



NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
INNOVATION AND KNOWLEDGE MANAGEMENT PROGRAM

**MEASURING e-GOVERNMENT AS AN INNOVATION TOOL FOR EFFECTIVE PROVISION
OF HEALTH SERVICES IN AFRICAN LOW AND MIDDLE-INCOME COUNTRIES:
A CASE STUDY OF LUBUMBASHI IN THE DEMOCRATIC REPUBLIC OF THE CONGO**

PATRICK KABIKA MWILA KABWE

MASTER'S THESIS

NICOSIA
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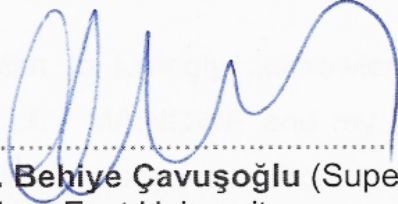
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NICOSIA
2021

ACCEPTANCE/APPROVAL


We as the jury members certify the 'MEASURING e-GOVERNMENT AS AN INNOVATION TOOL FOR EFFECTIVE PROVISION OF HEALTH SERVICES IN AFRICAN LOW AND MIDDLE-INCOME COUNTRIES: A CASE STUDY OF LUBUMBASHI IN THE DEMOCRATIC REPUBLIC OF THE CONGO' prepared by Patrick KABIKA MWILA KABWE defended on 20/08/2021 has been found satisfactory for the award of Degree of Master.

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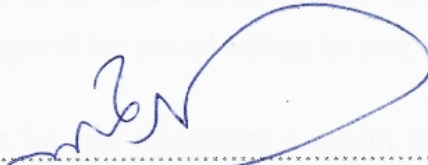
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To Manoosh Teymoori, thanks for her unending support throughout my life and for always believing in me.

DEDICATION

This thesis is dedicated to my parents KABIKA KIBAMBO Jeanne and MWILA LEY MAINGWE and to all my brothers and sisters specially my sister and best friend KAPUFI Viviane, for her unending support throughout my life and for never failing to inspire me.

"Through this desire for universal education, we want men, together or separately, young or old, rich or poor, noble or commoner, male or female, to be fully educated and to become complete human beings. We want them to be perfectly instructed and trained, not only on this or that point, but also on everything that allows man to fully realize his essence, to learn to know the Truth, not to be deceived by false pretenses, to love the good and not to be seduced by the evil, to do what one should do and to avoid what one should avoid, to speak wisely about everything with everyone; finally, to always treat things, men and God with prudence and not lightly, and never to deviate from his goal: Happiness. "

Comenius

ABSTRACT

Measuring e-government as an innovation tool for effective provision of health services in African low and middle-income countries. A case study of Lubumbashi in the Democratic Republic of the Congo

Driven by the development of Information and Communication Technologies (ICT), eHealth, through electronic government, has stimulated considerable interest in recent years. However, in developing countries including sub-Saharan Africa, they are still a challenge to implement. Due to their size and the very limited number of medical and paramedical staff, they feel a natural need to work at a distance, this in order to balance their deficient health systems. The study sought to determine the relationship between need and perceived usefulness for the integration of eHealth services in the Congolese medical system. The study employed the quantitative method to collect data from end users and medical personnel through surveys. The results revealed that need had a positive and significant impact on the implementation of eHealth services. Perceived ease of use and privacy were also found to have the same impact on eHealth services implementation with increase in perceived ease of use and privacy resulting in an increase in health care usage. However, the study revealed that perceived usefulness despite having a positive impact on the implementation of eHealth services, the effect was found to be insignificant. The researcher recommended that future studies focus on a mixed method approach to gain deeper insights into the implementation of eHealth services.

Keywords: eHealth, electronic government, need, perceived usefulness, perceived ease of use, privacy

ÖZ

Measuring e-government as an innovation tool for effective provision of health services in African low and middle-income countries. A case study of Lubumbashi in the Democratic Republic of the Congo

Bilgi ve İletişim Teknolojilerinin (BİT) gelişmesiyle hareket eden eSağlık, elektronik devlet aracılığıyla son yıllarda büyük ilgi uyandırmıştır. Ancak, Sahra altı Afrika da dahil olmak üzere gelişmekte olan ülkelerde, bunların uygulanması hala bir zorluktur. Boyutları ve çok sınırlı sayıda tıbbi ve paramedikal personel nedeniyle, yetersiz sağlık sistemlerini dengelemek için uzaktan çalışmaya doğal bir ihtiyaç duyuyorlar. Çalışma, Kongo tıbbi sistemine eSağlık hizmetlerinin entegrasyonu için ihtiyaç ve algılanan fayda arasındaki ilişkiyi belirlemeye çalıştı. Çalışma, anketler yoluyla son kullanıcılardan ve tıbbi personelden veri toplamak için nicel yöntemi kullanmıştır. Sonuçlar, ihtiyacın eSağlık hizmetlerinin uygulanması üzerinde olumlu ve önemli bir etkisi olduğunu ortaya koydu. Algılanan kullanım kolaylığı ve mahremiyetin, algılanan kullanım kolaylığı ve mahremiyetteki artış ile sağlık hizmeti kullanımının artmasıyla birlikte eSağlık hizmetlerinin uygulanması üzerinde aynı etkiye sahip olduğu bulunmuştur. Ancak çalışma, algılanan faydanın eSağlık hizmetlerinin uygulanması üzerinde olumlu bir etkiye sahip olmasına rağmen, etkinin önemsiz olduğunu ortaya koymuştur. Araştırmacı, e-Sağlık hizmetlerinin uygulanmasına ilişkin daha derin kavrayışlar elde etmek için gelecekteki çalışmaların karma yöntem yaklaşımına odaklanmasını tavsiye etti.

Anahtar Kelimeler: e-Sağlık, elektronik devlet, ihtiyaç, algılanan fayda, algılanan kullanım kolaylığı, mahremiyet

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ABBREVIATIONS

ANOVA	: Analysis of variance
Covid 19	: “CO” stands for Corona, “VI” for Virus, and “D” for Disease. Formerly, this disease was referred to as '2019 novel coronavirus' or '2019-nCoV.'
DRC	: The Democratic Republic of the Congo
e-government	: Electronic Government
E-health or e-Health	: Electronic health
EHS	: Electronic Healthcare Services
ICT	: Information and Communication Technologies
mHealth	: Mobile health
SPSS	: Statistical Package for Social Statistics
TAM	: Technology Acceptance Model
UTAUT	: Unified Theory of Acceptance and Use of Technology

CHAPTER 1

INTRODUCTION

This chapter focuses on the overview of the study by the researcher which provides a summation of what the study is about. The chapter provides the background of the study to highlight what eHealth care is all about, its benefits and why it is important. The researcher also provided the problem statement upon which objectives and questions guiding the study were formulated. The importance of the study and the reasons for conducting it were also outlined in this chapter. The researcher also provided the model underlying this study, which illustrates the variables being studied and the potential correlation between them that will be examined. Hypotheses derived from this research model will be tested in subsequent chapters and will provide answers to the research questions, thereby meeting the objectives of the study.

1.1 Background of the study

The increase in technology has transcended various industries, including the health sector. They are constantly finding ways to improve day-to-day operations and develop more efficient operations. One such way is eHealth. E-health care relates to the use of technology tools in the provision of health services in order to alleviate some of the problems encountered in the provision of health service in the traditional ways like difficulty in reaching patients that are in remote places and override the problem of care shortage especially in developing countries. According to Hans and Lisette (2016), e-health covers various forms of health care but infused with technology delivery to come up with telemedicine, mHealth, tele-care, e-mental health and e- Public health among others. A simple content summary was provided in the form of the chapter breakdown.

E-health care rose in popularity because of a number of reasons. There is a shortage of medical personnel in developing countries as well as shortage of resources. Electronic health care has been adopted by other countries in a bid to try and alleviate these problems. It has been found to help provide a wider coverage in the delivery of health services, catering to places that may not be easily reached with the traditional

methods. In addition, it has been found to be of convenience to patients that have difficulties coming in the actual health facilities.

The internet has also resulted in the increase in availability of information some of which is health related. People have discussions on social media on various topics related to their lives, share remedies for certain ailments and their experiences on various social aspects. Health officials have thus realized that there is increased need for information and control of it as well to avoid and minimize wrong information spreading and are also now utilizing these channels for distribution of information and updates. As a result, technological tools have been found to be of great use with regards to self-care management through their provision of information and easy access to medical and health related information. This also widens the range for health education and prompts a wider impact in disease prevention.

According to Hibbard and Greene (2013), patient interest and participation in health care processes has increased significantly, which has also led to a growth in demand for e-health services. It has also been noted that it reduces expenditures. However, end-users need to accept the systems to be ready to adopt and use them to their advantage. This is one of the problems that have resulted in the ineffectiveness of information systems and new technologies.

The Technology Acceptance Model is one of the models that attempts to describe the problems associated with the implementation of new technologies. It sought to identify the reasons why some end-users may not be receptive to information technology and has since been applied in various fields to predict end-user response to information systems and technologies. These issues include perceived usefulness and perceived ease of use, which are used as determinants of technology acceptance or rejection. This model will therefore be used in this study to better apprehend issues related to the implementation of e-health services.

1.2 Problem statement

Even though e-health care has rose in popularity, there are still underlying problems that prevent their full use, such as electricity problems in the Democratic Republic of the Congo. In addition, internal issues such as adoption, adherence and acceptance issues with medical personnel and patients as end users are also a source of concern with regard to the effective implementation of e-health facilities.

In addition, there are concerns about e-health services such as tele-medicine, with critics pointing out that, while beneficial, it still cannot replace the traditional health care system and that some problems are better handled in person rather than through a technological device. It was also noted that although the benefits of e-health have been studied, there is still a significant disparity in its use and outcomes. Its potential has been found to be far below expectations.

Although other developing countries are making progress in the area of e-government and in particular e-health, the Democratic Republic of the Congo is still lagging behind. There have been very few studies in the DRC addressing the potential and challenges associated with the implementation of e-health services. This study therefore seeks to determine the effectiveness of the implementation of digital health services in the Democratic Republic of the Congo in terms of need, perceived usefulness, and acceptance of services.

1.3 Significance of the study

This study has great potential to contribute tremendously to insight on issues associated with implementation of e-health services. This study evaluates the success of the service, providing health care leaders with data that can be used to identify gaps, weaknesses and strengths in digital health. In addition, the study highlights the benefits that other areas have gained, and how other developing and developed countries have responded to the challenges that have arisen. The Ministry of Health can use this as a learning curve. The results of this study can therefore be useful to system designers and implementers and provide information that can make the process of implementing eHealth services smoother, more efficient, and more effective.

Furthermore, this study could provide new insights into e-health. This knowledge can be used in any future study as a basis or argument point. If there is a new contribution to science, it can make an essential contribution to the literature. There is also a limited literature on e-health services in the DRC and this study can make a significant contribution to this situation. It can also serve as a study model for other developing countries, as health issues are one of the most challenging problems they face.

Finally, this study is part of the researcher's mandatory requirement for the Master's degree in Innovation and Knowledge Management. Therefore, the researcher also seeks to meet this requirement and to fully complete his studies in the field concerned.

1.4 Justification of the study

Most developing countries in the Southern African region are largely dependent on the traditional health services. They are now moving into adoption of e-health care services in order to improve service delivery. Usually, there is a rush to apply new technology and follow trends. However, there are usually problems concerning the acceptance and adoption of these developments by the end users due to implementation issues. The developing countries are constantly trying to mitigate the effects of these issues. There are also a lot of areas where even traditional health care is a problem. more practical alternative could be used to support existing efforts to improve effectiveness and efficiency.

The researcher focused on Lubumbashi as it is the capital city of the country and the people most tech savvy is based there. In addition, this is where the biggest medical institutions are found as well as the most equipped in terms of resources. In addition, the norm in developing countries is to copy systems in the larger cities and adopt them in the smaller places. It would therefore be most convenient to determine if their efforts in implementing e-health care are being successful.

1.5 Research model

Independent variables

Dependent variables

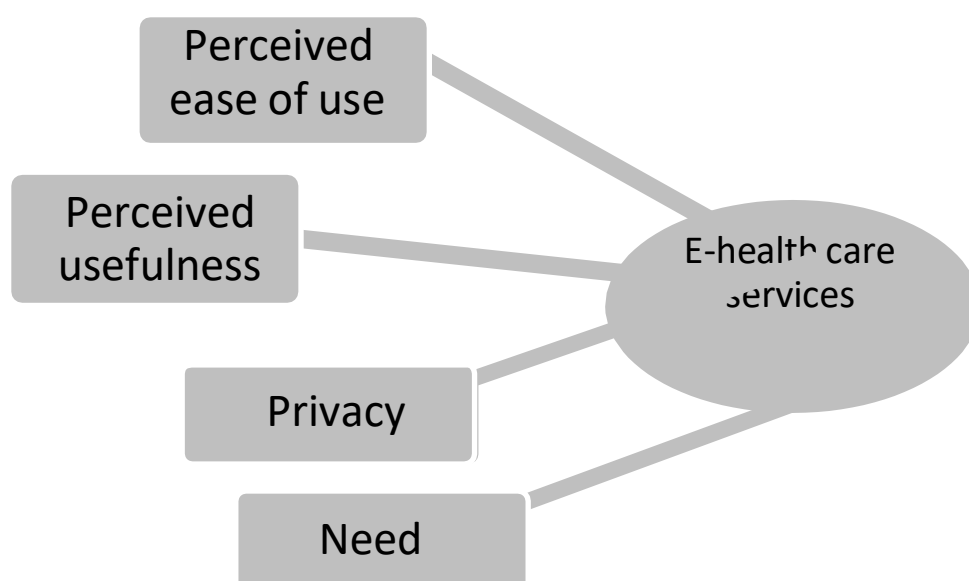


Figure 1. Research model

Source: researcher

The above research model shows the relationship between the independent and dependent variables that will be explored in this study. The researcher sought to determine the relationship between need and perceived usefulness in the implementation of health care services. The model variables were selected based on the Technology Acceptance Model (TAM). This model explains the processes of adoption and acceptance of a new technology or information system. Since eHealth services is a recent technology, the technology examined in this study is therefore evaluated according to this model. The model postulates that perceived usefulness and perceived ease of use are some of the factors that affect the acceptance and adoption of a new technology. The author also added necessity to determine the extent to which services are actually needed from the end-user's perspective. There have also always been privacy concerns, as e-health involves the submission of information online, so this has been included as a variable affecting service implementation. E-health services will be evaluated in terms of intent to use and actual use.

1.6 Hypotheses

The following hypotheses were thus developed to guide the study:

Table 1.7.1: Hypothesis and Explanations

Hypotheses	Explanation
H1 Null	Perceived usefulness has no significant impact in the implementation of e-health care services
Alternative	Perceived usefulness has a significant impact in the implementation of e-health care services
H2 Null	Perceived ease of use has no significant impact on the implementation of e-health care services
Alternative	Perceived ease of use has a positive impact on the implementation of e-health care services
H3 Null	Privacy has no significant impact on the implementation of e-health care services
Alternative	Privacy has a positive impact on the implementation of e-health care services
H4 Null	Need has no significant impact on the implementation of e-health care services
Alternative	Need has significant impact on the implementation of e-health care services

1.7 Objectives

The main objective of this study is to explore the issues associated with the implementation of e-health care services in the DRC. These will be assessed on the basis of need, acceptance, perceived usefulness and challenges. The objectives are thus outlined as below:

- To establish the extent of acceptance of e-health services by the employees and patients;
- To determine the role of perceived usefulness in the implementation of e-health services in the DRC;
- To determine the effects of perceived ease of use in the implementation of e-health services in the DRC;
- To determine the role of privacy concerns in the implementation of e-health services in the DRC.

1.8 Research questions

- How does need relate to the implementation of e-health services in the DRC?
- How does perceived usefulness affect the implementation of e-health services in the DRC?
- What impact does perceived ease of use has on the implementation of e-health services in DRC?
- How do privacy concerns impact the implementation of e-health services in the DRC?

1.9 Limitations

This study was focused on the relationship between need and perceived usefulness for implementation e-health services in the DRC. The study however, focused on e-health services in general and a focus on future studies could be directed towards one of the many branches of e-health services specifically for example e-mental health as there is a growing interest towards mental health. The study also focused on the Technology Acceptance Model in evaluation of the adoption and acceptance of the technology that is e-health care. Other theories could be explored. Lastly, the study focused on the capital city of Lubumbashi and delving into other remote areas or cities could unveil interesting results with regards to implementation of e-health services.

1.10 Chapter Breakdown

Chapter 2

This chapter focuses on the literature from previous studies which is related to the subject of need and perceived usefulness in the implementation of e-health care services across the globe. It includes factors that affect these, benefits and how certain models can be used to evaluate the success of implementation of new technology. In addition, it also provides lessons from other nations in the form of empirical literature.

Chapter 3

This chapter highlights the methodology that was employed in the study. The chapter deals with how the data was collected, from whom and the methods employed. It involves the research design that was the basis of the study, the sample size and how it was determined among other things. It also highlights the measurement instrument and how it was measured. An overview of how the data was analyzed was also given.

Chapter 4

This chapter focuses on the analysis and findings of the data obtained from the study. It includes an in-depth analysis of the methods and results that were found providing descriptions of each. These range from the reliability tests, tests to determine the relationship between the variables and extent of their association, if any. Results of the tests and acceptance or rejection of hypotheses is also made in this chapter.

Chapter 5

This chapter focuses on the discussion of the findings and their implications. It also provides comparisons with the results that were obtained from the previous studies, noting differences and similarities and establishing if there was any new contribution to science. Lastly, it focuses on conclusions drawn from the results of the study and recommendations for any future studies.

1.11 Conclusion

This chapter provided an introduction of the research study highlighting the basic summary of what the researcher is studying. It provided an insight into the variables under study, reasons for the study and the model that guided it. This chapter also provided a summary of the objectives, hypotheses and research questions that guide the study. A breakdown of the chapters was also given which provided an overview of how the whole study was set up.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the in-depth exploration of eHealth care. It highlights the theoretical literature from other scholars regarding eHealth and its adoption, factors that affect it and some of the strides made because of it. The chapter also focuses on the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) which actually provides the framework for this study. In addition, this chapter also highlights the empirical literature which focuses on eHealthcare lessons from across the globe. All these studies will be used for comparison purposes in the later chapters against the findings from this study.

