	Stakeholders' attitude towards social influence encourages the adoption of telemedicine	54(31.95%)	59(34.91%)	26(15.38%)	21(12.43%)	9(5.33%)	3.76	1.183
C4	Stakeholders' attitude towards facilitating conditions is essential for telemedicine growth	51(30.18%)	62(36.69%)	19(11.24%)	21(12.43%)	16(9.47%)	3.66	1.287
C5	Stakeholders' attitude toward technological adoption is essential for telemedicine success	61(36.09%)	48(28.40%)	20(11.83%)	24(14.20%)	16(9.47%)	3.67	1.343
<b>Composite Mean and Composite S.D</b>							<b>3.74</b>	<b>1.253</b>

The statistical descriptive analysis results outlined in Table 10 suggest that stakeholder attitude is an influential factor in implementation of telemedicine project with recorded composite mean that is =3.74 and composite S.D=1.253. The statements outcome that averaged the composites were follows;

The first item established whether stakeholders' attitude toward technological adoption is essential for telemedicine success. The 169 weighted responses were distributed as outlined; 68(40.24%) strongly-agreed, 45(26.63%) agreed, 25(14.79%) neutral, 21(12.43%) disagreed and 10(5.92%) disagreed strongly with the item statement. The mean score for the item statement was 3.83 and

1.249 S.D. The distribution across the five weights as scored suggest that stakeholders' attitude toward technological adoption is very essential for telemedicine success in Kisumu County

The second item was to establish whether stakeholders' attitude towards facilitating conditions is essential for telemedicine growth. The 169 weighted responses were distributed as outlined; 56(33.14%) strongly-agreed, 63(37.28%) agreed, 22(13.02%) neutral, 16(9.47%) disagreed and 12(7.10%) disagreed strongly with the item statement. The mean score for the item statement was 3.80 and 1.203 S.D. The distribution across the five weights as scored suggest that; stakeholders' attitude towards facilitating conditions is indeed essential for telemedicine growth

The third item was to establish whether stakeholders' attitude towards social influence encourages the adoption of telemedicine. The 169 weighted responses were distributed as outlined; 54(31.95%) strongly-agreed, 59(34.91%) agreed, 26(15.38%) neutral, 21(12.43%) disagreed and 9(5.33%) disagreed strongly with the item statement. The mean score for the item statement was 3.76 and 1.183 S.D. The distribution across the five weights as scored suggest that; stakeholders' attitude towards social influence can be confirmed encourages the adoption of telemedicine

The fourth item was to establish whether stakeholders' attitude towards efficiency promotes telemedicine adoption. The 169 weighted responses were distributed as outlined; 51(30.18%) strongly-agreed, 62(36.69%) agreed, 19(11.24%) neutral, 21(12.43%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.66 and 1.287 S.D. The distribution across the five weights as scored suggest that; stakeholders' attitude towards efficiency promotes telemedicine adoption as encourages opinion change

The fifth item was to establish whether stakeholder attitude towards performance expectancy is positive. The 169 weighted responses were distributed as outlined; 61(36.09%) strongly-agreed, 48(28.40%) agreed, 20(11.83%) neutral, 24(14.20%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.67 and 1.343 S.D. The distribution across the five weights as scored suggest that stakeholder attitude towards performance expectancy is positive with high number of respondents confirming that

Qualitative data collected on stakeholder attitude and implementation of telemedicine projects revealed that;

“Change in attitude by stakeholders that they can engage remotely for consultations and prescription is the backbone of telemedicine success. Once patients comprehend that then can engage the doctors and get the required help as soon as they are in touch, then telemedicine in Kisumu County will be a success story”. KII2

#### 4.5.1 Correlation Statistical Analysis Between Stakeholder Attitude and Implementation of Telemedicine Projects

The computed correlation statistical results between stakeholder attitude and implementation of telemedicine projects are highlighted in Table 11;

**Table 11: Analysis of Correlation Between Stakeholder Attitude Implementation of Telemedicine Projects**

Variable		Stakeholder Attitude	Implementation of Telemedicine Projects
<b>Stakeholder Attitude</b>	Pearson’ Correlation	1	0.442**
	Sig. (two-tailed test)		0.000
	n	169	169
<b>Implementation of Telemedicine Projects</b>	Pearson’ Correlation	0.442**	1
	Sig. (two-tailed test)	0.000.	
	n	169	169
<b>**Correlation at 0.05 level of significance (two-tailed test)</b>			

The presented Table 11 results suggest that stakeholder attitude and implementation of telemedicine projects have a moderately strong positive significant correlation ( $r=0.442$ ;  $P<0.000$ ). It is thus deducible that stakeholder attitude is a critical factor and is influencing implementation of telemedicine projects. Positive and supportive attitude thus is highly beneficial to the telemedicine projects, as it promotes synergy and support towards the realization of the objectives. The findings corroborated the finding of Holman *et al.*(2023) Kituyi and Isabija ( 2011) who also reported that stakeholder attitude influence implantation of telemedicine projects

#### 4.5.2 Model Summary Between Stakeholder Attitude and Implementation of Telemedicine Projects

The computed model summary statistical results between stakeholder attitude and implementation of telemedicine projects are highlighted in Table 12;

**Table 12: Analysis of Model Summary Between Stakeholder attitude and Implementation of telemedicine projects**

Model	R	R-Square	Adjusted R- Square	Standard Error of the Estimate
1	0.442 <sup>a</sup>	0.195	0.191	1.094

- a. Predictors: Stakeholder attitude (Constant)
- b. Criterion: Implementation of telemedicine projects

The highlighted Table 12 results suggest that stakeholder attitude and implementation of telemedicine projects have a distinct relationship as a unit increase in implementation of telemedicine projects is correspondingly predicted by 19.50% from the resultant increase in stakeholder perception, while the other 90.50% is attributable to other factors unrelated to stakeholder perception. Since stakeholder attitude to a greater extent influences implementation of telemedicine projects, stakeholder perception should be integrated in planning, scheduling and executing of telemedicine projects

#### 4.5.3 Regression ANOVA Analysis of Stakeholder Attitude and Implementation of Telemedicine Projects

The computed ANOVA statistical results between stakeholder attitude and implementation of telemedicine projects are highlighted in Table 13;

**Table 13: Analysis of Regression ANOVA Between Stakeholder Attitude And Implementation of Telemedicine Projects**

Model		Sum of Squares	Df	Mean Squares	F	Sig.
1	Regression	54.200	1	54.200	45.288	0.000 <sup>b</sup>

Residual	223.800	167	1.197
Total	278.000	168	

- 
- a. Predictors: (Constant), Stakeholder attitude
  - b. Criterion Variable: Implementation of telemedicine projects

In Table 13, the results suggest that stakeholder attitude and implementation of telemedicine projects have a significant relationships with the value for  $P < 0.000$  thus not in excess of  $\alpha = 0.05$  common alpha and  $F = 45.288$  and  $> 2.5$  as guided by the regression models rule of the thumb, the null hypothesis is rejected as that is a none-zero value. Subsequently, stakeholder attitude is thus significant and influences the implementation of telemedicine projects. The results provided evidence that through stakeholder attitude, implementation of telemedicine projects can positively be enhanced.

