2024

Antecedents of telemedicine adoption in private health care facilities in Nairobi County, Kenya.

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ANTECEDENTS OF TELEMEDICINE ADOPTION IN PRIVATE HEALTH CARE FACILITIES IN NAIROBI COUNTY, KENYA

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION OF STRATHMORE UNIVERSITY

MAY 2024

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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ABSTRACT

Telemedicine can change how healthcare is delivered globally and in Kenya, as it can allow healthcare service providers to provide better and coordinated healthcare to most communities that the current health services cannot reach. Its adoption in Kenya is limited; thus, the current study aims to examine telemedicine adoption in private health facilities in Nairobi County. Specifically, the study aimed to investigate the effect of technological factors on the adoption of telemedicine by private healthcare facilities in Nairobi County, while concurrently determining the effect of organizational and environmental dimensions on the adoption of telemedicine by private healthcare facilities in Nairobi County. The study was anchored on the TOE framework, applied descriptive research, and sourced primary data by administering 151 questionnaires. The study adopted descriptive and inferential statistics for data analysis and presented results in figures and tables. The study concludes that staff within hospitals possess relevant knowledge and skills to guide the implementation of technical systems, the hospitals have adequate staff with technical skills, and there is also a significant agreement on the sufficiency of resource provision to support investments in new emerging technologies within the hospitals.

In addition, there are policies to guide the development of training manuals that enhance the infrastructural capacity of staff and systems that ensure they can maintain technological infrastructure. However, despite having systems in place to ensure that technologies adopted in the hospitals support reliable service provision, the staff preparedness to utilize new technical systems in service provision had the lowest mean score. The study concludes that sufficient human resources are available in the hospital to support the implementation of new technical systems and that the hospital has adequate equipment and facilities to adopt new technical systems in their operations. It further concludes that the organization has enough financial resources to support investment in new technology equipment and staff training, and there is sufficient demand for primary and specialized care within the hospital to justify the adoption of new technologies in service provision. The hospital management also routinely delegates duties to subordinate employees to ease decision-making.

Similarly, management routinely reviews the existing structures to ensure alignment with their facilities' core objectives. The researcher concludes that the degree of competition in the private health industry is high and has pushed the hospitals to invest in emerging technologies; the competitive environment in the private health industry has exposed the hospitals to new standards and practices in the provision of healthcare; relevant government agencies have streamlined the regulatory environment, which has supported the assimilation of technology in private practice; relevant regulatory agencies provide the facilities with incentives to improve the digitalization of healthcare services, the increased demand for primary and specialized healthcare locally has exerted pressure on the hospitals to revolutionize service offerings and that various stakeholders in the health industry have enabled the facilities to integrate emerging technologies faster respectively. On technology adoption as the dependent aspect, the study concluded that due to various dimensions, the health facilities have clear and defined telemedicine strategies; they identify and adopt new technologies and processes that enhance their business models and improve the customer experience.

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ABBREVIATIONS AND ACRYONMS

HIT	Health Information Technologies
TAM	Technology Acceptance Model
TM	Telemedicine
TOE	Technology Organization and Environment
SPSS:	Statistical Package for Social Sciences

OPERATIONAL DEFINITION OF KEY TERMS

Environment dimension	This refers in this study, to government support, supplier support and readiness, and technology sustenance infrastructures (Ray, Gulla, & Gupta, 2011).
Organization dimension	In this study, means the enterprise's operational scope, structure, organizational size, and quality of human capital (Baker, 2012).
Technology dimension	In this study's context means both the internal and external technologies that drive the adoption of emerging digital technologies (Baker, 2012).
Telemedicine	Telemedicine involves the utilization of various information communication and technology (ICT) tools in the delivery of healthcare services thus eliminating the need for physical contact between the patient and physician (Hollander & Carr, 2020).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

While definitions of the various telemedicine modalities are lacking in consistency, generally telehealth is defined as use of real-time interactive audio and video in order to deliver care at a distance. Conversely, virtual visits are telephonic (audio only), and E-visits make use of written communication, typically via an online patient portal (Woodal et. Al, 2021). Telemedicine involves the utilization of various information communication and technology (ICT) tools in the delivery of healthcare services thus eliminating the need for physical contact between the patient and physician (Hollander & Carr, 2020). Even during the pre-pandemic period, health institutions were extensively examining its applicability and leveraging the available technologies to provide optimal healthcare digitally, while lessening the burden of physical interaction between patients (Drake, Zhang, Chaiyachati, & Polsky, 2019). With the onset of the Covid-19 pandemic, there has been a rapid integration of technological tools and other virtual platforms in the delivery of healthcare services (Mishra, 2020). In research, the remote provision of health services using technologies has been referred to as telemedicine, telehealth, mHealth and e-medicine and has been linked with timely provision of quality medical services, especially in remote regions (Dodoo, Al-Samarraie, & Alzahrani, 2021).

The advancements in technological tools across the globe have supported institutions in making real-time telemedicine available as a method of delivering high-quality healthcare (Hollander & Carr, 2020). Chiang, Huang, Chen and Lai (2020) note that the evolution in ICT tools within the last decade has supported the application of cost-effective, efficient, and time-saving telemedicine which is critical to improving access to health delivery in the world. Similar sentiments are held by Tsiouris, et al., (2020) research, which indicated that countries have seen an improvement in the service delivery effectiveness, financial efficiency, and timely delivery of healthcare as a result of adopting telemedicine services. Thota, Gill, Brant, Yeatman and Haslem (2020) provide evidence that in Rural Utah, the integration of technologies in medicine provision have been associated with reduced costs and increased quality of healthcare delivery.

Mehrotra, Jena, Busch, Souza and Uscher-Pines (2016) in their research showed the proliferation of telemedicine has led to higher-quality healthcare being provided in remote areas. Further, Drake, Zhang, Chaiyachati and Polsky (2019) in their study, showed that globally, the adoption of telemedicine eases the financial burden of setting up physical health facilities and becomes a faster method of providing healthcare and bridging the rural-urban health divide in developed countries such as Brazil, China and India. However, despite various studies showing the importance of incorporating telemedicine within the healthcare systems, Kashyap (2020) showed that the adoption of the practice is still in the early stages and is faced with numerous challenges (Chiang, Huang, Chen, & Lai, 2020).

Alaboudi, Atkins, Sharp, Balkhair and Sunbul (2016) revealed that globally, at least 75% of all telemedicine projects initialized fail and this rate goes up exponentially to over 90% when considered in developing countries. This presents a major health crisis as noted by Hollander and Carr (2020); the continued negative impacts of the pandemic have affected the capacity of doctors to provide healthcare services through traditional physical methods. This calls for an alternative health delivery system, which supports the contactless provision of healthcare, which can be realized through the adoption of telemedicine.

Taylor, et al. (2021) opines that in Australia, telemedicine use increased significantly due to external and internal pressures. The scholars observed increased adoption due to the policies limiting face-to-face interactions after the emergence of the COVID-19 pandemic and internal pressures from managers who used personal and organizational networks to provide access to and training for doctors, most of whom had to use the systems for the first time. In France, Chittim, Pappas and Bomba (2020) assert that there was an 11 percent increase in teleconsultations after the COVID-19 pandemic, with the services' use being driven by the availability of complementary devices, willing doctors and a population with the requisite IT knowledge and competencies. According to Koonin (2020), in the United States, the introduction of temporary government subsidies radically expanded Americans' access to telehealth systems.

Despite the evidence that telemedicine technologies' use has increased significantly after the emergence of the COVID-19 pandemic, Abdalla (2019) asserts that many developing countries lack sufficient support systems to facilitate the effective integration of new technologies. This is corroborated by (Dodoo, Al-Samarraie, & Alzahrani, 2021) who observes concern among

clinicians and patients in sub-Saharan countries on the efficacy of telemedicine services as alternative routes for healthcare delivery. The scholars report that despite a wide range of uses, individual, organizational, cultural and legal aspects were barriers to the effective implementation of telemedicine in Africa. Albarrak, et al. (2019) assert that Africa's telemedicine use became prevalent in the management of contagious diseases such as Ebola and Malaria. However, according to Abdalla (2019) a myriad of infrastructural, institutional, financing, and regulatory gaps has made it impossible to reap the benefits of adopting telemedicine applications in the continent.

In Ghana, Mensah, et al. (2020) revealed that doctors' readiness alongside the healthcare facility's core readiness and staff knowledge are the main factors that influence telemedicine adoption. Meanwhile, in Rwanda, Nkurunziza, et al. (2022) report on one hand, that apart from challenges such as limited financial support and poor staffing, healthcare workers' ability to provide pregnant women with remote surgical site infection diagnosis was down to the patient's acceptance of the intervention. On the other hand, Nigeria's Egenti, Chukwudi, Igweagu, Ubajaka and Adogu (2022) are of the opinion that regulatory and infrastructural challenges, coupled with a low level of awareness of e-health and its benefits are at the heart of the country's inability to fully utilize e-health services for strengthening its healthcare system. Some of these factors are also observed in Ethiopia's Amhara region where Wubante, Nigatu and Jemere (2022) reported that a third of the health professionals in the region are not ready to use telemedicine systems due to infrastructural challenges; limited IT competency and literacy; lack of access to computers, and Internet challenges.

In Kenya, the application of telemedicine has been limited to doctor consultations, pharmacies, and laboratories, showing the low capacity within healthcare facilities in integrating this beneficial technology into our healthcare system (Shituma, 2013). Nkanata, Makori and Irura (2018) cite limited IT training and provision of telehealth technologies as one of the main challenges limiting Kenyan healthcare centers' ability to fully integrate health technologies. Babalola, Anayo and Itoya (2021) opines that Kenya lacks a functional rural healthcare system for urban and rural dwellers to build upon. Mendenhall, et al. (2018) provide evidence that there is a huge gap in the provision of mental health in the country, with 100 psychiatrists are serving 55 million Kenyans. Outside Nairobi, one psychiatrist is expected to cater for one million people.

According to Otieno, et al., (2020), 60-80 percent of families in poor-urban resource settings have a significant problem accessing primary care, considering the healthcare centers lack financial support and quality technicians to effectively integrate new technologies.

With the evidenced disparity in access to healthcare in Kenya, characterized by poor policies for addressing inequality in accessing health services among the impoverished and disadvantaged communities, addressing the gap in adoption of telemedicine will be revolutionary (Nyamu, De Coster, & Taib, 2015; Mbugua, 2016). Awa, Eze, Urieto and Inyang (2011) assert that given the complexity of the issues affecting sub-Saharan countries in Africa, there is a need to understand what has contributed to the low adoption of telemedicine. This study will, therefore, seek to analyze the impact of technological, organizational, and environmental factors on the adoption of telemedicine.

1.1.1 Technology Organization Environment Dimensions

According to Fleischer and Tornatzky (1990) the initial Technological, Organizational, and Environmental (TOE) framework was established for the adoption of innovation. TOE is an exemplary that suggests three aspects of administrative context that influence or affect the application or adoption of inventions (Baker, 2012). The Technology-Organization-Environmental (TOE) model reveals that an organization's technology adoption is determined by environmental, organizational, as well as technological contexts (Molinillo & Japutra, 2017). Borgman, Bahli, Heier and Schewski (2013) showed that in the usage of industry-level technologies the application of the technology, organization and environmental factors have been key predictors of the rate of adoption.

Joo and Hovav (2016) in their study, mentioned organizational and individual factors as critical to the adoption of health information systems. Yusof's (2015) contends that flexibility, user satisfaction, user benefits, quality and information quality as well as system development capacity are integral to adopting emerging health information technologies (HIT). Bawack and Kamdjoug (2018) revealed that costs, social influence, government policies, and patients' needs determined the adoption of healthcare systems. Awa, Eze, Urieto and Inyang (2011), also found that the constructs of the TOE framework have been pivotal in supporting the adoption of technologies within firms.

The technological component encompasses both the internal and external technologies that drive the adoption of emerging digital technologies (Baker, 2012). These technological components include costs, technical competence, technical resources, and an organization's infrastructural capacity. Externally, the technological dimension focuses on the availability of support such as power supply, cloud computing, internet providers, and security (Fleischer & Tornatzky, 1990). Musawa and Wahab (2012) argue that the adoption of technology can be accelerated by outlining the compatibility, simplicity, value, and usefulness of the technology. Eze, Awa, Okoye, Emecheta and Anazodo (2013) further established that technical know-how, availability of tangible infrastructure, compatibility, and security can positively improve the adoption of emerging technologies (Awa, Ojiabo, & Emecheta, Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. , 2015).

Organizational issues include the enterprise's operational scope, which include the setups that direct day-to-day activities, structure, organizational size, and the quality of human capital (Baker, 2012). Still, the organizational context can focus on the innovativeness of the institution, the culture in place, top management support, and the size of the organization (Fleischer & Tornatzky, 1990). Awa, Ojiabo and Emecheta (2015) further added that top management support, group cohesiveness, corporate culture, and organizational structure can facilitate better adoption, while Awa, Eze, Urieto and Inyang (2011) opine that the size of the firm, the training capacity, financial capacity, and executive support is vital to the utilization of new technologies.

Environmental elements consist of government support, supplier support and readiness to adopt new technologies and sustenance infrastructures (Ray, Gulla, & Gupta, 2011). Environmental issues such as support from the government are an important instigator of healthcare firms' adoption of technology (Abdalla, 2019). Borgman, Bahli, Heier and Schewski (2013) further argued that competitive pressure, regulatory policies, and external support are significant drivers of the utilization of ICT platforms.

1.1.2 Adoption of Telemedicine

According to (Hu et al., 2002), Telemedicine (TM) involves delivering and supporting medical care through information and biomedical technology. It often occurs among geographically dispersed parties; these parties include patients, specialists and non-specialist medical practitioners. Telemedicine services encompass a comprehensive range of services including

allergies, immunology and urology, and can be delivered with or without the help of a tele-presenter who could be a nurse, physician or assistant physician located at a patient's remote location (Bakshi & Tandon, 2021).

Zawada, (2018), further asserts that telemedicine is less costly, and more personalized than in-person visits. The foregoing implies that telemedicine offers a strong value proposition for patients (customers) and owners of the health care organizations. The rapid advancements in technological innovations such as Augmented reality, machine learning, the Internet of Things (IoT), mobile applications and distributed ledgers, have revolutionized the medical landscape, and allowed its expansion out of the traditional healthcare facility such as consultation rooms and clinics; in addition, it has helped overcome barriers posed by geographical locations, and made it feasible to reduce inequalities in health delivery (Chitungo, Mhango, Mbunge, Dzobo, & Musuka, 2021). Telemedicine supports access to detailed clinical history; vital parameters of the patient and consultation in real-time (Alaboudi, Atkins, Sharp, Balkhair, & Sunbul, 2016).

Research on healthcare systems abound. An examination of telemedicine in Pakistan's healthcare system by Kamal, Hussain, Shafiq and Jahanzaib (2018) showed that telemedicine was in the infancy stage. Further analysis revealed that perceived usefulness and ease of use had a positive effect, while costs and ethical-legal concerns had a negative influence on adoption. In the Philippines, Ong, Kurata, Castro, De Leon, Rosa and Tomines (2022) showed that intention to usage and usage behavior were the most significant factors impacting the usage of telemedicine. Abdalla (2019) revealed that the adoption of telemedicine in Sudan was determined by six technology dimensions; product design, patient relationship management, supply chain management, knowledge management, environment, and governance structure. A study by Bali (2018) showed that the adoption of telemedicine in developing countries has been very low. The study attributed the low level of adoption to poor ICT infrastructure, high ICT connectivity costs, lack of capacity development, and lack of telemedicine policy framework. Mbugua (2016) revealed there is low adoption of telemedicine in Kenya and found that perceived ease of use, usefulness, and attitude affected its adoption.

All data that is collected on vitals is stored in a repository that can be accessed by the medical consultant for effective treatment (Drake, Zhang, Chaiyachati, & Polsky, 2019). This can have tremendous potential to address the challenges posed by the emergence of infectious diseases

such as COVID-19 which resulted in less in-person appointments and restrictions of movements, limiting access to healthcare services (Zhai, 2021). Webster (2020) showed that telemedicine has been considered a useful alternative healthcare provision option, particularly in containing (testing and treating) the recent global Covid-19 pandemic. If Telemedicine is to be a viable alternative in healthcare provision, its successful adoption ought to be a priority. Hence, this study will analyze the adoption of telemedicine in private healthcare organizations through the integration of real-time consultations, remote diagnosis, online access to clinical data, and online physician collaboration.

1.2 Statement of the Problem

Telemedicine has the potential to change the way health care is delivered in the world and Kenya particularly, as it can enable health care service providers to offer better and coordinated health care to most communities that the current health services cannot reach (Qin, Dzombak, Amin, & Mehta, 2013; Mbugua, 2016). However, evidence points to limited adoption of the technologies in health services delivery. According to data from the Kenya Medical and Dental Practitioners Council (KMPDC), only 20 health facilities have received approvals to offer telemedicine services in the country despite increased demand for telehealth services (Madengwa, 2021). Many other facilities are considered ill-equipped to implement technology systems in service delivery. Kenya is currently in the process of adopting legislation through the Digital Health Bill 2023, this will form the basis of laws regulating telemedicine use which limits their application (GoK, 2023).

Additionally, Nkanata, Makori, and Irura (2018) assert that medical professionals in the country have limited experience and training to integrate telehealth technologies into their operations. Given the plausible benefits of telemedicine as outlined by several authors such as (Bakshi & Tandon, 2021; Kangethe, 2018); its low adoption rates appear counter-intuitive, and worth investigating. Hence this research will focus on investigating the effect of technological, organizational, and environmental dimensions on the adoption of telemedicine by private healthcare facilities. Existing studies reveal inconsistency when researching on antecedents of adoption of telemedicine in private health facilities. There are those studies in support of technology, organization and environment while others are not in favour. This is a gap this study attempts to fill. The study will therefore seek to address the question: does technology, the

organization, and its environment act as the antecedents of the adoption of telemedicine in private health facilities in Nairobi County?

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of the research was to study the antecedents of the adoption of telemedicine among private healthcare facilities in Nairobi County.

1.3.2 Specific Objectives

The specific objectives of the research focused on;

i. To investigate the effect of the technological dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County.
ii. To determine the effect of the organizational dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County.
iii. To examine the effect of the environmental dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County.

1.4 Research Questions

The research sought to answer the following research questions;

i. What is the effect of technological dimension factors on the adoption of telemedicine among private healthcare facilities in Nairobi County?

ii. To what extent do organizational dimension factors affect the adoption of telemedicine among private healthcare facilities in Nairobi County?

iii. What is the effect of environmental dimension factors on the adoption of telemedicine among private healthcare facilities in Nairobi County?

1.5 Scope of the Study

The geographical scope of this study was limited to private health facilities in Nairobi County, the capital city, with a concentration of healthcare facilities. The conceptual scope of the study

was to examine the technological, organizational and environmental dimensions' effect on the adoption of telemedicine in the aforementioned healthcare facilities. The theoretical scope of the study involved utilization of the Technology-Organization-Environment (TOE) model to anchor the variables. Finally, the methodological scope of the research was a quantitative approach to answering the research problem. The research time scope was between June 2022- May 2024.

1.6 Significance of the Study

1.6.1 Policymakers

The findings can benefit regulatory bodies with insights that can aid development of policy guidelines and benchmarks beneficial to the adoption of telemedicine in the country. Moreover, the study will contribute to empirical evidence that can be considered in policy formulation that is focused on bridging the health access divide in Kenya's healthcare sector. Since healthcare is now a devolved function in Kenya, the study will also provide county governments and by extension, the ministry of health with results that can inform adopting new technologies in private healthcare facilities. Widespread adoption would allow the country to, not only narrow the current gap in access to health care, but also facilitate exploitation of the market's potential.