2.2 e-Health

According to Steininger et al (2014), eHealth refers to the application of technology to the health care system in the form of enhanced information systems, computer and communication technology. Moerman et al (2014) explained it as the use of technology in all aspects of health care in provision of new and better methods of health care. This could be doctors offering treatment remotely, physician making a prescription over an internet platform and tracking disease outbreaks with use of digital tools. The health information technology has grown immensely in the last decades and has gone a long way in improving service quality, improving storage of patient information, accessibility to information and filling the gaps that traditional health care did not (Ahmad, 2017; Hossein et al, 2019). E-health care systems were found to increase knowledge diffusion, enhancing health care information along the way (Kujala et al, 2018).

Nemeth, Wears, Patel, Rosen, and Cook (2011) outlined the crisis in the healthcare industry. The study emphasized on the use of proper crisis management in order to mitigate the obstacles in achieving effective healthcare management. The information and technology support the operators' performance. They explained that Information and

Communication Technologies (ICT) can be used to mitigate the crisis in the healthcare sector. Different healthcare sectors are dealing with various complex, uncertain and high level of operations which demands the need for ICT to mitigate the uncertain issues and crisis in the management. Understanding the complex systems and the operation in healthcare would be vital in order to develop an effective e- healthcare management system

According to Swinkels et al (2018), eHealth's purpose is to relieve the existing pressure on traditional health care and improve sustainability of health care. They also explained that regardless of the potential strides that eHealth can make in the health sector, implementation is still notably slow. The health sector is a fast moving (Eysenbach et al, 2001), competitive sector where there is pressure to put products on the market quickly (Money et al, 2011). On the other hand, it is necessary that there be a synergy between end users, which necessitates the need for collaboration between different stakeholders to ensure an effective implementation, adoption and acceptance of the services (De Beurs et al, 2017).

E-health care refers to a wide range of services like telemedicine, e-Prescribing, computerized physician order entry, health informatics, e mental health, m health among others (Neto and Flynn, 2018). All these utilize an even wider range of tools. Tools like electronic health records are now being employed in the storage of information as they are secure, offer faster and convenient accessibility as well as reduce the chances of incurring errors (Gagnon et al, 2014).

Scholars have also advocated for improvement in eHealth literacy and digital skills in health care professionals and other stakeholders (Norman and Skinner, 2006, Mosch et al, 2016, Bolliger, 2019). This entails individuals seeking health information through electronic resources, evaluating it and applying it when solving health related problems (European Medical Students' Association, 2019). The digital skills would help leaders in addressing ethical concerns associated with emerging technologies (Topol, 2019).

2.3 Factors affecting the implementation of eHealth care services

According to Ebrahimi et al (2017), there are many obstacles to the implementation of eHealth systems. These can be financial, attitudinal and even structural. These are to be removed or mitigated if a comprehensive or sustainable eHealth care service care system is to be put in place. There is a marked lack of resources especially in developing countries that hinder the implementation of eHealth practices (Mugo,

2014), health budgets are constricted, there are poor policies that govern needs, information technology is sorely lacking (Furusa and Coleman, 2018).

2.3.1 Policies and incentives

E-Healthcare does not just require advanced technology but also demands the clinical changes and the policies which govern these changes (Brennan et al, 2009). Several studies (Goldenstein, 2014; Lau et al, 2016) have noted that there is a general lack of adequate legislation and incentives in place to encourage the adoption of new technology. E-health systems bring with them issues concerning data safety as well as professional liability. An example is the use of electronic health records where exchange of patient related information is exchanged. This brings with it safety and privacy issues (Khan et al, 2019). A lack of proper policies would therefore make health professionals hesitant to adopt these systems as there may be consequences if anything goes wrong later.

There should be eHealth standards in place that provide a guideline on how operations should be conducted, issues of responsibility and accountability (Ludwick and Doucette, 2009; Benavides-Vaello et al 2013; Lau et al 2012). Sometimes health care organizations would want to adopt some e-health care systems but do not do so for fear of being crippled financially as most of these are costly to implement. Simbini (2013) also pointed out that bureaucratic tendencies were also a hindrance to the implementation of eHealth. They explained that hospitals lacked the right to implement some initiatives and therefore these would have to be given the green light at the government level. Stringent laws would therefore discourage technology adoption especially in public hospitals.

2.3.2 Individual knowledge and beliefs

The attitude of the health care workers was found to act either as a facilitator or as an impediment to adoption of eHealth technology (Ross et al, 2016; Castillo et al, 2010; Oluoch et al, 2010). A positive attitude towards adoption of new technology is positively associated with the easy acceptance and implementation of eHealth care systems. This attitude allows the user to be keen on using it and learning it as well as

finding the benefits and potential in it. This also means that they will probably find it easier to work with the system. At the same time those who have a negative attitude towards eHealth systems are reluctant to adopt the system and in that environment the system would also be difficult to implement as there will be much resistance to it. They will also harbor some doubts on the benefits of the system to the end user, distrust the system and would resist using it as much as they can (Khan et al, 2018).

Other scholars advocated for implementation of systems in place that focus on cooperation and communication. The personnel should be made aware of the system and knowledge imparted to them on how it works and its benefits as well as equipping them with the right set of skills they need to be able to use the system (Khan et al, 2019). All these go a long way in educating them about the system and making them more receptive to it.

Others also generally believe in the old system and are suspicious of new technology therefore they would find it difficult to embrace the system (Baryashaba et al, 2019). In addition, there may also be resistance towards eHealth implementation simply because the professionals are not happy with the change. It was also explained that some resist new technology as a result of fear of losing their power in the organization (Sambasivan et al 2012) as they feel that the new developments may result in a shift in power in the organization especially in cases where their computer skills are limited. Training and offering of financial incentives as well as job performance incentives were found to go a long way in overcoming these challenges.

2.3.3 Adaptability

Studies have shown that new technologies usually require some adjustments specially to fit with the existing ones. E health systems that can better work with existing systems and require minimal adjustments are easily adapted and implemented. Lack of consistent data standards would result in incompatibility between the new and old systems and make services like electronic health records difficult to adapt (Boonstra and Broekhuis (2010). In addition, other issues with the existing system may make it impossible for some eHealth care systems to be adopted.

Issues like slow performing hardware, software problems, connectivity issues and data handling troubles increased complexities associated with the adoption and implementation of eHealth systems. It was thus advocated that the end users of the

system be involved in the design and development of the eHealth care services products so that their input may also be incorporated. In addition, the systems should be made as user friendly as possible to ensure those with limited skills can use them without difficulty. Technical assistance should also be easily available as there have been known to be technology glitches and other issues.

2.3.4 Cost

E-health systems have been found to be costly to implement (Shekelle et al, 2006). This also deters some institutions from implementing them and in some instances the level of funding available determines whether new systems are implemented or rejected (Mugo, 2014). It should also be noted that the costs are not just once off but there will be maintenance issues as well as regular check-ups to ensure the equipment is working properly (Simbini, 2013). E-health care systems require purchase, installation and other ongoing costs associated with the operations. Small medical practices would therefore find it financially challenging to adopt such systems. Developing countries would most likely find it difficult to implement e-health (Mars, 2013). Developed countries are more likely to succeed because of their huge investments in this sector. Some measures that were encouraged to decrease this problem were associated with redesigning business models, financial incentives from external stakeholders and cost saving investment into the technology. Governments and other stakeholders should therefore provide some incentives like provision of funds, sponsorship, and donation of relevant equipment in facilitating adoption of these services (Lau et al, 2016).

2.3.5 Inner setting

This refers to the internal environment itself. Several internal factors have been found to influence the adoption and implementation of eHealth care services. These may include compatibility, leadership engagement and access to knowledge and information (Hans et al, 2018).

It is essential that medical personnel have access to information beforehand of the eHealth system to be implemented. Studies have shown that knowledge sharing in the

form of educating the staff about the system increased chances of acceptance and implementation of the system by the staff (Saliba et al, 2012). This would serve to equip the staff with expectations of the system, how to use it, the dangers, if any, benefits to the end user, benefits to them, among other things. It is therefore essential that there be adequate training as well as support (Peleg, 2006).

In the implementation of ICT, strategic leadership is required. The absence of leadership can cause the delay to implement the changes. Management engagement and support is necessary for the effective and successful implementation of eHealth care systems. Furusa and Coleman (2018) also pointed out that technical support is vital for the successful implementation of eHealth. It is necessary to ensure that the system is maintained in a good condition and is perfectly running with minimal or no disruptions.

The existing infrastructure should be in support of the new system. Essential resources like electricity, back-up power, internet connections, mobile devices and bandwidth are necessary for smooth operations. Lack of these resources would result in ineffectiveness, delays and disruptions in operations. Some of these require training and therefore management should set up systems that allow the staff to learn as well as become accustomed to the new systems in place. The management should also take a hard look at the potential effects the eHealth care systems may bring to the workforce, anticipate them and design or redesign roles and responsibilities around them. It also takes time to implement ICT in a hospital effectively. The challenges are faced by the stakeholders which can be mitigated if the process is properly monitored. The need to monitor the changes in the system and the decision making process should be based on it (Escobar-Rodríguez & Romero-Alonso, 2014)

Swinkels et al (2018), pointed out that collaborations between stakeholders would bring together a shared vision, pooling of funds and time necessary for implementation. This was also a notion shared by Peeters et al (2016) and Ross et al (2016). They explained that collaboration of health professionals is necessary as they work hand in hand within each other in the same industry. In addition, collaborations between stakeholders would also increase awareness about eHealth issues. It has been noted that in developing countries eHealth would be especially concentrated on central hospitals and remote or rural areas would be left out (Zhou et al, 2016).

E-health services requires proper and adequate infrastructure (Qureshi and Shan, 2013; Kundi et al, 2013)). Ebrahimi et al (2017), pointed out that in order for the health community to benefit from eHealth care services, there should be upgrades in the infrastructure and resources needed. This includes upgrading the hardware itself, a network be established, and also policies and relevant mandatories be made in relation to information and technology (Catwell and Sheikh, 2009). Trainings also need to be conducted on a wider base to equip medical staff across the spectrum to benefit from eHealth care knowledge. (Basak et al, 2015). This need for collaboration made innovations a bit complicated and added to the slow progress of eHealth.

Compatibility between eHealth systems and workflows is also one of the factors that influence adoption and implementation of eHealth care systems. According to Kohnke et al, (2014) compatibility reflects the degree to which the new system fits in with the one already in existence, the values and needs of end users. Information systems should blend with existing workflows and clinical practices. If health personnel perceive the eHealth care system to be disruptive to their daily schedules, this may lead to a resistance towards its adoption and likewise make it harder to implement.

A study by Swinkels et al (2018) indicated that health professionals had a hard time working with electronic health records when these were introduced as these were not integrated into daily care practices. However, if information systems notably increase efficiency and effectiveness of operations, the fit would encourage the use of the system. The work plans should therefore be put into consideration when designing and implementing the new systems. In addition, making the system user friendly may also go a long way in minimizing workflow disruptions. Prior studies by Celler et al (2013) also indicated that ICT can be properly integrated to enhance the facilities provided to the customer. It would also open new techniques for handling the management related issues faced by the patients during their treatment.

2.4 Technology Acceptance Model (TAM)

According to Ahlan and Amadi (2014), it is only when a system is accepted and put into use that the success of it becomes known. Yi et al (2018) also explained that system adoption is one of the biggest challenges faced by managers and factors that determine this have sparked so much interest and research. It is vital that there be

indications and prior knowledge of whether a technology will be accepted before it is implemented especially in cases where there can be huge financial consequences (Davis and Venkatesh, 1996). There have been a number of models aimed at understanding the acceptance of new technologies and information systems. The Technology Acceptance Model (Davis, 1989) is one of these models.

According to Morton et al (2016), the TAM is actually the most popular and well put theory that explains new technology adoption. It attempts to explain factors that determine the adopting and acceptance of a new technological and information system. In addition, the model also points out that attitudes and belief influence the intention to use the information system and that in turn influences actual behaviour (Deng et al, 2018).

The TAM model explains that the perceived usefulness and the perceived ease of use of any technological system determine the intention by the end user to use it as well as the actual usage of it. These factors represent adoption intention (Holden and Karsh, 2010). Susanto et al (2015), however, pointed out that in as much as the TAM is great at prediction of adoption and acceptance, it should be noted that these can be perceived differently in different organizations.

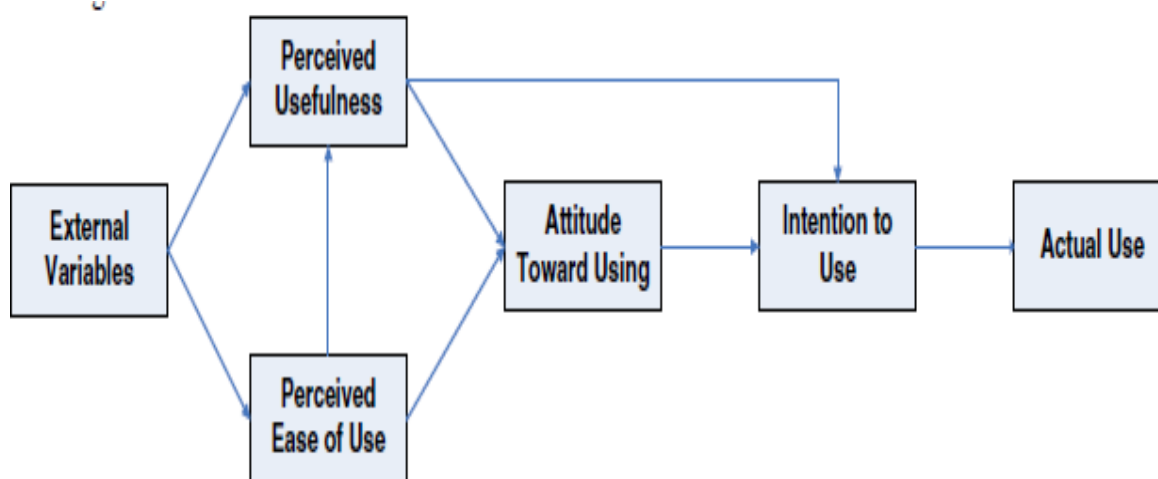


Figure 2 Technology Acceptance Model (TAM)

Source: Davis et al (1989)

2.5 Perceived usefulness

This refers to the usefulness of the system from the perspective of the system user (Davis et al, 1989). The scholars also explained that it also relates to the extent to which the user thinks the system will improve their job performance. If the user used a system and their job performance increased because of it then they would regard that system as having been useful and their attitudes towards it will be more positive (Zhang et al, 2019). Verma et al (2019) pointed out that if a system is user friendly, then its usage will also be high. This will also increase its chances of being adopted by end users as it will be easy to learn. However, Yi et al (2018) pointed out that the perceived usefulness is also determined by the individual's regulatory orientation. Ridings and Gefen (2000) also explained that in cases where both new and old information systems are being used, the perceived usefulness of the new system compared to the old system may determine the new system's acceptance and adoption. If the old system is perceived as more useful then the implementation of the new system may be difficult as it would be seen as unnecessary.

2.6 Perceived ease of use

Davis et al (1989), explained that perceived ease of use relates to the extent to which a user perceives that new technology or an information system will be easy to use. According to Verma et al (2019), the users will be most likely to accept new technology if they assume it will be easy to use. On the other hand, if they feel like it is difficult to use, then they will have a negative attitude towards it. Chen et al (2009) also pointed out that perceived ease of use not only affects the intention to use an information system but also affects the perceived usefulness itself. A new technology is most likely to be perceived useful if it is easy to use and they are also perceived as less risky (Hubert et al, 2019). The Diffusion Innovation Theory (Rogers, 1962) also supported this and pointed out that complexity of technology affects its adoption with the more complex it is the less it is likely to be adopted (Oner and Sertel, 2015). In addition, if it is deemed easy there will be more diffusion about it among members of the social system. The rate of diffusion was found to have an effect on the adoption of the information system (Rogers, 2003).

2.7 Privacy

There are many kinds of risks associated with technology and information systems. According to Verma et al (2019), these risks would be linked to losses incurred in the expectation of a certain outcome. They explained that health is associated with sensitive information and eHealth makes this information even more available. Furusa and Coleman (2018) explained that information and technology is prone to privacy breaches. A lot of confidential data is stored and patient information security is one vital ethical issue raises security concerns. As a result, there are always concerns about third party usage.

E-health involves putting information online and using internet for communication. This brings a high level of uncertainty especially with the end users as there is always fear of something happening and loss of confidentiality (Dinev et al, 2016). E-health would therefore require a modicum of trust between the patients and the health care professionals. On the other hand, health care professionals would be apprehensive about these systems as a result of liability issues that may arise in case of leakages (Robinson, 2008; Dehzad et al, 2016). The risk however, would be different from one individual or organization to another depending on other factors.

2.8 Unified Theory of Acceptance and Use of Technology (UTAUT)

Other models like the UTAUT model also came up with reasons behind adoption and acceptance of technology and more or less extended on the TAM. According to Deng et al (2018), this model goes on to include other factors that affect the adoption of new technology in the form of social influence, effort and performance expectancy, with gender, age, experience and voluntariness of use acting as moderators to this relationship. Wu and Lederer (2009) also identified age, gender and previous experience as moderating variables to the effect of the TAM. This was also in support of prior studies by Gefen and Straub (1997), that explained that males found new technology to be easier whilst the females found it to be useful.

It was also found that demographic characteristics influenced the health care practitioners in adopting and implementing eHealth care systems. E-health care systems require proficiency in the use of computers (Furusa and Coleman, 2018). According to Furusa and Coleman (2018), practitioners with ICT experience can better

appreciate the benefits of eHealth and will thus be more willing to use the system (Olok et al, 2015). Some medical personnel would therefore be reluctant to embrace the system if their computer literacy is limited. Mosch et al (2019) explained that digital health skills are a necessity among health care professionals if there is to be any successful digital transformation.

Age was also found to be one of the factors that affect the implementation of eHealth services. According to Furusa and Coleman (2018), there is a correlation between technology adoption and age. The younger generation are enamored with technological developments and therefore are more eager to use it thus making the implementation process easier and more acceptable.

2.9 Conceptual model

The following diagram serves as the model upon which this study was built on. The independent variables consist of perceived usefulness, perceived ease of use, privacy and need. The dependent variable is the eHealth care services.