#### 4.5.4 Regression Coefficient Analysis of Stakeholder Attitude and Implementation of Telemedicine Projects

The study computed regression coefficient statistical results to show the existing relationships by comparing the P values and the common alpha values and further the constant and sub-variable slope coefficient of stakeholder attitude as the sub-variable and implementation of telemedicine projects as the y-intercept the results of which are outlined in Table 14;

**Table 14: Regression Coefficient Between Stakeholder Attitude and Implementation of Telemedicine Projects**

Model	Unstandardized coefficients		standardized coefficients	T	Sig.
	B	Std. Err	Beta		
1					
1(Constant)	1.235	0.182		6.799	0.000
<b>Stakeholder Attitude</b>	0.417	0.062	0.442	6.730	0.000

Criterion: Implementation of telemedicine projects

In Table 14, the results suggest that stakeholder attitude is statistically significant in predicting implementation of telemedicine projects, since the value  $P < 0.000 < \alpha = 0.05$ . And with the intercept value of 1.235 and 0.417 for the slope coefficient stakeholder attitude, the constructed equation



therefore is  $1.235+0.417+0.062$  an indication that stakeholder attitude can thus be seen to exert a positive contribution on the implementation of telemedicine projects. The variables (stakeholder attitude and implementation of telemedicine projects) can thus be said to have a positive linear association between them

#### 4.5.5 Hypothesis 1 Testing

**H<sub>0</sub>1:** There is no significant relationship between stakeholder attitude and implementation of telemedicine projects

With priori significant level set at  $\alpha=0.05$  such that for values where  $P>0.05$  we accept the null hypothesis and we correspondingly fail to accept as there is no significant relationship that exists between the predictor and the criterion variable when  $p<0.05$ . Hypothesis test was thus done using Z-test scores to establish the degree of relationships between stakeholder attitude and implementation of telemedicine projects. The tested null hypothesis tested being  $\beta_1=0$  and  $\beta_1 \neq 0$  being the corresponding alternative hypothesis. Therefore, with  $P<0.000<0.05$ , we fail to accept null hypothesis and alternative hypothesis forthwith retained.

#### 4.6 Stakeholder Perception and Implementation of Telemedicine Projects

The theme of the study's second objective determined the influence of Stakeholder Perception on implementation of telemedicine projects. The results are as tabulated in Table 15;

**Table 15: Descriptive Statistics of Stakeholder Perception and Implementation of Telemedicine Projects**

Item	Statements on perception	Strongly Agree (5)	Agree. (4)	Neu.tral (3)	Dis agree (2)	Strongly Disagree (1)	Mean	SD
D1	Stakeholders perception towards performance expectancy is positive	44(26.04%)	45(26.63%)	21(12.43%)	39(23.08%)	20(11.83%)	3.32	1.386
D2	Stakeholders perception towards efficiency promotes telemedicine adoption	40(23.67%)	68(40.24%)	23(13.61%)	23(13.61%)	15(8.88%)	3.56	1.238
D3	Stakeholders' perception towards social influence encourages the adoption of telemedicine	35(20.71%)	64(37.87%)	29(17.16%)	28(16.57%)	13(7.69%)	3.47	1.210

D4	Stakeholders' perception towards facilitating conditions is essential for telemedicine growth	36(21.30%)	61(36.09%)	24(14.20%)	29(17.16%)	19(11.24%)	3.39	1.301
D5	Stakeholders' perception toward technological adoption is essential for telemedicine success	52(30.77%)	51(30.18%)	26(15.38%)	24(14.20%)	16(9.47%)	3.59	1.312
<b>Composite Mean and S.D</b>							<b>3.47</b>	<b>1.289</b>

The statistical descriptive analysis results outlined in Table 15 suggest that stakeholder perception in implementation of telemedicine projects with recorded composite mean that is =3.47 and composite S.D=1.289. The statements frequencies contributing to the composites were follows;

The first item established whether stakeholder perception towards performance expectancy is positive. The 169 weighted responses were distributed as outlined; 44(26.04%) strongly-agreed, 45(26.63%) agreed, 21(12.43%) neutral, 39(23.08%) disagreed and 20(11.83%) disagreed strongly with the item statement. The mean score for the item statement was 3.32 and 1.386 S.D. The distribution across the five weights as scored suggest that stakeholder perception towards performance expectancy is moderately positive

The second item established stakeholder perception towards efficiency promotes telemedicine adoption. The 169 weighted responses were distributed as outlined; 40(23.67%) strongly-agreed, 68(40.24%) agreed, 23(13.61%) neutral, 23(13.61%) disagreed and 15(8.88%) disagreed strongly with the item statement. The mean score for the item statement was 3.56 and 1.238 S.D. The distribution across the five weights as scored suggest that; stakeholder perception towards efficiency is a catalyst that promotes telemedicine adoption

The third item established whether stakeholders' perception towards social influence encourages the adoption of telemedicine. The 169 weighted responses were distributed as outlined; 35(20.71%) strongly-agreed, 64(37.87%) agreed 29(17.16%) neutral, 28(16.57%) disagreed and 13(7.69%) disagreed strongly with the item statement. The mean score for the item statement was 3.47 and 1.210 S.D. The distribution across the five weights as scored suggest that; stakeholders' perception towards social influence moderately encourages the adoption of telemedicine

The fourth item established whether stakeholders' perception towards facilitating conditions is essential for telemedicine growth. The 169 weighted responses were distributed as outlined; 36(21.30%) strongly-agreed, 61(36.09%) agreed, 24(14.20%) neutral, 29(17.16%) disagreed and

19(11.24%) disagreed strongly with the item statement. The mean score for the item statement was 3.39 and 1.301 S.D. The distribution across the five weights as scored suggest that; stakeholder perception towards facilitating conditions is moderately essential for telemedicine growth and adoption for it encourages it use and adoption through sensitization

The fifth item established whether stakeholders’ perception toward technological adoption is essential for telemedicine success. The 169 weighted responses were distributed as outlined; 52(30.77%) strongly-agreed, 51(30.18%) agreed, 26(15.38%) neutral, 24(14.20%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.59 and 1.312 S.D. The distribution across the five weights as scored suggest that; stakeholders’ perception toward technological adoption is very essential for telemedicine success as it is likely to promote quick diffusion and use of telemedicine as a concept in patient to physician interactions.