1.6.2 Healthcare Centers

The results of this investigation will be important to owners of the private healthcare facilities, as they will offer insights on the opportunities that can be harnessed through adoption of telemedicine. The study will, in addition, point out to the private healthcare facilities officials, how to leverage the various dimensions of the TOE model in improving the level of technology adoption, thereby improving economic outcomes for both firms and patients. The application of telemedicine may provide private healthcare facilities with a competitive edge in the provision of services across the country, as well as an alternative method for expansion. Moreover, investment in technology represents additional costs to these facilities and it would be prudent to know and possibly address factors that would increase the odds for a return on such technology investments.

1.6.3 Academia

There has been a minimal examination of how telemedicine has been adopted in the country; thus, in the current environment where more than ever, the adoption of this technology is vital to

the provision of healthcare. This study will provide empirical knowledge on the various factors that have affected the adoption of telemedicine as well as contribute to the debate on the efficacy of telemedicine utilization in the local health sector. The findings will expand the available knowledge and contribute to the application of both the TAM theory and the TOE model in studies on the adoption of emerging technologies.

1.6.4 Technology Manufacturers and Sellers

Lastly, the study could be beneficial to technology businesses that are considering entry into the telemedicine local market. By considering market entry strategies that increase the likelihood of adoption prior to market entry, chances of commercial success will be higher.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provided a review of the theories underpinning the research and existing literature related to the study. First, components of the framework guiding the research were analyzed. Thereafter, previous studies that were undertaken by other researchers, was scrutinized to reveal and highlight research gaps. Finally, the current study's conceptual framework was delineated.

2.2 Theoretical Review

2.2.1 The TOE Framework

Tornatzky and Fleischer (1930) developed the Technology-Organization-Environmental (TOE) Framework upon realizing that the then prevailing theory, Rodgers' Diffusion of Innovation (DOI), could not sufficiently account for the adoption of technologies in the wider contexts of industry adoption, governmental regulations, and global competition. Its essence is that innovation is influenced by a mix of complex technological, organizational, and environmental factors. TOE identifies four main determinants of technology adoption: technological, individual, organizational, and environmental contexts.

The technological context refers to the technological capabilities within an organization and the external technologies that can influence how organizations utilize new technologies to achieve their operations (Fleischer & Tornatzky, 1990). While external technologies exist within the operating environment but are not used by the firm, internal technologies already exist within the organization (Baker, 2012). Still, external technologies inform firms how other firms use new technologies, while internal technologies determine the scope and limit of technological change possible within an organization. Chang, Hsu, Huang, and Chen (2020) also identified five constructs that can be investigated about technology factors: infrastructural capability, technical competency, compatibility factors, privacy, and timeliness. Moreover, technological skills and the time for adoption significantly influence adoption decisions as the ability to use a product increases reuse intention (Amini, 2014). According to Chartjee and Kar (2020), firms will adopt technologies that they can support in execution and that complement existing technologies.

Again, according to Atkins and Stainer (2016), technological readiness factors have insignificant influences on adoption decisions.

Additional technology factors, such as service quality and security, were also found to influence adoption. Insofar as service quality is concerned, technologies that can successfully address consumers' and health professionals' expectations are likely to receive widespread adoption (Odun-Ayo, Ajayi & Falade, 2018). Javed, et al. (2020) in China further opine that technology-specific measures such as reliability, responsiveness, tangibility and assurance all impact adoption decisions. Additionally, according to Sun, Zhang, Xiong and Zhu (2014), technologies have to assure users of data security to build confidence in data security. Gao and Sunyaev (2019) further provide evidence that privacy issues dominate acceptance considerations for the use of cloud health systems. The aforementioned factors will be useful in examining the effect of the technological dimension in the adoption of Telemedicine by private health facilities in Nairobi County.

The organizational factors refer to the firm-specific characteristics that influence adoption decisions including the structure and resources that support proper execution (Jaradat, Shbail, & Baker, 2022). According to Wallace, Green, Johnson, Cooper and Gilstrap (2021), organizational factors include the firm's size, top management support and organizational culture and orientation toward innovation. Tsai, et al (2019) aver that an organization's top managers can either facilitate or discourage new systems adoptions since they play a key role in deciding an organization's support initiatives. Clohessy and Acton (2019) add that it is important to acquire managers with adequate knowledge on emerging technologies and their application in business processes, as the top management is vital to budget allocation and in shaping the organization's orientation towards new technologies. Resource availability is another variable identified by Anwar and Talib (2018) as a key determinant of health systems' adoption. This sentiment is shared by Ngongo (2019), whose study affirmed that larger hospitals with higher-value slack resources are likely to adopt new technologies. Other organization variables include the employees' and patients' interactions with new technologies. Vest, et al. (2019) opine that hospitals with staff with experience in using digital health services, strong personal innovativeness, and receptivity to innovations are more successful at integrating new

technologies. This study investigated the effect of the organizational dimension in the adoption of Telemedicine by private health facilities in Nairobi County.

The environment aspect of the TOE framework identifies factors external to an organization, but with a significant influence on its decisions; such as policies that guide data privacy and security issues (Bhatiasevi &Naglis, 2018). They are characteristics of the environment within which an organization exists, sources resources, and targets the market. Empirical evidence points to the existence in the external environment, of drivers and barriers to the adoption of technologies; examples include supporting policies, complementary infrastructure, competitive pressures, and market forces. Ortega, et al. (2020) shows the importance of developing policies that would ensure support for existing HIPAA regulations and prioritize patient privacy, while Lokken, Blegen, Hoff, and Demaerschalk (2020) recon that a dedicated support team and telemedicine hubs are key to implementation of telemedicine services in large integrated multi-specialized health care system. Regarding market forces, Ong, et al. (2022) aver that there are psychological factors that define emotional, cognitive, personal, and social influences on human behavior, in this case, the use and reuse of telehealth technologies. Again, regarding supporting policies, evidence points to the need for policies that would make it less costly for companies to integrate new technologies in service delivery. In support, Bhatia and Taneja (2019) provide evidence that reimbursement policies and policies promoting secure data usage improve adoption decisions.

Other environmental factors that can influence the adoption of technology include consumer perception, competition, and prevailing market conditions such as COVID-19. According to Selase, et al. (2019), factors such as the technology's perceived usefulness, perceived ease of use, trust, and social influence determine the demand for new technologies. Such demand, in turn, stimulates businesses to adopt the particular technologies. Baker (2012) also opines that the degree of competition for consumers is one of the primary drivers of technology systems' adoption. According to Salem and Nor (2020), prevailing market conditions can also influence the adoption of new technologies. The scholars provide evidence that African countries' intention to utilize digital medical health delivery was significantly boosted by the conditions set by governments after the emergence of the 2020 COVID-19 epidemic. This study investigated the effect of the environment dimension and the aforementioned factors on the adoption of Telemedicine by private health facilities in Nairobi County.

When combined, the TOE framework identifies a host of human and non-human factors that influence technology adoption (Abdalla, 2019). Qualitative analysis can be used to determine the extent to which TOE variables support or discourage new technologies' adoption in a particular organization. It also identifies context-specific factors that are unique to specific organizations and those that encompass organizations in all industries (Bakshi & Tandon, 2021). The TOE framework is used in this study due to its ability to accommodate a wide range of factors that influence implementation efforts. Many researchers consider the model prevalent in examining IT processes adoption due to its diversity and has been used in previous telehealth systems' implementation (Thanakijsombat, Bhatiasevi, & Suwanposri, 2022; Chowdhury, Hafeez-Baig, Gururajan, & Chakraborty, 2019). This examination will, therefore, embody the factors identified in the TOE framework.

2.3 Empirical Review

This section presented an empirical review of previous researchers' explorations into the field of telehealth systems adoption across the world. It covered the research methods deployed, tools of analysis, target population, and findings. A summary of the gaps identified in the critiqued literature was provided at the end.

2.3.1 Technology Dimension's Influence on Telemedicine Adoption

Thanakijsombat, Bhatiasevi and Suwanposri (2022) investigated Thailand's public and private healthcare systems' readiness for telehealth technologies, using the TOE framework. In-depth interviews were used in the qualitative study. Healthcare professionals in centers that had previously participated in a pilot phase of the country's Telehealth project, were contacted. The analysis revealed that the new system's compatibility with existing information technology systems; its ability to guarantee data privacy and security were the main barriers to adoption. Factors such as continuous infrastructural and financial support, work process redesign, digital literacy training, and motivation schemes also emerged as critical to sustainable adoption. The study recommended the following changes for the adoption of telehealth technologies to be extended nationwide: improved interconnectedness between systems; changing the belief in the need for physical meetings between care providers and receivers; and changes that would lower regulatory risks associated with data privacy and intellectual property rights. This study was Tai-based.

Suresh, Prabhakar, Santhanalakshmi and Maran (2016) used the Technology Acceptance Model (TAM) to examine factors that influence the acceptance of out-patient information systems among private hospitals in India using a descriptive research design. The study not only included the core TAM variables of perceived ease of use and perceived usefulness but also considered information quality and product trustworthiness. The methodology applied in the study was exploratory factor analysis with findings asserting that all the examined variables significantly impact technology acceptance among private hospitals. The study recommended that hospital heads consider user acceptance factors when making policies on systems' utilization in healthcare settings. This study specified out-patient information systems among private centers, findings that will be enhanced through an analysis of public institutions.

Chang, Yu, Chao, and Lin (2020) deployed the Unified Theory of Acceptance and Use of Technology (UTAUT) theoretical model, to establish what drives the use of medical applications. The study, which was based on the Taiwanese health system, collected data from hospital patients and relied on structural equation modeling. The study found that performance expectancy, effort expectancy, and social influence are the contributing factors on user's behavioral intention. However, the analysis also revealed that the user's technology readiness moderates the association between performance expectancy and behavioral intention. Further, effort expectancy was the single most significant determinant of behavioral intention, affirming the need to ensure new technologies are easy to use before launching them into the market. These findings will be evaluated in the Kenyan context.

Cobelli, Cassia, and Burro (2021) researched Italian pharmacies' use of telemedicine as a mode of service delivery during pandemics. The study was based on the theory of planned behavior and used a cross-sectional approach. The data was analyzed using partial least squares–structural equation modeling (PLS-SEM), and it revealed that attitude towards telemedicine and perceived behavioral control have strong and significant effects on the intention to use telemedicine technologies. Subjective norms, was however, determined to have insignificant effects on adoption intention. The scholars also observed that complex psychological factors also impact usage intention as telemedicine self-efficacy was one of the variables that mediate the intention to use telemedicine, while performance expectancy impacts attitude towards telemedicine. This study specified pandemic-time service delivery which is usually technology intensive.

Napitupulu, Yacub, and Putra (2021) also used UTAUT to assess acceptance of telehealth technologies in Indonesia. The study collected data using online sources, which were analyzed using the PLS-SEM methodology. Performance expectancy; effort expectancy; and facilitating conditions were found to be the main determinants of intention to use telehealth technologies, while social influence was not key to adoption. Performance expectancy also emerged as the main determinant of doctors' intention to use telehealth services. This study is limited as it failed to address environmental determinants of technology adoption.

Affirming that South African hospitals have been slow to take up e-Health services, Ndlanzi (2021) carried out a case study of Edendale Hospital that investigated factors affecting e-Health adoption. The study used a descriptive approach involving healthcare professionals at the organization and found that performance expectancy is the most significant determinant of e-Health systems' adoption. Doctors opined that they would adopt the systems only if they could produce accurate patient diagnoses, improve patients' education regarding their health, and guarantee stronger data privacy and security. The system's usability and ease of access were also found to influence the systems' adoption. The study further concluded that to encourage adoption of the systems, facilitating conditions ought to be guaranteed. This was a case study that assessed a single institution.

Mbugua (2016) investigated the determinants of telemedicine adoption among Kenyan clinicians by investigating the technologies' perceived ease of use, perceived usefulness, and user's attitude toward new technologies. The study used a descriptive research design and focused on doctors and nurses affiliated to the Aga Khan University Hospital. The study applied Pearson's correlation coefficient and revealed a strong effect of telemedicine's compatibility, trialability, observability, and complexity on the adoption of telemedicine. In addition, the study determined that users' attitude towards new technologies has a significant impact on their intention to use the systems. The study concluded that telemedicine systems designers ought to design systems to present observable advantages that appeal to the target market. The study further concluded that hospitals should involve clinicians in the selection and implementation of telemedicine systems. This was also a case study and focused on a private hospital.

Ngongo (2019) used the TOE framework to assess the factors influencing the adoption of Patient Centered mHealth applications, focusing on the perspectives of top executives. The study used a

correlational survey design and logit regressions to analyze data sourced from the executives. The analysis revealed that the technology's compatibility; trialability and acquisition strategy; the organization's technology-affiliated leadership; slack resources; human resources; and IT capacity; environmental factors such as ICT infrastructure and capacity of support services; the level of competition for patients; and pressure from patients determine adoption. The study also asserts that ICT use was prevalent among older hospitals operating in environments with strong government support. This study sourced data from top executives who may have a more management-centered view of hospital operations.

2.3.2 Organizational Dimension's Influence on Telemedicine Adoption

Razmak, Shawabkeh, Kharbat, and Qasim (2018) researched external determinants of the intention to use personal health record technologies, for advancing the electronic patient-physician relationship. The study, based in Canada, specified the role of government incentives, physician support and hospital management support. Data was collected using a case survey research design and analyzed using multiple regressions. The results showed a significant association between the adoption of innovative technologies and perceived ease of use, as well as perceived usefulness. The analysis revealed that aside from government support, awareness, training, and support from family doctors through demonstrated benefits, would increase Canadians' intention to use the health delivery technologies. This study informs on the relationship between an organization's empowerment capabilities and technology adoption intentions but was based in Canada.

Gaziel-Yablowitz, Bates, and Levine (2021) sought to identify the factors that influence the adoption of telehealth using data from the American Telemedicine Association and the American Hospital Association. The study used logistic regressions in assessing the characteristics that influence telehealth adoption. The study determined that two-thirds of health facilities can integrate new technologies. Furthermore, it revealed a strong association between non-profit status, location, and services offered, and the adoption of telehealth technologies. Hospitals without electronic clinical documentation and affiliation with hospital systems were unlikely to adopt telehealth technologies. In addition, the study found that state-wide policies associated with new technologies had insignificant effects on adoption decisions. these findings are from a developed economy that is more experienced with new technologies.

Rajmohan and Johar (2020) sought to establish the drivers of adoption for the Internet of Things (IoT) in the delivery of health in Sri Lanka. The study used variables highlighted in the UTAUT theory, including performance expectancy, effort expectancy, perceived creditability and social influence. It examined their influence on behavioral intentions using structural equation models, and revealed that performance expectancy has the greatest impact on intention to make repeated use of the IoT. The findings also showed that doctors will not react to industry pressures, if they do not have trust in the service offered by the new technologies. The study called for increased awareness of emerging technologies as a means to increase their adoption since trust is key to adoption. The implications are that organizations can stimulate adoption intentions by educating healthcare providers but it did not assess how resource factors influence adoption intentions.

Bhatia and Taneja (2019) based their study on the Indian market in their assessment of factors that influence the use of eHealth services by consumers. The study's objectives were to determine the extent of telehealth technologies' application, as well as its demographic and market determinants. The study involved patients and used interviews to collect data. Thematic analysis was applied to the data to reveal that individual factors such as age, location, computer literacy, and the patient's status in terms of type of need; accessibility of technologies; and previous experience with the technologies, were the main determinants. The study recommends that doctors be properly trained and a support infrastructure be set up to ensure users are satisfied with the technologies and services after first-time user. This study sourced data from patients while the current will include healthcare professionals in its analysis.

Nyaggah (2016) purposed to establish the specific variables that influence ICT adoption in Kenyan public hospitals. The study examined the influence of training, infrastructure, ICT staff attitude and financial capability on ICT adoption. Using factors identified in the innovation-diffusion theory and technology acceptance theory, the study's analysis revealed that the cost of ICT training materials and equipment are the most significant barriers to ICT adoption. The study's findings suggest that before implementing ICT technologies, hospitals should consider the cost burden born by hospitals and the users.

In Uasin Gishu, Kosgei (2020) sought to unravel the relationship between the use of integrated information-sharing systems and knowledge factors, organizational, technical, and behavioral elements, in Uasin Gishu Sub County Hospitals. The study used quantitative and qualitative

approaches involving thematic and multivariate logistic regressions. The analysis showed that a third of the information system users expressed low confidence in their capacity to utilize the systems, citing unawareness and limited experience in using the technologies as reasons. The study also illustrated that the issue was exacerbated by low-quality training and help from more competent government-affiliated officials. Moreover, age was found to be a major determinant of the pace of adoption of information systems by health workers. This study reviewed small healthcare centers and this will be enhanced through an analysis of large as well as small healthcare centers.

Meanwhile, Kirengo (2020) investigated the factors that affect the adoption of mHealth products among patients in Embu County, Kenya. The study focused on the impact of social, technical, and individual determinants of m-Health products' adoption and applied a descriptive and correlational research methodology. Regression analysis of the data illustrated that social and individual variable, such as access to mobile devices, mobile phone network services, frequency of using digital products and services for simple uses, have a significant impact on the intention to utilize mHealth products. A key insight from the study's findings was the importance for companies to consider the population's attitudes towards specific technologies and actively attempt to break social barriers prior to rollout.

2.3.3 Environment Dimension's Influence on Telemedicine Adoption

Rahim and Abdul Rahman (2017) carried out an empirical examination into factors that determine tele-healthcare delivery in Malaysia. The study sampled patients who visited private hospitals and employed a quantitative approach. Moreover, the study applied bootstrapping analysis and established a significant effect of attitude, need, willingness to pay, perceived ease of use, and intention to use the technologies. The study also found no significant association between patient's experience with the technologies and the technologies' complexity and adoption intention. Other factors identified in the study that influence the continued use of new technologies in healthcare delivery are resource capabilities of the health systems, patient age, and demand from consumers. This study was limited in its examination of private healthcare centers.

Anwar and Talib (2018) studied the influence of consumers' attitudes on the use of new technologies; focusing their analysis on the Singaporean healthcare system. The investigation

used the case study methodology, applied TAM variables, and used correlation and Analysis of Variance (ANOVA) in its analysis. The findings identified perceived usefulness, security, and privacy as the main determinants of adoption. Furthermore, the study notes that educating users on the potential advantages of healthcare delivery systems and making them as secure as possible, would increase patients' willingness to use. This study contributes to the understanding of the factors that influence user intention to adopt new technologies.

Rahi, Khan, and Alghizzawi (2021) researched factors influencing the adoption of Telemedicine Health Services during the COVID-19 pandemic. The study used variables from the unified theory of acceptance and use of technology (UTAUT), the protection motivation theory (PMT), and DeLone & McLean information success model. The data was analyzed using structural equation modeling, and findings suggested that healthcare professionals play a significant role in increasing user adoption of telemedicine health services by improving their self-efficacy in new technologies, service quality, and performance expectancy. The study also shows that the quality of the system; quality of information in the system; complementary services; perceived severity; and response efficacy, all have significant effects on usage intention. In this exploration, effort expectancy and patient attitude were determined to have insignificant impacts, since high computer self-efficacy moderates their influence. This study informs the importance of patient empowerment in new technology adoption but specifies a specific period at the height of the COVID-19 pandemic.