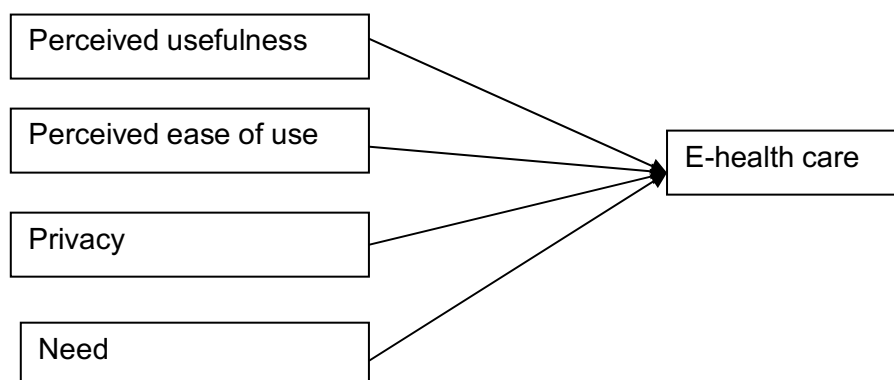


Figure 3. Conceptual Model

2.10 Hypotheses development

The theory of reasoned action explained that the behavioral intention is what leads an individual to perform an action (Ajzen and Fishbein, 1975). This study therefore measures eHealth care services based on the intention to use it as well as its actual usage.

According to Davis (1989), the adoption and acceptance of a new technology is determined by the user's perceived usefulness and perceived ease of use of it. The scholar explained that the easier the system is perceived the easier it will be accepted and adopted by the user. This was also supported by several other theories from different scholars. Weng et al (2018) also found a significant relationship between intention to use a service and its perceived usefulness. They also found a link between that and perceived usefulness. Davis (1989) also pointed out that perceived usefulness would be reflected in using a specific technology where the effort exerted will be lesser. Therefore, in this context adoption of eHealth services would result in work load being easier for the medical personnel and they would be willing to use it if they thought it would be useful to their work. The hypothesis was thus formulated as follows:

H1 Perceived usefulness has a positive impact in the implementation of e-health care services

The TAM also pointed out that perceived ease of use was a major factor in influencing the use of technology. It also explained that perceived ease of use would show the extent to which a new technology is effortless. This notion was also pointed out by Zhu et al (2003) who explained that perceived ease of use was a necessity in the implementation of new technology. They explained that if new technology is user friendly it is highly likely that the end user would accept it and adopt it. In addition, Hussain et al (2016) also pointed out that if the system is perceived to be easy then even its implementation would be easier as well. Portz et al (2019), added that if a technology has high quality design, is useful, credible and desirable it is most likely to be adopted and implemented. However, they also explained that these factors are mediated by the effect of other external variables like the conditions present, differences in individuals, and the system characteristics. The hypothesis was thus formulated as follows:

H2 Perceived ease of use has a positive impact on the implementation of e-health care services

According to Sahama et al (2013) one of the barriers to the implementation of eHealth care services is the concern for security of the technology especially when it comes to patient data. They explained that it is imperative there be legislation requirements be formulated to govern the privacy of patients and deal with the security and privacy concerns for there to be successful and sustainable implementation of eHealth services. Al-Issa et al (2019), explained that hospitals usually have centralized systems and eHealth would also mean centralized eHealth with services like patient data, pharmacy information system and medical images centrally cloud computed. This would leave the data vulnerable to cyber-attacks by the third parties.

Zhang and Liu (2010) explained that privacy as a moral right may lead to severe liabilities especially on the medical professionals if it is not observed. This may lead to professionals being hesitant and resistant to using eHealth care services hence leading to their difficulty in implementing (Sneha and Asha, 2017). In addition, if the patients also feel like their data may not be securely protected, they may opt to omit some vital information (Haas et al, 2011). This would then result in more harmful consequences like wrongful diagnosis among others (Ibrahim et al, 2016). Privacy therefore is a very important factor in influencing the adoption and implementation of eHealth care services. The hypothesis was thus formulated as follows:

H3 Privacy has a positive impact on the implementation of e-health care services

Celler et al (2013) explained that ICT has properly integrated the use of information and technology to enhance the facilities provided to the customer. In addition, applications are used to connect the doctors, patients, and pharmacists together towards a common goal of providing better health care and improving service delivery. It has also opened new techniques for handling the management related issues faced by the patients during their treatment. Mohammad and Habeeb (2015) explained that ICT in healthcare also ensures that workflow and operations are expedited in the hospital. that e-healthcare requires the integration of different electronic devices. The devices should be connected in a routine which minimizes the error in the

management process. Brennan et al (2013) also pointed out that eHealth would be a great solution in dealing with providing patient care to those in remote areas. They also indicated that with the advancement of technology, planning design and implementation of new healthcare will be promoted. The need for eHealth care would thus increase the chances of it being implemented. The hypothesis is thus formulated as follows:

H4 Need has a positive impact on the implementation of e-health care services

Below is the summary of the hypotheses:

Table 2: 10.1 Hypotheses

Hypotheses	Explanation
H1	Perceived usefulness has a positive impact in the implementation of e-health care services
H2	Perceived ease of use has a positive impact on the implementation of e-health care services
H3	Privacy has a positive impact on the implementation of e-health care services
H4	Need has a positive impact on the implementation of e-health care services

2.11 Empirical literature

Verma et al (2019) conducted a study on acceptance and adoption of eHealth in Punjab through application of the TAM. The study focused on perceived usefulness, perceived risk, behavioral intention and perceived ease of use. The study revealed that age had an effect on the acceptance of eHealth with the young being keen to use the eHealth care services. This was linked to their interest in technology and latest devices. Those above the age of 50 were found to have no intention of using eHealth and in some cases even unaware of the eHealth care services.

Ahmad (2017) conducted a study in Jordan concerning the implementation of eHealth care in Jordan with focus on its adoption by nurses and other end users. The exploratory study was conducted through a survey on various medical institutions. The nurses in Jordan were found to be highly receptive of the electronic health records. A

positive and significant relationship was found on perceived ease of use and perceived usefulness of the eHealth tools leading to their easy acceptance. The study however, revealed that experience in the profession and with electronic health records actually had an effect on the perceived ease of use of the electronic health records. The higher the experience, the positive the reception was.

Vadillo et al (2017) evaluated the Talisman telecare monitoring digital home tool in Spain. The Talisman is an eHealth care tool that helps detect a risky situation in the home through the collection and management of the user's environmental data. The results of the study indicated that the end users found the interface of the tool simple enough but complained that it showed too much unnecessary and irrelevant information. The system was also found to be very flexible. However, the cost was found to be higher and most respondents indicated that this would deter them from adopting and using the system. Respondents also expressed security concerns and a lack of privacy from using the system because of inadequate information provided.

Khan et al (2019) conducted a study on acceptance and adoptions of eHealth care services from the patient perspective of African expats in China. The study revealed that the dimensions of the Technology Acceptance Model were significantly associated with the intention to use eHealth care applications. The study also showed that the demographic characteristic of gender was related to usage of eHealth care systems as the findings revealed a partial association between gender and acceptance and adoption of the system. Trust was found to have no significant impact on the intention to use the system.

Swinkels et al (2018), conducted a qualitative study in Netherlands evaluating mHealth technology implementation where a three-year living laboratory was established. The study was focused on trying to accelerate the efforts of eHealth. It consisted of collaboration between health care centers, small and medium enterprises, patients, health care professionals and research institutions, all in collaboration. The study revealed that health care professions were interested in adopting eHealth care services as they would differentiate them from other service care providers. Stakeholders pointed out that there was need for an integrated infrastructure to ensure smooth operations. It was explained that for effective and sustainable eHealth, collaboration between stakeholders was of utmost importance. This would enable new

innovative health models, active participation of all parties and increase the potential of eHealth turning into reality.

The study conducted by Munyua, Rotich, and Kimwele (2015) highlighted the factors affecting the adoption of M-health in maternal health care in Kenya. The study was based on the quantitative research method which was done using the descriptive survey design. The participants of the study were the 3460 patients attending the antenatal clinics along with the 24 medical staff in the gynecology section of Nakuru Provincial General Hospital. The findings of the study indicated that awareness is essential to adopt the new changes. The study also revealed the awareness about the M-Health in the employee but the absence of awareness about its advantages was observed. The study also reflected the influence of government and the policymakers in the adoption of m-Health. The absence of a budget, untrained usage of ICT, the absence of policy guidelines was the reason for the absence of the successful implementation of ICT.

Mosch et al (2019) conducted a study among medical care students evaluating their intention to use eHealth care. The study showed that there is a significant gap between the medical students' willingness to adopt eHealth services and the skills they acquired. This was as a result of most medical students revealing that they had poor digital literacy skills. The study therefore recommended the integration of digital health into the learning process of students, collaborations between health care professionals as well as establishing platforms upon which vital information and ideas on eHealth can be exchanged.

The study conducted by Celler et al (2013) outlined the significance of using information technology to improve the healthcare system. The study outlined the usage of Information and Technology (ICT) in healthcare networks to facilitate the shared devices, scheduling, information directories, storing patient's history, knowledge, and consumer-based health education. The study also indicated the need for effective management of chronic diseases as it requires a close partnership with all healthcare providers. It also highlighted how common application of ICT includes the home monitoring of the patients. It includes replacing home visits of the patients with videophone consultations. The study depicted that ICT has facilitated the patients as well as the healthcare staff.

The users can also be facilitated through healthcare education and daily logs. It is the facility which ensures patients are getting attention and their ease is also considered. The study indicated that how ICT has properly integrated the use of information and technology to enhance the facilities provided to the customer. It has also opened new techniques for handling the management related issues faced by the patients during their treatment

The study conducted by Mohammad and Habeeb (2015) outlined the research on e-healthcare systems which are based on service-oriented architecture. The quantitative research methodology was used in this research. Data was collected from different sources and was analyzed statistically. The study depicted that e-healthcare is the use of electronic devices which helps to deliver the healthcare services in any hospital. The study indicated that e-healthcare requires the integration of different electronic devices. The devices should be connected in a routine which minimizes the error in the management process. ICT in healthcare also ensures that workflow and operations are expedited in the hospital.

The results of the study also indicated the lack of the proper flow of the system in hospitals and health organizations. It indicated the need for a system that guarantees the appropriate application of the e-Healthcare system. The study also indicated the significance of proper communication between doctors, patients, pharmacists, and the management team. All these stakeholders should have access to real-time communication.

Furusa and Coleman (2018) conducted a qualitative study on factors affecting eHealth in Zimbabwe. The study revealed that there was a noted lack of funds available for the health sector and this was a major challenge in the implementation of eHealth care services. The allocated health sector budget was insufficient to meet the current needs with traditional health care already. The study also noted that even though there was an eHealth policy in place this was hardly implemented and did not provide enough guidance for diffusion of technology in medical institutions.

2.12 Conclusion

The chapter highlighted the theoretical and empirical foundation for the study where the major variables and contexts from which they were drawn from were examined. The study explained the need for eHealth care services and factors which affected their implementation. They also discussed the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology. These models detailed the variables that were used for this study and examined them in greater detail. The study also dealt with the empirical literature which described and explained technology acceptance and adoption cases from around the world and their implications. All the literature review done in this chapter will be used later to derive lessons and contribution to science, if any, from this study.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter focused on the process of determining the steps taken in the collection of data, the material used as well as the way in which the data would be analyzed later. It explained in detail the research design that served as the framework for the study, the research methods and approaches used in the study. The method of data collection was also explained, highlighting on the targeted population, sample size and sampling technique that determined the sample size.

In addition, the researcher explained and justified the selection of the research instrument, its contents and measurement and how it was distributed to the respondents. The researcher also outlined the ethical procedures that were followed from the beginning and during the process of data collection for the study and how they ensured the respondents' data was kept safely and in confidentiality. The researcher also provided a snapshot into how the data obtained was going to be analyzed and the tests that were going to be conducted in the analysis.

3.2 The research process

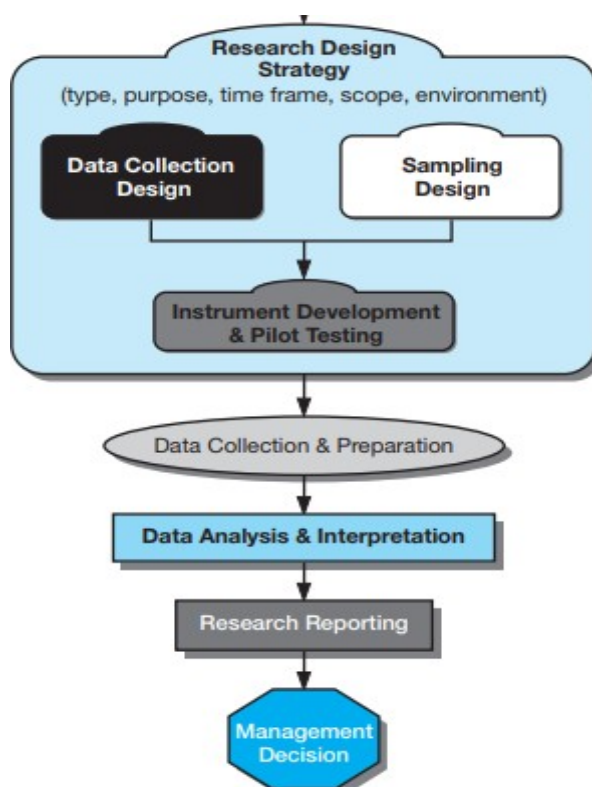


Figure 4: Research process

Source: Cooper and Schindler (2014)

The above diagram shows the research process that was followed by the researcher after the research questions were determined. The process was advocated for by Cooper and Schindler (2014). The research process clearly shows the steps performed in conducting a study.

3.3 Research design

According to Creswell (2016), the research design acts as a guideline in research by providing the specifications and procedures that need to be followed. The research design provides a clear path of how the researcher intends to collect data. It therefore needs to be structured in such a way that everything is transparent, clearly defined and easy to understand (Cooper and Schindler, 2014).

The study employed a descriptive research design as well as an explanatory hence it was a descriptor-explanatory study. Descriptive research showcases an accurate

picture of certain events at a particular time, with a clear picture and pace of what is being studied. According to Saunders et al (2009), it can be used in conjunction with an explanatory design so that it acts as a prelude to a deeper explanation. Explanatory research attempts to test a theory in the field and comes with clear structure and conceptualization of variables. The researcher thus utilized these methods so that he would not just end up at description of the eHealth adoption situation in DRC; but that he would also provide explanations for the variables that would enable a deeper understanding of the subject.

The study also used a quantitative approach. According to Stockemer (2019), the use of quantitative methods enables transmissibility of the research through replication of the study in the future. That means that the results can be easily verified, hence the selection of the quantitative approach. In addition, the study involved hundreds of observations hence quantitative methods were the logical method to represent the findings numerically. Research method

The research employed a deductive approach. The deductive approach provides formulation of theory and hypothesis prior to the empirical research. According to Gill and Johnson (2002), the deductive process entails theory and a hypothesis whose operationalization involves translating concepts into measures that enable observations. This is followed by testing of the hypotheses which may result in falsification or discarding of the theory; or result in new laws that are used to predict the past and forecast future observations. This study followed all the above steps and thus was classified as a deductive study.

In addition, this study was based on the positivism paradigm which is usually associated with the deductive approach. According to Park et al (2020), the positivism paradigm involves studies which are focused on studies which identify causal relationships and seek inference and generalization from a large sample.

3.4 Population and sampling

The population represents the whole entire universe. In this study the population was the medical personnel of the Democratic Republic of the Congo. However, for the purposes of research it is impossible to observe the entire population. This is then solved through sampling whereby a part of the population is selected based on the people who possess the information needed. As a result, only a portion of it is regarded under study and this is what is referred to as the target population consisting of people

who best meet the criteria for the study.

The targeted population of this study were the medical personnel in Lubumbashi city in the DRC. A small portion of this targeted population is chosen for the study and this is considered the sample size upon which the hypothesis is later tested to establish the answers to the research questions. It also stands as a representation of the targeted population on which findings are generalized over the whole population.

The sample size for this study was 286 medical personnel from few medical institutions across Lubumbashi. This consisted of various medical professionals like nurses, doctors, pediatricians and so forth. This sample size was calculated using the formula $n = \frac{N}{1 + Ne^2}$ for a population of 1000 medical personnel all the respondents were adults from the age of 18, and both genders were selected.

The sample was selected using the simple random sampling technique. It is a probability sampling technique and according to Saunders et al (2009), a probability sampling technique is used to make inferences upon a population by drawing it from a smaller sample and is used mainly in survey research. The method was chosen because it allows all the elements under study an equal chance of being selected.

3.5 Data collection

The data was collected from primary and secondary sources. Primary data which is data obtained straight from the field for the first time for that specific purpose was collected through a survey. According to Saunders et al (2009), a survey is very common in exploratory and descriptive research where questions pertaining to the what, who, how, where and so forth are often asked. The scholar also added that the survey is easy to administer and understand as well as use for comparison purpose. It also allows data to be collected in large quantities in an economical way. All these factors contributed to it being chosen by the researcher as the data collecting strategy.

The primary data was obtained with the use of a questionnaire in the survey which was distributed by the researcher himself. The researcher chose primary methods as the nature of the study deemed it necessary. In addition, primary data also provides a first-hand account from the respondents hence obtaining authentic data relevant for the study in question. The survey was also cross sectional in nature. This means that it provided a clear snap of events at a particular time.

The researcher also utilized secondary data sources in the course of the study. Secondary data consists of data that is already available; that would have been initially used for other purposes. The secondary data used in this study was used for literature review and came in the form of theoretical and empirical research. It consisted of academic journals, academic articles, textbooks and internet sources as well. These were later used for comparison purposes with the findings of the current study to draw similarities and areas of divergence upon which new findings could be built.

3.6 Research instrument

The research instrument is the data collection tool in research, administered to the respondents. The research instrument employed for this study was the questionnaire. The questionnaire was structured and had close ended questions. This was to ensure that responses fell within a certain framework to avoid the respondents' going off the topic which would have been bad for the study. The contents of the questionnaire were adopted and adapted from the work of various scholars. These were Ahmad (2017), Hendriks et al (2013) and Khan et al (2019) and they were all studies based on adoption of eHealth in China, Germany and India.

The questionnaire was divided into different sections. The first section was focused on information pertaining to the demographic characteristics of the respondent. It established basic background on things like age, gender, profession, type of hospital the respondent worked in and their qualifications. It also sought to establish the respondent's educational qualifications, their competence with computers as well as their level of experience with eHealth systems.

The next sections focused on the variables perceived usefulness, perceived ease of use, privacy, eHealth usage and need. The questionnaires were chosen as the research instrument as they are cheap and easy to administer. In addition, they are also appropriate for quantitative studies and less time consuming.

3.7 Measurement

It is necessary that the research instrument employed be measurable in order for the quantitative analysis to be conducted. In order to do this, scales are employed. The

current study employed the Likert Scale. The Likert scale measures attitudes and opinions on a scale of three, five or seven pre-coded responses. It measures the strength of an opinion or experience with ranges. The researcher employed a five-point Likert scale for this study which ranged from strongly disagree to strongly agree with the neutral portraying indifference. The researcher chose the Five-point scale as this was more appropriate and best captured the range of responses without going overboard or providing too narrow responses.