Qualitative data collected on stakeholder perception and implementation of telemedicine projects suggested that;

*“Perception is very essential in adoption and use of new technology. Any initiative positively perceived by the users is likely to gain quick prominence than that which has got limited positive perception. Positive perception and feedback leads to better interaction and demand for a service through technology”.* KII3

#### 4.6.1 Correlation Statistical Analysis Between Stakeholder Perception and Implementation of Telemedicine Projects

The computed correlation statistical results between stakeholder perception and implementation of telemedicine projects are highlighted in Table 16;

**Table 16: Analysis of Correlation Between Stakeholder Perception and Implementation of Telemedicine Projects**

Variable		Stakeholder Perception	Implementation of Telemedicine Projects
<b>Stakeholder Perception</b>	Pearson’ Correlation	1	0.397**
	Sig. (two-tailed test)		0.000
	‘n’	169	169
<b>Implementation of Telemedicine Projects</b>	Pearson’ Correlation	0.397**	1

Sig. (two-tailed test) 0.000  
'n' 169 169

**\*\* Correlation at 0.05 level of significance (two-tailed test)**

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The results outlined in Table 16 suggest that stakeholder perception and implementation of telemedicine projects have a strong positive and significant correlation ( $r=0.397$ ;  $P<0.000$ ). It is thus deducible that stakeholder perception is of critical importance in the implementation of telemedicine projects. By collecting and putting into account stakeholder perceptions, implementation of telemedicine projects is promoted to a greater extent. The findings validated study findings by; (Bashshur *et al.*, 2016).; Kosgey; Mars *et al.* (2018) who equally reported that stakeholder perception positively influence implementation of telemedicine projects.

#### **4.6.2 Model Summary Between Stakeholder Perception and Implementation of telemedicine projects**

The computed model summary statistical results between stakeholder perception and implementation of telemedicine projects are highlighted in Table 17;

**Table 17: Model Summary Between Stakeholder Perception and Implementation of Telemedicine Projects**

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<b>Model</b>	<b>R</b>	<b>R-Square</b>	<b>Adjusted R- Square</b>	<b>Standard Error of the Estimate</b>
1	0.397 <sup>a</sup>	0.157	0.153	1.169

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Predictor: Stakeholder Perception (Constant)

In Table 17, the results suggest that stakeholder perception and implementation of telemedicine projects have a degree of identifiable relationship pattern as a unit increase in implementation of telemedicine projects can be correspondingly projected by 15.70% from the resultant increase in stakeholder perception, while the other 84.30% is attributable to unrelated factors to stakeholder perception. Since stakeholder perception to some level of association influences implementation

of telemedicine projects, stakeholder perception should be well sought and integrated in the implementation of telemedicine projects

#### 4.6.3 Regression ANOVA Analysis of Stakeholder Perception and Implementation of telemedicine projects

The results for the regression ANOVA statistical analysis computed to establish the degree of the relationships through “P” and “F” values between Stakeholder Perception and implementation of telemedicine projects are presented in the given Table 18;

**Table 18: Analysis of Regression ANOVA Between Stakeholder Perception and Implementation of telemedicine projects**

Model		Sum of Squares	Df	Mean Squares	F	Sig.
1	Regression	43.765	1	43.765	34.939	0.000 <sup>b</sup>
	Residual	234.235	167	1.253		
	Total	278.000	168			

Criterion Variable: in Implementation of telemedicine projects  
 Predictor: (Constant) Stakeholder perception

In Table 18, the results suggest that stakeholder attitude and implementation of telemedicine projects have a significant relationships with the value for  $P < 0.000$  thus not in excess of  $\alpha = 0.05$  common alpha and  $F = 34.939$  and  $> 2.5$  as guided by the regression models rule of the thumb, the null hypothesis is rejected as that is a none-zero value. Subsequently, stakeholder perception is thus significant and influences the implementation of telemedicine projects. The results provided evidence that through incorporating stakeholder perception, implementation of telemedicine projects can positively be enhanced.

#### 4.6.4 Regression Coefficient Analysis of Stakeholder Perception and Implementation of Telemedicine Projects

The study computed regression coefficient statistical results to show the existing relationships by comparing the P values and the common alpha values and further the constant and sub-variable

slope coefficient of stakeholder perception as the sub-variable and implementation of telemedicine projects as the y-intercept the results of which are outlined in Table 19;

**Table 19: Analysis of Regression Coefficients Between Stakeholder Perception and Implementation of telemedicine projects**

Model	Unstandardized		standardized	T	Sig.
	coefficients		coefficients		
1	B	Std. Err	Beta		
1(Constant)	1.358	0.184		7.385	0.000
Stakeholder perception	0.384	0.065	0.397	5.911	0.000

Criterion Variable: in Implementation of telemedicine projects

In Table 19, the results suggest that stakeholder perception is statistically significant in predicting implementation of telemedicine projects, since the value  $P < 0.000 < \alpha = 0.05$ . And with the intercept value of 1.358 and 0.384 for the slope coefficient stakeholder experience, the constructed equation therefore is  $1.358 + 0.384 + 0.065$  an indication that stakeholder perception can thus be seen to exert a positive contribution on the implementation of telemedicine projects. The variables (stakeholder perception and implementation of telemedicine projects) can thus be said to have a positive linear association between them

#### 4.6.5 Hypothesis 2 Testing

**H<sub>0</sub>2:** There is no significant relationship between Stakeholder Perception and implementation of telemedicine projects

With priori significant level set at  $\alpha = 0.05$  such that for values where  $P > 0.05$  we accept the null hypothesis and we correspondingly fail to accept as there is no significant relationship that exists between the predictor and the criterion variable when  $p < 0.05$ . Hypothesis test was thus done using Z-test scores to establish the degree of relationships between Stakeholder Perception and implementation of telemedicine projects. The tested null hypothesis tested being  $\beta_2 = 0$  and  $\beta_2 \neq 0$  being the corresponding alternative hypothesis. Therefore, with  $P < 0.000 < 0.05$ , we fail to accept null hypothesis and alternative hypothesis forthwith retained.