Rangachari, Mushiana, and Herbert (2021) carried out a literature review on telehealth adoption drivers in the United States, focusing on varying rates of adoption across medical specialties. The influencing factors were categorized into macro (policy-level), meso (organizational-level), and micro (individual-level) factors. The review showed that removal of macro-level government policy barriers will not translate into sustainable telehealth use. The review highlights the critical role that hospitals and health organizations could play in making joint efforts to create conducive conditions for increased adoption. Specifically, they would play a role in addressing the meso and micro-level barriers such as training, reimbursement, workflow, design, implementation, provider attitudes, and cultures. However, according to the study telemedicine delivery was not possible for certain needs and was perceived as lacking the potential to improve access to care. The review highlights the crucial role of hospital and specialty-society organizations in creating

conditions for sustainable telehealth as it addressed tangible barriers such as reimbursement, training, and workflow, as well as intangible barriers including provider attitudes.

Connolly, et al. (2022) investigated the factors facilitating tele-mental health via video (TMH-V) adoption in the US Department of Veterans Affairs (VA). The study used twenty-four (24) qualitative interviews across four (4) sites to collect data and was guided by the Consolidated Framework for Implementation Research (CIFR). The analysis was done using directed content analysis. The findings revealed that five constructs had a positive influence on adoption; namely: relative advantage; patients' needs and resources; relative priority; knowledge, beliefs and self-efficacy. Four constructs were found to be significantly different in high-adoption sites compared to low-adoption sites. These were: quality, compatibility, leadership engagement, and champions. Complexity, however, was the one construct that had a negative influence on implementation. The study concludes that future implementations can draw insights from the foregoing, to develop strategies that would increase the uptake of TMH-V. In addition, the study recommends education of frontline staff and leadership using evidence from successful implementation sites to demonstrate that TMH-V does indeed facilitate high quality care. Regarding complexity, the study recommends that platforms and processes supporting the technology be simple and user-friendly.

Haque, DeStefano, Banger, Rutledge, and Romaire (2021) explored determinants of implementation of telehealth services across hospitals in the United States. The study was qualitative and entailed collection of data from 8 critical access hospitals through interviews. A semi-structured discussion guide was used to facilitate conversations with clinical, administrative, and Information Technology staff, and the notes coded were subjected to thematic analysis, thereafter. The study identified the following as factors that influence the implementation and use of Telehealth services: practitioner acceptance, infrastructure changes, changes to workflow and practitioner availability, and financing. This study is from a large economy that enjoys larger economies of scale than hospitals in smaller economies.

Isabalija and Mayoka (2017) examined the determinants of uptake of e-medicine in sub-Saharan Africa, focusing on health systems in Uganda, Ethiopia and, Nigeria. The study adopted a mixed research approach involving both qualitative and quantitative research methods. Data was collected from hospital administrators, information technology staff and medical officers and

analyzed using Structural Equation Modelling for hypothesis testing. The study found that social environmental factors have significant impacts on sustainable e-medicine uptake. The study further observes that countries with better knowledge-management practices are more likely to succeed at sustaining e-medicine use and thus uptake, compared to those that do not. The study recommends setting up of networked e-Medicine sites that link hospitals, and facilitate information sharing, formulation of national level e-Medicine policies, training of users and promotion of funding projects for e-Medicine integration.

2.4 Summary of the Literature and Research Gaps

The section above presented findings from previous researchers on the effect of TOE factors on the adoption of new technologies in service delivery. These studies range from local to regional and international levels and use different research methodologies. Moreover, different a variety of population samples were studied in different contexts, with different end goals. Consequently, the review identified a host of gaps that are presented in Table 2.1 below.

Table 2.1 Research Gaps

Author	Title	Findings	Research Gaps	How the Study will solve the Gap
Isabalija and Mayoka (2017)	A comparative study of e-medicine uptake in Uganda, Nigeria and Ethiopia	Socio-environmental factors have significant effects on e-medicine uptake	The study was comparative and sourced data from three countries while the current is restricted to technology adoption in one county within a country. A contextual gap	This study will address this gap by investigating firms operating under unified policies and

				with similar technologies.
Connolly, et al., (2022)	Factors influencing uptake of telemental health via videoconferencing at high and low adoption sites within the department of Veterans Affairs during COVID 19: a qualitative study	Slack resources, patient demand and relative advantage strongly impact adoption intention while complexity factors impede adoption decisions	The study was confined to health centers affiliated with Veterans Affairs which is a government institution. A conceptual as well as location gap	This gap will be addressed by investigating technology adoption among private healthcare centers
Rahman and Abdul (2017)	An empirical study on acceptance of telecare health services in Malaysia	The findings were that adoption is a function of demand, attitude, willingness to pay, and perceived ease of use	This study used bootstrapping methods in its analysis and investigated Malaysian firms. A methodological gap	The current study will use traditional regression in the analysis of Kenyan health centers
Kirengo (2020)	Factors affecting the adoption of m-health products amongst patients in Kenya: A case	m-health utilization is influenced by social and individual	The study looked into mobile health adoption which is less expansive, more accessible, and	This study will investigate a wide range of telehealth technologies'

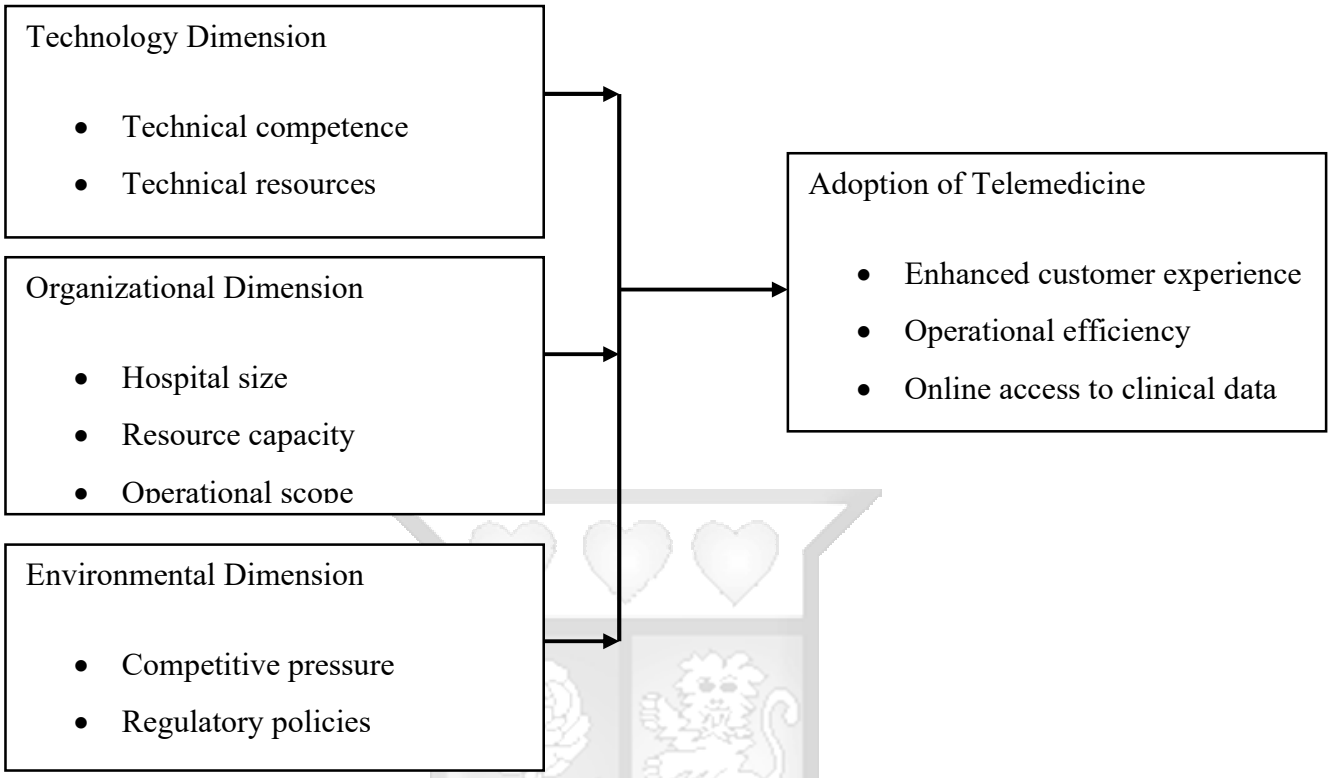
	of Embu.	variables, such as access to mobile phone network services and frequency of use of digital products and services.	impactful than more complex telehealth technologies. A contextual gap emerges.	adoption hence enhance findings on mobile telehealth service provision.
Nyaggah (2016)	Factors influencing adoption of information and communications technology in public hospitals in Nairobi County, Kenya.	The cost of ICT training materials and equipment are the most significant barriers to ICT adoption	The study investigated ICT adoption in public hospitals which are often underfunded and run on management with significantly less power that directors at private healthcare institutions. This is a contextual gap emerges.	This study will examine private facilities which are run under private management policies
Razmak, Shawabkhe n, Kharbat and Qasim (2018)	Examining the factors affecting the adoption of e-health innovative technology	The analysis revealed that perceived usefulness, ease of use and complexity are significant determinants of personal health records adoption	The study focused on the external drivers of new technologies adoption. This is a conceptual gap.	The findings drawn from the study will be enhanced through an investigation into the effects of internal factors on adoption of e-health

				innovative technologies
Cobelli, Cassia & Burro (2021)	Factors affecting the choices of adoption/non adoption of future technologies during coronavirus pandemic	Attitude towards telemedicine and perceived behavioral control have strong and significant effects o the intention to use telemedicine technologies	The study scope was limited to Italian pharmacies which operate in highly integrated markets. This was a conceptual and methodological gap.	These findings will be extended to developing economies

2.5 Conceptual Framework

A conceptual framework is a graphical representation of the interactions between study variables. Having been founded on the TOE framework, the conceptual framework showed how technological, organizational and environmental factors interact to influence adoption of telemedicine technologies. The following framework was adopted.

Figure 2.1 Conceptual Framework



2.6 Operationalization of Variables

Table 4.1: Operationalization of Variables

Variable	Indicators	Data Collection Tool	Type of Variable	Data Analysis
Technology dimension	Technical competence	Structured questionnaire	Ordinal	Descriptive & Inferential Statistics
	Technical resources			
	Infrastructure capacity			
	Usability and reliability			
Organization dimension	Hospital size	Structured questionnaire	Ordinal	Descriptive & Inferential Statistics
	Resources capacity			
	Operational scope			
	Structure			
	Quality of human capital			
Environmental dimension	Competitive pressure	Structured questionnaire	Ordinal	Descriptive & Inferential Statistics
	Regulatory policies			
	External support			
	Market factors			

Adoption of telemedicine	Enhanced customer experience	Structured questionnaire	Ordinal	Descriptive & Inferential Statistics
	Operational efficiency			
	Online access to clinical data			
	Online physician collaboration			

2.7. Chapter Summary

This chapter highlights the literature on the antecedents of adoption of telemedicine in private hospitals in Nairobi. From literature, it is clear that the space is not well researched in the African context. However, in developing countries, the concept has fairly been tackled. This is a key learning point for the global south. In Kenya, the evolution and penetration of mobile telephony has been a huge boost to this course. Literature postulates that adoption is driven by the following aspects; technology, organization and environmental dimensions, these are key.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented the methodological plan for the research. It captures the research's philosophy, design, population, and sampling process. Further, the chapter identified data collection instruments, data collection procedure, pilot tests, data analysis, and ethical considerations.

3.2 Research Philosophy

Selecting a valid research philosophy is critical to the research, as it highlights the various steps and methodological approaches that can be used in solving the research problem (Bauer, 2016). This study relied on the positivist philosophy whose ontological assumption is a single reality, external to, and observable by the researcher. From an epistemology standpoint, it only considers facts that are measurable as the acceptable form of knowledge; from an axiological perspective, it views the researcher as detached from the subject phenomenon under study, and hence, does not influence its behavior (Saunders, Lewis & Thornhill, 2019). Based on this philosophy, the study should be replicable; the findings generalizable; and deductive reasoning applicable by conducting tests on the cause and effect of the relationship between variables (O'Gorman & MacIntosh, 2016). By applying the positivism philosophy, the study required the collection of measurable data that can be subjected to statistical analysis. This research adopted a quantitative methodology in determining the effect of TOE on the adoption of telemedicine among private healthcare facilities in Nairobi, Kenya.

3.3 Research Design

Research design is the general plan for answering the research question (Saunders, Lewis & Thornhill, 2019). It also presents a logical plan that helps the researcher formulate the initial sets of questions and develop some sets of answers to the questions (Sekaran & Bougie, 2016). This research was designed based on a positivist philosophy; its purpose is both descriptive; while it takes a deductive approach to investigate the relationship between technological, organizational,

and environmental factors and the adoption of Telemedicine among private healthcare facilities in Nairobi. The study was designed based on a quantitative methodology that supports the statistical analysis of causal relationships between variables. Moreover, the study used the survey strategy to answer the research question, and it was cross-sectional, examining TOE dimensions' influence on the adoption of telemedicine in the target population at a specific time.

3.4 Target Population

The target population represents the collection of elements with common features of interest to the research and from which inferences can be made for all the possible items of interest in the study (Sekaran & Bougie, 2016). The current study focused on the private health facilities within Nairobi County. According to the Kenyan Master Facility List (MFL), which includes all officially registered health facilities in Kenya; there were 251 private health facilities within Nairobi County (Kenya Master Health Facility List, 2022). These private health facilities are in the relevant categories that constitute the population of interest for the current research. The key respondents were the Medical Director/Owner/Senior Specialist-In-Charge who were surveyed to provide relevant information on how TOE dimensions have impacted adoption of telemedicine in their facilities. The facilities were categorized as level 2, 3, 4 and 5 as tabulated in Table 3.1.

Table 4.2: Target Population

Level	Number of facilities	Percentage
2	70	28
3	128	51
4	48	19
5	5	2
Total	251	100

3.5 Sampling Design and Sample Size

Sampling represents the selected process of identifying units from the accessible and observable population, who can be involved in the study to fairly generalize the results to the target

population (Blumberg, Cooper, & Schindler, 2014). The study's sample frame comprised the 252 private health facilities registered under Nairobi County, in the Kenya Master Facility List. This research applied random sampling; a chance sampling or probability sampling technique in which every item in the population has an equal chance of being included (Zikmund, Babin, Carr, & Griffin, 2013). This technique reduced the likelihood of bias by ensuring every private healthcare facility was considered in the survey. The study's sample size was computed using the Yamane formula so that a relatively smaller number of healthcare facilities could be selected from the target population and was statistically representative of the population. The calculation is shown below;

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

Where n is the sample size, N is the total population, and e is the level of precision (Yamane, 1967).

The study used a confidence level of 95% and, therefore, a margin of error of 0.05 thus:

=251/ (1+251*0.05*0.05) = 154.22 approximately 155 as stratified in Table 3.2. The actual respondents namely the Medical Director/Owner/Senior or Specialist-In-Charge were chosen using convenience sampling because the researcher believed that these would provide the information they needed.

Table 3.2 Sample Size

Level	Number of facilities	Percentage
2	43	28
3	79	51
4	30	19
5	3	2

Total	155	100

3.6 Data Collection

The questionnaire is a well-established research tool used for collecting information on participants' social features, present and past conduct, or behavior, their viewpoint and grounds for action with respect to the subject under inquiry (Sekaran & Bougie, 2016). The study used primary data that was collected using questionnaires. The questionnaire was designed to address the research question. It was structured into 5 main sections; Part A covered demographic information such as the name of the institution, how long it has been in existence and the rank of the respondent; Part B-D covered the TOE dimensions and Part E had statements on the dependent variable. The instrument used a 5-point Likert that will be interpreted as 5 = strongly agree, 4 = agree, 3 = moderately agree, 2 = disagree and 1 = strongly agree.

3.7 Data Collection Procedure

The data collection procedure is the precise and systematic way of gathering information that is relevant to the research for the analysis (Sekaran & Bougie, 2016). Research approval was first sought from the supervisor, before presentation for defense and ethical review. Thereafter, the research instrument was reviewed by the University's Ethics Review Committee and a permit was sought from the National Commission for Science, Technology and Innovation. Next, approval from the various health facilities to conduct research within their premises was sought before engaging respondents. The research questionnaires were then administered by the drop-and-pick method, and where a respondent preferred, Google (digital) forms were utilized to obtain responses.

3.8 Pilot Test

Before conducting the actual data collection, the study conducted a pretest of the study instrument with 10% of the target sample size (28) respondents. The pilot test was conducted to help in assess the reliability and validity of the research instrument.

3.8.1 Reliability Test

Blumberg, Cooper, and Schindler, (2014) suggest that reliability is the measure of stability or internal consistency of an instrument in measuring data. It is the extent to which the research instrument yields the same results on repeated trials. The research adopted the Cronbach alpha tests to assess the internal consistency of the research instrument. The alpha score is a value between 0-1 with the following criterion applied in the interpretation of the results; ">0.9 Excellent, >0.8, Good,>0.7, Acceptable, >0.6 Questionable and >5 Unacceptable". The study considered all variables with an alpha score of above 0.7 as the acceptable level for inclusion in the main research.

3.8.2 Validity Test

Validity is the ability of the research instrument to measure what it is supposed to measure (Gujarati & Forter, 2010). There are various types of validity, including construct, content, face, and criteria-related validity (Creswell, 2015). The construct validity of the instrument was checked to ensure it has included the measures stated in the operationalization of variables. Content validity, focused on whether the research covered all the variables of the study and the questions in the instrument are designed in line with the research questions. Face validity was then conducted, with the help of the supervisor, to assess the instrument's adequacy as a valid measure of the research's concepts.

3.9 Data Analysis and Presentation

The data collected was sorted and coded into SPSS 25 for subsequent quantitative data analysis. Various statistical methods were used to analyze the quantitative data including descriptive statistics – frequencies, percentages, means, and standard deviation and inferential statistics such as regression analysis and correlation. The correlation analysis applied to establish the direction of the relationship between the selected variables was Spearman rank correlation. Both simple and multiple linear regression were used to predict the strength of influence of the independent variables on the adoption of telemedicine. The data analysis was presented using charts and tables. Below is the regression model used in the survey:

$$ATM\ t = \alpha + \beta 1TD + \beta 2OD + \beta 3ED + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (4)$$

Where,

ATM represents adoption of telemedicine of private healthcare facilities in Nairobi County

α represents the constant of the adopted model

β1-3 represents the coefficient of the predictor variables

TD represents the technology dimension of private healthcare facilities in Nairobi County

OD represents the organizational dimension of private healthcare facilities in Nairobi County

ED represents the environment dimension of private healthcare facilities in Nairobi County

ε is the error term of the model

3.10 Diagnostic Tests

3.10.1 Normality Test

Kolmogorov-Smirnov test was applied to test for normality test. The null hypothesis states that Ho: The sample data are not significantly different than a normal population. Against an alternative that Ha: The sample data are significantly different than a normal population. If the p-value is less than 0.05, then the data will not be normally distributed otherwise it will be normal.

3.10.2 Linearity Test

Regression analysis is based on the assumption that there is a linear relationship between dependent and independent variables. Scatter plots were used for linearity between each independent variable and dependent variable. Further, correlation analysis was used to show the strength of the relationship between dependent and independent variables (Kothari, 2011).

3.10.3 Multicollinearity Test

Multicollinearity is associated with a high correlation between independent variables. To test this assumption, this study used Variance Inflation Factor (VIF) values to determine whether there is multicollinearity. In addition, tolerance limits were used to test for multicollinearity. According to Baltagi (2005), if VIF is greater than 10 then there is multicollinearity and if tolerance limits is less than 0.1 then there is multicollinearity.