3.8 Pilot study

It is vital that the respondents understand the questions on a questionnaire before they attempt them (Cooper and Schindler, 2014). This is to ensure that they will answer in the same context that the researcher intended them and that they interpret them correctly. A researcher can ensure that this happens by conducting a pilot study before the main study. This is where the researcher would distribute a few questionnaires to the respondents in a mini study. If there are any errors or areas that the respondents are having difficulty interpreting and answering then these areas would be amended and a final draft of the research questionnaire is made (Skroemmer, 2019).

The researcher conducted a pilot study on 10 medical personnel and the study revealed that the respondents were able to correctly interpret the questions and had no difficulties in understanding them. The questionnaires were thus deemed reliable and ready to be distributed to the targeted population.

3.9 Reliability and validity

In research it is imperative that the adopted research instrument be highly reliable to measure the items it is intended to measure. This means that even in future studies, the same research instrument can be adopted and used to measure the same. A reliability analysis was conducted to determine if the research instrument could be relied upon as a measurement tool. This was done through the use of the Cronbach Alpha where the higher the Cronbach Alpha figure, the higher the reliability of the research instrument. Validity of the research instrument is also necessary to ensure that the contents of the instrument can best reflect the variable being measured. The

researcher used research instrument whose contents had already been tested for validity ensuring also that the current study had high validity.

3.9.1 Analysis

The study was a quantitative one and such, the researcher employed quantitative methods in analyzing the data and results of the study. The researcher employed the Statistical Package for Social Statistics (SPSS) version 23 for data analysis. Descriptive statistics were observed through the use of quantitative tools that determine frequency like the mean and the standard deviation. This was measured on the demographic characteristics of the population as well as the content items of the independent and dependent variables. Reliability tests were also conducted to determine usefulness of the research instrument as a research tool. The researcher also sought to determine the relationship between the independent and dependent variables through the correlation and regression analysis. The correlation analysis determines the existence, if any, of a relationship between variables and its significance as well. The regression analysis was conducted to determine the extent to which variations in the independent variables resulted in changes in the dependent variables. The data was then presented in the relevant statistical tables.

3.9.2 Ethical consideration

In conducting research, it is essential that proper ethical conduct is observed. Proper protocol has to be followed so that the study will not result in any harm, infringements, losses or liabilities on other parties. In this context, the researcher sought permission from the relevant parties before the study was conducted. The researcher sought the permission from the Near East University's Ethical Committee to conduct the study. He also sought permission from the hospital administration first before the study was conducted and it was only then that the researcher approached the respondents.

In addition, permission was also sought from the respondents. The researcher clearly explained the expectations and requirements to them. He also went on to communicate to them that their information would be used only for academic study and nothing else, their confidentiality would be observed and no names would be taken down. It was also made clear that participation in the study was voluntary and the

respondents were allowed to opt out at any time, if they so decided. Lastly, the respondents were also informed that there was no monetary gain from the participation and neither were they supposed to pay for anything.

The researcher will keep the questionnaires under lock and key in a safe to ensure that the information is kept private and safe. In addition, he will also upload it on a hard drive which will be kept in the same position. After the data has been used it will be uploaded to a secure Cloud storage and the physical copies will be destroyed.

3.9.3 Summary

This chapter focused on the methodology that guided this study. The study was based on a descriptive, cross sectional research design. It was also quantitative in nature and based on a deductive approach. The chapter also detailed how the data would be collected through the use of a survey using a structured questionnaire as the research instrument. The instrument was adopted from previous studies and had its reliability through the reliability analysis. The study collected primary data from 286 medical personnel through the use of the simple random sampling. A pilot study was undertaken prior to the study on a few respondents to improve the reliability of the research instrument. The chapter also explained how the data would be analyzed using the SPSS package using different quantitative tools on the program.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter consists of the results from the data collection and its analysis. The researcher conducted descriptive analysis of the demographic characteristics as well as the variables to determine frequencies of responses. The researcher also tested the research instrument to determine its reliability for use in studies. Correlation and regression analysis were also conducted to determine the relationships between the variables and to test the hypotheses

4.2 Realization rate

Table 4.2.1 realization rate

Questionnaires distributed	161
Questionnaires spoiled or rejected	39
Questionnaires used	122
Realization rate	75.7%

The table above shows the number of questionnaires the researcher used in relation to the ones he distributed. A total of 161 questionnaires were distributed to the users of eHealth care services. The researcher received all the questionnaires back. However, there were 39 incomplete questionnaires and the researcher rejected them and did not use them for the study. That left 122 valid questionnaires which made up 75.7% of the initial number and these were the ones used for the study.

4.3 Reliability

A reliability analysis is crucial for study because it is imperative to know whether or not one can depend on the research instrument for future studies; to measure the

variables given. The researcher conducted a Cronbach Alpha test to determine if the items used in the research instrument can be relied upon to measure the independent and dependent variables. The results are presented below. According to Taber (2018) Cronbach alpha values above 0.60 are acceptable whilst those above 0.70 are considered excellent. The following tables show the reliability analysis for each variable and whether or not they are a reliable measurement for the specified variable.

Table 4.3.1 Perceived ease of use Reliability Statistics

Cronbach's Alpha	N of Items
.746	7

The table above shows the Cronbach alpha value of the perceived ease of use variable items. The table shows a value of 0.746 which shows that the items used to measure perceived ease of use can be relied upon to measure it.

Table 4.3.2 Perceived usefulness Reliability Statistics

Cronbach's Alpha	N of Items
.917	7

The table shows a reliability of 0.917 for the 7 items employed to measure perceived usefulness. The figure shows a high internal consistency which is deemed to be in the excellent range by scholars. It therefore also reflects that the items used to measure perceived usefulness are reliable.

Table 4.3.3 Privacy Reliability Statistics

Cronbach's Alpha	N of Items
.690	7

The table shows a Cronbach Alpha of 0.69 for the seven items used to measure privacy. This value falls within the acceptable range of reliability according to Taber (2018). The items used can thus be relied upon to measure privacy successfully.

Table 4.3.4 Need for eHealth Reliability Statistics

Cronbach's Alpha	N of Items
.786	7

The above table shows the internal consistency for need for eHealth. The table shows a high Cronbach alpha value of 0.786. This means that the items used can be relied upon as a measurement tool for need for eHealth.

4.4 Demographic analysis

The researched conducted a demographic analysis to determine the social characteristics of the population used for the research. To this end, the researcher assessed the gender, age, educational background, computer skills and the purpose of eHealth use of the respondents. The results are presented in the tables below.

Table 4.4.1 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	48	39.3	39.3	39.3
female	74	60.7	60.7	100.0
Total	122	100.0	100.0	

The table above indicates that there were 48 male respondents and 74 female respondents. Females were almost twice more than their male counterparts, contributing 60.7% of the targeted population. On one hand this may show the distribution of gender in the population of the city; but on the other it may just be a reflection that more females were willing to participate in the study compared to the males.

Table 4.4.2 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18-28	65	53.3	53.3	53.3
29-34	44	36.1	36.1	89.3
35-40	4	3.3	3.3	92.6
40+	9	7.4	7.4	100.0
Total	122	100.0	100.0	

The table indicates that there were fewer respondents above the age of 35 and most were between the ages 18 to 34. Most patients are between the age of 18 and 28, contributing 53.3%, slightly above half. The age group 29 to 34 years came in second with 44 patients that made up for 36.1% of the population. The users of eHealth care services therefore mostly consisted of younger people

Table 4.4.3 Highest education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid diploma	36	29.5	29.5	29.5
bachelors	66	54.1	54.1	83.6
masters	20	16.4	16.4	100.0
Total	122	100.0	100.0	

In terms of education the majority of users have a Bachelor's degree and they made up 54.1% of the total. A higher number of respondents had more diplomas as their highest education with 29.5% compared to those with Master's Degree who only made up 16.4% of the total percentage.

Table 4.4.4 Computer skills

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid poor	24	19.7	19.7	19.7
Average	59	48.4	48.4	68.0
Good	24	19.7	19.7	87.7
Verygood	15	12.3	12.3	100.0
Total	122	100.0	100.0	

The computer proficiency level of the respondents was examined to determine their level of skills with using computers. The results show that a large number of respondents are average, almost contributing half of the total at 48.4%. A decent 32% comprised of those whose computer skills were good and very good. A smaller percentage of 19.7% have poor computer skills. All in all, the users have decent computer abilities as the majority have average and above computer proficiency.

Table 4.4.5 Length of e-health usage

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid lessthan1yr	61	50.0	50.0	50.0
1-3yrs	45	36.9	36.9	86.9
4-6yrs	15	12.3	12.3	99.2
7+	1	.8	.8	100.0
Total	122	100.0	100.0	

The researcher also examined the length of time the users have been using eHealth care services. Half of the population has been using it for less than a year, contributing exactly 50%. It also indicated that 36.9% have been using it for 1 to 3 years. Only a very small number of users have been using eHealth care services for more than

4years as the total figure for that consists of only13.1%. Only 1 person has been using e-health care services for more than 7 years which is less than a percentage.

Table 4.4.6 Purpose of e-healthcare

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid knowledge	67	54.9	54.9	54.9
Prescription	54	44.3	44.3	99.2
Consultation	1	.8	.8	100.0
Total	122	100.0	100.0	

The researcher sought to determine what the users mostly used the eHealth care services for. The table reveals that the majority use eHealth care services to acquire knowledge on various health related things. The number for this constituted 54.9%. The table also shows that a high number of users engage in eHealth care services for prescription purposes. Only one person indicated that they used it for consultation and this is the least contribution at less than 1%.

4.5 Descriptive statistics

The researcher conducted descriptive statistics and determined the frequency of responses using the mean values. The scales were based on the five-point Likert scale and their opinions were thus based on this. The results are presented in the tables below.

Table 4.5.1 Descriptive Statistics perceived usefulness

	N	Mean	Std. Deviation
EHS make obtaining health information more convenient	122	4.1557	.81332
EHS make health information more accessible.	122	4.2213	.77686
EHS enable me to find answers to my health questions more quickly	122	4.2295	.77977
EHS enhance my effectiveness in managing my health care	122	4.0574	.77459
EHS make it easier for me to gain the health information I want	122	4.0820	.85850
EHS offer additional health Information	122	3.9262	1.03786
The advantages of using EHS far outweigh the disadvantages	122	4.4262	.66703
Valid N (listwise)	122		

In terms of perceived usefulness, the results from the table indicate that the respondents were generally of a strong opinion that eHealth care services were useful. The table shows that the respondents strongly agreed that the eHealth care services made accessing their health information more convenient. This is reflected in the high mean of 4.1557. The respondents were also of the opinion that eHealth care services made access to health information more accessible as well as providing them with more health-related knowledge and solutions as shown in the mean of 4.22, 4.08 and 4.229 respectively; indicating a strong agreement to the opinions. The table also shows that respondents favored the e-health care system as they strongly agreed to the opinion that it had more advantages than disadvantages. This is reflected in the mean of 4.4262. Overall, the table indicates that respondents find eHealth care services to be useful especially with regards to acquiring information and quick solutions.

Table 4.5.2 Descriptive Statistics Perceived ease of use

	N	Mean	Std. Deviation
The EHS system is user friendly	122	4.1311	.74911
I rarely make errors frequently when I use the EHS system	122	3.4918	1.15884
Interacting with the EHS system requires less mental effort	122	2.0328	.87135
The EHS system rarely behaves in unexpected ways.	122	2.2131	.99776
The EHS system is flexible to interact with.	122	2.0328	.96153
My interaction with the EHS system is easy for me to understand.	122	3.9836	.76042
The EHS system provides helpful guidance in performing tasks	122	3.6148	.94865
Valid N (listwise)	122		

The table above represents opinions of the respondents with regards to the perceived ease of use of the eHealth care services. The table shows that on average the respondents strongly agreed that the eHealth care system was user friendly, reflected in the mean of 4.11 and that it was easy to understand as shown in the mean of 3.987. They also indicated that it provided guidance to the user in their tasks as shown by the high mean of 3.614. In terms of errors there was a moderate response to the opinion that respondents rarely make errors when using the eHealth care system. However, the table also reflects that with regards to using mental effort, the respondents disagreed to the notion that eHealth care uses less mental effort shown by the mean of 2.03. The respondents also expressed disagreement to the uncertainty of the eHealth care system. The table however, reveals that the respondents disagreed to the opinion that they rarely make errors when using eHealth care services, shown by the low mean of 2.2. In addition, the table also shows that

respondents expressed disagreement with regards to whether the eHealth caresystem was flexible to interact with as shown by the low mean of 2.03. Overall, the respondents had mixed feelings with regards to the perceived ease of use of eHealth care services

Table 4.5.3 Privacy descriptive Statistics

	N	Mean	Std. Deviation
I believe privacy of e-Health patients is protected	122	4.0902	.88143
I believe personal information stored in e-Health system is safe	122	4.0984	.92182
I believe e-Health systems keep participants information secure	122	4.2951	.88783
I would be concerned about my privacy when using an EHS	122	2.7049	1.19702
Wrong treatment of a health matter can be an outcome of using EHS	122	3.9098	.88143
I would be concerned about the quality of the information obtained from an EHS	122	3.2623	1.21154
I would feel safe using an EHS	122	4.0492	.89860
Valid N (listwise)	122		

The researcher also sought the respondents' opinions with regard to eHealth care services and privacy. Overall, the respondents expressed confidence in the eHealth care system with regards to privacy issues. The table above indicates that respondents strongly agreed that their privacy was protected as reflected by the high mean of 4.09. They also indicated that they strongly believed their information was safe and secure as shown by the mean of 4.098 and 4.29 respectively. The table also shows that the respondents were indifferent to the opinion that they would be concerned about their privacy when using eHealth care system as reflected in the

mean score of 2.7. However, they moderately agreed that wrong treatment can be an outcome of eHealth care services as shown by the score of 3.9. They also moderately agreed that they would be concerned about the quality of information obtained from eHealth care sources as reflected in the mean score of 3.26. Lastly, the respondents strongly agreed that they felt safe using eHealth care systems as depicted by the high mean score of 4.04. Overall, the respondents expressed confidence in the eHealth care system with regards to privacy matters.

Table 4.5.4 Usage for eHealth descriptive Statistics

	N	Mean	Std. Deviation
e-Health service is a pleasant experience	122	4.3197	.74152
I use eHealth service regularly	122	3.4180	1.40742
I will strongly recommend others to use an Online Health Guide.	122	4.2623	.82124
I have high interest in eHealth care services	122	4.3361	.77790
Much of my routinely work is carried out through e health care services	122	3.4016	1.41222
I would like to use more of e health services in the future	122	4.3279	.82765
E-health care services allow me to detect and manage incidents that traditional care services cannot	122	4.1639	.85629
Valid N (listwise)	122		

The researcher sought to determine the usage of the e health care services by the respondents. The table above indicates that using e health care services is a pleasant experience as reflected in their strong agreement of the notion in the mean score of 4.319. They also indicated by their moderate agreement that they regularly use eHealth care services regularly as shown by the 3.41 mean score. They also indicated

that they are highly interested in eHealth care system and would recommend others to use an eHealth guide as expressed by their strong agreements to these notions. The mean scores for these were 4.33 and 4.26 respectively. The respondents also moderately agreed that much of their routine work is conducted through eHealth care services as shown by the mean score of 3.40. The respondents strongly agreed that they would continue using eHealth care services in the future shown by the high mean score of 4.32. They also strongly agreed that eHealth care system allows them to detect and manage incidents that traditional care services cannot as reflected in the high mean score of 4.16. Overall, the respondents were content using eHealth care services and would welcome more services in the future

4.6 Correlation Analysis

Correlation analysis measures the strength of association between variables. The researcher sought to determine the relationship between the independent and dependent variables. The results are shown in the table below. A high correlation figure implies a strong, positive and significant relationship between the variables.

Table 4.6.1 Correlations

		Need for eHealth use	Privacy	Perceived ease of use	Perceived usefulness
Need for e-health use	Pearson Correlation	1	.503**	.131	.056
	Sig. (2-tailed)		.000	.152	.539
	N	122	122	122	122
Privacy	Pearson Correlation	.503**	1	.191*	.148
	Sig. (2-tailed)	.000		.035	.103
	N	122	122	122	122
Perceived ease of use	Pearson Correlation	.131	.191*	1	.233**
	Sig. (2-tailed)	.152	.035		.010
	N	122	122	122	122
Perceived Usefulness	Pearson Correlation	.056	.148	.233**	1
	Sig. (2-tailed)	.539	.103	.010	
	N	122	122	122	122

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

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

Table 4.6.1

The table above shows that there is a significant and positive correlation between need for eHealth usage and privacy. This is reflected in the 0.503 association between the variables. In addition, there is also a positive relationship between the need for eHealth usage and perceived ease of use at 0.13. Another positive relationship was also observed between need for eHealth and perceive usefulness. This is shown in the 0.056 value.

4.7 Regression analysis

The researcher conducted a linear regression analysis to determine the strength and significance of the relationship between the variables. He determined the fitness of the model to the data as well as if the independent variables significantly and statistically predicted the dependent variable. the results are presented below.

4.7.1 Model summary

The researcher sought to establish whether the model used for the study was a good fit for the data. The results obtained are displayed in the table below.

Table 4.7.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.505 ^a	.255	.236	4.11216

a. Predictors: (Constant), privacy, perceived usefulness, perceived ease of use

The above table shows the model for the study. The model for the study shows the overall relationship between the variables. The R value shows the correlation of all the independent variables to the dependent variable. They show a correlation of 0.505 which can be translated to a 50.5% association. The R square depicts the degree to which the dependent variable can be explained by the independent variable and this is 25.5%. Therefore, it can be said that the need for eHealth care services can be explained by perceived usefulness, ease of use and privacy by 25.5%.

4.7.2 ANOVA

The table below shows the analysis of variance. The analysis of variance shows whether the results obtained from a test are statistically significant. In addition, it also reflects whether the independent variables predict the dependent variable. It is also used to make the decision whether to accept or reject a hypothesis.

Table 4.7.2 ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	684.213	3	228.071	13.487	.000 ^b
	Residual	1995.360	118	16.910		
	Total	2679.574	121			

a. Dependent Variable: eHealth use

b. Predictors: (Constant), privacy, perceived usefulness, perceived ease of use

The table shows that the results of the relationship between the independent and dependent variables are statistically significant. This is reflected in the sig value of 0.000. A p value of less than the 0.05 significant level shows that the regression model fits the data and is statistically significant. This also means that the independent variables of perceived usefulness, perceived ease of use and privacy can predict the need for e health usage. In addition, the F value is way above one which means that the alternative hypotheses are true. An F value closer to 1 would mean that the null hypothesis is true.