#### 4.7 Stakeholder knowledge Implementation of telemedicine projects

The theme of the study's third objective examined the influence of stakeholder knowledge on implementation of telemedicine projects. The results are as tabulated in Table 20;

**Table 20: Descriptive statistics Analysis on Monitoring and Evaluation and Implementation of telemedicine projects**

Item	Statements on stakeholder knowledge	Strongly Agree (5)	Agree. (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Mean	SD
E1	Stakeholders knowledge influence on performance expectancy is positive	64(37.87%)	45(26.63%)	21(12.43%)	23(13.61%)	16(9.47%)	3.70	1.349
E2	Stakeholders knowledge on efficiency promotes telemedicine adoption	33(19.53%)	87(51.48%)	20(11.83%)	18(10.65%)	11(6.51%)	3.67	1.106
E3	Stakeholders' knowledge of social influence encourages the adoption of telemedicine	29(17.16%)	80(47.34%)	27(15.98%)	20(11.83%)	13(7.69%)	3.54	1.139
E4	Stakeholders' knowledge on facilitating conditions is essential for telemedicine growth	51(30.18%)	64(37.87%)	21(12.43%)	24(14.20%)	9(5.33%)	3.73	1.188
E5	Stakeholders' knowledge on technological adoption is essential for telemedicine success	72(42.60%)	53(31.36%)	19(11.24%)	12(7.10%)	13(7.69%)	3.94	1.233
<b>Composite Mean and S.D</b>							<b>3.72</b>	<b>1.203</b>

The statistical descriptive analysis results outlined in Table 20 suggest that stakeholder knowledge in implementation of telemedicine projects with recorded composite mean that is =3.72 and composite S.D=1.203. The statements frequencies contributing to the composites were follows; The first item examined whether stakeholder knowledge influence on performance expectancy is positive. The 169 weighted responses were distributed as outlined; 64(37.87%) strongly-agreed, 45(26.63%) agreed, 21(12.43%) neutral, 23(13.61%) disagreed and 16(9.47%) disagreed strongly with the item statement. The mean score for the item statement was 3.70 and 1.349 S.D. The distribution across the five weights as scored suggest that; stakeholder knowledge influence on performance expectancy is very positive and aiding adoption of telemedicine projects.

The second item examined whether stakeholder knowledge on efficiency promotes telemedicine adoption. The 169 weighted responses were distributed as outlined; 33(19.53%) strongly-agreed, 33(19.53%) agreed, 20(11.83%) neutral, 18(10.65%) disagreed and 11(6.51%) disagreed strongly with the item statement. The mean score for the item statement was 3.67 and 1.06 S.D. The distribution across the five weights as scored suggest that; stakeholder knowledge on efficiency promotes telemedicine adoption to a very high extent

The third item examined whether stakeholders' knowledge of social influence encourages the adoption of telemedicine. The 169 weighted responses were distributed as outlined; 29(17.16%) strongly-agreed, 80(47.34%)80(47.34%) agreed, 27(15.98%) neutral, 20(11.83%) disagreed and 13(7.69%) disagreed strongly with the item statement. The mean score for the item statement was 3.54 and 1.139 S.D. The distribution across the five weights as scored suggest that stakeholders' knowledge of social influence encourages the adoption of telemedicine projects

The fourth item examined stakeholders' knowledge on facilitating conditions is essential for telemedicine growth. The 169 weighted responses were distributed as outlined; 51(30.18%) strongly-agreed, 64(37.87%) agreed, 21(12.43%) neutral, 24(14.20%) disagreed and 9(5.33%) disagreed strongly with the item statement. The mean score for the item statement was 3.73 and 1.188 S.D. The distribution across the five weights as scored suggest that; knowledge on facilitating conditions is very essential for telemedicine growth and adoption

The fifth item examined whether stakeholders' knowledge on technological adoption is essential for telemedicine success. The 169 weighted responses were distributed as outlined; 72(42.60%) strongly-agreed, 53(31.36%) agreed, 19(11.24%) neutral, 12(7.10%) disagreed and 13(7.69%) disagreed strongly with the item statement. The mean score for the item statement was 3.94 and 1.233 S.D. The distribution across the five weights as scored suggest that stakeholders' knowledge on technological adoption is very essential for telemedicine success as it catalyzes its diffusion

Qualitative data collected on stakeholder knowledge and implementation of telemedicine projects revealed that;

*“Knowledge on use and adoption telemedicine is dependent on training and capacity building of both the initiator and receiver of the services. High knowledge on technological*



*knowhow speeds up the use and adoption and this of critical important to the health practitioners". KII4*

#### 4.7.1 Correlation Statistical Analysis Between Stakeholder knowledge and Implementation of telemedicine projects

The computed correlation statistical results between stakeholder knowledge and implementation of telemedicine projects are highlighted in Table 21;

**Table 21: Analysis of Correlation Between Stakeholder Knowledge and Implementation of Telemedicine Projects**

Variable		Stakeholder Knowledge	Implementation of Telemedicine Projects
<b>Stakeholder Knowledge</b>	Pearson' Correlation	1	0.474**
	Sig. (2-tailed)		0.000
	'n'	169	169
<b>Implementation of Telemedicine Projects</b>	Pearson' Correlation	0.474**	1
	Sig. (2-tailed)	0.000	
	'n'	169	169

**\*\* Correlation, at 0.05 level of significance for a two-tailed test**

The Table 21 results suggest that stakeholder knowledge and implementation of telemedicine projects have a moderately strong positive and significant correlation ( $r=0.474$ ;  $P<0.000$ ). It is thus deducible that stakeholder knowledge is critical in the implementation of telemedicine projects and can be relied on to promote the implementation. The findings validated the findings by; Miller *et al.* (2021) ; Madden *et al.*(2020) who similarly reported that stakeholder knowledge is critical in implementation of telemedicine projects