3.11 Ethical Considerations

Research ethical guidelines are sets of requirements that a study has to observe when conducting a survey involving human participants (Creswell, 2015). This study upheld ethics, by providing an Informed Participant Consent Form to respondents through which they can acknowledge their willingness to take part in the research. In addition, the study sought ethical clearance from the University as well as research license from NACOSTI before commencing the field work. Moreover, the study **assured** respondents that the survey data collected will be treated as confidential and used for academic and research purposes only.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presents the data analysis, interpretation and presentation. The general objective of the research was to study the antecedents of the adoption of telemedicine among private healthcare facilities in Nairobi County. The specific objectives of the research were; to investigate the effect of the technological dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County, to determine the effect of the organizational dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County, and to examine the effect of the environmental dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County.

4.2 Response rate

Table 4.3: Response rate

Status	Frequency	Response rate
Responded	130	84
Not Responded	25	16
Total	155	100

Researcher (2024)

The study required to know the response rate. According to the results, out of the total 155 respondents, 130 individuals responded to the survey, constituting a response rate of 84%. On the other hand, 25 respondents did not respond, representing a non-response rate of 16%. This above analysis reflects the engagement level of respondents with the survey instrument, indicating a relatively high response rate and suggesting a significant level of interest and willingness to participate in the study. The considerable response rate enhances the validity and reliability of the data collected, providing a robust foundation for the subsequent analyses and interpretations conducted in the research.

4.3 Demographic Information of the respondent

4.3.1 Gender of the Respondents

The study required examining the gender distribution among respondents, with a total sample size of 155 participants. The frequency table reveals that 82 respondents identified as male, constituting approximately 53% of the total sample, while 73 respondents identified as female, making up around 47%. This distribution indicates a relatively balanced representation of both genders in the sample, which is essential for ensuring diverse perspectives in the study. Moreover, the near-equal representation of males and females suggests that the findings are likely to reflect a broad range of experiences and viewpoints, contributing to the robustness and comprehensiveness of the research outcomes. Understanding the gender composition of the sample also allows for the development of targeted interventions or strategies that cater to the specific needs or preferences of each gender group, thereby enhancing the relevance and effectiveness of any proposed interventions or recommendations arising from the study.

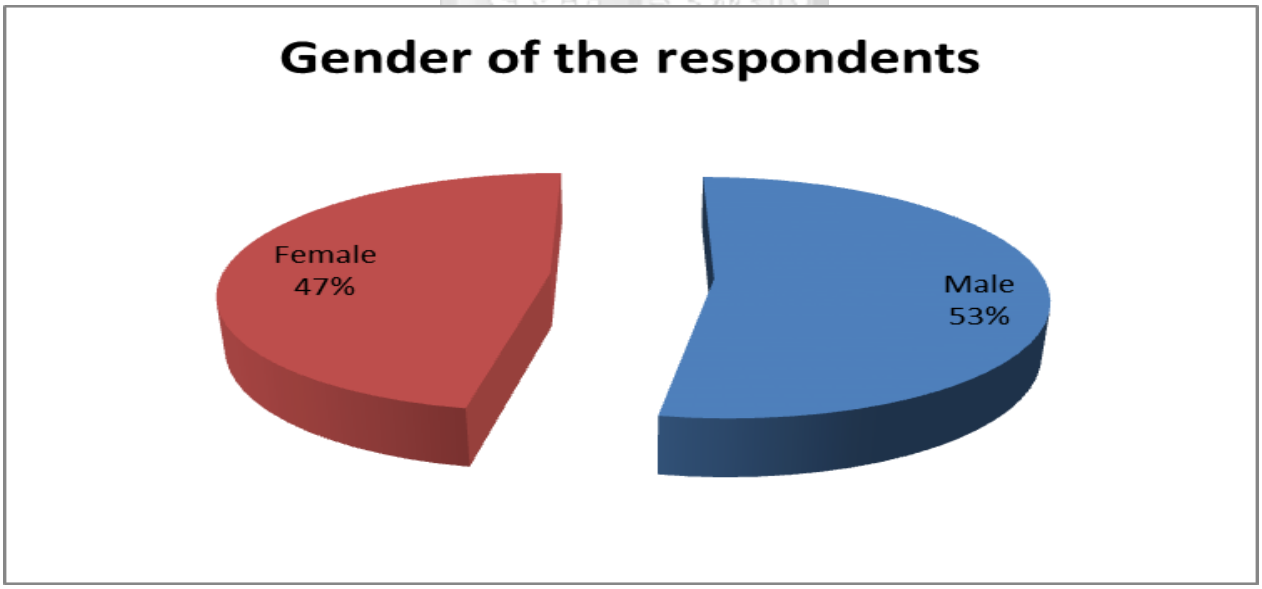


Figure 4.1: Gender of the Respondents

4.3.2 Highest education qualification of the respondents

The study required the respondents to indicate their highest level of education. From the gathered data, it is evident that the respondents had diverse educational backgrounds, ranging from diploma to postgraduate or doctorate qualifications. The descriptive analysis reveals that the

majority of the respondents, comprising 59 individuals or 38% of the total sample, held a degree qualification. Following closely, 45 respondents, constituting 29% of the sample, reported having a diploma. Additionally, 39 respondents, representing 25% of the total sample, possessed a master's degree. In contrast, the smallest proportion of respondents, consisting of 12 individuals or 8% of the total sample, reported having a postgraduate or doctorate qualification. This diverse distribution of educational qualifications among the respondents underscores the need to consider varying perspectives and expertise levels when interpreting the study findings.

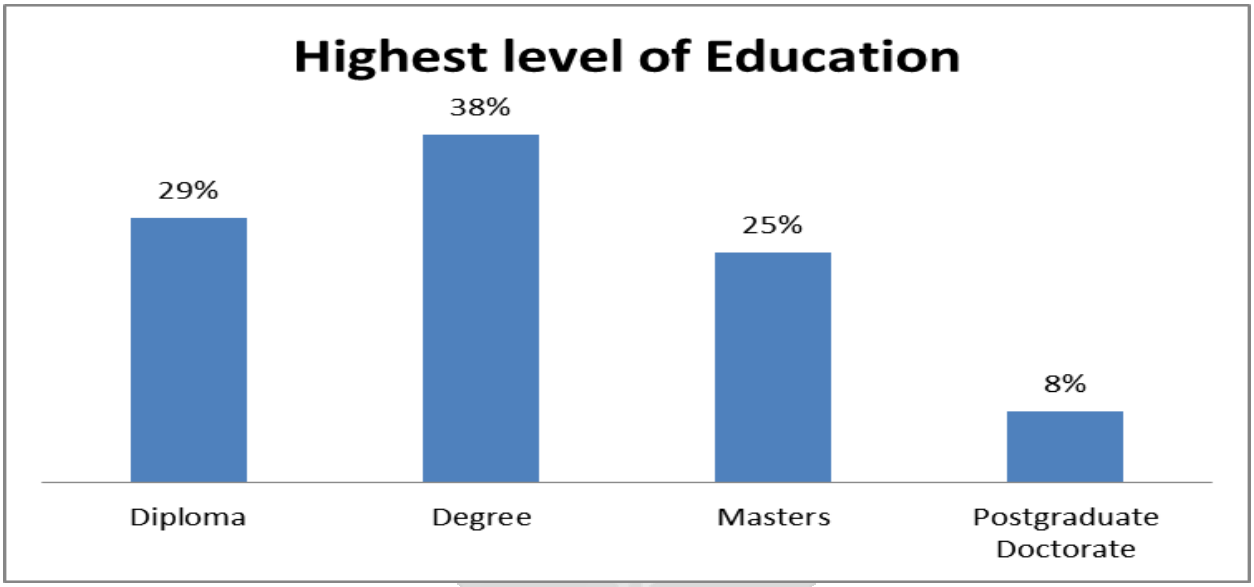


Figure 4.2: Highest Education Qualification of the Respondents

4.3.3 Duration the private healthcare facility been in existence

Table 4.4: Duration the private healthcare facility been in existence

Duration	Frequency	Percentage
Less than 5 years	33	21
6-10 years	77	50
11-15 years	33	21
Over 16 years	12	8

Total	155	100

The study required the respondents to indicate their duration of operation, providing insights into the establishment history of private healthcare facilities. According to the results, a diverse range of operational durations was reported among the surveyed facilities. The majority of facilities, constituting 50% of the total sample, reported being in existence for a duration ranging between 6 to 10 years, indicating a significant presence and experience within the healthcare sector. Conversely, 21% of facilities reported being operational for less than 5 years, suggesting a proportion of relatively new entrants in the industry. Additionally, another 21% reported a duration of operation between 11 to 15 years, signifying a mix of moderate longevity and experience. Furthermore, 8% of facilities reported a history of over 16 years, indicating a notable level of experience and establishment within the healthcare landscape. These findings underscore the diverse range of operational durations among private healthcare facilities in the surveyed area, reflecting varying degrees of experience and tenure within the sector.

4.3.4 Respondent's role/workstation within the private healthcare facility

The researcher required the respondents to indicate their respective roles within the private healthcare facilities. According to the findings, the roles of the respondents varied, reflecting the diverse organizational structure within these facilities. The majority of respondents, constituting 49% of the total sample, held the position of Medical Director, indicating a significant presence of leadership and oversight at the medical management level. Additionally, 22% of respondents identified themselves as Owners, suggesting a notable proportion of individuals with direct ownership stakes in the facilities, potentially influencing strategic decision-making and operational direction. Moreover, 29% of respondents indicated their role as Senior Specialists-In-Charge, highlighting the significant involvement of experienced medical professionals in clinical leadership roles within the facilities. These findings underscore the diverse range of roles and responsibilities held by respondents within private healthcare facilities, reflecting the complex organizational structures and leadership dynamics inherent in the sector.

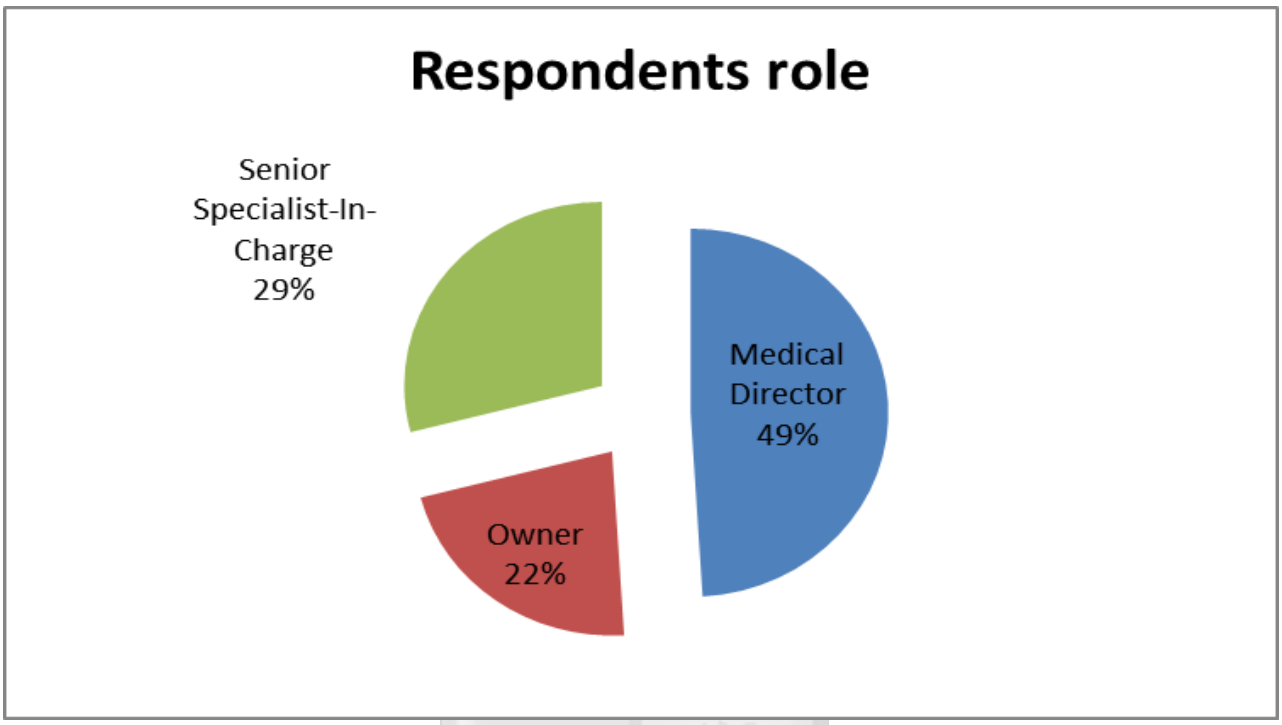


Figure 4.3: Respondent's role/work station within the Private Healthcare Facility

4.3.5 Duration respondent worked within the Private Healthcare Facilities

The research aimed to ascertain the duration of employment among respondents within private healthcare facilities. The findings reveal that the distribution of respondents varied across different tenure categories. Among the respondents, 30% reported working within the facilities for 1-5 years, indicating a substantial proportion of relatively new entrants into the workforce. Additionally, 35% of respondents reported tenure of 6-10 years, suggesting a considerable segment of the workforce with moderate experience levels within the facilities. Furthermore, another 35% of respondents reported working in the facilities for over 10 years, highlighting the presence of seasoned professionals with extensive experience in their respective roles. These findings underscore the diverse range of tenure lengths among respondents within private healthcare facilities, reflecting the dynamic nature of the workforce and the retention strategies employed by these institutions.

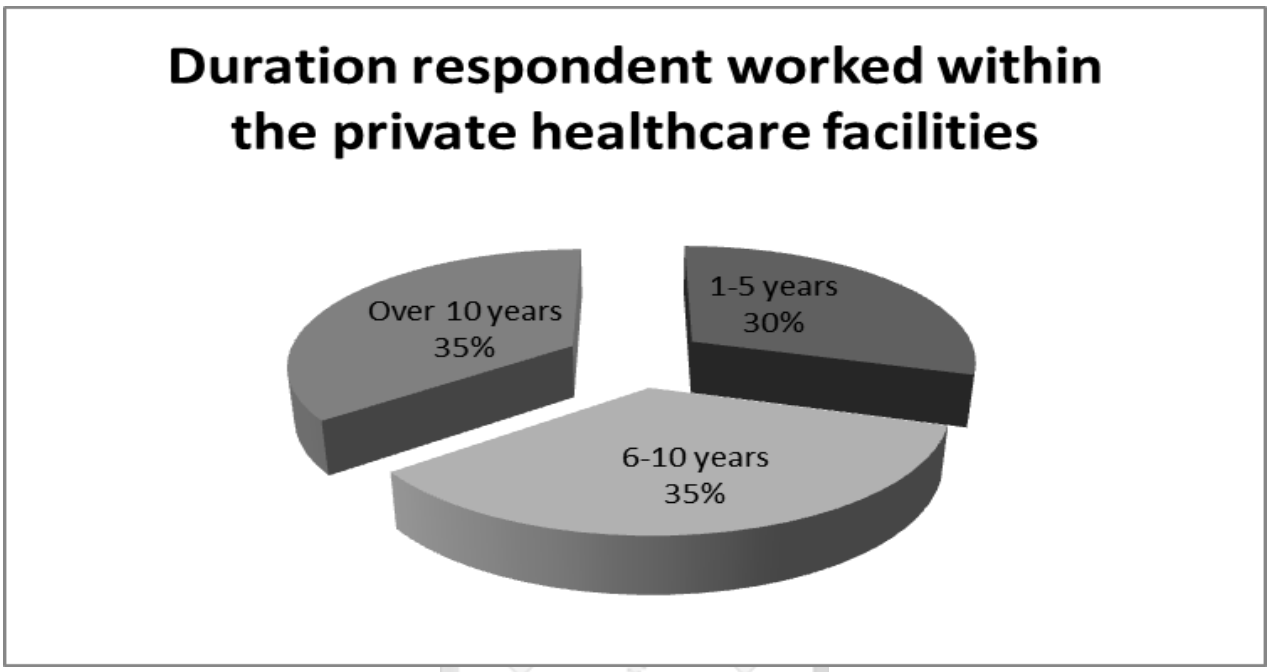


Figure 4.4: Duration respondent worked within the Private Healthcare Facilities

4.4 Effect of Technological on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

Table 4.5: Respondents level of agreement on effect of Technological on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County.

Technological Dimension	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean score	Std. Dev
Staff within the hospital possesses relevant knowledge and skills to guide implementation of technical systems	19	68	11	1	1	4.03	0.0020
The hospital has retained an adequate staff complement with technical skills	19	71	6	3	1	4.04	0.0016
There is sufficient provision of resources to support investments on new emerging technologies within the hospital	15	70	13	1	1	3.97	0.0012
There are policies in place that guide development of training manuals that enhance the infrastructural capacity of our staff	14	71	13	1	1	3.97	0.0120
There are policies and systems in place to ensure the technical readiness of the hospital in maintenance of technological infrastructure	18	67	8	6	1	3.85	0.0020
There are systems in places to ensure technologies adopted in the hospital support reliable service provision	10	76	10	2	2	3.00	.0022
The hospital has ensured the readiness of the staff in utilizing new technical systems in service provision	8	90	1	1	0	2.95	.0120

Source: (Author, 2024)

The table above depicts findings on the technological readiness and support within the hospitals, for implementing telemedicine systems. According to the findings, the majority of respondents agreed that the staff within the hospitals possess relevant knowledge and skills to guide the implementation of technical systems, as indicated by a mean score of 4.03 and a standard deviation of 0.0020. Additionally, most respondents concur that the hospitals retained adequate staff with technical skills, evidenced by a mean score of 4.04 and a standard deviation of 0.0016. There is also a significant agreement on the sufficiency of resource provision to support investments in new emerging technologies within the hospitals, with a mean score of 3.97 and a standard deviation of 0.0012. Similarly, respondents indicated that there are policies in place to guide the development of training manuals that enhance the infrastructural capacity of the staff, reflected by a mean score of 3.97 and a standard deviation of 0.0120. Moreover, the hospitals have policies and systems to ensure technical readiness for the maintenance of technological infrastructure, as shown by a mean score of 3.85 and a standard deviation of 0.0020. However, there are systems in place to ensure that technologies adopted in the hospital support reliable service provision, but this area has a lower mean score of 3.00 and a standard deviation of 0.0022, indicating some variability in responses. Furthermore, the readiness of the staff to utilize new technical systems in service provision has the lowest mean score of 2.95 and a standard deviation of 0.0120, suggesting room for improvement. Overall, the analysis indicates a strong foundation in staff knowledge, technical skills retention, resource provision, and training policies, while highlighting areas such as reliable service provision and staff readiness for new systems that need further attention. The low standard deviations across most items indicate consistent responses, providing a clear picture of the current state of technological readiness in the hospitals.

The findings align with existing literature on technological readiness and support in healthcare settings. Specifically, the high mean scores and low standard deviations suggest a consensus among respondents regarding the staff's knowledge and skills, retention of technical staff, resource provision, and training policies. These are foundational elements for the successful implementation and utilization of telemedicine systems. This alignment with literature is consistent with studies emphasizing the importance of staff preparedness, adequate resources, and supportive policies for the effective adoption of new technologies in healthcare. For example, research by Smith et al. (2020) highlights the critical role of staff training and technical

support in ensuring the successful integration of telemedicine into healthcare practices. Similarly, Jones and Brown (2019) emphasize the need for robust policies and systems to facilitate the maintenance and utilization of technological infrastructure in healthcare settings. The areas identified for improvement, such as ensuring reliable service provision and enhancing staff readiness for new systems, resonate with recommendations from experts like Johnson (2021), who underscores the significance of continuous evaluation and improvement strategies in technological implementations within healthcare organizations. The findings hence provide valuable insights into the current state of technological readiness in the hospitals and underscores the importance of addressing specific areas to optimize the benefits of telemedicine and other emerging technologies in healthcare delivery.