4.7.3 Coefficients

Table 4.7.3 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	12.690	3.508		3.617	.000
Perceived usefulness	.028	.082	.028	.337	.737
Perceived ease of use	.058	.115	.042	.502	.617
Privacy	.572	.093	.500	6.136	.000

a. Dependent Variable: eHealth use

The table above shows the individual aspects of the effect of changes in the independent variable on the dependent variable. The study shows a positive but insignificant effect on perceived usefulness and perceived ease of use. This is reflected in their high p values that are greater than the significant value of 0.05. Only privacy has a p value less than 0.05 at 0.000 which means that the variable change is significant. An increase in privacy would lead to increase in the usage of eHealth care services. The hypothesis is thus accepted.

4.8 Medical personnel analysis

The researcher also collected information from the perspective of the medical personnel consisting of nurses, doctors and other personnel. Because of the Covid 19 pandemic the researcher was not able to reach the original number of the medical personnel intended and thus only managed to reach those that were conveniently available. The researcher managed to reach and get responses from 51 medical personnel. The results are reflected in the tables below.

Table 4.8.1 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	17	33.3	33.3	33.3
Female	34	66.7	66.7	100.0
Total	51	100.0	100.0	

The table above shows the gender of the respondents. The table shows that there were twice more females than males at 66.7% compared to the 33.3% males. The distribution was 34 and 17 respectively.

Table 4.8.2 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18-28	20	39.2	39.2	39.2
29-34	21	41.2	41.2	80.4
35-40	5	9.8	9.8	90.2
40+	5	9.8	9.8	100.0
Total	51	100.0	100.0	

The table above shows the age distribution of the respondents. The table reflects that most of the respondents were in the age group 29-34, constituting 41.2%, nearly half of the population. This was followed by the 18-28 age group which had 20 respondents that made up 39.2%. These two age groups made up for more than three quarters of the population. The 36-40 age group and the 40+ consisted of 5 respondents each, contributing 9.8% each of the population.

Table 4.8.3 Profession

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid nurse	34	66.7	66.7	66.7
doctor	11	21.6	21.6	88.2
other	6	11.8	11.8	100.0
Total	51	100.0	100.0	

The researcher sought to establish the profession of the respondents in their medical field. There were three categories given which are nurses, doctors and others were all combined into the other category. The table reflects that there were more nurses than any other medical profession. There were 34 nurses and they made up more than half of the respondents at 66.7%. Doctors were next with only 11 doctors being part of the study, making up 21.6%. Lastly, there were 6 other medical personnel and these made up 11.8% of the respondents.

Table 4.8.4 Type of hospital

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid public	28	54.9	54.9	54.9
private	23	45.1	45.1	100.0
Total	51	100.0	100.0	

The researcher sought to determine the type of hospital in which the medical personnel operated in. The results show that 28 respondents worked in public hospitals whilst 23 worked in private hospitals. These figures made up 54.9% and 45.1% respectively.

Table 4.8.5 Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid diploma	14	27.5	27.5	27.5
bachelor	22	43.1	43.1	70.6
masters	4	7.8	7.8	78.4
doctorate	11	21.6	21.6	100.0
Total	51	100.0	100.0	

The researcher assessed the educational qualifications of the respondents, asking them to state their highest educational qualification. The table above shows that the majority of the respondents had at least a Bachelor's degree. There were 14 respondents with a diploma as their highest qualification, making up 27.5% of the respondents. The Bachelor's degree holders were 22, making up 43.1%. Four respondents had doctorate degrees, making up 21.6%.

Table 4.8.6 Computer skills

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid poor	10	19.6	19.6	19.6
average	21	41.2	41.2	60.8
Good	9	17.6	17.6	78.4
Very Good	11	21.6	21.6	100.0
Total	51	100.0	100.0	

The researcher established the computer proficiency of the respondents through assessing their computer skills. The table shows that the majority of the respondents had at least average computer literacy levels. Ten respondents have poor computer literacy skills and this made up 19.6% of the population. Those with average proficiency were 21, making up 41.2%. Nine respondents ticked that they had good computer skills and these made up 17.6% of the population. Lastly, 11 respondents pointed out that they had very good computer skills and these made up for 21.6% of

the respondents.

Table 4.8.7 E-health usage

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid lessthan1yr	27	52.9	52.9	52.9
1-3yrs	8	15.7	15.7	68.6
4-6yrs	11	21.6	21.6	90.2
7+	5	9.8	9.8	100.0
Total	51	100.0	100.0	

The researcher sought to determine the level of usage frequency of eHealth services. Slightly more than half of the respondents indicated that they had been using e-health care services for less than 1 year. These made up for 52.9% of the respondents. Eight respondents had been using eHealth care services for a period of between 1 and 3 years, making up 15.7% of the respondents. Those that had been using eHealth care services for a period of 4-6years were 11 contributing 21.6% of the population. Lastly only 5 respondents indicated that they had been using eHealth care services for more than 7 years and these constituted 9.8% of the total.

Table 4.8.8 Perceived usefulness Descriptive Statistics

	N	Mean	Std. Deviation
My job would be difficult to perform without EHS	51	3.2745	.82652
Using EHS gives me greater control over my work	51	3.5294	.70294
Accessing to digitalized patient medical history anywhere anytime thanks to EHS makes my job more efficient	51	4.0588	.73244
Using EHS saves time and money.	51	4.4118	.69790
Using EHS saves lives and reduces the death rate.	51	4.4706	.67388
Using EHS makes appointments with patients easier	51	4.0392	.59869
Using EHS improves my job performance.	51	3.8235	.71291
Using EHS allow me to accomplish more work than would otherwise be possible	51	3.7647	.83877
Using EHS enhances my effectiveness on the job	51	4.1373	.87223
Using EHSs improves the quality of work I do.	51	3.8235	.91007
EHS support critical aspects of my job.	51	3.6078	.91823
Using EHS increases my productivity	51	3.8824	.95178
Valid N (listwise)			

The researcher sought to determine the perceived usefulness for eHealth care services from the point of view of the medical personnel. The respondents slightly

agreed that their work would be difficult without using EHS. This is reflected in the mean value of 3.2745. They moderately agreed that EHS gave them greater control over their work as reflected in the mean value of 3.529. The respondents strongly agreed that EHS made their jobs more efficient as they can access their patient files digitally from anywhere. This strong agreement is reflected by the high mean value of 4.0588. The respondents also strongly agreed that EHS saved money and time as well as lives as shown by the high mean values of 4.41 and 4.47 respectively. The mean of 4.03 indicates that the respondents strongly agreed that the EHS made appointments with their patients easier. They also indicated that they strongly agreed that EHS improved their job performance as reflected by the mean value of 3.82. It also allowed them to improve their job performance and accomplish more work as indicated by the high mean values of 3.82 and 3.76 respectively. EHS also improved their job quality, job effectiveness, critical job aspects and productivity. The respondents' strong agreement is reflected in the mean values of 4.13, 3.82, 3.60 and 3.88 respectively. Overall, the medical personnel found eHealth care services to be useful.

Table 4.8.9 Perceived ease of use Descriptive Statistics

	N	Mean	Std. Deviation
I often become confused when I use the EHS system	51	2.3725	.84760
I make errors frequently when I use the EHS system	51	2.3333	.84063
Interacting with the EHS system requires a lot of my mental effort	51	1.8235	1.01402
I find it easy to recover from errors encountered while using electronic medical records	51	3.3529	1.14584
The EHS system often behaves in unexpected ways	51	2.7059	.80732
The EHS system is rigid and inflexible to interact with	51	2.0196	.98975
My interaction with the EHS system is easy for me to Understand	51	4.0588	.73244
The EHS system provides helpful guidance in performing tasks	51	4.2549	.74413
Valid N (listwise)	51		

The researcher sought to determine the respondents' opinions towards perceived ease of use of the e health care services. The table reveals that overall; the medical personnel had no problems with the EHS system and reflect that the system is user friendly. The respondents disagreed to the notion that they found the e health care services to be confusing and often made errors. This is reflected in their strong disagreements to those notions, indicated by the mean values of 2.37 and 2.33 respectively. The respondents also strongly disagreed that EHS took more mental effort as reflected by the mean value of 1.82. They also moderately agreed that they

found it easy to recover from errors they encountered whilst using the EHS as shown by the mean value of 3.35. However, the majority of the respondents showed indifference to the opinion that their system behaved in unexpected ways, as indicated by the mean value of 2.70. They also disagreed that they found the system to be rigid and inflexible and strongly pointed out that they found the interaction with it easy to understand as reflected by the mean values of 2.01 and 4.05 respectively. Lastly, the respondents strongly agreed that the eHealth care system provided helpful guidance to them in their performance of tasks as shown by the high mean value of 4.25. Overall, the respondents found the eHealth care system to be easy to use.

Table 4.8. 10 Privacy Descriptive Statistics

	N	Mean	Std. Deviation
I believe privacy of e-Health participants is Protected	51	4.0588	.75926
I believe personal information stored in e-Health system is safe	51	4.0392	.77358
I believe e-Health systems keep participants information secure	51	4.1176	.79113
I believe access to electronic patient related data is properly authorized, controlled and is safe from thirdparties	51	3.9608	.77358
There is proper monitoring on electronic devices in my workplace	51	3.4902	.85726
The hospital routinely fixes bugs and ensure the patient records are safe at all times	51	3.3137	.81216
Medical personnel are properly trained and can detect phishing attempts	51	3.3137	.90532
Valid N (listwise)	51		

The table above shows the medical personnel opinions with regards to the privacy of their e-health care system. Overall, the respondents agreed to the privacy measurements in place in their organization. The respondents strongly agreed that they believed that the privacy of their patients was protected as shown by the high mean value of 4.05. They also strongly agreed that they believed the personal information of participants stored on the eHealth system was safe and that the information was secure. This is reflected in the mean values of 4.03 and 4.11 respectively. The medical personnel also strongly agreed that they believed the electronic data records of their patients was properly authorized such that it was safe from third parties as indicated by the mean value of 3.96. In addition, they moderately agreed that there was sufficient monitoring of electronic devices in the workplace as shown by the mean value of 3.49. They also moderately agreed to the notion that their hospital conducted routine fixing of bugs to ensure safety of patient records and that the medical personnel were sufficiently trained to detect any phishing attempts on the system and this was shown by the mean value of 3.31 for each of these opinions. The major finding with regards to privacy is that the eHealth care system in their hospitals is strong and has strong internal controls in place.

Table 4.8.11 Usage Descriptive Statistics

	N	Mean	Std. Deviation
e-Health service is a pleasant experience	51	4.6471	.52244
I use e-Health service currently	51	3.7255	1.41532
I spend a lot of time on eHealth care services	51	3.0784	1.24649
I have high interest in e-health care services.	51	4.7059	.50176
Much of my routinely work is carried out through eHealth care services	51	2.9804	1.15741
I would like to use more of eHealth services in the future	51	4.8431	.46358
I would recommend others to use more of eHealth services in the future	51	4.3725	.56430
Valid N (listwise)	51		

The researcher also sought to determine the medical personnel opinions with regards to their usage of the eHealth care usage through day to day interaction with the system. Overall, the respondents showed agreement to the opinions and indicated that they were happy with their usage of the eHealth care system. The respondents strongly agreed that the eHealth care system offered a pleasant experience as reflected by the high mean value of 4.64. They also strongly agreed that they were using eHealth services currently but only slightly agreed that they spent most of their time using e-health care services as shown by the mean values of 3.72 and 3.07 respectively. The personnel also strongly agreed that they had a high interest in the eHealth care services as shown by the high mean value of 4.07. However, they professed indifference to the opinion that their routine work is done through eHealth care services. The respondents also strongly indicated that they would like to use more of eHealth care services and recommend it to others as shown by the high mean values of 4.84 and 4.37 respectively.

Table 4.8.12 Needs Descriptive Statistics

	N	Mean	Std. Deviation
Making an appointment with your GP over the internet	51	4.4706	.78366
General (medical) information about how you can live a healthier life	51	4.3529	.84436
Request information over the internet (the healthcare organization will contact you to inform you about a treatment)	51	4.6275	.66214
Finding, contacting, and bringing people with a high risk for certain disease together, so they can talk to each other about their health issue	51	4.5686	.80635
Buying prescription medication online. (online pharmacy)	51	4.3529	.97619
e-monitoring (your health is monitored over the internet using special equipment)	51	4.5294	.73083
Online diagnosis. (your physician examines you using webcam and attempts to diagnose you)	51	4.5098	.73137
Valid N (listwise)	51		

The table above shows the level of demand for eHealth care services by the patients from the perspective of the medical personnel. The table shows that overall there was high need for eHealth care services as reflected in the strong agreements to the opinions. The medical personnel strongly responded that there was high need for making online prescriptions as shown by the mean value of 4.47. They also indicated there was high need for general medical information on how individuals can live a healthier life as shown by the mean of 4.35. The respondents also strongly indicated that there was need for providing information over the internet where the healthcare organization will contact you to inform you about a treatment. This was shown by the

high mean value of 4.6275. In addition, the respondents also indicated by their strong agreement that there was need for eHealth care services where finding, contacting, and bringing people with a high risk for certain disease together, so they can talk to each other about their health issue was implemented.; as shown by the mean value of 4.56. There was also need for implementation of eHealth care services where it would be possible to buy prescriptions online as shown by the mean value of 4.35. In addition, the respondents showed strong agreement to the need for monitoring health through the internet using special equipment as shown by the mean of 4.52. Lastly, the respondents strongly agreed that there was need for online diagnosis where webcams and special equipment were used to do a diagnosis online and this was reflected in the high mean value of 4.50. The responses show that there is high need for eHealth care services in the hospitals from the perspective of the medical personnel.

4.9 Reliability statistics

It is imperative that the research instrument used be reliable as it can be adopted for future studies. In addition, one has to make sure that the items used in the instrument really measure the components given. One of the ways of determining that is through the Cronbach Alpha test of reliability. According to many scholars a high alpha value indicates that the research instrument can be relied upon as a measuring instrument and that the items chosen could accurately measure what they were intended to measure. A high Alpha value therefore points to a strong and reliable research instrument. A research instrument of between .70 and .95 is deemed the ideal range.

Table 3.9.1 Perceived usefulness Reliability Statistics

Cronbach's Alpha	N of Items
.927	12

The table above shows that the 12 items employed in the measurement of perceived usefulness can be relied upon as these had an excellent Cronbach Alpha value of .927.

Table 3.9.2 Perceived ease of use Reliability Statistics

Cronbach's Alpha	N of Items
.768	8

The researcher employed 8 items to measure the perceived ease of use items. The alpha value of these items was .768 which fell within the ideal range, hence they can be relied upon to measure perceived ease of use variable.

Table 3.9.3 Privacy Reliability Statistics

Cronbach's Alpha	N of Items
.876	7

The researcher used 7 items to measure the privacy aspect of the study. The table shows a Cronbah alpha value of .876 which is a high figure that falls within the ideal range. The items can thus be relied upon as a measurement instrument.

Table 3.9.4 Usage Reliability Statistics

Cronbach's Alpha	N of Items
.725	7

The researcher employed 7 items to determine the eHealth usage characteristics of the respondents. The table reflects that the items employed had a good alpha value of .725 and thus the items can be considered reliable.

Table 3.9.5**E-Health Needs Reliability Statistics**

Cronbach's Alpha	N of Items
.933	7

The researcher also assessed the eHealth needs of the medical personnel using 7 selected items. The above table shows that the scale employed to measure eHealth needs was reliable as reflected by the high Cronbach Alpha value of 93.3%.

4.10 Correlations**Table 3.10 Correlations**

	Perceived usefulness	Perceived ease of use	Privacy	E health needs	Usage
Perceived usefulness	1	-.409**	.434**	.400**	.614**
Pearson Correlation					
Sig. (2-tailed)		.003	.001	.004	.000
N	51	51	51	51	51
Perceived ease of use	.409**	1	.071	.152	.275
Pearson Correlation					
Sig. (2-tailed)	.003		.619	.287	.051
N	51	51	51	51	51
Privacy	.434**	-.071	1	.257	.628**
Pearson Correlation					
Sig. (2-tailed)	.001	.619		.068	.000
N	51	51	51	51	51

E-health needs	Pearson Correlation	.400**	-.152	.257	1	.725**
	Sig. (2-tailed)	.004	.287	.068		.000
	N	51	51	51	51	51
Usage	Pearson Correlation	.614**	.275	.628**	.725**	1
	Sig. (2-tailed)	.000	.051	.000	.000	
	N	51	51	51	51	51

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

Correlation analysis shows the degree of association between variables. A high correlation figure translates to a strong relationship whilst a low figure shows a weak relationship between the variables. The table above shows the relationship between the independent and dependent variables and explored the relationship between eHealth needs and perceived usefulness, perceived ease of use, privacy and usage. The table shows that the relationship between eHealth usage and perceived usefulness is strongly and positively significant at .614. A positive and significant relationship was also found between e health usage and privacy as shown by the .628 value. However, a positive but insignificant relationship was found between perceived ease of use and the eHealth usage as shown by the .275. Lastly, eHealth needs was found to be significantly and positively associated with usage of the service. This is indicated by the .725 correlation value.

4.11 Regression analysis

The researcher conducted a linear regression analysis to determine the strength and significance of the relationship between the variables. He determined the fitness of the model to the data as well as if the independent variables significantly and statistically predicted the dependent variable. the results are presented below.

Table 3.11.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.773 ^a	.598	.563	4.43742

a. Predictors: (Constant), Usage, perceived ease of use, privacy, perceived usefulness

The above table shows the model summary. The model summary shows if the data set fits the model used. From the table above, it can be seen that there is a strong and linear relationship between the independent variables as predictors and the dependent variable. This is reflected in the R value of .773. The R square simply shows the proportion of the dependent variable that can be explained by the predictors or independent variables. The table above shows an R square value of .598 which means that 59.8% of the changes in eHealth needs can be explained by its perceived usefulness, perceived ease of use, usage factor and privacy.

Table 3.11.2 ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1345.406	4	336.351	17.082	.000 ^b
	Residual	905.771	46	19.691		
	Total	2251.176	50			

a. Dependent Variable: eHealth needs

b. Predictors: (Constant), Usage, perceived ease of use, privacy, perceived usefulness.

The Analysis of Variance (ANOVA) tests the significance of the regression model as a whole. The table above shows that the model was significant and that there is enough data to establish that the model with predictors used fits better than one without. This is indicated in the p value of .000 which is less than the level of significance of 0.05. A p value that is lower than the significance value shows

significance of the model whilst a higher value would signify insignificance. The predictor values in the model above thus enhance the fitness of the model and the model used is statistically significant.