#### 4.7.2 Model Summary Between Stakeholder knowledge and Implementation of Telemedicine Projects

The computed model summary statistical results between stakeholder knowledge and implementation of telemedicine projects are highlighted in Table 22;

**Table 22: Analysis of Model Summary Between Monitoring and Evaluation and Implementation of telemedicine projects**

<b>Model</b>	<b>R</b>	<b>R-Square</b>	<b>Adjusted R- Square</b>	<b>Standard Error of the Estimate</b>
1	0.474 <sup>a</sup>	0.225	0.221	1.073

Predictor: Monitoring and Evaluation(Constant)

In Table 22, the results suggest that stakeholder knowledge and implementation of telemedicine projects have a degree of relationship as a unit increase in implementation of telemedicine projects can be correspondingly projected by 22.50% from the resultant increase in stakeholder knowledge, while the other 77.50% is attributable to other factors unrelated to stakeholder knowledge. Since stakeholder knowledge has a degree of influence on implementation of telemedicine projects, stakeholders should undergo capacity building and training on project process to promote better implementation of telemedicine projects.

#### **4.7.3 Regression ANOVA Analysis of Stakeholder knowledge and Implementation of telemedicine projects**

The results for the regression ANOVA statistical analysis computed to establish the degree of the relationships through “P” and “F” values between stakeholder knowledge and implementation of telemedicine projects are presented in the given Table 23;

**Table 23: Regression ANOVA Between Stakeholder Knowledge and Implementation of Telemedicine Projects**

<b>Model</b>		<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Squares</b>	<b>F</b>	<b>Sig.</b>
1	Regression	62.505	1	62.505	54.240	0.000 <sup>b</sup>
	Residual	215.495	167	1.152		
	Total	278.000	168			

a. Predictors: (Constant), Stakeholder knowledge

b. Criterion Variable: Implementation of telemedicine projects

In Table 23, the results suggest that stakeholder knowledge and implementation of telemedicine projects have a significant relationships with the value for  $P < 0.000$  thus not in excess of  $\alpha = 0.05$  common alpha and  $F = 54.240$  and  $> 2.5$  as guided by the regression models rule of the thumb, the null hypothesis is rejected as that is a none-zero value. Subsequently, stakeholder knowledge is thus significant and influences the implementation of telemedicine projects. The results provided evidence that through reinforcement of stakeholder knowledge and skill sets, implementation of telemedicine projects can positively be enhanced.

#### 4.7.4 Regression Coefficient Analysis of Stakeholder knowledge and Implementation of Telemedicine Projects

The study computed regression coefficient statistical results to show the existing relationships by comparing the P values and the common alpha values and further the constant and sub-variable slope coefficient of stakeholder attitude as the sub-variable and implementation of telemedicine projects as the y-intercept the results of which are outlined in Table 24;

**Table 24: Regression Coefficients Between Stakeholder Knowledge and Implementation of Telemedicine Projects**

Model	Unstandardized coefficients		standardized	T	Sig.
	B	Std. Err	Beta		
1					
1(Constant)	1.137	0.180		6.312	0.000
Stakeholder Knowledge	0.464	0.063	0.474	7.365	0.000

Predictors: (Constant), Implementation of Telemedicine Projects

In Table 24, the results suggest that stakeholder knowledge is statistically significant in predicting implementation of telemedicine projects, since the value  $P < 0.000 < \alpha = 0.05$ . And with the intercept value of 1.137 and 0.464 for the slope coefficient stakeholder knowledge, the constructed equation therefore is  $1.137 + 0.464 + 0.063$  an indication that stakeholder knowledge can thus be seen to exert a positive contribution on the implementation of telemedicine projects. The variables (stakeholder

knowledge and implementation of telemedicine projects) can thus be said to have a positive linear association between them.

#### 4.7.5 Hypothesis 3 Testing

**H<sub>0</sub>3:** There is no significant relationship between monitoring and evaluation and implementation of telemedicine projects.

With priori significant level set at  $\alpha=0.05$  such that for values where  $P>0.05$  we accept the null hypothesis and we correspondingly fail to accept as there is no significant relationship that exists between the predictor and the criterion variable when  $p<0.05$ . Hypothesis test was thus done using Z-test scores to establish the degree of relationships between stakeholder knowledge and implementation of telemedicine projects. The tested null hypothesis tested being  $\beta_3=0$  and  $\beta_3 \neq 0$  being the corresponding alternative hypothesis. Therefore, with  $P<0.000<0.05$ , we fail to accept null hypothesis and alternative hypothesis forthwith retained.

#### 4.8 Stakeholder experience and Implementation of telemedicine projects

The theme of the study's fourth objective assessed the influence of stakeholder experience on implementation of telemedicine projects. The results are outlined in Table 25;

**Table 25: Stakeholder Experience and Implementation of Telemedicine Projects**

Item	statements on experience	Strongly Agree (5)	Agree. (4)	Neu.tr.al (3)	Disagree (2)	Strongly Disagree (1)	Mean	SD
F1	Stakeholders experience on performance expectancy is positive	60(35.50%)	39(23.08%)	21(12.43%)	31(18.34%)	18(10.65%)	3.54	1.406
F2	Stakeholders experience on efficiency promotes telemedicine adoption	36(21.30%)	80(47.34%)	23(13.61%)	16(9.47%)	14(8.28%)	3.64	1.162
F3	Stakeholders' experience on social influence encourages the adoption of telemedicine	53(31.36%)	52(30.77%)	24(14.20%)	20(11.83%)	20(11.83%)	3.58	1.352
F4	Stakeholders' experience on facilitating conditions is essential for telemedicine growth	47(27.81%)	50(29.59%)	28(16.57%)	27(15.98%)	17(10.06%)	3.49	1.319
F5	Stakeholders' experience on technological adoption is essential for telemedicine success	67(39.64%)	47(27.81%)	21(12.43%)	15(8.88%)	19(11.24%)	3.76	1.356
<b>Composite Mean and Composite S.D</b>							<b>3.60</b>	<b>1.319</b>