4.5 Effect of Organization Dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

Table 4.6: Respondents level of agreement on effect of organization dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

Organization Dimension	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean score	Std. Dev
There is adequate human resource available in the hospital to support the implementation of new technical systems	24	68	4	3	1	4.1	0.0011
The hospital has sufficient equipment and facilities to adopt new technical systems in our operation	15	85	0	0	0	4.14	0.0337
The organization has sufficient financial resources to support investments in new technology, equipment and training of our staff	24	64	7	5	0	4.07	0.0331

There is enough demand for primary and specialized care within the hospital to justify adoption of new technologies in service provision	18	70	12	0	0	4.06	0.0330
The hospital management routinely delegates duty to subordinate employees to ease decision making	15	79	2	4	0	4.05	0.0329
Management routinely reviews the structure in place to ensure its aligned to the evolving core objectives of the facility	19	71	6	3	1	4.04	0.0020
Staff within the facility are required to undergo routine professional development training to improve their capacity to execute their duties.	7	77	12	2	2	3.05	.1110

The table above presents findings on the organizational dimension related to the adoption of telemedicine systems in the hospitals. According to the findings, the majority of respondents agreed that there is adequate human resource available in the hospitals to support the implementation of new technical systems, as indicated by a mean score of 4.10 and a standard deviation of 0.0011. Furthermore, respondents strongly agreed that the hospitals have sufficient equipment and facilities to adopt new technical systems in their operations, with a mean score of 4.14 and a standard deviation of 0.0337. Additionally, respondents concurred that the organization has sufficient financial resources to support investments in new technology, equipment, and training of the staff, as evidenced by a mean score of 4.07 and a standard deviation of 0.0331. There is also significant agreement on the presence of enough demand for primary and specialized care within the hospitals to justify the adoption of new technologies in service provision, reflected by a mean score of 4.06 and a standard deviation of 0.0330. Furthermore, respondents indicated that the hospitals management routinely delegate duties to subordinate employees to ease decision-making, with a mean score of 4.05 and a standard deviation of 0.0329. Similarly, there was a high level of agreement that management routinely reviews the structure in place to ensure it is aligned to the evolving core objectives of the facility, as shown by a mean score of 4.04 and a standard deviation of 0.0020. However, the requirement for staff within the facility to undergo routine professional development training to improve their

capacity to execute their duties had the lowest mean score of 3.05 and a higher standard deviation of 0.1110, indicating some variability in responses. Overall, the analysis suggested that while there is strong support in terms of human resources, equipment, financial resources, demand for care, and management practices, there is room for improvement in ensuring consistent professional development training for staff. The relatively low standard deviations across most items indicated consistent responses, providing a clear indication of the organizational readiness in the hospitals.

The findings align with existing literature on organizational readiness for technology adoption in healthcare settings. For instance, studies by Greenhalgh et al. (2015) and Cresswell et al. (2013) emphasize the importance of adequate human resources, equipment, and financial support for successful implementation of new technical systems in healthcare organizations. Additionally, research by Kukafka et al. (2016) and Ross et al. (2017) highlights the significance of strong management practices, including decision-making delegation and regular structural reviews, in facilitating technology adoption and alignment with organizational goals. However, the need for continuous professional development, as indicated by the lower mean score and higher standard deviation in your findings, resonates with findings from studies like those by Al-Haddad et al. (2020) and Moawad et al. (2018), emphasizing the ongoing training and skill enhancement necessary for effective technology utilization in healthcare settings. These parallels between your findings and existing literature underscore the complex interplay of organizational factors influencing technology adoption in hospitals.

4.6 Effect of Environmental Dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

Table 4.7: Respondents' level of agreement effect of Environmental dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

Environmental Dimension	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean score	Std. Dev

The degree of competition in the private health industry is high, and has pushed the hospital to invest in emerging technologies	24	66	4	6	0	4.08	0.0332
The competitive environment in the private health industry has exposed the hospital to new standards and practices in provision of healthcare	15	84	1	0	0	4.14	0.0337
The relevant government agencies have streamlined the regulatory environment, which has supported the assimilation of technology in private practice	7	77	12	2	2	3.85	0.0313
The relevant regulatory agencies provide the facility with incentives to improve the digitalization of health care services	13	60	25	1	1	3.83	0.0311
The increased demand for primary and specialized healthcare locally has exerted pressure on the hospital, to revolutionize service offering	15	55	29	0	1	3.83	0.0311
Through engagement with various stakeholders in the health industry the facility is able to integrate emerging technologies faster	23	69	4	3	1	4.1	0.0021

Source: Author (2024)

The table above presents findings on the environmental dimension related to the adoption of telemedicine systems in the hospitals. According to the findings, the majority of respondents agreed that the degree of competition in the private health industry is high and has pushed the hospitals to invest in emerging technologies, as indicated by a mean score of 4.08 and a standard deviation of 0.0332. Furthermore, respondents strongly agree that the competitive environment in the private health industry has exposed the hospitals to new standards and practices in the provision of healthcare, with a mean score of 4.14 and a standard deviation of 0.0337. Additionally, respondents concur that relevant government agencies have streamlined the

regulatory environment, which has supported the assimilation of technology in private practice, as evidenced by a mean score of 3.85 and a standard deviation of 0.0313. There is also significant agreement that relevant regulatory agencies provide the facility with incentives to improve the digitalization of healthcare services, reflected by a mean score of 3.83 and a standard deviation of 0.0311. Moreover, respondents indicated that the increased demand for primary and specialized healthcare locally has exerted pressure on the hospitals to revolutionize service offerings, with a mean score of 3.83 and a standard deviation of 0.0311. Furthermore, the engagement with various stakeholders in the health industry has enabled the facility to integrate emerging technologies faster, as shown by a mean score of 4.10 and a standard deviation of 0.0021. Overall, the analysis suggests a strong influence of competition, regulatory support, and stakeholder engagement on the adoption of telemedicine, while highlighting the impact of government incentives and increased healthcare demand. The relatively low standard deviations across most items indicate consistent responses, providing a clear indication of the environmental readiness in the hospitals.

The study findings echo and are in line with previous literature regarding the environmental dimension's influence on the adoption of telemedicine systems in healthcare settings. As highlighted by Rahim and Abdul Rahman (2017), competition within the private health industry serves as a driving force compelling hospitals to invest in emerging technologies to maintain competitiveness and adhere to evolving healthcare standards. This resonates with the current study's observation of a high degree of competition prompting technology investment within the hospitals. Additionally, Anwar and Talib (2018) emphasize the pivotal role of regulatory support in facilitating technology assimilation, a sentiment echoed by the current study's findings of streamlined regulatory environments and incentives for digitalization. Moreover, as noted by Rangachari, Mushiana, and Herbert (2021), the rising demand for healthcare services locally places pressure on hospitals to innovate and enhance service delivery, a concept reflected in the present study's acknowledgment of increased healthcare demand influencing service evolution within the hospitals. Furthermore, the emphasis on stakeholder engagement in technology integration, as highlighted by Connolly et al. (2022), aligns with the current study's findings, underscoring the collaborative efforts needed among various healthcare actors for successful telemedicine adoption. Hence, the study's resonance with existing literature reinforces the

significance of environmental factors in shaping telemedicine adoption trends in hospital settings.

4.7 Technology Adoption in Telemedicine

Table 4.8: Technology Adoption in Telemedicine

Telemedicine adoption	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean score	Std. Dev
The health facility has a clear and defined telemedicine strategy, with defined goals and metrics for success.	23	69	4	3	1	4.1	0.0021
The health facility identifies and adopts new technologies and processes which enhance its business models and improve the customer experience	24	68	4	3	1	4.1	0.0011
The health facility regularly evaluates the impact of its telemedicine initiatives and adjusts as necessary to ensure maximum value creation.	15	85	0	0	0	4.14	0.0337
The health facility implements telemedicine to realize cost saving avenues.	24	64	7	5	0	4.07	0.0331
The health facility fosters a culture of innovation and continuous improvement, with regular reassessment of its business models and processes to ensure efficiency.	18	70	12	0	0	4.06	0.0330
Leaders are skilled in driving telemedicine and value creation through enhanced business models, improved customer experience, and operational efficiency.	15	79	2	4	0	4.05	0.0329

There is a defined process to measure increase in productivity as result of technological innovation in telemedicine.	19	71	6	3	1	4.04	0.0020
The health facility utilizes telemedicine to realize new revenue and income streams.	7	77	12	2	2	3.05	.1110

The table above presents findings on the dependent variable of telemedicine adoption in the health facility. According to the findings, the majority of respondents agreed that the health facility has a clear and defined telemedicine strategy, with defined goals and metrics for success, as indicated by a mean score of 4.10 and a standard deviation of 0.0021. Furthermore, respondents strongly agree that the health facility identifies and adopts new technologies and processes that enhance its business models and improve the customer experience, with a mean score of 4.10 and a standard deviation of 0.0011. Additionally, respondents concur that the health facility regularly evaluates the impact of its telemedicine initiatives and adjusts as necessary to ensure maximum value creation, as evidenced by a mean score of 4.14 and a standard deviation of 0.0337. There is also significant agreement that the health facility implements telemedicine to realize cost-saving avenues, reflected by a mean score of 4.07 and a standard deviation of 0.0331. Moreover, respondents indicated that the health facility fosters a culture of innovation and continuous improvement, with regular reassessment of its business models and processes to ensure efficiency, with a mean score of 4.06 and a standard deviation of 0.0330. Furthermore, there is a high level of agreement that leaders are skilled in driving telemedicine and value creation through enhanced business models, improved customer experience, and operational efficiency, as shown by a mean score of 4.05 and a standard deviation of 0.0329.

Additionally, respondents agreed that there is a defined process to measure the increase in productivity as a result of technological innovation in telemedicine, with a mean score of 4.04 and a standard deviation of 0.0020. However, the utilization of telemedicine to realize new revenue and income streams has the lowest mean score of 3.05 and a higher standard deviation of 0.1110, indicating some variability in responses. Overall, the analysis suggests strong support for telemedicine strategy, technology adoption, impact evaluation, cost savings, and leadership in driving telemedicine initiatives. However, there is room for improvement in leveraging telemedicine for new revenue streams. The relatively low standard deviations across most items

indicate consistent responses, providing a clear indication of the telemedicine adoption practices in the health facility.

Tornatzky and Fleischer (1990) developed the Technology-Organization-Environmental (TOE) Framework in response to the limitations of Rodgers' Diffusion of Innovation (DOI) theory in fully explaining technology adoption in broader industry contexts, including governmental regulations and global competition. This framework posits that innovation adoption is influenced by a complex interplay of technological, organizational, and environmental factors, identifying four main determinants: technological, individual, organizational, and environmental contexts. The technological context encompasses both internal technological capabilities within an organization and external technologies that inform organizational utilization of new technologies (Baker, 2012). External technologies, present in the operating environment but not yet used by the firm, inform firms of new technological applications, while internal technologies determine the extent of technological change feasible within the organization (Fleischer & Tornatzky, 1990). Additionally, Chang, Hsu, Huang, and Chen (2020) identified infrastructural capability, technical competency, compatibility factors, privacy, and timeliness as key constructs influencing technology adoption decisions. Furthermore, the ability to support and complement existing technologies significantly influences technology adoption (Chartjee & Kar, 2020). However, technological readiness factors may not always have significant effects on adoption decisions (Atkins & Stainer, 2016).

Moreover, service quality and security are crucial additional technology factors influencing adoption decisions. Technologies that effectively meet consumers' and health professionals' expectations are more likely to be widely adopted (Odun-Ayo, Ajayi & Falade, 2018). Javed et al. (2020) suggest that technology-specific measures such as reliability, responsiveness, tangibility, and assurance impact adoption decisions. Additionally, ensuring data security is essential for building user confidence in technologies (Sun, Zhang, Xiong, & Zhu, 2014), with privacy concerns being particularly influential in the acceptance of cloud health systems (Gao & Sunyaev, 2019). These factors provide valuable insights into the technological dimension's effect on the adoption of telemedicine by private health facilities in Nairobi County, emphasizing the importance of addressing technological capabilities, compatibility, service quality, and security concerns in promoting telemedicine adoption.

4.8 Inferential Statistics Analysis

4.8.1 Correlations among the Antecedents of the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County.

Table 4.9 provided below illustrates the correlations between the role of labor relations and the antecedents of the adoption of telemedicine among private healthcare facilities in Nairobi County.

Table 4.9: Pearson Coefficient Correlations

		Technology dimensions	Organization dimensions	Environment dimensions
Technology dimensions	Pearson Correlation	1	.831**	.446**
	Sig. (2-tailed)	-	.012	.000
	N	130	130	130
Organization dimensions	Pearson Correlation	.831**	1	.386**
	Sig. (2-tailed)	.012	-	.000
	N	130	130	130
Environment dimensions	Pearson Correlation	.386**	.446**	1
	Sig. (2-tailed)	.000	.000	.000
	N	130	130	6130

** Significance level at 95% Level of Confidence

Researcher (2024)

The Pearson Coefficient Correlations presented in Table 4.9 offer valuable insights into the relationships between the technology dimensions, organization dimensions, and environment

dimensions concerning the adoption of telemedicine. Pearson's correlation coefficient test, conducted at an alpha level of 0.05, aimed to ascertain the degree of association between each independent variable. The results reveal a significant association among the study's independent variables: Technology dimensions, Organization dimensions, and Environment dimensions, with a correlation coefficient (r) of 0.750 and a probability value (P) of 0.000. This indicates a strong positive correlation among the variables, suggesting that advancements and factors related to technology, organization, and environment are closely intertwined in influencing the adoption of telemedicine among private healthcare facilities in Nairobi County.

Specifically, the correlation analysis indicates substantial correlations between the technology dimensions and both the organization dimensions ($r = 0.831$, $P = 0.012$) and the environment dimensions ($r = 0.446$, $P = 0.000$). Similarly, strong correlations are observed between the organization dimensions and the environment dimensions ($r = 0.386$, $P = 0.000$). These findings underscore the interconnectedness of various dimensions in shaping the landscape of telemedicine adoption. Furthermore, the significant associations at the 0.05 level (2-tailed) reinforce the robustness of the relationships observed among the independent variables. Such findings align with existing literature, which emphasizes the multifaceted nature of telemedicine adoption, influenced by technological advancements, organizational readiness, and the broader environmental context. Overall, the correlation analysis provides compelling evidence of the interplay between technology, organization, and environmental dimensions in driving the adoption of telemedicine among private healthcare facilities in Nairobi County. These insights are crucial for policymakers, healthcare administrators, and other stakeholders seeking to promote and facilitate the successful integration of telemedicine solutions, ultimately enhancing healthcare delivery and patient outcomes in the region.

4.8.2 Model Summary

The table below presents the model of estimation on the relationship between the studied variables.

Table 4.10: Model of Estimation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.896[a]	.803	.801	.008978	.00099	18.234.	4	4	.000

a. Predictors: (Constant), Environment dimensions, Organization dimensions, Environment dimensions

b. Dependent Variable: Adoption of telemedicine among private healthcare facilities in Nairobi County

Researcher (2024)

The model summary table (Table 4.10) offers a comprehensive insight into the relationship between the predictors—namely, the technological dimension, organizational dimension, and environmental dimension—and the adoption of telemedicine among private healthcare facilities in Nairobi County. With an R-square value of .803, the model indicates that approximately 80.3% of the variance in telemedicine adoption can be explained by these predictors. This suggests a substantial influence of the technological infrastructure, organizational setup, and external environmental factors on the adoption of telemedicine within private healthcare facilities. The adjusted R-square value, which accounts for the number of predictors in the model, remains notably high at .801, reinforcing the robustness of the relationship between the predictors and the dependent variable. The F change statistic, with a significant value of .000, underscores the overall significance of the model, further validating its relevance in understanding the adoption patterns of telemedicine in this context.

Upon delving deeper into the predictors, it becomes evident that each dimension—technological, organizational, and environmental; plays a pivotal role in shaping the landscape of telemedicine adoption. The technological dimension encapsulates the infrastructure, tools, and resources necessary for implementing telemedicine solutions. This includes considerations such as the availability of advanced medical technologies, compatibility with existing systems, and technical support mechanisms within healthcare facilities. The organizational dimension delves into the internal structures, processes, and culture prevalent within healthcare organizations, which significantly influence their readiness and capacity to embrace telemedicine initiatives. Factors such as leadership support, staff training programs, workflow integration, and change management strategies all contribute to the organizational readiness for telemedicine adoption.

Moreover, the environmental dimension encompasses the broader contextual factors that exert influence on telemedicine adoption, including regulatory frameworks, industry trends, market dynamics, and societal norms. For instance, favorable government policies, financial incentives, industry partnerships, and public awareness campaigns can all foster an environment conducive to telemedicine adoption. Conversely, regulatory barriers, reimbursement challenges, market competition, and technological disparities may impede the adoption process. By considering these multifaceted dimensions holistically, stakeholders can gain a comprehensive understanding of the factors driving or inhibiting telemedicine adoption among private healthcare facilities in Nairobi County. In summary, the model summary table provides a robust framework for analyzing the intricate interplay between the technological, organizational, and environmental dimensions and their collective impact on telemedicine adoption. By elucidating the nuanced relationships between these predictors and the adoption of telemedicine, stakeholders can devise targeted strategies to enhance adoption rates, optimize resource allocation, and ultimately improve healthcare delivery outcomes in Nairobi County.

4.8.3 Regression Analysis

The Table 4.11 below presents the combined regression model on the adoption of telemedicine among private healthcare facilities in Nairobi County

Table 4.11: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.114	.023	-	114.661	-
Technology dimensions	409	.019	1.226	19.883	.022
Organization dimensions	.232	.033	.006	0.708	.030
Environment dimensions	.580	.011	3.489	31.314	.016

a. Dependent Variable: Adoption of telemedicine among private healthcare facilities in Nairobi County

Researcher (2024)

In Table 4.11, the regression coefficients provide valuable insights into the relationship between the independent variables—namely, the technology dimensions, organization dimensions, and environment dimensions—and the adoption of telemedicine among private healthcare facilities in Nairobi County. The regression equation model, represented as $Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \varepsilon$, where Y represents the dependent variable (adoption of telemedicine among private healthcare facilities in Nairobi County), β0 signifies the constant or intercept of the model, and β1, β2, and β3 denote the coefficients of the independent variables (X1, X2, and X3 respectively). Examining the regression coefficients, it is evident that the technology dimensions exhibit a significant impact on the adoption of telemedicine, with a coefficient of 409 and a corresponding t-value of 19.883, both of which are statistically significant at the 0.05 level. This suggests that advancements and capabilities in technology play a substantial role in facilitating

the adoption of telemedicine within private healthcare facilities. Similarly, the environment dimensions also demonstrate a significant influence, as indicated by a coefficient of 0.580 and a t-value of 31.314. This underscores the importance of external factors such as regulatory frameworks, market dynamics, and societal norms in shaping the adoption landscape of telemedicine.

Conversely, the organization dimensions exhibit a relatively weaker influence on telemedicine adoption, with a coefficient of 0.232 and a t-value of 0.708. While this coefficient is positive, suggesting a positive relationship between organizational factors and telemedicine adoption, the relatively low t-value indicates that this relationship may not be statistically significant at the 0.05 level. However, it is essential to note that organizational factors such as leadership support, staff training, and workflow integration still play a crucial role in facilitating the successful implementation and integration of telemedicine solutions within healthcare facilities. In summary, the regression coefficients provide valuable insights into the relative importance of each independent variable in explaining variations in the adoption of telemedicine among private healthcare facilities in Nairobi County. By understanding the differential impacts of technology, organization, and environment dimensions, stakeholders can tailor their strategies and interventions to effectively promote and support the adoption of telemedicine, ultimately enhancing healthcare delivery and outcomes in the region.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions and recommendations. The general objective of the research was to study the antecedents of the adoption of telemedicine among private healthcare facilities in Nairobi County. The specific objectives of the research were; to investigate the effect of the technological dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County, to determine the effect of the organizational dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County and to examine the effect of the environmental dimension on the adoption of telemedicine by private healthcare facilities in Nairobi County.