Table 3.11.3 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.808	8.274		2.877	.006
	Perceived Usefulness	.013	.119	.014	.111	.912
	Perceived ease of Use	.172	.211	.085	.815	.419
	Privacy	.530	.191	.340	2.779	.008
	Needs	1.643	.234	.970	7.005	.000

a. Dependent Variable: eHealth

The coefficient table tests the fitness of the model not as a whole but for each of the variables. It observes the changes in dependent variables as a result of independent variables. The beta coefficients show the strength of the predictors in explaining the dependent variable. The table above shows a value of .013 for perceived usefulness. This shows that an increase in usefulness is associated with an increase in eHealth use. However, the p value was found to be above the significant value meaning that the change is not significant. The hypothesis was thus rejected because of this.

On the other hand, an increase in perceived ease of use was found to be associated with a .172 increase in eHealth. The p value however was found to be above the significant level therefore the hypothesis would have been rejected but for the fact that it was positive. It can also be determined from the table above that privacy has a significant effect on the use of eHealth care services. The beta coefficient shows that an increase in privacy would lead to an increase in eHealth by .530. The p value is also significant at .008 which is less than .005 hence the decision to accept the hypothesis. The table also shows that increase in needs for eHealth care services

results in an increase in the use for the services by 1.643 units. The p value for this is .000 which means that the change is significant hence the acceptance of the hypothesis.

4.12 Conclusion

The chapter focused on the analysis of the data collected. The data was collected from 122 users of eHealth care services, the general populace and the 51 medical personnel. The results indicated that from the perspective of the end users they found the eHealth care services to be useful though they had mixed feelings about its ease of use. They also showed confidence in the privacy of the system and usage. The chapter also showed the opinions of the medical personnel with regards to privacy, need, perceived usefulness and ease of use as well as usage of the eHealth care services. The chapter also determined the reliability of the items used in the measurement tool and the questionnaires deployed where found to be reliable. Correlation analyses were conducted to determine the relationships between the variables and some of the relationships were found to be significant whilst some were not. Other variables were found to have a significant impact on the use of e-health care services whilst others though significantly correlated were not found to have significant impact on the use of eHealth care. The researcher also made decisions based on the data whether the hypotheses were accepted or rejected.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a round up to the study. It provides an in-depth discussion of the findings obtained in the previous chapters as well as compare them with the empirical findings from previous studies. Similarities and differences were observed between the theoretical literature and the findings from the research in order to determine if any contribution to science existed. The chapter also pointed out the limitations of the study and it is upon this that the recommendations for the future studies were based. Implications of the study were also provided and the chapter was concluded.

5.2 Key theoretical findings

E-health care services incorporate technology in health care services and apply it to aspects like the information systems. It is aimed at coming up with improved processes that are more efficient and providing a co-ordination between all the aspects of health care. The services were also found to be useful with regards to the access and the spread of health-related information. In addition, it also plays a great role in taking the pressure off the traditional health care services and in some ways actually offering new services and improving health care reach. Moreover, eHealth care services like telemedicine ensure that areas that are normally hard to reach can be accessed and the people from outlying areas can have access to quality and convenient medical care.

E-health care services offer a wide range of services like e prescribing, m health, online diagnosis and so forth but require the use and proficiency in digital skills to better deliver the service. Gadgets like mobile devices, computers, specialized equipment and computers are utilized in carrying out eHealth care services. Specialized training regarding the use of the equipment and digital tools is important to ensuring a smooth

work flow. In addition, it goes a long way in ensuring the use of eHealth care services is not resisted by the medical personnel.

There are however, some factors that may affect the effective implementation of eHealth care services. Reasons like poor funding, unwillingness of the management or those in authority to adopt change and the attitude of the individuals towards embracing this new development. E-health care services are costly to implement and thus need solid budgets. In addition, the introduction of eHealth can bring complications with the regards to the changes in personnel as well as change in structure. Those lacking in digital skills may feel their positions are threatened and develop a negative attitude towards embracing the technology.

Compatibility between devices was also found to be essential especially as implementation of some devices may require adjustments and these could have an impact on the quality of service delivered. In addition, the quality of gadgets used may affect the work done therefore it is important that technological equipment be kept in good condition and monitored regularly to ensure it is still working efficiently. Knowledge sharing helps manage implementation and adoption of new things and facilitate communication. Demographic characteristics have an impact on the adoption of new technologies by personnel like their computer proficiency may hamper medical practitioners from embracing and adopting eHealth care related services.

Acceptance of new technology goes a long way in the implementation process of the technology. The Technology Acceptance model provides factors that can affect the acceptance and adoption of new technologies like the perceived usefulness, privacy, demand for the service and perceived ease of use. If the technology is perceived to be of use and easy to work with then the recipients are more inclined to accept and use it. The patients also want assurances that the information they put online is safe and protected from third parties. In addition, the intention to use and the actual usage of the service are important in establishing just how much the people need and use the service.

E-health care services make private information susceptible to attacks and phishing attempts among other nasty outcomes. This sometimes makes the patients apprehensive about having so much personal information online. The medical teams can also get apprehensive and anxious about any of the patients' information being leaked as this would result in legal battles. Privacy issues are one of the key areas in the implementation of e health care services. It is thus of utmost importance that the

whole set up system has strong internal controls that ensure that this vital information is protected.

5.3 Empirical findings

5.3.1 Demography

The results reflected a gender distribution of more females than males, in both samples, twice as many in the users' sample and at almost twice the rate in the medical personnel sample. The age distribution for the users' sample reflected that more than three quarters of the respondents were under the age of 35 and found in the categories 18-28 and 29-34. Similarly, the age distribution showed the same pattern and revealed that at least three quarters is under the age of 35 and that the work force is in a good productive age. The majority of the medical personnel respondents were nurses and there were few doctors and just slightly above half of them worked in public hospitals. The researcher actually failed to reach the initial number of medical respondents he had intended to. This is because of the ongoing corona virus pandemic that has made the medical personnel to be on high demand for their essential services. Only a few were thus available to participate in the study.

In terms of education, the users sample revealed that they were an educated people with more than half of them having a Bachelors' degree as their highest education qualification at 54%. The same goes for the medical personnel sample which showed 43% with a Bachelor's degree and half as much with Doctorates. The respondents were also found to be technological savvy as the findings revealed that more than half of the respondents in the two samples had above average command of computers. These findings are in line with those of Furusa and Coleman, (2018) who explained that computer skills were a necessity for any digital health services.

The findings also revealed that e health care services were still a novel phenomenon. This can be seen from the length of usage of e health care services where half the respondents alluded that they have been using e health care services for a period of less than a year. In the case of users, the findings show that 86.9% have been using e health care services for 3 or less years; and the medical personnel 68.6% for the same length. These findings show that e health care services are not yet as

widespread in the Democratic Republic of the Congo and this is not a surprising finding considering that the nation is a developing nation and this slow adoption process is what motivated the researcher to conduct this study.

The study also revealed that in terms of the particular services the people were using, there were only a few available. E-health care services were mainly for knowledge, prescription and consultation. The most popular usage in this regard was actually the knowledge factor. These findings support the above findings of there being a slow adoption of the e health care services.

5.3.2 Relationship between need and perceived usefulness

The aim of the study was to determine the relationship between need and perceived usefulness in the implementation of e health care services in the Democratic Republic of the Congo. The study looked at privacy, needs and usage in addition to perceived ease of use and usefulness.

The study revealed that the medical personnel agreed that e health care services helped them in their work. The study reflects that the most useful aspect of the services was in reducing mortality rates. However, the correlation analysis and the regression analysis revealed that the perceived usefulness had an insignificant impact on the demand for e health care services. This, in the researcher's opinion might be attributed to the fact that health care services are more of a necessity and usually one does not really have the option of choice when they need medical attention.

The users on the other hand also showed agreement to the usefulness of eHealth care services. They strongly agreed that the benefits of eHealth care services were vast compared to the disadvantages. This is in line with the findings of Ridings and Gefen (2000) and Zhang et al (2019) who pointed out that where the new system is perceived to be better than the old one, its adoption will be easier. Factors that made the most impact were those associated with accessibility of information and having their questions answered more quickly. Similar results were also observed in terms of the significance of perceived usefulness. The study showed that on the users sample perceived usefulness impact on the usage of eHealth care services was insignificant.

In addition, the study revealed that perceived ease of use had a positive but insignificant impact on the needs and usage of eHealth care services. The frequency of responses indicated that both users and medical personnel found the eHealth care

system user friendly. This can be seen on the strong agreement by the medical personnel that interaction with the system is easy for them to understand and the strong disagreement to the notion that they expend a lot of mental effort when using the system. On the other hand, the general users experience with the e health care system showed that they found the system to be user friendly as indicated by the high mean of 4.13 but they had some challenges.

Unlike the medical personnel, they only moderately agreed that the system was easy for them to understand. They also alluded that the system was inflexible and required more mental effort. These differences in findings reflect the difference between the experience from the generaluser's perspective and the medical personnel. It shows that there is still a bit that needsto be done to the system to ensure that the general users do not expend as much mental effort when using it and it should be flexible enough.

The Diffusion Innovation Theory (1962) supports this as it alludes to the fact that if the system is considered complex then its adoption will be problematic. These findings are in agreement with the Technology Acceptance Method that points out thatperceived ease of use goes a long way in making the technology accepted. The regression analysis however showed that the perceived ease of use had a positive effect on the usage of eHealth care needs. An increase in perceived ease of use wouldlead to increased usage of eHealth care but this change was revealed to be insignificant. These findings are also in line with Zhu et al (2013), Hussain et al (2016)and Portz et al (2019).

Yeloglu and Sagsan (2009) pointed out that the attributes of e-government applications had a greatly affect the diffusion of these innovations. They pointed out that the diffusion is also affected by time and development phases are created to ensure that there is effective and efficient service delivery. The scholars also pointed out that diffusion of e-government innovations was a challenge in developing countries because of the high costs and that they lack strong infrastructural backbone.

E-government applications are a form of external innovation. Prior studies by Rogers (1995) pointed out that diffusion referred to the adoption of an innovation by way of communication channels. The e-health care applications can also be classified as this kind of innovation seeing how they utilize digital platforms to deliver health care services. Rogers (1995) highlighted that there is a direct and positive correlation between adoption of these innovations and the way they are perceived. The scholar pointed out that if the outcome of the innovation is positive then the length of time it takes for people to adopt it becomes shorter. If the innovation is perceived as complex

and the adopters have a difficult time with it then the adoption resistance will be high. Consequently, this also negatively affects the rate of adoption.

In terms of privacy, the findings revealed that they valued their privacy and that they also had confidence in the privacy of the current eHealth care system. The general users indicated their belief in the information in the system through their strong agreement to the privacy statements. However, they also indicated that it is possible to have wrong treatment as a result of using eHealth care services and that they would also be concerned about quality of information obtained from the system. The medical personnel findings also reflect the same trust in the system that was displayed by the general users.

These findings on privacy also corroborate the findings of Dinev et al (2016) who pointed out that trust in the privacy of the system is essential for the services to thrive. The one with the most impact was that they believed eHealth care systems keep patients' information secure. They also indicated that the personnel are adequately trained enough to be able to detect if there are any phishing attempts and the fact that they agreed that there is proper monitoring indicates that the hospitals take internal controls seriously. Trust is a necessary ingredient to the implementation of e-government services according to Mensah and Luo (2020) and greatly affects their adoption. If the citizens have trust in their government, then service delivery will be easily embraced.

The study also showed that the demand for eHealth care services was not fully met. The study revealed that the adoption of e-health care was still in its infancy given the limited services that are offered at the current time. As a developing country this is actually common and was also reiterated by Mensah and Luo (2020). The scholars pointed out that implementation of e-government in developing countries is subject to so many obstacles like technological, operational and organizational problems.

These findings are also very much in line with what Swinkels (2018) pointed out that despite the benefits of eHealth adoption is still very slow. The findings from the general users indicated that they used eHealth care services for three purposes that are knowledge, prescription and consultation. This was corroborated by the medical personnel when they indicated that there was high need for making appointments with general practitioners over the internet, buying prescriptions online as well as seeking general information and information requisition.

However, the findings from the medical personnel indicated that there was a need for a range of other eHealth care services like online diagnosis, e monitoring and finding and bringing people with risk for certain conditions together so they can help each other. These services were not selected by the general users when asked what they used eHealth care services. This reveals a gap in what is needed versus what is delivered. The same was supported by Moschet al (2016) and Bollinger et al (2019) when they advocated for improvement in the service delivery of eHealth services.

In terms of usage of the eHealth care systems the respondents indicated that they enjoyed using eHealth care services and have intentions to continue using it in the future. Both the general users and the medical personnel indicated that they would highly recommend the service to others. The general users also indicated that e health care services allowed them to detect some incidences in a way that traditional health care services do not. These results were in line with the literature. According to Mensah and Luo (2020) the needs of the users of services should be put into account before any implementation of the services as failure to consider this would lead to a dismal rate of acceptance and adoption of the service. This was also emphasized in prior studies by Ahmad et al (2012) and Ibrahim et al (2014). The scholars pointed out that the desire to use e-government in particular by the people had to be understood before any implementation takes place as their attitudes and behavior towards the services greatly influenced their acceptance of them.

5.4 Hypothesis test results

The results revealed an insignificant relationship between perceived usefulness and need of eHealth care services. However, the study revealed a significant relationship between the usage of eHealth care systems and the increased need for them; as well as between privacy and eHealth care services. The positive results were observed in the correlation analysis as well as supported by the regression analysis. In both cases the p value was found to be less than the significance values of 0.05 hence the acceptance of the null hypothesis in the case of perceived usefulness and perceived ease of use and the rejection of the null hypothesis in terms of the privacy and usage

of eHealth care services.

The results of the hypotheses match most of the literature as well except for the one based on perceived usefulness. Most of the studies find a positive and significant relationship between perceived usefulness and adoption of services. This study however only showed that the relationship is positive but not significant. The results showed that perceived ease of e health care services had a positive impact in the implementation of e health care services. This finding is also in line with most of the literature. Mensah and Luo (2020) stated that the easier a technology is to use the higher chances of its adoption and this was a perspective shared by other scholars like Dwivedi et al., 2017; Williams et al (2016).

Privacy was also found to have a positive impact on implementation of e health care services. Again, this is in line with literature where it was revealed that the public is concerned about the exposure of their confidential information. If they deem the systems to be secure then they are more likely to accept it. Verkijika & De Wet, (2018) pointed out that the perception of risk is negatively associated with the adoption of e-government services and their usage.

Need was found to be positively associated with implementation of services. This hypothesis was also found to be true in the literature where scholars like Ibrahim and Zakaria (2014) and Al Rawahna et al (2018) highlighted that the need for services and desire to use them are at the epicenter of service delivery. If the public have no need for the services, then it goes without saying their implementation will also be low.

The summary of the hypotheses is indicated in the table below.

Table 4.4.1 Hypotheses results table

Hypothesis	Decision
<p>H1: Null: perceived usefulness does not have a significant impact on the implementation of eHealth care services Alternative: perceived usefulness has a significant impact on the implementation of eHealth care services</p>	<p>Accepted Rejected</p>

<p>H2: Null: perceived ease of use has no impact on the implementation of e health care services Alternative: perceived ease of use has a positive impact in the implementation of eHealth care services</p>	<p>Rejected Accepted</p>
<p>H3: Null: privacy has no impact in the implementation of eHealth care services Alternative: privacy has a positive impact in the implementation of eHealth care services</p>	<p>Rejected Accepted</p>
<p>H4: Null: Need has no impact on the implementation of eHealth care services Alternative: need has a positive impact in the implementation of eHealth care services</p>	<p>Rejected Accepted</p>

5.5 Implications of the study

The findings revealed some interesting information with regards to usefulness, ease of use, privacy, needs and usage of eHealth care services. The results revealed that there is actually a gap in the needs of the general users and what is actually delivered at the hospitals. This shows that there is still some room for improvement and expansion with regards to the eHealth care services offered. In addition, the general users also indicated that there is still a possibility that one can get wrongful treatment which means that they are also aware of how infallible the system can be and do not just take information at face value.

The respondents also showed a high degree of confidence and trust in the privacy of their eHealth system. The medical personnel also showed that the employees are trained in this and there is a good monitoring system. This implies that the hospitals have good internal control systems in place to ensure that the patients' information is kept safe. However, the findings also showed that in as much as the system is perceived to be user friendly, it may need to be tweaked a bit with regards to making it more flexible as well. Overall the study showed that perceived ease of use, privacy and needs are significant in the usage of eHealth services. This means that these need to be prioritized in the implementation of the services in the other areas of the Democratic Republic of the Congo.

5.6 Limitations and recommendations for future studies

The study was only focused on the area of Kitwe. It also employed only the quantitative method of analysis. The study also ended up using a smaller than intended population on the medical personnel as they were not accessible due to performing essential corona virus services. The limitations above provide a gap that can be utilized for future studies regarding eHealth care services. Firstly, future studies can also focus on the areas that actually do not have eHealth care services yet as this is a service found in cities. Studies into the rural areas can provide insight on the perceptions and attitudes of users towards adoption of eHealth care services. In addition, since the study used only quantitative methods, future studies can conduct a mixed research to provide a balance and a more in-depth analysis of the study. Lastly, a larger population can be employed when things stabilize so that the researcher reaches more medical personnel.

5.7 Policy Recommendations

Kaya et al (2016), conducted a study to determine e-participation in local government applications in local municipalities in Turkish Republic of Northern Cyprus. The study revealed great progress in terms of websites set up by the municipalities but that they needed to be upgraded in terms of features. The study also revealed that key success factors like revenue and population among others were vital in enhancing e-participation levels across the world. Lessons for Lubumbashi can be drawn from this and the ministry of local government can focus on revenue, population and capability to enhance the

participation in the applications. Inclusion of the citizens in these programs go a long way in increasing chances of their adoption. Mensah and Luo (2020) pointed out that the government and the public had a social relationship based on trust. If the public do not have trust in their government, then they are more inclined to reject and distrust services the government policies. The researcher thus recommends that a rapport be built by the government and when they roll out programs like these; they take time to furnish the public with all the details and even conduct surveys to get their opinions and how they can improve these services.

In addition, functioning websites with upgraded features are a necessity as these can also make navigation easier for the users of e-health care services, therefore it is something to be considered. Furthermore, developing lessons from this study which highlighted the effective use of language on websites, Lubumbashi can also make use of this considering that more than one language is used. The major official languages of the country can be provided to ensure that everyone understands how to use the e-services and it would also make them more user friendly. Mensah (2018) pointed out that language was a determinant in the perceived ease of use and perceived usefulness of e-government services.