The statistical descriptive analysis results outlined in Table 25 suggest that stakeholder experience in implementation of telemedicine projects with recorded composite mean that is =3.60 and composite S.D=1.319. The statements frequencies contributing to the composites were follows;

The first item assessed whether stakeholders experience on performance expectancy is positive. The 169 weighted responses were distributed as outlined; 60(35.50%) strongly-agreed, 39(23.08%) agreed, 21(12.43%) neutral, 31(18.34%) disagreed and 18(10.65%) disagreed strongly with the item statement. The mean score for the item statement was 3.54 and 1.406 S.D. The distribution across the five weights as scored suggest that; stakeholders experience on performance expectancy is moderately positive and just what telemedicine projects need for implementation

The second item assessed whether stakeholders experience on efficiency promotes telemedicine adoption. The 169 weighted responses were distributed as outlined; 36(21.30%) strongly-agreed, 80(47.34%) agreed, 23(13.61%) neutral, 16(9.47%) disagreed and 14(8.28%) disagreed strongly with the item statement. The mean score for the item statement was 3.64 and 1.162 S.D. The distribution across the five weights as scored suggest that stakeholders experience on efficiency indeed promotes telemedicine adoption as the experience is capitalized on to aid implemntation

The third item assessed stakeholders' experience on social influence encourages the adoption of telemedicine. The 169 weighted responses were distributed as outlined; 53(31.36%) strongly-agreed, 52(30.77%) agreed, 24(14.20%) neutral, 20(11.83%) disagreed and 20(11.83%) disagreed strongly with the item statement. The mean score for the item statement was 3.58 and 1.352 S.D. The distribution across the five weights as scored suggest that experience on social influence is indeed a good encourages the adoption of telemedicine

The fourth item assessed whether stakeholders' experience on facilitating conditions is essential for telemedicine growth. The 169 weighted responses were distributed as outlined; 47(27.81%) strongly-agreed, 50(29.59%) agreed, 28(16.57%) neutral, 27(15.98%) disagreed and 17(10.06%) disagreed strongly with the item statement. The mean score for the item statement was 3.49 and 1.319 S.D. The distribution across the five weights as scored suggest that stakeholders' experience on facilitating conditions is essential for telemedicine growth, and implementation

The fifth item assessed whether stakeholders' experience on technological adoption is essential for telemedicine success. The 169 weighted responses were distributed as outlined; 67(39.64%) strongly-agreed, 47(27.81%) agreed, 21(12.43%) neutral, 15(8.88%) disagreed and 19(11.24%) disagreed strongly with the item statement. The mean score for the item statement was 3.76 and 1.356 S.D. The distribution across the five weights as scored suggest that stakeholders' experience on technological adoption is essential for telemedicine success and therefore it should be sought and brought on board by stakeholders.

Qualitative data gathered on stakeholder experience and implementation of telemedicine projects revealed that;

*“Stakeholder experience is very critical in technological use and adoption a good experience leads to a faster adoption while a bad experience lead to opposition and negative feedbacks. The experience should be good and positive to encourage adoption”.*

KII5

#### **4.8.1 Correlation Statistical Analysis Between Stakeholder experience and Implementation of telemedicine projects**

The computed correlation statistical results between stakeholder experience and implementation of telemedicine projects are highlighted in Table 26;

**Table 26: Analysis of Correlation Between Stakeholder experience and Implementation of Telemedicine Projects**

<b>Variable</b>		<b>Stakeholder Experience</b>	<b>Implementation of Telemedicine Projects</b>
<b>Stakeholder Experience</b>	Pearson' Correlation	1	0.376**
	Sig. (2-tailed)		0.000
	'n'	169	169
<b>Implementation of Telemedicine Projects</b>	Pearson' Correlation	0.376**	1
	Sig. (2-tailed)	0.000	
	'n'	169	169

**\*\* Correlation at 0.05 level of significance for a two-tailed test**

The Table 26 results suggest that stakeholder perception and implementation of telemedicine projects have a moderately strong positive and significant correlation ( $r=0.376$ ;  $P<0.000$ ). This can be deduced to mean stakeholder experience is very critical in the implementation of telemedicine projects and can be counted on to provide valuable facts. Stakeholders through their experience can enhance the implementation of telemedicine projects. The findings were comparable to the findings by; Mark *et al.* (2023), & Tozour *et al.* (2021) who similarly reported that telemedicine was significantly associated with a positive user experience and perception.

#### **4.8.2 Model Analysis Between Stakeholder Experience and Implementation of Telemedicine Projects**

The computed model summary statistical results between stakeholder experience and implementation of telemedicine projects are highlighted in Table 27;

**Table 27: Analysis of Model Summary Between Stakeholder Experience and Implementation of Telemedicine Projects**

<b>Model</b>	<b>R</b>	<b>R-Square</b>	<b>Adjusted R- Square</b>	<b>Standard Error of the Estimate</b>
1	0.376 <sup>a</sup>	0.141	0.137	1.130

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Predictor: Stakeholder experience (Constant)

In Table 27, the results suggest that stakeholder experience and implementation of telemedicine projects have an identifiable pattern of relationship as a unit increase in implementation of telemedicine projects is correspondingly projected by 14.10% from the resultant increase in stakeholder experience, while the other 85.90% is attributable to other factors unrelated to stakeholder experience. Since stakeholder experience to some degree influences implementation of telemedicine projects, stakeholder experience should be integrated in the telemedicine projects cycle management for better implementation outcomes.

### 4.8.3 Regression ANOVA Analysis of Stakeholder experience and Implementation of Telemedicine Projects

The results for the regression ANOVA statistical analysis computed to establish the degree of the relationships through “P” and “F” values between stakeholder experience and implementation of telemedicine projects are outlined in Table 28;

**Table 28: Analysis of Regression ANOVA Between Stakeholder Experience and Implementation of Telemedicine Projects**

Model		Sum of Squares	Df	Mean Squares	F	Sig.
1	Regression	39.237	1	39.237	30.730	0.000 <sup>b</sup>
	Residual	238.763	187	1.277		
	Total	278.000	188			

a. Dependent Variable: Implementation of telemedicine projects

b. Predictors: (Constant), Stakeholder experience

In Table 28, the results suggest that stakeholder experience and implementation of telemedicine projects have a significant relationships with the value for  $P < 0.000$  thus not in excess of  $\alpha = 0.05$  common alpha and  $F = 30.730$  and  $> 2.5$  as guided by the regression models rule of the thumb, the null hypothesis is thus rejected as that is a none-zero value. Subsequently, stakeholder experience is thus significant and influences the implementation of telemedicine projects. The results provided evidence that through incorporated experience accumulated over the years, implementation of telemedicine projects can positively be enhanced.