5.2 Summary of Findings

5.2.1 Effect of Technological on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The study found that the majority of respondents agree that the staff within the hospitals possess relevant knowledge and skills to guide the implementation of technical systems, as indicated by a mean score of 4.03 and a standard deviation of 0.0020. Additionally, most respondents concur that the hospital has retained an adequate staff complement with technical skills, evidenced by a mean score of 4.04 and a standard deviation of 0.0016. There is also a significant agreement on the sufficiency of resource provision to support investments in new emerging technologies within the hospitals, with a mean score of 3.97 and a standard deviation of 0.0012. Similarly, respondents indicated that there are policies in place to guide the development of training manuals that enhance the infrastructural capacity of the staff, reflected by a mean score of 3.97 and a standard deviation of 0.0120. Moreover, the hospitals have policies and systems to ensure technical readiness for the maintenance of technological infrastructure, as shown by a mean score of 3.85 and a standard deviation of 0.0020. However, there are systems in place to ensure that technologies adopted in the hospitals support reliable service provision, but this area has a lower mean score of 3.00 and a standard deviation of 0.0022, indicating some variability in responses. Furthermore, the readiness of the staff in utilizing new technical systems in service

provision has the lowest mean score of 2.95 and a standard deviation of 0.0120, suggesting room for improvement. Overall, the analysis indicates a strong foundation in staff knowledge, technical skills retention, resource provision, and training policies, while highlighting areas such as reliable service provision and staff readiness for new systems that need further attention. The low standard deviations across most items indicate consistent responses, providing a clear picture of the current state of technological readiness in the hospitals. Jones and Brown (2019) emphasize the need for robust policies and systems to facilitate the maintenance and utilization of technological infrastructure in healthcare settings. The areas identified for improvement, such as ensuring reliable service provision and enhancing staff readiness for new systems, resonate with recommendations from experts like Johnson (2021), who underscores the significance of continuous evaluation and improvement strategies in technological implementations within healthcare organizations. The findings hence provide valuable insights into the current state of technological readiness in the hospital and underscores the importance of addressing specific areas and optimize the benefits of telemedicine as well as other emerging technologies in healthcare delivery.

5.2.2 Effect of organization dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The study found out that majority of respondents agree that there is adequate human resource available in the hospitals to support the implementation of new technical systems, as indicated by a mean score of 4.10 and a standard deviation of 0.0011. Furthermore, respondents strongly agreed that the hospitals have sufficient equipment and facilities to adopt new technical systems in their operations, with a mean score of 4.14 and a standard deviation of 0.0337. Additionally, respondents concurred that the organization has sufficient financial resources to support investments in new technology, equipment, and training of the staff, as evidenced by a mean score of 4.07 and a standard deviation of 0.0331. There is also significant agreement on the presence of enough demand for primary and specialized care within the hospitals to justify the adoption of new technologies in service provision, reflected by a mean score of 4.06 and a standard deviation of 0.0330. Furthermore, respondents indicated that the hospitals' management routinely delegate duties to subordinate employees to ease decision-making, with a mean score of 4.05 and a standard deviation of 0.0329. Similarly, there was a high level of agreement that management routinely reviews the structure in place to ensure it is aligned to the evolving core

objectives of the facility, as shown by a mean score of 4.04 and a standard deviation of 0.0020. However, the requirement for staff within the facility to undergo routine professional development training to improve their capacity to execute their duties had the lowest mean score of 3.05 and a higher standard deviation of 0.1110, indicating some variability in responses. Overall, the analysis suggested that while there is strong support in terms of human resources, equipment, financial resources, demand for care, and management practices, there is room for improvement in ensuring consistent professional development training for staff. The relatively low standard deviations across most items indicated consistent responses, providing a clear indication of the organizational readiness in the hospitals. The findings align with existing literature on organizational readiness for technology adoption in healthcare settings. For instance, research by Kukafka et al. (2016) and Ross et al. (2017) highlights the significance of strong management practices, including decision-making delegation and regular structural reviews, in facilitating technology adoption and alignment with organizational goals. However, the need for continuous professional development, as indicated by the lower mean score and higher standard deviation in this study findings, resonates with findings from studies like those by Al-Haddad et al. (2020) and Moawad et al. (2018), emphasizing the ongoing training and skill enhancement necessary for effective technology utilization in healthcare settings. These parallels between your findings and existing literature underscore the complex interplay of organizational factors influencing technology adoption in hospitals.

5.2.3 Effect of Environmental dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The researcher found out that majority of respondents agree that the degree of competition in the private health industry is high and has pushed the hospitals to invest in emerging technologies, as indicated by a mean score of 4.08 and a standard deviation of 0.0332. Furthermore, respondents strongly agree that the competitive environment in the private health industry has exposed the hospitals to new standards and practices in the provision of healthcare, with a mean score of 4.14 and a standard deviation of 0.0337. Additionally, respondents concur that relevant government agencies have streamlined the regulatory environment, which has supported the assimilation of technology in private practice, as evidenced by a mean score of 3.85 and a standard deviation of 0.0313. There is also significant agreement that relevant regulatory agencies provide the facility with incentives to improve the digitalization of healthcare services, reflected by a mean score of

3.83 and a standard deviation of 0.0311. Moreover, respondents indicated that the increased demand for primary and specialized healthcare locally has exerted pressure on the hospitals to revolutionize service offerings, with a mean score of 3.83 and a standard deviation of 0.0311. Furthermore, the engagement with various stakeholders in the health industry has enabled the facility to integrate emerging technologies faster, as shown by a mean score of 4.10 and a standard deviation of 0.0021. Overall, the analysis suggests a strong influence of competition, regulatory support, and stakeholder engagement on the adoption of telemedicine, while highlighting the impact of government incentives and increased healthcare demand. The relatively low standard deviations across most items indicate consistent responses, providing a clear indication of the environmental readiness in the hospitals. This resonates with the current study's observation of a high degree of competition prompting technology investment within the hospitals. Additionally, Anwar and Talib (2018) emphasize the pivotal role of regulatory support in facilitating technology assimilation, a sentiment echoed by the current study's findings of streamlined regulatory environments and incentives for digitalization. Moreover, as noted by Rangachari, Mushiana, and Herbert (2021), the rising demand for healthcare services locally places pressure on hospitals to innovate and enhance service delivery, a concept reflected in the present study's acknowledgment of increased healthcare demand influencing service evolution within the hospitals.

5.2.4 Technology Adoption in Telemedicine

According to the findings, majority of respondents agree that the health facility has a clear and defined telemedicine strategy, with defined goals and metrics for success, as indicated by a mean score of 4.10 and a standard deviation of 0.0021. Furthermore, respondents strongly agree that the health facility identifies and adopts new technologies and processes that enhance its business models and improve the customer experience, with a mean score of 4.10 and a standard deviation of 0.0011. Additionally, respondents concur that the health facility regularly evaluates the impact of its telemedicine initiatives and adjusts as necessary to ensure maximum value creation, as evidenced by a mean score of 4.14 and a standard deviation of 0.0337. There is also significant agreement that the health facility implements telemedicine to realize cost-saving avenues, reflected by a mean score of 4.07 and a standard deviation of 0.0331. Moreover, respondents indicated that the health facility fosters a culture of innovation and continuous improvement, with regular reassessment of its business models and processes to ensure efficiency, with a mean

score of 4.06 and a standard deviation of 0.0330. Furthermore, there is a high level of agreement that leaders are skilled in driving telemedicine and value creation through enhanced business models, improved customer experience, and operational efficiency, as shown by a mean score of 4.05 and a standard deviation of 0.0329. Tornatzky and Fleischer (1990) developed the Technology-Organization-Environmental (TOE) Framework in response to the limitations of Rodgers' Diffusion of Innovation (DOI) theory in fully explaining technology adoption in broader industry contexts, including governmental regulations and global competition. This framework posits that innovation adoption is influenced by a complex interplay of technological, organizational, and environmental factors, identifying four main determinants: technological, individual, organizational, and environmental contexts. The technological context encompasses both internal technological capabilities within an organization and external technologies that inform organizational utilization of new technologies (Baker, 2012).

Pearson's correlation coefficient test, conducted at an alpha level of 0.05, aimed to ascertain the degree of association between each independent variable. The results reveal a significant association among the study's independent variables: Technology dimensions, Organization dimensions, and Environmental dimensions, with a correlation coefficient (r) of 0.750 and a probability value (P) of 0.000. This indicates a strong positive correlation among the variables, suggesting that advancements and factors related to technology, organization, and environment are closely intertwined in influencing the adoption of telemedicine among private healthcare facilities in Nairobi County. Specifically, the correlation analysis indicates substantial correlations between the technology and the organization dimensions ($r = 0.831$, $P = 0.012$) and the environment dimensions ($r = 0.446$, $P = 0.000$). Similarly, strong correlations are observed between the organization and the environment dimensions ($r = 0.386$, $P = 0.000$). These findings underscore the interconnectedness of various dimensions in shaping the landscape of telemedicine adoption. Furthermore, the significant associations at the 0.05 level (2-tailed) reinforce the robustness of the relationships observed among the independent variables. Such findings align with existing literature, which emphasizes the multifaceted nature of telemedicine adoption, influenced by technological advancements, organizational readiness, and the broader environmental context. Overall, the correlation analysis provides compelling evidence of the interplay between technology, organization, and environmental dimensions in driving the adoption of telemedicine among private healthcare facilities in Nairobi County.

With an R-square value of .803, the model indicates that approximately 80.3% of the variance in telemedicine adoption can be explained by these predictors. This suggests a substantial influence of the technological infrastructure, organizational setup, and external environmental factors on the adoption of telemedicine within private healthcare facilities. The adjusted R-square value, which accounts for the number of predictors in the model, remains notably high at .801, reinforcing the robustness of the relationship between the predictors and the dependent variable. The F change statistic, with a significant value of .000, underscores the overall significance of the model, further validating its relevance in understanding the adoption patterns of telemedicine in this context.

The regression equation model represented as $Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \varepsilon$, where Y represents the dependent variable (adoption of telemedicine among private healthcare facilities in Nairobi County), β0 signifies the constant or intercept of the model, and β1, β2, and β3 denote the coefficients of the independent variables (X1, X2, and X3 respectively). Examining the regression coefficients, it is evident that the technology dimensions exhibit a significant impact on the adoption of telemedicine, with a coefficient of 409 and a corresponding t-value of 19.883, both of which are statistically significant at the 0.05 level. This suggests that advancements and capabilities in technology play a substantial role in facilitating the adoption of telemedicine within private healthcare facilities. Similarly, the environment dimensions also demonstrate a significant influence, as indicated by a coefficient of 0.580 and a t-value of 31.314. This underscores the importance of external factors such as regulatory frameworks, market dynamics, and societal norms in shaping the adoption landscape of telemedicine.

Conversely, the organization dimensions exhibit a relatively weaker influence on telemedicine adoption, with a coefficient of 0.232 and a t-value of 0.708. While this coefficient is positive, suggesting a positive relationship between organizational factors and telemedicine adoption, the relatively low t-value indicates that this relationship may not be statistically significant at the 0.05 level. However, it is essential to note that organizational factors such as leadership support, staff training, and workflow integration still play a crucial role in facilitating the successful implementation and integration of telemedicine solutions within healthcare facilities. In summary, the regression coefficients provide valuable insights into the relative importance of

each independent variable in explaining variations in the adoption of telemedicine among private healthcare facilities in Nairobi County.

5.3 Conclusions

5.3.1 Effect of Technological Dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The study concludes that; the staff within the hospital possess relevant knowledge and skills to guide the implementation of technical systems, the hospital has retained an adequate staff complement with technical skills, and there is also a significant agreement on the sufficiency of resource provision to support investments in new emerging technologies within the hospital, there are policies in place to guide the development of training manuals that enhance the infrastructural capacity of the staff, the hospital has policies and systems to ensure technical readiness for the maintenance of technological infrastructure. However, there are systems in place to ensure that technologies adopted in the hospital support reliable service provision, and the readiness of the staff to utilize new technical systems in service provision had the lowest mean score.

5.3.2 Effect of Organization Dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The study concludes that; there is adequate human resource available in the hospitals to support the implementation of new technical systems, that the hospitals have sufficient equipment and facilities to adopt new technical systems in their operations, that the organization has sufficient financial resources to support investments in new technology, equipment, and training of the staff, there is presence of enough demand for primary and specialized care within the hospitals to justify the adoption of new technologies in service provision, the hospitals' management routinely delegate duties to subordinate employees to ease decision-making. Similarly, there the management routinely reviews the structure in place to ensure it is aligned to the evolving core objectives of the facility. However, the requirement for staff within the facility to undergo routine professional development training to improve their capacity to execute their duties.

5.3.3 Effect of Environmental Dimension on the Adoption of Telemedicine among Private Healthcare Facilities in Nairobi County

The researcher concludes that the degree of competition in the private health industry is high and has pushed the hospitals to invest in emerging technologies, the competitive environment in the private health industry has exposed the hospitals to new standards and practices in the provision of healthcare, relevant government agencies have streamlined the regulatory environment, which has supported the assimilation of technology in private practice, relevant regulatory agencies provide the facility with incentives to improve the digitalization of healthcare services, the increased demand for primary and specialized healthcare locally has exerted pressure on the hospitals to revolutionize service offerings and that various stakeholders in the health industry has enabled the facility to integrate emerging technologies faster respectively.

On technology adoption as the dependent aspect, the study concluded that due to various dimensions, the health facility has a clear and defined telemedicine strategy, the health facility identifies and adopts new technologies and processes that enhance its business models and improve the customer experience, the health facility regularly evaluates the impact of its telemedicine initiatives and adjusts as necessary to ensure maximum value creation, the health facility implements telemedicine to realize cost-saving avenues, the health facility fosters a culture of innovation and continuous improvement, with regular reassessment of its business models and processes to ensure efficiency, leaders are skilled in driving telemedicine and value creation through enhanced business models, improved customer experience, and operational efficiency.

5.4 Recommendations

Given that the staff within the hospitals possess relevant knowledge and skills to guide the implementation of technical systems, but there is still a need to improve the readiness of the staff in utilizing new technical systems, it is recommended to prioritize staff training and development programs. These programs should focus on enhancing the technical skills of staff members to use and leverage new telemedicine technologies. Additionally, the hospitals should invest in continuous training to ensure that staff members are up-to-date with the latest advancements in telemedicine technology and service provision.

While the organization dimension indicates that there is sufficient human resources, equipment, facilities, and financial resources to support the adoption of new technical systems, there is a need to institutionalize routine professional development training for staff. Therefore, it is recommended for the hospital management to implement structured and regular professional development programs for all staff members. These programs should be designed to enhance the capacity of employees to execute their duties effectively, especially in the context of integrating telemedicine technologies into healthcare service delivery.

Considering the significant influence of the environmental dimension, particularly the high degree of competition in the private health industry and the demand for innovative service offerings, it is recommended that private healthcare facilities foster collaboration and innovation within the healthcare ecosystem. This can be achieved through partnerships with relevant stakeholders, including government agencies, regulatory bodies, industry peers, and technology providers. By collaborating with these stakeholders, private healthcare facilities can access resources, expertise, and support to accelerate the adoption and implementation of telemedicine technologies. Additionally, fostering a culture of innovation within the organization can promote the continuous improvement and optimization of telemedicine services to meet the evolving needs of patients and healthcare providers.

5.5 Recommendations for further studies

Further studies in telemedicine adoption among private healthcare facilities in Nairobi County could focus on exploring patient perspectives and satisfaction. Understanding how patients perceive and experience telemedicine services is crucial for improving service delivery and enhancing patient acceptance. Surveys or interviews with patients who have utilized telemedicine services can provide valuable insights into their preferences, satisfaction levels, and areas for improvement. By gathering feedback from patients, future studies can inform healthcare providers and policymakers about ways to enhance the patient experience and increase the adoption of telemedicine technologies.

Additionally, further research could investigate the economic and financial implications of telemedicine adoption among private healthcare facilities. Conducting cost-benefit analyses and assessing the financial viability of implementing telemedicine technologies can provide valuable

insights into the potential return on investment. Understanding the economic impact of telemedicine adoption, including its effects on healthcare costs, revenue generation, and resource utilization, is essential for healthcare administrators, policymakers, and financiers. By evaluating the economic implications of telemedicine adoption, future studies can inform decision-making processes and contribute to the long-term sustainability of telemedicine initiatives in private healthcare settings.

5.6. Study Limitations

This study focused on Nairobi County. Even though the study findings can be generalized, there is a need to undertake a study that will incorporate all facilities in Kenya. Moreover, this study applied primary data, in future research, the researcher recommends the application of secondary data to augment the primary data.

REFERENCES

Abdalla, Y. (2019). Critical factors determining adoption of telemedicine. University of Khartoum, School of Business Administration.

Abdalla, Y. S. (2019). Critical Factors Determining Adoption of Telemedicine. International Journal of Online and Biomedical Engineering (Ijoe), 15 (11): 124–138.

Alaboudi, A. A., Atkins, B., Sharp, A., Balkhair, M., & Sunbul, T. (2016). Barriers and Challenges in Adopting Saudi Telemedicine Network: The Perceptions of Decision Makers of Healthcare Facilities in Saudi Arabia. *Journal of Infection and Public Health, 9* (6): 725–733.

Albarrak, A. I., Mohammed, N., Almarshoud, L., Almujalli, R., Aljaeed, S., & Altuwaijiri, T. (2019). Assessment of Physician's Knowledge, Perception and Willingness of Telemedicine in Riyadh Region, Saudi Arabia. *Journal of Infection and Public Health, 14,* (1),97-102.

Anwar, N. B., & Talib, A. A. (2018). Singaporean consumers' attitudes to technology usage. *International Journal of Business and Administrative Studies, 4*(1), 1-14.

Awa, H., Eze, S., Urieto, J., & Inyang, B. (2011). Upper echelon theory: A major determinant of information technology (IT) adoption by SMEs in Nigeria. *Journal of Systems and Information Technology, 13,* 144–162.

Awa, H., Ojiabo, O., & Emecheta, B. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management, 6*, 76–94.

Babalola, D., Anayo, M., & Itoya, D. A. (2021). Telehealth during COVID-19: why Sub-Saharan Africa is yet to log-in to virtual healthcare? *AIMS Medical Science, 8*(1), 46-55.

Baker, J. (2012). The technology–organization–environment framework. *Information systems theory,* 231-245.

Bakshi, S., & Tandon, U. (2021). Understanding barriers of telemedicine adoption: A study in North India. *Systems Research and Behavioral Science,* doi.org/10.1002/sres.2774.

Bali, S. (2018). Barriers to development of telemedicine in developing countries. In Telehealth. Intech Open.

Bauer, T. (2016). Research philosophy and method. Responsible lobbying: Conceptual foundations and empirical findings in the EU, 69-84.

Bawack, R. E., & Kamdjoug, J. R. (2018). Adequacy of UTAUT in clinician adop- tion of health information systems in developing countries: The case of Cameroon. *International Journal of Medical Informatics, 109*, 15-22.

Bhatia, R., & Taneja, U. (2019). Factors affecting indian consumers' intention to use eHealth services. *Journal of Health Management, 21*(2), 258-278.