Kaya et al (2020) conducted a comparison study for Northern and Southern Nicosia municipalities of Cyprus. The study was focused on the citizens perception of e-government services and revealed that both municipalities were lacking in terms of efficiency, transparency and vision. Factors like social media, human rights, were positively linked to e-government. The Lubumbashi city can draw lessons from this and work on developing a more active social media presence in encouraging citizens to use e-health care services.

This study revealed a lack of adequately qualified personnel. This in itself hinders the adoption of e health care services. A study by Sagsan and Yildiz (2010) revealed that lack of expertise in the Information Technology department acted as an obstacle to the adoption of e-government services in the Northern Cyprus. Lack of depth in the content on websites was also given as a reason for lack of adoption of the e-government services. They advised that there has to be an organizational structure that dealt solely with the establishment and maintenance of e-government applications.

5.8 Conclusion

The chapter provided the finishing touches to the study. The study showed a positive but insignificant relationship between perceived usefulness and the usage of eHealth system and this led to the null hypothesis being accepted and the alternative being

rejected. In the case of privacy, perceived ease of use and needs, the changes were found to be positive and significant hence the acceptance of the alternative hypotheses and rejection of the null. Some similarities were observed especially to the Technology Acceptance Method and it is seen that user-friendly system are embraced and privacy is also essential and increases usage and intention to use technological services. A gap was found between the services offered and the ones needed by the general users. The researcher concludes that the privacy, usefulness, ease of use and needs are important to the usage of eHealth care services and these should be seriously considered in the implementation of the services in the other areas of the Democratic Republic of Congo.

REFERENCES

- Ahlan A R, Amadi, I B. (2015). An overview of patient acceptance of health information technology in developing countries: a review and conceptual model. *Int J Inform SystProject Management*. issue 3(01):29–48.
- Ahmad Tubaishat (2017): Perceived usefulness and perceived ease of use of electronic health records among nurses: Application of Technology Acceptance Model, *Informatics for Health and Social Care*, DOI: 10.1080/17538157.2017.1363761
- Ahmad, Syed & Khalid, Khalizani. (2017). The adoption of M-government services from the user's perspectives: Empirical evidence from the United Arab Emirates. *International Journal of Information Management*. 37. 367-379. 10.1016/j.ijinfomgt.2017.03.008.
- Ahmed, M.H., Bogale, A.D., Tilahun, B(2020). Intention to use electronic medical record and its predictors among health care providers at referral hospitals, north-West Ethiopia, 2019: using unified theory of acceptance and use technology 2(UTAUT2) model. *BMC Med Inform Decis Mak* 20, 207
- Al-Issa, Y., Ottom, M. A., & Tamrawi, A. (2019). eHealth Cloud Security Challenges: A Survey. *Journal of healthcare engineering*, 2019, 7516035. <https://doi.org/10.1155/2019/7516035>
- and de Witte LP (2018). Lessons learned from a Living Lab on broad adoption of eHealth in primary health care. *Journal of Medical Internet Research*.
- Baryashaba, A., Musimenta, A., Mugisha, S., Binamungu, L. P. (2019). Investigating the adoption of an integrated hospital information system in rural Uganda: A case of Kisiizi Hospital. Paper presented at the International Conference on Social Implications of Computers in Developing Countries, Dar es Salaam, Tanzania
- Basak E, Gumussoy CA, Calisir F (2015). Examining the factors affecting PDA acceptance among physicians: an extended technology acceptance model. *Journal of healthcare engineering*;6(3):399-418.

- Benavides-Vaello S, Strode A, Sheeran BC (2013). Using technology in the delivery of mental health and substance abuse treatment in rural communities: a review. *J Behav Health Serv Res*.
- Benavides-Vaello, Sandra & Strode, Anne & Sheeran, Beth. (2012). Using Technology in the Delivery of Mental Health and Substance Abuse Treatment in Rural Communities: A Review. *The journal of behavioral health services & research*. 40. 10.1007/s11414-012-9299-6.
- Bolliger, André. (2019). 'EANA Position on Artificial Intelligence in the Health Sector'. *Eanamed.Eu*.<https://www.eanamed.eu/index.php/statements/artificial-intelligence>.
- Boonstra, Albert & Broekhuis, Manda. (2010). Barriers to the Acceptance of Electronic Medical Records by Physicians from Systematic Review to Taxonomy and Interventions. *BMC health services research*. 10. 231. 10.1186/1472-6963-10-231.
- Brennan, d. M., mawson, s., & Brownsell, S. (2009). Telerehabilitation: Enabling the Remote Delivery of Healthcare, Rehabilitation, and Self Management. *Stud Health Technol Inform*, 145, 231-48.
- Castillo VH, Martinez-Garcia AI, Pulido JR. A knowledge-based taxonomy of critical factors for adopting electronic health record systems by physicians: a systematic literature review. *BMC Med Inform Decis Mak*. 2010;10:60.
- Catwell, L. & Sheikh, A(2009), 'Evaluating eHealth interventions: The need for continuous systemic evaluation', *PLoS Medicine* 6(8), 1–6. <https://doi.org/10.1371/journal.pmed.1000126>
- Celler, B. G., Lovell, N. H., & Basilakis, J. (2013). Using information technology to improve the management of chronic disease. *Medical Journal of Australia*, 179(5), 242-246.
- Chen, Hui & Nicogossian, Arnauld & Olsson, Silas & Rafiq, Azhar & Stachura, Max & Watanabe, Mamoru & Whitten, Pam & Xiao, Yang. (2009). Electronic Health. *International journal of telemedicine and applications*. 2009. 308710. 10.1155/2009/308710.
- Cooper, D. and Schindler, P., (2014). *Business Research Methods*. 12th ed. Boston: McGraw- Hill/Irwin.

- Creswell, J. W. (2016, March). Advances in mixed methods research. Paper presented at the 18th CAQD conference, Berlin, Germany.
- Davis FD, Bagozzi RP, Warshaw PR (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science.*;35(8):982-1003.
- De Beurs D, van Bruinessen I, Noordman J, Friele R, van Dulmen S (2017). Active involvement of end users when developing Web-based mental health interventions. *Frontiers in Psychiatry* *Decis Mak.*
- Dehzad, F., Hilhorst, C., De Bie, C. & Claassen, E.(2014), 'Adopting health apps, what's hindering doctors and patients?', *Health* 6(1), 2204–2217. <https://doi.org/10.4236/health.2014.616256>
- Deng Z, Hong Z, Ren C, Zhang W, Xiang F (2018). What Predicts Patients' Adoption Intention Toward mHealth Services in China: Empirical Study. *JMIR Mhealth Uhealth*, 6(8):e172
- Dinev, T., Albano, V., Xu, H., D'Atri, A. & Hart, P (2016), 'Individuals' attitudes towards electronic health records: A privacy calculus perspective', in *Advances in healthcare informatics and analytics*, pp. 19–50, Springer, Cham.
- Ebrahimi S, Mehdipour Y, Karimi A, Khammarnia M, Alipour J. (2018). Determinants of Physicians' Technology Acceptance for Mobile Health Services in Healthcare Settings. *J Health Man & Info*; 5(1): 9-15.
- Escobar-Rodríguez, T., & Romero-Alonso, M. (2014). The acceptance of information technology innovations in hospitals: differences between early and late adopters. *Behaviour and Information Technology*, 33(11), 1231-1243.
- Eysenbach G (2001). What is e-health? *Journal of Medical Internet Research*
- Fishbein, M. & Ajzen, Icek. (1975). Belief, attitude, intention and behaviour: An introduction to theory and research.
- Flynn, Matthew B., Tiago Coutinho, Vera Lucia Luiza. 2019. "Brazil and the US Internet-

Based Medicines." *The Internet and Health in Brazil*, André Neto and Matthew Flynn(Ed.): 251-271: Springer Nature Switzerland AG

- Furusa, Samuel S., & Coleman, Alfred. (2018). Factors influencing e-health implementation by medical doctors in public hospitals in Zimbabwe. *South African Journal of Information Management*, 20(1), 1-9. <https://dx.doi.org/10.4102/sajim.v20i1.928>
- Gagnon MP, Ghandour El K, Talla PK, Simonyan D, Godin G, Labrecque M, (2014). Electronic health record acceptance by physicians: testing an integrated theoretical model. *J Biomed Inform* 48:17–27.doi:10.1016/j.jbi.2013.10.010
- Gajanayake, Randike & Sahama, Tony & Iannella, Renato. (2014). The Role of Perceived Usefulness and Attitude on Electronic Health Record Acceptance. *International Journal of E-Health and Medical Communications*. 5. 108-119. 10.4018/ijehmc.2014100107.
- Gefen, D., and D.W. Straub (1997) "Gender Difference in the Perception and Use of E-mail: An Extension to the Technology Acceptance Model" *MIS Quarterly* 21(4), pp.389-400.
- Gill, J. & Johnson, P. (2002). *Research methods for managers*, Sage.
- Goldstein DH, Phelan R, Wilson R, Ross-White A, VanDenKerkhof EG, Penning JP, (2014). Brief review: adoption of electronic medical records to enhance acute pain management. *Can J Anesth*
- Haas, Sebastian & Wohlgemuth, Sven & Echizen, I. & Sonehara, Noboru & Müller, Günter. (2010). Aspects of privacy for electronic health records. *International journal of medical informatics*. 80. e26-31. 10.1016/j.ijmedinf.2010.10.001.
- Hans, P. K., Gray, C. S., Gill, A., Tiessen, J. (2018). The provider perspective: Investigating the effect of the Electronic Patient-Reported Outcome (ePRO) mobile application and portal on primary care provider workflow. *Primary Health Care Research & Development*, 19, 151-164.
- Hendrikx, H,C.A.A. S. Pippel, R. van de Wetering & R.S. Batenburg (2013) Expectations and attitudes in eHealth: A survey among patients of Dutch private healthcare

organizations, *International Journal of Healthcare Management*, 6:4, 263-268

- Holden RJ, Karsh BT. The technology acceptance model: its past and its future in health care (2010). *J Biomed Inform.* 43(1):159-72. doi: 10.1016/j.jbi.2009.07.002. Epub 2009 Jul 15. PMID: 19615467; PMCID: PMC2814963.
- Hussain, A., Mkpojiogu, E., Yusof, M. (2016). Perceived usefulness, perceived ease of use, and perceived enjoyment as drivers for the user acceptance of interactive mobile maps (Vol. 1761). *AIP Conference Proceedings*.
- Ibrahim, Ahmed Fouad Shedeed, (2016). "NEW SECURE SOLUTIONS FOR PRIVACY AND ACCESS CONTROL IN HEALTH INFORMATION EXCHANGE". *Theses and Dissertations-- Computer Science*. 47. https://uknowledge.uky.edu/cs_etds/47.
- Kaya, Tugberk & Sağsan, Mustafa & Yildiz, Mete & Medeni, Tunc & Medeni, İhsan Tolga. (2020). Citizen Attitudes Towards E-Government Services: Comparison of Northern and Southern Nicosia Municipalities. *International Journal of Public Administration*. 7. 10.4018/IJPADA.2020010102.
- Kaya, T. , Medeni, T. , Sağsan, M. , Medeni, İ. T. & Asunakutlu, T. (2016). A SITUATION ANALYSIS FOR NORTHERN CYPRUS MUNICIPALITIES: KEY SUCCESS FACTORS FOR EFFECTIVE PARTICIPATION. *International Journal of eBusiness and eGovernment Studies*,8 (2) , 1-17
- Khan I, Xitong G, Ahmad Z, Shahzad F(2019). Investigating factors impelling the adoption of e-Health: a perspective of African expats in China. *SAGE Open*. 9(3):215824401986580.
- Khan, Imran & Xitong, Guo & Ahmad, Zeeshan & Shahzad, Fakhar. (2019). Investigating Factors Impelling the Adoption of e-Health: A Perspective of African Expats in China. *SAGE Open*. 9. 1-12. 10.1177/2158244019865803.
- Kujala, Sari & Rajalahti, Elina & Heponiemi, Tarja & Hilama, Pirjo. (2018). Health Professionals' Expanding eHealth Competences for Supporting Patients' Self-Management. *Studies in health technology and informatics*. 247. 181-185.

- Kundi, M., Shah, B., Nawaz, A., Chishti, A.K. & Qureshi, N. (2013), 'Infrastructural barriers to e-health implementation in developing countries', *European Journal of Sustainable Development* 2(1), 163–170.
- Kutia, Svitlana & Chauhdary, Sajjad & Iwendi, Celestine & Liu, Lin & Yong, Wang & Bashir, Ali.(2019). Socio-Technological Factors Affecting User's Adoption of eHealth Functionalities: A Case Study of China and Ukraine eHealth Systems. IEEE Access. PP. 1-1. 10.1109/ACCESS.2019.2924584.
- Ladan MA, Wharrad H, Windle R. (2019). eHealth adoption and use among healthcare professionals in a tertiary hospital in Sub-Saharan Africa: a Qmethodology study. *PeerJ*:e6326
- Lau F, Price M, Boyd J, Partridge C, Bell H, Raworth R (2012). Impact of electronic medical record on physician practice in office settings: a systematic review. *BMC Med Inform Decis Mak*.
- Lau R, Stevenson F, Ong BN, Dziedzic K, Treweek S, Eldridge S (2016). Achieving change in primary care—causes of the evidence to practice gap: systematic reviews of reviews. *Implement Sci*.
- Lenz, Richard & Peleg, Mor & Reichert, Manfred. (2012). Healthcare Process Support: Achievements, Challenges, Current Research. *International Journal of Knowledge- Based Organizations*. 2.
- Lu, T.-H., Huang, Y.-T., Lee, J.-C., Li-Tan Yang, M., Liang, F.-W., & Yin, W.-H. (2015). Characteristics of Early and Late Adopting Hospitals Providing Percutaneous Coronary Intervention in Taiwan. *American Heart Association*. doi:10.1161/JAHA.115.002840
- Ludwick DA, Doucette J (2009). Adopting electronic medical records in primary care: lessons learned from health information systems implementation experience in seven countries. *Int J Med Inform*.
- Luo, Y. F., Yang, S. C., Chen, A. S., & Chiang, C. H. (2018). Associations of eHealth Literacy With Health Services Utilization Among College Students: Cross-Sectional Study. *Journal of medical Internet research*, 20(10), e283. <https://doi.org/10.2196/jmir.8897>

- Machleid, F., Kaczmarczyk, R., Johann, D., Balčiūnas, J., Atienza-Carbonell, B., von Maltzahn, F., & Mosch, L. (2020). Perceptions of Digital Health Education Among European Medical Students: Mixed Methods Survey. *Journal of medical Internet research*, 22(8), e19827. <https://doi.org/10.2196/19827>
- Moerman, A.H., Van Houwelingen, C.T.M. & Kort, H.S.M. (2014). 'An explorative Delphi study to uncover knowledge, attitudes and skills for nurses using
- Mohammad, T. A., & Habeeb, R. A. (2015). E-Healthcare System based on Service oriented architecture With JavaScript Object Notation (Json) Framework. *International Journal of Information System and Engineering*, 3(1). doi:10.24924/ijise/2015.11/v3.iss1/171.187
- Money AG, Barnett J, Kuljis J, Craven MP, Martin JL, Young T (2011). The role of the user within the medical device design and development process: medical device manufacturers' perspectives. *BMC Med Inform*
- Morton K, Dennison L, May C, Murray E, Little P, McManus RJ (2016).. Using digital interventions for selfmanagement of chronic physical health conditions: A meta-ethnography review of published studies. *Patient Educ Couns.*:616-635
- Muchangi, David & Nzuki, David. (2014). Determinants of Electronic Health in Developing Countries.
- Mugo, D.M., & Nzuki, D. (2014). Determinants of Electronic Health in Developing Countries.
- Mugo, D.M., 2014, 'Determinants of electronic health in developing countries', *International Journal of Arts and Commerce* 3(3), 49–60.
- Mugo, D.M.,(2014), 'Determinants of electronic health in developing countries', *International Journal of Arts and Commerce* 3(3), 49–60.
- Munyua, S., Rotich, D. G., & Kimwele, D. M. (2015). Factors Affecting The Adoption Of Mhealth In Maternal Health Care In Nakuru Provincial General Hospital. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH*, 4(11), 318-331.
- Neto, A. P., Flynn, M. B. (2018). The internet and health in Brazil: Challenges and trends. New York, NY: Springer.
- Norman, Cameron D, and Harvey A Skinner. (2006). 'EHealth Literacy: Essential Skills for Consumer Health in a Networked World'. *Journal of Medical Internet Research* 8 (2): e9.

- Olok, G.T., Yagos, W. & Ovuga, E. (2015), 'Knowledge and attitudes of doctors towards e-health use in healthcare delivery in government and private hospitals in Northern Uganda: A cross-sectional study', *MC Medical Informatics and Oluoch T, Santas X, Kwaro D, Were M, Biondich P, Bailey C, et al. The effect of electronic medical record-based clinical decision support on HIV care in resource-constrained settings: a systematic review. Int J Med Inform. 2012;*
- Öner, N. & Sertel, Ö. (2015). 'Technology acceptance in health care: An integrative review of predictive factors and intervention programs', *Procedia – Social and Behavioral Sciences* 195, 1698–1704. <https://doi.org/10.1016/j.sbspro.2015.06.263>
- Park, Yoon Soo & Konge, Lars & Artino, Anthony. (2019). The Positivism Paradigm of Research. *Academic Medicine*. 95. 1. 10.1097/ACM.0000000000003093.
- Peeters JM, Krijgsman JW, Brabers AE, de Jong JD, Friele RD (2016). Use and uptake of eHealth in General Practice: a cross-sectional survey and focus group study among health care users and general practitioners. *JMIR Medical Informatics*.
- Portz JD, Bayliss EA, Bull S, Boxer RS, Bekelman DB, Gleason K, Czaja S (2019). Using the Technology Acceptance Model to Explore User Experience, Intent to Use, and Use Behavior of a Patient Portal Among Older Adults With Multiple Chronic Conditions: Descriptive Qualitative Study. *J Med Internet Res* 21(4):e11604
- Qureshi, Afaq & Nawaz, Allah & Samiullah, & Yasin, Muhammad & Ali, Rafaqet & Abbas, Mazhar & Khan, Muhammad. (2019). User's e-readiness for E-Health and traditional healthcare: a case of Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan.. 10.14456/ITJEMAST.2019.57.
- Qureshi, Q.A. & Shah, B.,(2013). 'Infrastructural barriers to e-Health implementation in developing countries', *European Journal of Sustainable Development* 2(1), 163–170
- Robinson, E. (2008), 'E-health and the Internet: Factors that influence doctors' mediation behaviors with patients', Master's thesis, Georgia State University,
- Rogers, E. M. (1962). *Diffusion of innovations*. New York: FreePress.
- Rogers, E.M. (2003). *Diffusion of innovations* (5th ed.). NewYork:

Rogers, Everett & Singhal, Arvind & Quinlan, Margaret. (2019). Diffusion of Innovations.