### 4.8.4 Regression Coefficient Analysis of Stakeholder Experience and Implementation of Telemedicine Projects

The study computed regression coefficient statistical results to show the existing relationships by comparing the P values and the common alpha values and further the constant and sub-variable slope coefficient of stakeholder experience as the sub-variable and implementation of telemedicine projects as the y-intercept the results of which are outlined in Table 29;



**Table 29: Regression Coefficient Between Stakeholder Experience and Implementation of Telemedicine Projects**

Model	Unstandardized		Standardized	T	Sig.
	coefficients		coefficients		
1	B	Std. Err	Beta		
1(Constant)	1.383	0.190		7.279	0.000
<b>Stakeholder Experience</b>	0.373	0.067	0.376	5.544	0.000

a. Dependent Variable: Implementation of telemedicine projects

In Table 29, the results suggest that stakeholder experience is statistically significant in predicting implementation of telemedicine projects, since the value  $P < 0.000 < \alpha = 0.05$ . And with the intercept value of 1.383 and 0.373 for the slope coefficient stakeholder experience, the constructed equation therefore is  $1.383 + 0.373x + 0.067y$  an indication that stakeholder experience can thus be seen to exert a positive contribution on the implementation of telemedicine projects. The variables (stakeholder experience and implementation of telemedicine projects) can thus be said to have a positive linear association between them.

#### 4.8.5 Hypothesis 4 Testing

**H<sub>0</sub>4:** There is no significant relationship between stakeholder experience and implementation of telemedicine projects

With priori significant level set at  $\alpha = 0.05$  such that for values where  $p > 0.05$  we accept the null hypothesis and we correspondingly fail to accept as there is no significant relationship that exists between the predictor and the criterion variable when  $p < 0.05$ . Hypothesis test was thus done using Z-test scores to establish the degree of relationships between stakeholder experience and implementation of telemedicine projects. The tested null hypothesis tested being  $\beta_4 = 0$  and  $\beta_4 \neq 0$  being the corresponding alternative hypothesis. Therefore, with  $P < 0.000 < 0.05$ , we fail to accept null hypothesis and alternative hypothesis forthwith retained.

## **CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

The fifth chapter outlines the in-summary key findings on: stakeholder attitude influence implementation of telemedicine projects, how stakeholder perception influence implementation of telemedicine projects, how stakeholder knowledge influence implementation of telemedicine projects. And how stakeholder experience influence implementation of telemedicine projects. The chapter also anchors recommendations, conclusions, study's contribution to the body of knowledge and suggestions for further research

### **5.2 Summary of the Study's Key Findings**

The study's general objective which was to explore the perspectives of various stakeholders and implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya. The study thus set out to achieve the objectives as outlined: to evaluate the influence of stakeholder attitudes on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya; to assess the impact of stakeholder perceptions on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya; to examine the effect of stakeholder knowledge on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya. And to investigate the role of stakeholder experience on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya

#### **5.2.1 Stakeholder attitude and implementation of telemedicine projects**

To achieve this objective, the study realized that stakeholder attitude is significant in influencing implementation of telemedicine projects with correlation coefficients of ( $r=0.442$ ;  $P<0.000$ ) and composite mean and S.D 3.74; 1.253. This implies that a strong, significant and positive correlation exists between the predictor and the criterion variable and thus the alternative hypothesis was retained

### **5.2.2 Stakeholder Perception and Implementation of Telemedicine Projects**

To realize this objective, the study determined that stakeholder perception is significant in influencing implementation of telemedicine projects with correlation coefficients of ( $r=0.397$ ;  $P<0.000$ ) and composite mean and S.D 3.47; 1.289. This implies that a strong, significant and positive correlation exists between the predictor and the criterion variable and thus the alternative hypothesis was retained

### **5.2.3 Stakeholder Knowledge and Implementation of telemedicine projects**

To realize this objective, the study established that stakeholder knowledge is significant in influencing implementation of telemedicine projects with correlation coefficients of ( $r=0.474$ ;  $P<0.000$ ) and composite mean and S.D 3.72; 1.203. This implies that a moderately strong, significant and positive correlation exists between the predictor and the criterion variable and thus the alternative hypothesis was retained

### **5.2.4 Stakeholder Experience and Implementation of Telemedicine Projects**

To realize this objective, the study established that stakeholder experience is significant in influencing implementation of telemedicine projects with correlation coefficients of ( $r=0.376$ ;  $P<0.000$ ) and composite mean and S.D 3.60; 1.319. This implies that a weak, significant and positive correlation exists between the predictor and the criterion variable and thus the alternative hypothesis was retained

### **5.2.5 Implementation of Telemedicine Projects**

The study aspired to establish there is haphazard implementation levels of implementation of telemedicine projects in Kisumu County. The study established implementation of telemedicine projects is dependent on stakeholder participation as supported by empirical results with a composite mean and S.D of 3.73 and 1.305 respectively.

### **5.3 Conclusions**

The study arrived at the outlined conclusions from the established and presented findings;

Stakeholder attitude significantly and positively influences implementation of telemedicine projects. Stakeholder perception significantly and positively influences implementation of telemedicine projects. Stakeholder knowledge positively and significantly influences implementation of telemedicine projects. The study further concluded that stakeholder experience positively and significantly influences implementation of telemedicine projects. The study also concluded that success rates of implementation of telemedicine projects is highly dependent on stakeholder participation

### **5.4 Recommendations**

For informed policy formulation and for onward practice the study outlined the recommendations as numbered;

- i. Stakeholder attitude should be positively influenced and at all possible, changed
- ii. Stakeholder Perception should be integrated in all phases of project planning and management during implementation of telemedicine projects
- iii. Stakeholder knowledge should be enhanced through training and capacity building to make arm them with requisite skill-set necessary for the implementation of telemedicine projects
- iv. Stakeholder experience should be considered part and parcel of running telemedicine projects to facilitate their implementation, performance and sustainability

## 5.5 Suggestions for Further Research

The suggested areas for further research are as follows;