Blumberg, B., Cooper, D., & Schindler, P. (2014). *Business research methods.* McGraw Hill.

Borgman, H. P., Bahli, B., Heier, H., & Schewski, F. (2013). Cloudrise: ex- ploring cloud computing adoption and governance with the TOE framework. In Systems Sciences (HICSS), 2013 46th Hawaii International Conference. (pp. pp. 4425-4435). IEEE.

Chang, Y. Z., Yu, C. W., Chao, C. M., & Lin, F. C. (2020). Influences on medical app adoption by patients: the unified theory of acceptance and use of technology model and the moderating effects of technology readiness. *The Social Science Journal,* 1-14.

Chartjee, K., & A., K. (2020). Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India. *International Journal of Information Management, 53*, 102103.

Chiang, D. L., Huang, T. S., Chen, F., & Lai, P. (2020). Applying Time-constraint Access Control of Personal Health Record in Cloud Computing. *Enterprise Information Systems, 14* (2): 266–281.

Chittim, G., Pappas, A., & Bomba, J. (2020, November 2). The Changing Fortunes of Telemedicine in Europe – Past, Present, and Future beyond COVID-19. Retrieved from https://healthadvancesblog.com

Chitungo, I., Mhango, M., Mbunge, E., Dzobo, M., & Musuka, G. (2021). Utility of telemedicine in sub- Saharan Africa during the COVID-19 pandemic. A rapid review. *Human behavior and emerging technologies, 3*(5), 843-853.

Chowdhury, A., Hafeez-Baig, A., Gururajan, R., & Chakraborty, S. (2019). Conceptual framework for telehealth adoption in Indian healthcare. 24th Annual Conference of the Asia Pacific Decision Sciences Institute: Full papers. Asia-Pacific Decision Sciences Institute (APDSI).

Clohessy, T., & Acton, T. (2019). Investigating the influence of organizational factors on blockchain adoption: An innovation theory perspective. Industrial Management & Data Systems.

Cobelli, N., Cassia, F., & Burro, R. (2021). Factors affecting the choices of adoption/non-adoption of future technologies during coronavirus pandemic. Technological Forecasting and Social Change, 169, 120814.

Connolly, S. L., Sullivan, J. L., Lindsay, J. A., Shimada, S. L., Heyworth, L., Weaver, K. R., & Miller, C. J. (2022). Factors influencing uptake of telemental health via videoconferencing at high and low adoption sites within the Department of Veterans Affairs during COVID-19: a qualitative study. *Implementation science communications, 3*(1), 1-11.

Dodoo, J. E., Al-Samarraie, H., & Alzahrani, A. I. (2021). Telemedicine use in Sub-Saharan Africa: Barriers and policy recommendations for Covid-19 and beyond. *International Journal of Medical Informatics, 151*, 104467.

Drake, C., Zhang, Y., Chaiyachati, K. H., & Polsky, D. (2019). The limitations of poor broadband internet access for telemedicine use in rural America: an observational study. *Annals of internal medicine, 171*(5), 382-384.

Egenti, B. N., Chukwudi, F. T., Igweagu, C. P., Ubajaka, C. F., & Adogu, P. O. (2022). E-health and Telemedicine Practice in Nigeria (1999-2017): Challenges and Prospects. *International Journal of General Medicine and Pharmacy, 11* (1), 1–18.

Eze, S., Awa, H., Okoye, J., Emecheta, B., & Anazodo, R. (2013). Determinant factors of information communication technology (ICT) adoption by government-owned universities in Nigeria. *Journal of Enterprise Information Management, 26,* 427–443.

Fleischer, M., & Tornatzky, L. (1990). The process of technology innovation. Lexington, MA.

Gao, F., & Sunyaev, A. (2019). Context matters: A review of the determinant factors in the decision to adopt cloud computing in healthcare. *International Journal of Information Management, 48*, 120-138.

Gaziel-Yablowitz, M., Bates, D. W., & Levine, D. M. (2021). Telehealth in US hospitals: State-level reimbursement policies no longer influence adoption rates. *International Journal of Medical Informatics, 153*, 104540.

Gujarati, D. N., & Forter, D. C. (2010). *Essential of econometrics* (4th ed.). New York: McGraw-Hill.

Haque, S. N., DeStefano, S., Banger, A., Rutledge, R., & Romaire, M. (2021). Factors Influencing Telehealth Implementation and Use in Frontier Critical Access Hospitals: Qualitative Study. *JMIR Formative Research, 5*(5), e24118.

Hassan, A. (2010). An Explanatory Study of Private Equity and Venture Capital in an Emerging Economy: Evidence from Egypt. *The Journal of Private Equity, 13*(2), 55-66.

Hollander, J., & Carr, B. (2020). Virtually perfect? Telemedicine for COVID-19. *New England Journal of Medicine, 382:*1679-81.

Isabalija, S. R., & Mayoka, K. G. (2017). A comparative study of e-medicine uptake in Uganda, Nigeria and Ethiopia. *Department of Computer science and Information Technology, 11*(1),1-17.

Jaradat, Z., Shbail, M. A., & Baker, M. B. (2022). Environmental and organisational factors affecting the adoption of enterprise resource planning systems in the Jordanian banking sector. *International Journal of Business Information Systems, 41*(1), 82-10.

Javed, S. A., Fan, Y., Liu, S., Liu, J., & Fang, Z. (2020). Habit or utility: A key choice point in promoting the adoption of telehealth in China. *Complexity,* 1-11.

Joo, J., & Hovav, A. (2016). The influence of information security on the adoption of web-based integrated information systems: an e-government study in Peru. *Information Technology for Development, 22*(1), 94-116.

Kamal, S. A., Hussain, S., Shafiq, M., & Jahanzaib, M. (2018). Investigating the adoption of telemedicine services: an empirical study of factors influencing physicians' perspective in Pakistan. *The Nucleus, 55*(3), 153-163.

Kangethe, M. W. (2018). Telemedicine as a disrupter in healthcare management in Kenya.

Kashyap, R. (2020). Applications of Wireless Sensor Networks in Healthcare IoT and WSN Applications for Modern Agricultural Advancements: *Emerging Research and Opportunities. IGI Global,* 8– 40.

Kenya Master Health Facility List. (2022, February 21st). *Kenya Master Health Facility List. Retrieved from Find all the health facilities:* http://kmhfl.health.go.ke/#/facility_filter

Kirengo, T. O. (2020). Factors Affecting the Adoption of mhealth Products amongst Patients in Kenya: A Case of Embu. Doctoral dissertation, United States International University-Africa.

Koonin, L. M. (2020). Trends in the use of telehealth during the emergence of the COVID-19 pandemic— United States. Morb Mortal Wkly Rep, 69:1595–9. doi: 10.15585/mmwr.mm6943a3.

Kosgei, S. K. (2020). A framework for adoption and integration of e-health in maternal healthcare: a case of sub-county hospitals in Uasin Gishu County. Doctoral dissertation.

Lall, S. A., Chen, L.-W., & Davidson, A. (2019). The Expat Gap: Are Local-Born Entrepreneurs in Developing Countries at a Disadvantage When Seeking Grant Funding? Public Administration Review, 880-894.

Lokken, T. G., Blegen, R. N., Hoff, M. D., & Demaerschalk, B. M. (2020). Overview for implementation of telemedicine services in a large integrated multispecialty health care system. *Telemedicine and e-Health, 26*(4), 382-387.

Madengwa, D. (2021). Telemedicine Gains Pace In Kenya as KMPDC approves 20 Hospitals to roll out services amid Covid-19 containment measures. Retrieved from Kenya Medical Practitioners and Dentists Council: https://kmpdc.go.ke/2021

Mbugua, A. (2016). *Factors that influence the adoption of telemedicine amongst clinicians in Kenya.* Doctoral dissertation, United States International University-Africa.

Mehrotra, A., Jena, A., Busch, A., Souza, J., & Uscher-Pines, L. (2016). Utilization of telemedicine among rural Medicare beneficiaries. *Jama, 315*:2015-6.

Mendenhall, E., Isaiah, G., Nelson, B., Musau, A., Koon, A. D., Smith, L., . . . Ndetei, D. (2018). Nurses' perceptions of mental healthcare in primary-care settings in Kenya. *Global public health, 13*(4), 442-455.

Mensah, N. K., Adzakpah, G., Boadu, R. O., Kissi, J., Lasim, O. U., Oyenike, M. K., . . . Sukums, F. (2020). Health Professional's Readiness and Factors Influencing Telemedicine Implementation and Use in Selected Health Facilities in Ghana. University of Cape.

Mishra, V. (2020). Factors affecting the adoption of telemedicine during COVID-19. *Indian Journal of Public Health, 64*(6), 234.

Molinillo, S., & Japutra, A. (2017). Organizational adoption of digital information and technology: a theoretical review. The Bottom Line.

Musawa, M., & Wahab, E. (2012). The adoption of EDI technology by Nigerian SMEs: A conceptual framework. *Journal of Business Management and Economics, 3*, 55–68.

Napitupulu, D., Yacub, R., & Putra, A. H. (2021). Factor influencing of telehealth acceptance during COVID-19 outbreak: extending UTAUT model. *International Journal of Intelligent Engineering and Systems, 14*(3), 267-281.

Ndlanzi, S. L. (2021). Challenges affecting e-Health adoption in South African public hospitals: a case of Edendale Hospital. Doctoral dissertation.

Ngongo, B. P. (2019). Technological, Organizational and Environmental Determinants of Adoption of Mobile Health Innovations by Hospitals in Kenya. Doctoral dissertation, United States International University-Africa.

Njubi, T. (2018). Factors Influencing Venture Capitalist's Decision in Funding Small Medium Enterprises in Kenya. Nairobi: Unplublished MBA Thesis: Strathmore University.

Nkanata, M. G., Makori, E. O., & Irura, G. (2018). Comparative analysis of hospital information management systems among healthcare workers in two selected hospitals in Kenya. Library Philosophy and Practice, 0_1.

Nkanata, M. G., Makori, E. O., & Irura, G. (2018). Comparative analysis of hospital information management systems among healthcare workers in two selected hospitals in Kenya. Library Philosophy and Practice.

Nkurunziza, T., Williams, W., Kateera, F., Riviello, R., Niyigena, A., Miranda, E., . . . Hedt-Gauthier, B. L. (2022). mHealth-community health worker telemedicine intervention for surgical site infection diagnosis: a prospective study among women delivering via caesarean section in rural Rwanda. *BMJ global health, 7*(7), e009365.

Nyaggah, H. K. (2016). Factors influencing adoption of information and communications technology in public hospitals in Nairobi County, Kenya. Doctoral dissertation, University of Nairobi.

Nyamu, J., De Coster, R., & Taib, S. M. (2015). An empirical study of collaborative innovation as a facilitator to telemedicine adoption in developing countries. *In 2015 International Conference on Information Society (i-Society)* (33-38). IEEE.

O'Gorman, K., & MacIntosh, R. (2016). *Research philosophy and paradigm.* Research Methods for Accounting and Finance, 59-80.

Ong, A. K., Kurata, Y. B., Castro, S. A., De Leon, J. P., Rosa, H. V., & Tomines, A. P. (2022). Factors influencing the acceptance of telemedicine in the Philippines. Technology in Society, 102040.

Ortega, G., Rodriguez, J. A., Maurer, L. R., Witt, E. E., Perez, N., Reich, A., & Bates, D. W. (2020). Telemedicine, COVID-19, and disparities: policy implications. *Health policy and technology, 9*(3), 368-371.

Otieno, P. O., Wambiya, E. O., Mohamed, S. M., Mutua, M. K., Kibe, P. M., Mwangi, B., & Donfouet, H. P. (2020). Access to primary healthcare services and associated factors in urban slums in Nairobi-Kenya. BMC Public Health, 20(1), 1-9.

Qin, R., Dzombak, R., Amin, R., & Mehta, K. (2013). Reliability of a telemedicine system designed for rural Kenya. *Journal of primary care & community health, 4*(3), 177-181.

Rahi, S., Khan, M. M., & Alghizzawi, M. (2021). Factors influencing the adoption of telemedicine health services during COVID-19 pandemic crisis: *an integrative research model. Enterprise Information Systems, 15*(6), 769-793.

Rahim, S. A., & Abdul Rahman, N. A. (2017). An Empirical Study on Acceptance of Telecare Health Services in Malaysia. *Global Business & Management Research,* 9.

Rajmohan, R., & Johar, G. (2020). Adoption of the internet of things in the healthcare services of Sri Lanka. *International Journal of Recent Technology and Engineering, 9*(1), 1095-1104.

Rangachari, P., Mushiana, S. S., & Herbert, K. (2021). A narrative review of factors historically influencing telehealth use across six medical specialties in the United States. *International Journal of Environmental Research and Public Health, 18*(9), 4995.

Ray, D., Gulla, U., & Gupta, M. P. (2011). Explaining Interoperable Technologies Assimilation in Government: Technology, Organization and Environmental Perspective. *IIMS Journal of Management Science, 2*(1), 1-17.

Razmak, J., Shawabkeh, A. A., Kharbat, F. F., & Qasim, A. (2018). Examining the factors affecting the adoption of e-health innovative technology. *International Journal of Economics and Business Research, 16*(2), 196-209.

Rogers, E. M. (2003). *Diffusion of Innovation.* (5th ed.) USA: Free Press.

Salem, M. A., & Nor, K. M. (2020). The effect of COVID-19 on consumer behaviour in Saudi Arabia: Switching from brick-and-mortar stores to E-Commerce. *International Journal of Scientific & Technology Research, 9*(07), 15-28.

Saunders, M. Lewis, N., & Thornhill, P. L. (2019). *Research methods for business students.* Harlow, United Kingdom: Pearson Education Limited.

Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach. John Wiley & Sons.

Selase, A. M., Selase, A. E., Ayishetu, A. R., Comfort, A. D., Stanley, A., & Ebenezer, G. A. (2019). Impact of technology adoption and its utilization on SMEs in Ghana. *International Journal of Small and Medium Enterprises, 2*(2), 1-13.

Shituma, S. (2013). *Adoption of telemedicine in hospitals in Nairobi County.* Doctoral dissertation, University of Nairobi.

Sun, Y., Zhang, J., Xiong, Y., & Zhu, G. (2014). Data security and privacy in cloud computing. *International Journal of Distributed Sensor Networks, 10*(7), 190903.

Suresh, V., Prabhakar, K., Santhanalakshmi, K., & Maran, K. (2016). Applying technology acceptance (TAM) model to determine the factors of acceptance in out-patient information system in private hospital sectors in Chennai city. *Journal of Pharmaceutical Sciences and Research, 8*(12), 1373.

Taylor, A., Caffery, L. J., Gesesew, H. A., King, A., Bassal, A. R., Ford, K., . . . Ward, P. R. (2021). How Australian health care services adapted to telehealth during the COVID-19 pandemic: a survey of telehealth professionals. *Frontiers in public health, 9*, 648009.

Thanakijsombat, T., Bhatiasevi, V., & Suwanposri, C. (2022). Public Adoption of Telehealth Technology in Thailand. *Journal of Global Business Review, 24*(1).

Thota, R., Gill, D. M., Brant, J. L., Yeatman, T. J., & Haslem, D. S. (2020). Telehealth is a sustainable population health strategy to lower costs and increase quality of health care in rural Utah. *JCO Oncology Practice, 16*(7), e557-e562.

Tsai, J. M., Cheng, M. J., Tsai, H. H., Hung, S. W., & Chen, Y. L. (2019). Acceptance and resistance of telehealth: The perspective of dual-factor concepts in technology adoption. *International Journal of Information Management, 49*, 34-44.

Tsiouris, K. M., Gatsios, V., Tsakanikas, A. A., Pardalis, I., Kouris, T., & Androutsou, F. (2020). Designing Interoperable Telehealth Platforms: Bridging IoT Devices with Cloud Infrastructures. *Enterprise Information Systems, 14* (8), 1–25.

Vest, J. R., Jung, H. Y., Wiley Jr, K., Kooreman, H., Pettit, L., & Unruh, M. A. (2019). Adoption of health information technology among US nursing facilities. *Journal of the American Medical Directors Association, 20*(8), 995-1000.

W., C. Y., Y., H. P., H., H. S., & J., C. (2020). Determinants of switching intention to cloud computing in large enterprises. *Data Technologies and Applications, 54*(1), 16–33.

Wallace, S., Green, K., Johnson, C., Cooper, J., & Gilstrap, C. (2021). An Extended TOE Framework for Cybersecurity Adoption Decisions. *Communications of the Association for Information Systems, 47*(2020), 51.

Webster, P. (2020). Virtual health care in the era of COVID-19. The Lancet.

Woodall T, Ramage M, LaBruyere JT, McLean W, Tak CR. Telemedicine Services During COVID-19: Considerations for Medically Underserved Populations. J Rural Health. 2021 Jan;37(1):231-234. doi: 10.1111/jrh.12466. Epub 2020 Jul 2. PMID: 32613657; PMCID: PMC7364549.

Wubante, S. M., Nigatu, A. M., & Jemere, A. T. (2022). Health Professionals' Readiness And Its Associated Factors To Implement Telemedicine System At Private Hospitals In Amhara Region, Ethiopia . https://doi.org/10.21203

Yamane, T. (1967). *Statistcis, an introductory analysis.* (2nd Ed). New York: Harper and Row.

Yusof, M. M. (2015). A case study evaluation of a critical care information systems adoption using the socio-technical and fit approach. *International Journal of Medical Informatics, 84*(7), 486-499.

Zawada, S. J. (2018). *Telemedicine: The Promise and the Performance.* Heritage Foundation Backgrounder, (3373), 2018-12.

Zhai, Y. (2021). A call for addressing barriers to telemedicine: health disparities during the COVID-19 pandemic. *Psychotherapy and psychosomatics,* 1.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods.* Cengage learning.

APPENDICES

Appendix I: Research Questionnaire for Health Facilities

Dear Participant,

This questionnaire is purely for academic purposes, and is intended to enable the researcher complete a research dissertation on the topic: "The effect of technological, organizational, and environmental dimensions on the adoption of telemedicine among private healthcare facilities in Nairobi County." Participating in this research will provide useful information that can benefit your current and future technology change initiatives, making them more successful. The questionnaire will take about 10 minutes to complete, and your participation is purely voluntary. Please respond by ticking (√) in the blank space provided next to the option that matches your view the closest; alternatively, state your answer in the space given. It would be ideal if you answer the inquiries sincerely, diligently, and according to the guidelines given. Your responses will be treated with strict confidence and your anonymity guaranteed during the research. The information you provide, will be used only for the stated academic goals.

Part A: Demographic Information

1. Please indicate your gender

   Male ( )

   Female ( )

2. What best describes your highest education qualification?

Diploma ( )

Degree ( )

Masters ( )

Postgraduate Doctorate ( )

3. How long has the private healthcare facility been in existence?

Less than 5 years ( )

6-10 years ( )

11-15 years ( )

Over 16 years ( )

4. What is your role/work station within the private healthcare facility?

Medical Director ( )

Owner ( )

Senior Specialist-In-Charge ( )

5. How long have you worked within the private healthcare facilities?

Less than one year ( )

1-5 years ( )

6-10 years ( )

Over 10 years ( )

PART B: Technological, Organizational, and Environmental Dimensions on The Adoption of Telemedicine Among Private Healthcare Facilities In Nairobi County

Please tick the level of agreement of the following statements; 1- Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly agree

Technological Dimension	1	2	3	4	5
Staff within the hospital possesses relevant knowledge and skills to guide implementation of technical systems.					
The hospital has retained an adequate staff complement with technical skills					
There is sufficient provision of resources to support investments on new emerging technologies within the hospital					
There are policies in place that guide development of training manuals that enhance the infrastructural capacity of our staff					
There are policies and systems in place to ensure the technical readiness of the hospital in maintenance of technological infrastructure					
There are systems in places to ensure technologies adopted in the hospital support reliable service provision					
The hospital has ensured the readiness of the staff in utilizing new technical systems in service provision					

Organization Dimension	1	2	3	4	5
There is adequate human resource available in the hospital to support the implementation of new technical systems					
The hospital has sufficient equipment and facilities to adopt new technical systems in our operation					
The organization has sufficient financial resources to support investments in new technology, equipment and training of our staff					
There is enough demand for primary and specialized care within the hospital to justify adoption of new technologies in service provision					
The hospital management routinely delegates duty to subordinate employees to ease decision making					
Management routinely reviews the structure in place to ensure its aligned to the evolving core objectives of the facility					
Staff within the facility are required to undergo routine professional development training to improve their capacity to execute their duties.					