10.4324/9780203710753-35.

Ross, Jamie & Stevenson, Fiona & Lau, Rosa & Murray, Elizabeth. (2016). Factors that influence the implementation of e-health: A systematic review of systematic reviews (an update). *Implementation Science*. 11. 10.1186/s13012-016-0510-7.

Sağsan, m., & Yildiz, M., (2010). E-government in the Turkish Republic of Northern Cyprus. *Comparative e-government*, vol.25, 409-423.

Sahama, Tony & Simpson, Leonie & Lane, Bill. (2013). Security and Privacy in eHealth: Is it possible? 2013 IEEE 15th International Conference on e-Health Networking, Applications and Services, Healthcom 2013. 249-253.

10.1109/HealthCom.2013.6720676.

Saliba, Vanessa & Legido-Quigley, Helena & Hallik, Riina & Aaviksoo, Ain & Car, Josip & Mckee, Martin. (2012). Telemedicine across borders: A systematic review of factors that hinder or support implementation. *International journal of medical informatics*. 81. 10.1016/j.ijmedinf.2012.08.003.

Sambasivan, Murali, Esmailzadeh, Pouyan (2017). Patients' support for health information exchange: a literature review and classification of key factors. *BMC Medical Informatics and Decision Making*. 17. 10.1186/s12911-017-0436-2.

Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students*. Pearson, New York

Scott, Richard & Mars, Maurice. (2013). Principles and Framework for eHealth Strategy Development. *Journal of medical Internet research*. 15. e155. 10.2196/jmir.2250.

Simbini, T. (2013), *Discussion: The impact, opportunities, and challenges ICTs in e-Health*, Technomag

Simbini, T., 2013, Discussion: The impact, opportunities, and challenges ICTs in e-Health, TECHNOMAG, September, viewed 10 May 2020, from <http://www.technomag.co.zw/2013/09/23/discussion-the-impact-opportunities-and-challenges-icts-in-e-health/>

- Sneha and P. Asha, "Privacy preserving on E-Health re-cords based on Anonymization technique," *Global Journal of Pure and Applied Mathematics*, vol. 13, no. 7, pp. 3367–3380, 2017
- Steininger K, Stiglbauer B, Baumgartner B, Engleder B (2014). Factors explaining physicians' acceptance of electronic health records. *System Sciences (HICSS)*, 2014 47th Hawaii International Conference on System Science; IEEE.
- Stockemer, Daniel. (2019). *Quantitative Methods for the Social Sciences: A Practical Introduction with Examples in SPSS and Stata*. 10.1007/978-3-319-99118-4.
- Stratton E, Lampit A, Choi I, Calvo RA, Harvey SB, et al. (2017) Effectiveness of eHealth interventions for reducing mental health conditions in employees: A systematic review and meta-analysis. *PLOS ONE* 12(12): e0189904.
- Susanto, T. D., & Aljoza, M. "Individual acceptance of e-Government services in a developing country: Dimensions of perceived usefulness and perceived ease of use and the importance of trust and social influence". *Procedia Computer Science*, 272, 622-629
- Swinkels ICS, Huygens MWJ, Schoenmakers TM, Oude Nijeweme-d'Hollosy W, van Topol, Eric. (2019). *Preparing the Healthcare Workforce to Deliver the Digital Future* .
- Vadillo, Laura & Martín-Ruiz, María & Pau, Iván & Conde Melguizo, Rafael & Valero Duboy, Miguel. (2017). A Smart Telecare System at Digital Home: Perceived Usefulness, Satisfaction, and Expectations for Healthcare Professionals. *Journal of Sensors*. 1-12. 10.1155/2017/8972350.
- Velsen L, Vermeulen J, Schoone-Harmsen M, Jansen YJFM, van Schayck OCP, Friele RD,
- Venkatesh, V. and Davis, F.D. (1996), A Model of the Antecedents of Perceived Ease of Use: Development and Test*. *Decision Sciences*, 27: 451-481.
<https://doi.org/10.1111/j.1540-5915.1996.tb00860.x>
- Verma, Prabal & Sood, Sandeep. (2018). Fog Assisted-IoT Enabled Patient Health Monitoring in Smart Homes. *IEEE Internet of Things Journal*. PP. 1-1. 10.1109/JIOT.2018.2803201.
- Verma, S. K. Sood, and S. Kalra (2019). "Cloud-centric IoT based student healthcare

monitoring framework,” *Journal of Ambient Intelligence and Humanized Computing*, vol. 9, no. 5, pp. 1293–1309

.Weng, Fumei & Yang, Rong-Jou & Ho, Hann-Jang & Su, Hui-Mei. (2018). A TAM-Based Study of the Attitude towards Use Intention of Multimedia among School Teachers. *Applied System Innovation*. 1. 36. 10.3390/asi1030036.

Wu, Jiming & Lederer, Albert. (2009). A Meta-Analysis of the Role of Environment-Based Voluntariness in Information Technology Acceptance. *MIS Quarterly*. 33. 419-432. 10.1201/9781420074086-b2.

Yeloglu, HO and M Sagsan (2009). The diffusion of e-government innovations in Turkey: A conceptual framework. *Journal of US-China Public Administration* 6 (7), 17-22

Zhang R. and Liu, L. (2010). Security models and requirements for healthcare application clouds. *IEEE 3rd International Conference on Cloud Computing*, Miami, Florida.

Zhang, H, Li, Y, Zhao, C (2016). To explore the health education effect of telephone follow-up combined with SMS in nursing care of patients after pacemaker operation. *Med Eq* 9:1002–2376

Zhou, M., Herselman, M.E. & Coleman, A. (2016). ‘Investigating factors determining the use of the clinical care module by nurses through the UTAUT model’, in *The Eighth International Conference on eHealth, Telemedicine, and Social Medicine, eTELEMED 2016*, 24–28 April 2016, Venice, Italy, pp. 186–191.

Zhu D. and Lin C. (2008). Using technology acceptance model to evaluate users’ attitude and intention of uses. In *Proceedings of the International Conference on e-Business*, pages 384-389 DOI: 10.5220/0001908003840389

Zhu, Dauw-Song, Thomson Chih-Te Lin & You-Chung Hsu (2012) Using the technology acceptance model to evaluate user attitude and intention of use for online games, *Total Quality Management & Business Excellence*, 23:7-8, 965-980,

APPENDIX



NEAR EAST UNIVERSITY
Institute of Graduate Studies

Participant Information Sheet

1. Research Project Title

Measuring m-government as an innovation tool for effective provision of e-health services in African low and middle-income countries. a case study of the Democratic Republic of the Congo

2. Invitation

You are being invited to take part in this research project. Before you decide to do so, it is important you understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

The aim of this research is one side to highlight the various advantages of e-government, specifically in telemedicine since some developing countries are already experimenting with this new trend. On another side, it will be about carrying out a feasibility study on the possibility of transfer and integration of e-health services in the Congolese medical system. Mobile platforms are the most envisaged for good e-government given the unscheduled interruptions in the power supply continued to be a problem in some regions.

4. Why have I been chosen?

You have been chosen because as a Congolese citizen, you will have knowledge about medical institutions in your country.

5. Do I have to take part?

No. Taking part is entirely voluntary. You can still withdraw at any time. You also have the right to refuse participation, refuse any question and withdraw at any time without any consequence whatsoever.

6. What will happen to me if I take part?

You will be asked to answer to some questions an interview which we estimate will take you 15 minutes.

7. What do I have to do?

Please answer the questions in the questionnaire. There are no other commitments or lifestyle restrictions associated with participating.

8. What are the possible disadvantages and risks of taking part?

Participating in the research is not anticipated to cause you any disadvantages or discomfort.

9. What are the possible benefits of taking part?

Whilst there are no immediate benefits for those people participating in this research, it is hoped that this work will clearly spotlight the usefulness telemedicine in the Democratic Republic of the Congo. Results will be shared with participants.

10. What if something goes wrong?

If you have any complaints about the project, you can contact the Director of Institute of Graduate Studies to take your complaint further (see below).

11. Will my taking part in this project be kept confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified or identifiable in any reports or publications.

Data collected may be shared in an anonymized form to allow reuse by the research team and other third parties. These anonymized data will not allow any individuals or their institutions to be identified or identifiable.

12. Will I be recorded, and how will the recorded media be used?

You will not be recorded without separate permission being gained from you.

13. What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?

The interview will be about your opinions about medical system in your area and about telemedicine. Your views and experience are just what the project is interested in exploring.

14. What will happen to the results of the research project?

Results of the research will be published. You will not be identified in any report or publication. If you wish to be given a copy of any reports resulting from the research, you may let us now.

15. Who has ethically reviewed the project?

This project has been ethically approved by Near East Ethics Committee of Institute of Graduate Studies

16. Contacts for further information

Assoc. Prof. Dr. Behiye Çavuşođlu
Head of Innovations and Knowledge Management
Near East University, Near East Boulevard, ZIP: 99138
NicosiaTRNC Mersin 10 – Turkey
Tel: +90 (392) 223 64 64 / +90 (392) 680 20 00 – 3109 (ext.)
Email: behiye.cavusoglu@neu.edu.tr

Thank you for taking part in this research.



CONSENT FORM

Title of Project:

Measuring m-government as an innovation tool for effective provision of e-health services in African low and middle-income countries. A case study of the Democratic Republic of the Congo

Name of Researcher: PATRICK KABIKA MWILA KABWE

If you agree, please initial box

- 1. I confirm that I have read the information sheet dated..... (version) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
- 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.
- 3. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers
- 4. I agree being informed of my participation in this study and I understand I will not gain any direct personal or financial benefit from them.
- 5. I agree to audio/video recording and the use of anonymized quotes in research reports and publications.
- 6. I agree to take part in the above study.
- 7. I agree for my anonymized samples to be used in future research, here or abroad, which has ethics approval.
- 8. I will receive a summary report on the results of this research, if I make a request.
- 9. I can lodge any concerns or complaints about the project by contacting:
 Prof. Dr. Mustafa SAĞSAN
 Director of Graduate School of Social Sciences
 Near East University, Near East Boulevard, ZIP: 99138 Nicosia TRNC Mersin
 10 – Turkey Tel: +90 (392) 223 64 64 / +90 (392) 680 20 00 – 5143 (ext.)
 Email: mustafa.sagsan@neu.edu.tr

Name of Participant

Date

Signature

Near East University

Institute of Social Sciences

Innovation and KnowledgeManagement

September, 2019.

The Relationship between Need and Perceived Usefulness for Implementation of E-Healthcare Services in Lubumbashi, Democratic Republic of Congo

Dear participant,

Thank you for your motivation to participate in my research. The questionnaire below is designed as part of my Master’s in Innovation and Knowledge Management thesis study that focuses on determining relationship between need and perceived usefulness for implementation of e-health care services in the Democratic Republic of Congo. Your contribution will be treated with the utmost confidentiality and used for academic purposes only. Please note: participation is voluntary and you are free to quit if you feel like it. In addition, there will be no payment awarded for participation. Your kind assistance is greatly appreciated.

Please read the questions carefully and give your honest opinion.

Yours faithfully,

KABWE KABIKA MWILA Patrick

Do you use e-health care services? If yes then proceed with the questionnaire

SECTION A DEMOGRAPHICS

1. Gender

Male Female

2. Age

18-28 29-34 35-40 40+

3. Profession

Nurse doctor other

4. Type of hospital

Public private

5. Highest educational qualification

Diploma Bachelor Master

6. Computer skills

Poor Average Good Very good

7. E-health usage experience

Less than 1yr 1-3yrs 4-6 yrs 7+ yrs



NEAR EAST UNIVERSITY
Institute of Graduate Studies

Analyse de la gouvernance électronique comme outil innovant pour un déploiement efficace des moyens et services de santé dans les pays à faible revenu et à revenu intermédiaire: Cas de Lubumbashi en République Démocratique du Congo.

Cher participant,

Merci pour votre motivation à participer à mes recherches. Le questionnaire ci-dessous est conçu dans le cadre de ma thèse de maîtrise en **Intelligence Économique** qui se concentre sur la détermination de **la relation entre le besoin et l'utilité perçus des services de santé en ligne (santé électronique ou e-santé) en République démocratique du Congo**. Votre contribution sera traitée avec la plus grande confidentialité et utilisée à des fins académiques uniquement. Veuillez noter que la participation est volontaire et vous êtes libre d'arrêter quand vous en avez envie. D'autre part, aucun paiement ne sera accordé pour la participation. Votre aimable assistance est grandement appréciée. Veuillez lire attentivement les questions et donner votre opinion honnête.

Cordialement,

KABWE KABIKA MWILA Patrick

Veuillez s'il vous plaît répondre aux questions suivantes (**Personnel Médical uniquement**).

SECTION A: DONNÉES DEMOGRAPHIQUES

1. Sexe

M F

2. Age

18-28 29-34 35-40 40+

3. Profession

Docteur Infirmier (ère) Autre

4. Type d'hôpitaux fréquentés

Public Privés

5. Niveau Scolaire le plus élevé

Diplôme d'Etat

Licence

Maîtrise

Doctorat

6. Compétences informatiques

Faibles

Moyennes

Bonnes

Très bonnes

7. Expérience avec les soins de santé en ligne

Moins d'un an

1-3 ans

4-6 ans

7+ ans

Near East University

Institute of Social Sciences

Innovation and Knowledge

Management June, 2020.

Measuring e-government as an innovation tool for effective provision of health services in African low and middle-income countries. A case study of Lubumbashi in the Democratic Republic of the Congo

Dear participant,

Thank you for your motivation to participate in my research. The questionnaire below is designed as part of my Master's in Innovation and Knowledge Management thesis study that focuses on determining relationship between need and perceived usefulness for implementation of e-health care services in the Democratic Republic of Congo. Your contribution will be treated with the utmost confidentiality and used for academic purposes only.

Please note: Participation is voluntary and you are free to quit if you feel like it. In addition, there will be no payment awarded for participation. Your kind assistance is greatly appreciated

Please read the questions carefully and give your honest opinion.

Yours faithfully,

KABWE KABIKA MWILA Patrick

SECTION A: DEMOGRAPHICS

1. Gender

Male Female

2. Age

18-28 29-34 35-40 40+

3. Highest educational qualification

Diploma Bachelor's Masters

4. Computer skills

Poor Average Good Very good

5. E-health usage experience

Less than 1yr 1-3yrs 4-6yrs 7+yrs

6. What do you most use e health care services for?

Setting appointments with doctors

Knowing availability of doctors

Getting knowledge on causes, symptoms and treatment
of various diseases

Prescription

Clarification

Direct consultation



UNIVERSITÉ DE NEAR EAST
Institut des Hautes Études

Analyse de la Gouvernance électronique comme outil innovant pour un déploiement efficace des moyens et services de santé dans les pays à faible revenu et à revenu intermédiaire: Cas de Lubumbashi en République Démocratique du Congo.

Cher participant,

Merci pour votre motivation à participer à mes recherches. Le questionnaire ci-dessous est conçu dans le cadre de ma thèse de maîtrise en **Intelligence Économique** qui se concentre sur la détermination de **la relation entre le besoin et l'utilité perçus des services de santé en ligne (santé électronique ou e-santé) à Lubumbashi, en République démocratique du Congo**. Votre contribution sera traitée avec la plus grande confidentialité et utilisée à des fins académiques uniquement. Veuillez noter que la participation est volontaire et vous êtes libre d'arrêter quand vous en avez envie. D'autre part, aucun paiement ne sera accordé pour la participation. Votre aimable assistance est grandement appréciée. Veuillez lire attentivement les questions et donner votre opinion honnête.

Cordialement,

KABWE KABIKA MWILA Patrick

Veuillez s'il vous plaît répondre aux questions suivantes (**Questionnaire Non destiné au Personne Médical**).

SECTION A DEMOGRAPHICS

1. Sexe

M F

2. Age

18-28 29-34 35-40 40+

3. Niveau d'études le plus élevé

Secondaire (Lycée)

Licence

Maîtrise

Doctorat

4. Compétences informatiques

Faibles Moyennes Bonnes Très bonnes

5. Expérience avec le système de santé électronique.

Moins d'un an 1-3 ans 4-6 ans 7+ans

6. Quelle pourrait être votre plus principale raison d'utilisation du système de santé électronique?

Pour prendre rendez-vous avec les docteurs

Pour connaître la disponibilité des docteurs

Pour connaître les causes, symptômes et traitement de différentes maladies

Pour avoir des clarifications sur une prescription donnée

Pour une consultation directe

SECTION D: ASPECT PRIVÉ

		1 DF	2 D	3 N	4 A	5 AF
21.	J'ai la conviction que la vie privée des patients utilisant le système de santé électronique est protégée.					
22.	J'ai la conviction que les données personnelles des patients utilisant le SSE sont en sécurité.					
23.	Je suis convaincu(e) que la vie privée des participants est protégée					
24.	En utilisant le SSE, je devrais m'inquiéter par rapport à ma vie privée.					
25.	Un problème médical qui n'a pas eu de solution avec le système médical traditionnel peut trouver une solution grâce au SSE.					
26.	En utilisant le SSE, je devrais m'inquiéter par rapport à la qualité de l'information que je pourrais trouver.					
27.	Je devrais me sentir en sécurité pendant que j'utilise le SSE.					

SECTION E: UTILISATION

		1 DF	2 D	3 N	4 A	5 AF
28.	La santé électronique est une expérience enrichissante.					
29.	J'utilise la santé électronique régulièrement.					
30.	Je recommande vivement à tout le monde d'avoir un guide médical en ligne.					
31.	J'ai beaucoup d'intérêt pour les services de santé électronique.					
32.	La plupart de mes travaux routiniers se font avec le système de santé électronique.					
33.	Je voudrais à l'avenir utiliser encore plus de services de santé électronique					
34.	La santé électronique permet de détecter certains problèmes auxquels les service traditionnels ne pouvaient apporter de solution.					

SIMILARTY REPORT

Measuring e-government as an innovation tool for effective provision of health services in african low and middle-income countries. A case study of the Democratic Republic of the Congo

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YAKIN DOĐU ÜNİVERSİTESİ

**BİLİMSEL ARAŞTIRMALAR ETİK
KURULU**

27.07.2020

Dear Patrick Kabika Mwila Kabwe

Your application titled “**Measuring m-government as an innovation tool for effective provision of e-health services in African low and middle-income countries. a case study of the Democratic Republic of the Congo**” with the application number YDÜ/SB/2020/729 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.