- i. Stakeholder perceptions and telemedicine infrastructure projects
- ii. Health Sector funding models and implementation of telemedicine projects

## 5.6 Contribution to the Body of Knowledge

The study's contribution to the body of knowledge is as outlined;

**Table 30: The study's contribution to the body of knowledge**

<b>Research Objective</b>	<b>Contributions to the Body of Knowledge</b>
To evaluate the influence of stakeholder attitudes on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya	Stakeholder attitude strongly, significantly and positively influences implementation of telemedicine projects. This contributed to the validation of studies with similar findings and theory formulation
To assess the impact of stakeholder perceptions on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya	stakeholder perceptions significantly and positively influence implementation of telemedicine projects. This contributed to the validation of studies with similar findings and theory formulation
To examine the effect of stakeholder knowledge on the implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya	Stakeholder knowledge significantly and positively influences implementation of telemedicine projects. This contributed to the validation of studies with similar findings and theory formulation
projects	
To investigate the role of stakeholder experience on the implementation of	Stakeholder experience significantly and positively influences implementation of telemedicine projects.

telemedicine projects in referral hospitals  
in Kisumu City, Kenya

This contributed to the validation of studies with  
similar findings and theory formulation

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**APPENDICES**

**Appendix I: Questionnaire**

My name is **Joash Gombe** with a study topic entitled; **“Stakeholder Perspectives and Implementation of Telemedicine Projects in Referral Hospitals in Kisumu City, Kenya”** seeking your indulgence to participate in the study.

**Instructions**

- i. You are requested to willingly participate or decline to participate
- ii. Use any visible mark on the spaces provided to communicate your response
- iii. Strive to remain anonymous
- iv. All sections should be attempted
- v. Follow the outlined instructions

**Section A: Demographic Information of Respondents**

**Which gender are you identified with?**

Male  Female

**Please indicate your age**

Below 23  24-33  34-43  44-53  54-63  Above 63

**What level of education did you achieve?**

Primary  Secondary  TIVET  Diploma

Graduate  Postgraduate  Other (Specify)

**Please indicate your occupation**

Doctor  Nurse  Beneficiary  Pharmacist  Lab Technologist

Administrator  Other (specify)..........

**SECTION B: IMPLEMENTATION OF TELEMEDICINE PROJECTS**

Choose from the Likert Scale weighted options of statements and mark at the intersection of the statement and Likert Scale weight. The highest weight is 5 descending to 1 for the least weight

<b>Item</b>	<b>statements on implementation of telemedicine projects</b>	<b>Strongly agree 5</b>	<b>Agree 4</b>	<b>Neutral 3</b>	<b>Disagree 2</b>	<b>Strongly disagree 1</b>
B1	User training enhances the implementation of telemedicine projects					
B2	Elaborate migration plan to implementation of telemedicine projects promotes success of the projects					
B3	Well trained projects support staff promotes the implementation of telemedicine projects					
B4	Regular service and maintenance of telemedicine equipment enhances implementation of telemedicine projects					
B5	Total cost of ownership of telemedicine projects determines the level of implementation of telemedicine projects					

## SECTION C: STAKEHOLDER ATTITUDES

Choose from the Likert Scale weighted options of statements and mark at the intersection of the statement and Likert Scale weight. The highest weight is 5 descending to 1 for the least weight

Item	Statements on stakeholder attitudes	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree
C1	Stakeholders attitude towards performance expectancy is positive					
C2	Stakeholders attitude towards efficiency expectancy promotes telemedicine adoption					
C3	Stakeholders' attitude towards social influence encourages the adoption of telemedicine					
C4	Stakeholders' attitude towards facilitating conditions is essential for telemedicine growth					
C5	Stakeholders' attitude toward technological adoption is essential for telemedicine success					

## SECTION D: STAKEHOLDER PERCEPTIONS

Choose from the Likert Scale weighted options of statements and mark at the intersection of the statement and Likert Scale weight. The highest weight is 5 descending to 1 for the least weight

Item	Statements on stakeholder perceptions	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
D1	Stakeholders perception towards performance expectancy is positive					
D2	Stakeholders perception towards efficiency expectancy promotes telemedicine adoption					
D3	Stakeholders' perception towards social influence encourages the adoption of telemedicine					
D4	Stakeholders' perception towards facilitating conditions is essential for telemedicine growth					
D5	Stakeholders' perception toward technological adoption is essential for telemedicine success					

## SECTION E: STAKEHOLDER KNOWLEDGE

Choose from the Likert Scale weighted options of statements and mark at the intersection of the statement and Likert Scale weight. The highest weight is 5 descending to 1 for the least weight

Item	Statements on stakeholder knowledge	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree
E1	Stakeholders knowledge of performance expectancy is positive					
E2	Stakeholders knowledge of efficiency expectancy promotes telemedicine adoption					
E3	Stakeholders' knowledge of social influence encourages the adoption of telemedicine					
E4	Stakeholders' knowledge of facilitating conditions is essential for telemedicine growth					
E5	Stakeholders' knowledge of technological adoption is essential for telemedicine success					

## SECTION F: STAKEHOLDER EXPERIENCE

Choose from the Likert Scale weighted options of statements and mark at the intersection of the statement and Likert Scale weight. The highest weight is 5 descending to 1 for the least weight

Item	Statements on stakeholder experience	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree
F1	Stakeholders experience of performance expectancy is positive					
F2	Stakeholders experience on efficiency expectancy promotes telemedicine adoption					
F3	Stakeholders' experience of social influence encourages the adoption of telemedicine					
F4	Stakeholders' experience of facilitating conditions is essential for telemedicine growth					
F5	Stakeholders' experience of technological adoption is essential for telemedicine success					

**The End. Thank You**

## **Appendix II: Interview Schedule**

Interview schedule to collect qualitative data on **Stakeholder Perspectives and Implementation of Telemedicine Projects in Referral Hospitals in Kisumu City, Kenya**

- i. In what manner and ways can you say stakeholder attitudes influence implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- ii. In what manner and ways can you say stakeholder perception influences implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- iii. In what manner and ways can you say stakeholder knowledge influences implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?
- iv. In what manner and ways can you say stakeholder experience influences implementation of telemedicine projects in referral hospitals in Kisumu City, Kenya?



## **Appendix III: Research Permit**