Environmental Dimension	1	2	3	4	5
The degree of competition in the private health industry is high, and has pushed the hospital to invest in emerging technologies					

The competitive environment in the private health industry has exposed the hospital to new standards and practices in provision of healthcare					
The relevant government agencies have streamlined the regulatory environment, which has supported the assimilation of technology in private practice					
The relevant regulatory agencies provide the facility with incentives to improve the digitalization of health care services					
The increased demand for primary and specialized healthcare locally has exerted pressure on the hospital, to revolutionize service offering					
Through engagement with various stakeholders in the health industry the facility is able to integrate emerging technologies faster					

Telemedicine adoption	1	2	3	4	5
The health facility has a clear and defined telemedicine strategy, with defined goals and metrics for success.					
The health facility identifies and adopts new technologies and processes which enhance its business models and improve the customer experience					
The health facility regularly evaluates the impact of its telemedicine initiatives and adjusts as necessary to ensure maximum value creation.					
The health facility implements telemedicine to realize cost saving avenues.					
The health facility fosters a culture of innovation and continuous improvement, with regular reassessment of its business models and processes to ensure efficiency.					
Leaders are skilled in driving telemedicine and value creation through					

enhanced business models, improved customer experience, and operational efficiency.					
There is a defined process to measure increase in productivity as result of technological innovation in telemedicine.					
The health facility utilizes telemedicine to realize new revenue and income streams.					

Appendix II: Research Work Plan

Activity	Sep-Nov 2023	December2023	Jan 2024	Feb-2024	March 2024	April 2024
Topic discussion						
Write-up proposal						
Proposal Presentation						
Data collection/pilot study						
Data analysis						
Report writing						
Project report submission						

Appendix III: Research Budget

Activity	Amount (Ksh)
Proposal preparation and submission	30,000
Photocopying of research instruments	30,000
Data Collection - traveling and miscellaneous	60,000
Draft thesis-typing, printing and binding	30,000
Final copy of thesis preparation and submission	30,000
Total	200,000

VT OMNES
VNVM SINT

Appendix IV: List of Private Hospitals in Nairobi County

	HOSPITAL NAME	KEPH LEVEL
1	ST. BRIDGET DISPENSARY	2
2	ST. TERESA'S PARISH DISPENSARY	2
3	CHURCH ARMY DENTAL CLINIC	2
4	CHURCH ARMY MEDICAL CENTRE	3B
5	DIVINE WORD PARISH HEALTH CENTER	3B
6	ANNUNCIATION MISSION DISPENSARY MWIHOKO	2
7	JUMUIA HOSPITAL HURUMA	5
8	MISSION OF HOPE INTERNATIONAL	2
9	MWANGAZA ULIO NA TUMAINI CLINIC-KOROGOCHO	3B
10	NEEMA HOSPITAL	4
11	ST.JOSEPH THE WORKER DISPENSARY	3B
12	NAIROBI ADVENTIST HOSPITAL	4
13	EASTEND DOCTORS PLAZA- MEDICAL CENTER	2
14	KAMLESH KAPADIA OPTICS LIMITED-NHIF BUILDING	2
15	LONDON MEDICAL & DIALYSIS CENTRE LIMITED	3B

16	SHAMATA PRIVATE MEDICAL CENTRE	3A
17	ALIF MEDICAL CENTRE	2
18	ALLIANCE MEDICAL CENTRE LTD	4
19	ANKA HOSPITAL LIMITED	4
20	BEIRUT PHARMACY AND MEDICAL CENTRE	4
21	BURHAN NURSING HOME	4
22	CITY POINT	2
23	CKS DIALYSIS -PANGANI	4
24	EDNAH MEDICAL CENTRE	4
25	EDRIS PREMIERE HOSPITAL LIMITED	4
26	GEDWELL HOSPITAL LIMITED	3B
27	HAYAT HOSPITAL	4
28	HEALTHGATE HOSPITAL LIMITED	5
29	JOY NURSING & MATERNITY EASTLEIGH	4
30	LADNAN HOSPITAL LIMITED	5
31	MADINA HOSPITAL LIMITED	4
32	MARIE STOPES KENYA LIMITED	3B
33	MOTHER & CHILD HOSPITAL	4
34	NAIROBI EAST HOSPITAL LIMITED	5

35	NEO-DENTAL CLINIC	2
36	STAREHE HEALTHCARE LIMITED	4
37	TRUE HEALTH MEDICAL CENTRE LTD	4
38	BLISS GVS HEALTHCARE JOGOO ROAD CLINIC	3A
39	JAMII YADAH MEDICAL CENTRE MAKADARA	3A
40	MARY IMMACULATE HEALTH CENTRE BAHATI	3B
41	AFRICARE LIMITED NHIF BUILDING	2
42	ARROW DENTAL LIMITED	2
43	BEN AMMI MEDICAL CENTRE	3A
44	BLISS GVS HEALTHCARE COLLEGE	2
45	BLISS GVS HEALTHCARE TELEPOSTA CLINIC	3B
46	BLUE RIDGE MEDICAL LTD	3B
47	CITY EYE HOSPITAL	4
48	CITY HEALTH LIMITED	3A
49	CRESCENT MEDICAL AID	2
50	CRESENT MEDICAL AID KENYA-JAMIA	2
51	CUSPID LLP DENTAL CLINIC	3A
52	DENTALACCESS NAIROBI CLINIC	2
53	DENTAL CARE LIMITED NAIROBI CBD	2

54	DENTAL HEALTH PROVIDERS LIMITED - MENELIK HOSPITAL	3A
55	EAGLE EYE LASER CENTRE	4
56	EMERALD DENTAL SURGERY LIMITED	2
57	EQUITY AFIA KAWANGWARE	2
58	EXECUTIVE DENTAL CLINIC	2
59	FIRST SIGHT OPTICIANS LTD	2
60	FOREST JAPAN MEDICAL CENTRE	3A
61	FREMO MEDICAL CENTRE	3B
62	GERMAN MEDICAL CENTRE	4
63	IVORY HEALTH SOLUTIONS LTD	3A
64	JANICE CHOLERTON MEDICAL & CANCER CENTRE	4
65	KIBERA HUMAN DEVELOPMENT PROJECT MEDICAL CLINIC	2
66	KIDNEY AID DIALYSIS CENTRE	3B
67	KINANI FAMILY MEDICAL AND DENTAL CARE	2
68	MARIE STOPES KENYA KENYATTA MARKET CLINIC	2
69	MEKAM MEDICAL CENTRE	3A
70	MIDHILL MATERNITY & NURSING HOME	3B
71	MILE DENTAL CLINIC	2
72	MOI AVENUE OUPATIENT CENTRE	2

73	MOLARS DENTAL PRACTICE	3A
74	NAIROBI RADIOTHERAPY AND CANCER CENTRE LIMITED	3A
75	NAIROBI SPINE AND ORTHOPAEDIC CENTRE	3A
76	NEPHRO MED LIMITED	4
77	NILE MEDICAL CLINIC	2
78	NILE NURSING HOME LIMITED	3B
79	ODEON MEDICAL CENTRE LIMITED	3A
80	ODYSSEY OPTICIANS LTD	2
81	OMEGA OPTICIANS LIMITED	2
82	PLAZA MAGNETI RESONANCE IMAGING	3B
83	PRECISE DIAGNOSTIC IMAGING	3A
84	PRECISE DIAGNOSTIC UPPERHILL	2
85	PRIMECARE DENTAL ASSOCIATES	2
86	PROGRESSIVE DENTAL CARE LTD	2
87	QUALITY DIALYSIS LTD UPPERHILL	4
88	SMARTMILE DENTAL CARE CLINICS (K)	2
89	SONAR IMAGING CENTRE NAIROBI	3A
90	SUPREME DENTAL CARE	2
91	TABITHA MEDICAL CLINIC	2

92	TRUST OPTICIANS LIMITED	2
93	TWINKLE MEDICAL SERVICES	2
94	UHAI QUALITY DIALYSIS CENTRE LTD	3B
95	VIMAK DENTAL CENTRE	2
96	VITALRAY HEALTH SOLUTIONS LIMITED	4
97	YAYA COLLINS DENTAL CLINIC	2
98	ABRAR HEALTH SERVICES LTD	4
99	BAHATI PRIVATE HOSPITAL	3A
100	BLISS GVS HEALTHCARE BURUBURU CLINIC	3A
101	BURUBURU DENTAL CENTRE	2
102	BURUBURU HEALTH CENTRE	3B
103	CASCADE OF HOPE PRIVATE HEALTH CENTRE	3B
104	COMPREHENSIVE PINE MEDICAL CENTRE LTD	3A
105	EDELVALE TRUST JAMAA H$M HOSPITAL	4
106	EQUITY AFIA BURUBURU	3A
107	EQUITY AFIA KAYOLE	3A
108	EURAKA MEDICAL CENTRE	3B
109	EXCELITE EYECARE	3B
110	FAIRVIEW MEDICAL CENTRE	3B

111	HAVEN HEALTHCARE	3B
112	HUVANS MEDICAL CENTRE DONHOLM	3A
113	JAMII WELLNESS HOSPITAL	3B
114	KAYOLE HOSPITAL	3B
115	KAYOLE PROVIDE INTERNATIONAL	3B
116	KOMAROCK MEDICAL CENTRE	3A
117	MARIA MAT. & NURSING HOME	3B
118	MIKULINZI NURSING HOME	3B
119	MKUNGA MATERNITY & NURSING HOME	3B
120	OTTOMAN MEDICAL CENTER	3A
121	PENDA MEDICAL CENTRE-KAYOLE	3A
122	PHADAM HOSPITAL COMPANY LIMITED	3A
123	PHADAM HOSPITAL COMPANY LTD-NASRA	4
124	PRIMED MEDICAL CENTRE	2
125	PRUDENT COTTAGE HOSPITAL	4
126	RELIABLE MEDICAL HEALTH SERVICES	2
127	RUAI FAMILY MEDICAL CENTRE	4
128	SAIKA NURSING HOME	3B
129	SHALOM MEDICAL CLINIC BURUBURU	2

130	SILENT HILL MEDICAL CLINIC LTD	2
131	SMILE EXPERTS DENTAL CLINIC	2
132	SOS MEDICAL CENTRE	3B
133	ST. JUDES MEDICAL CENTRE	3B
134	ST. PATRICK HEALTH CARE	3B
135	TENAMYLES HEALTHCARE CLINIC	3B
136	UMOJA HOSPITAL	4
137	UMOJA THREE MEDICAL CENTRE	3A
138	UNITY MATERNITY AND NURSING HOME-UMOJA	3B
139	UWEZO HEALTHCARE LIMITED	3B
140	VICTORY HOSPITAL LTD	4
141	VICTORY MEDICAL CENTRE	2
142	ACCESS AFYA LTD MUKURU	2
143	ACESS AFYA LTD SINAI	3A
144	BAHATI TASSIA MEDICAL CENTRE	3B
145	BIZET MEDICAL CENTER	3B
146	BLISS GVS HEALTHCARE PIPELINE CLINIC	3A
147	CANA FAMILY CLINIC AND RESOURCE CENTRE	3B
148	COMMUNAL ORIENTED SERVICES INTERNATIONAL	3B

149	DENTALDOC CLINIC	2
150	DENTOPTIC MEDICARE LIMITED	3A
151	FAMILY HEALTH DENTAL CLINIC	2
152	IMARA HEALTH CARE CENTRE	3A
153	JAMII MEDICAL CLINIC EMBAKASI	3B
154	JAMII YADHA MEDICAL CENTRE	2
155	KENYA AIRWAYS MEDICAL CENTRE-PRIDE	3A
156	LENGO MEDICAL CLINIC	2
157	MEDICAL LINK INTERGRATED HEALTH PROGRAM	3B
158	MEDIGOLD HEALTH SERVICES LIMITED	3A
159	MISSION CARE NURSING HOME	3B
160	MWATATE PRIVATE HEALTH CARE	3A
161	NIMOLI MEDICAL SERVICES LIMITED	3B
162	OLIVE LINK HEALTHCARE	3B
163	OM SHANTI MEDICAL CLINIC	2
164	PARKVIEW DENTAL CLINIC	2
165	PENDA MEDICAL CENTRE-TASSIA	3A
166	PIPELINE NURSING HOME	3B
167	Planet Dental Clinic Limited	2

168	REINHA ROSARY HEALTH CENTRE	4
169	RHEEMAH HOSPITAL	3B
170	RUBEN MEDICAL CLINIC	3B
171	SCION HEALTH CARE LTD	3B
172	SOUTH B DENTAL CENTRE	3A
173	SOUTH C DIALYSIS CENTRE LIMITED	3B
174	ST. BAKHITA DISPENSARY	3A
175	ST. CLARE MEDICAL CENTRE	3A
176	SUVA DENTAL CARE CENTRE-FEDHA	3A
177	TASSIA HOSPITAL	3B
178	THE BALOZI HOSPITAL LIMITED	4
179	UTAWALA ESTATE HEALTH CENTRE	3B
180	BARAKA SMILES DENTAL	2
181	BLISS GVS HEALTHCARE GITHURAI	2
182	BRIDGING OUTPATIENT CLINIC	3A
183	BRO ANDRE MEDICAL	3B
184	CELESTIAL DENTAL CENTRE	2
185	CENTRES FOR PRIVATE HEALTHCARE ACCESS	2
186	DENSMILE DENTAL CLINIC	2

187	EQUATOR MEDICAL AND NUTRITION CENTRE	2
188	EQUITY AFIA MEDICAL CENTRE-KAHAWA WEST	3A
189	FAMILY ACCESS MEDICAL CENTRE	2
190	GIOVANNA E-SYLVIA MEDICAL CENTRE	3B
191	HURUMA HOSPITAL MATHARE NORTH ANNEX CLINIC	4
192	HURUMA NURSING & MATERNITY HOME	4
193	INDEX MEDICAL SERVICES	3A
194	JACARANDA MATERNITY HOSPITAL	3B
195	JAHMII KIPAWA MEDICAL CENTRE	3B
196	JESSE KAY CHILDRENS HOSPITAL	4
197	JOSMA HEALTH SERVICES LIMITED	3B
198	JUJA ROAD HOSPITAL	4
199	KASARANI NURSING & MAT. HOME	3B
200	LIFEBRIDGE COTTAGE HOSPITAL LIMITED	3B
201	MARURA NURSING HOME	4
202	MEDIPOINT CLINIC	3B
203	MILELE DENTAL CARE LIMITED	3A
204	MILELE INTERGRATED MEDICAL SERVICES	3A
205	MIMOSA COTTAGE HOSPITAL	3B

206	MUNDIKA MATERNITY AND NURSING HOME	3B
207	NELLY MEDICAL CENTRE	3B
208	NEWLIGHT MEDICAL CENTRE	3B
209	NGARA COMPREHENSIVE HEALTH SERVICES LTD	4
210	NGUMBA MEDICAL AND LABORATORY SERVICES	4
211	PARKROAD NURSING HOME (NAIROBI)	3B
212	PENDA MEDICAL CENTRE KAHAWA WEST	3A
213	PLAZA MEDICAL	2
214	PRIME HEALTH SERVICES	2
215	PROACT SERVICES HEALTH CENTRE	3A
216	RADIANT GROUP OF HOSPITAL KASARANI SPORTSVIEW	4
217	RAPHA PARADISE HEALTH CENTRE	3B
218	SHEKINAH MEDICAL CENTRE	3A
219	SILOA MEDICAL CENTRE	3B
220	SMILESTAR DENTAL AND HEALTH CARE SERVICES	3A
221	STAR GENERAL MEDICAL CENTRE	3B
222	ST. JOHN'S HOSPITAL LTD	4
223	ST. MARY HEALTH SERVICES	3B
224	ST. SCHOLASTICA UZIMA HOSPITAL	4

225	THE FOCUS HOSPITAL LIMITED	4
226	THE LIFELINE GROUP OF HOSPITALS LIMITED	4
227	THIKA ROAD HEALTH SERVICES	2
228	UZIMA UHAI HEALTH CENTRE	3B
229	AMURT HEALTH CARE	3A
230	EAGLE HEALTH AND CLINIC SERVICES	4
231	JEMINDAS NURSING HOME LIMITED	3B
232	LAVINGTON DENTAL SERVICES	2
233	LAVINGTON GREEN DENTAL SUITE LTD	2
234	Lianas Hospital	3B
235	MARIE STOPES KENYA KANGEMI CLINIC	2
236	MEDICROSS LTD KAWANGWARE	2
237	MERCY MISSION MEDICAL CENTRE	3B
238	MUTEITHANIA NURSING AND MATERNITY HOME	3B
239	NYINA WA MUMBI HEALTH SERVICES	2
240	PENDA MEDICAL CENTRE KANGEMI	3A
241	ST.ANGELA MERICI HEALTH CENTRE	3B
242	ST. JAMES HEALTH CENTRE	3A
243	ST. PETER'S ORTHOPEDICS AND SURGICAL SPECIALTY CENTRE LIMITED	5

244	ASTRADENTAL CLINIC	3A
245	DR AGARWALS EYE HOSPITAL	4
246	EYE-AND U OPTHALMICS LIMITED	4
247	MEDITEST DIAGNOSTICS SERVICES	4
248	MENORAH HOSPITAL (K) LTD-WESTLANDS MEDICAL CENTRE	3B
249	MUMTAZ EYE CARE LIMITED	2
250	PARK EYE CENTRE	4
251	WESTLANDS MEDICAL CENTRE	3A

Appendix V: Ethics Approval

Strathi
UNIVER

17th April 2024

Mr Omolo Steve,
steve.omolo@strathmore.edu

Dear Mr Omolo,

RE: Antecedents of Telemedicine Adoption in Private Health Care F
Nairobi County, Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-ma** proposal. Your application reference number is **SU-ISERC1993/24.** The approval per **17th April 2024 to 16th April 2025.**
This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, used.
ii. All changes including (amendments, deviations, and violations) are submitted approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected whether related or unrelated to the study must be reported to SU-ISERC wit notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected s of study participants and others or affect the integrity of the research must be ISERC within 72 hours.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

STRATHMORE UNIVERSITY INSTITUTIONAL
SCIENTIFIC AND ETHICAL REVIEW COMMITTEE
(SU-ISERC)
17-Apr-2024
Email:ethicsreview@strathmore.edu
P.O BOX 59857-00200
NAIROBI-KENYA

Appendix VI: NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **154639**

Date of Issue: **03/June/2024**

RESEARCH LICENSE

This is to Certify that Mr.. Steve Obura of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: ANTECEDENTS OF TELEMEDICINE ADOPTION IN PRIVATE HEALTH CARE FACILITIES IN NAIROBI COUNTY, KENYA. for the period ending : 03/June/2025.

License No: **NACOSTI/P/24/36428**

154639

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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