



Innovative health service delivery in government hospitals in Uganda: A case of Kabale and Kambuga hospitals in Kigezi sub-region

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Thesis accepted for the degree Doctor of Philosophy in Public Management and Governance at the North-West University

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DECLARATION

I, **Adrian Beinebyabo**, declare that this thesis is my original work and has never been submitted to any academic institution for any degree award or examination. The sources that have been used have been duly acknowledged through appropriate referencing and citations. This thesis is submitted in fulfillment of the requirements for the award of a PhD in Public Management and Governance in the faculty of Humanities at North West University, Vaal Campus, South Africa.



Signature

Date: 20th March 2020

ACKNOWLEDGEMENT

It would have not been possible for me to complete this academic journey without the love and grace of God. From Him, through Him and to Him are all things. To Him be the glory forever. I extend my heartfelt thanks to the Director General of Uganda Management Institute, Dr. James L. Nkata, and the entire management team for the financial support and creating a favourable environment for staff academic. To my Dean, Head of Department, colleagues in academia and all friends who supported and encouraged me to do this doctoral programme, I will always be indebted to you.

Special thanks go to my Promoter, Prof. Costa Hofisi, for his timely academic guidance. It was your parental, friendly, candid and professional advice that made my academic journey possible. I wish to thank comrades, Dr. Bruce Kisitu, Dr. Rose Kwatampora, Dr. Innocent Nuwagaba and Dr. Alex Nduhura, for the encouragement and academic guidance. The good and living God should reward you accordingly.

To my friends who kept giving me the title of "Dr." before I earned it and pestering me about the graduation, I shall always remember you. These include; Hon. Justice Jotham Tumwesigye, Hon. Lt. Gen. Henry Tumukunde, Tumushabe Narce Rwangoga, Orishaba Peter Muhiga (Patel), Joseph Musinguzi (Big Joe), Nabeeta Soteri Karanzi, Alloysius Akishure, Eng. Alloysius Kafeeza, Julius Tukesiga, Izidoro Kataama, Achilles Byaruhanga and all friends from Rukungiri. You made me have sleepless nights to get this degree. To my great respondents, you are the pivot of this qualification!

To the Bwankwindi Foundation whose responsibility to lead I was given while on the academic journey, I am grateful for your support and prayers. To my core family members, Monica, Betty, Anita, Ivan, Daphine, Audrey, Nina, Aldrine and Mario (**the Beines**), without your permanent prayers, love, support, sacrifice, endurance and caring, I would not have made it. This is where the journey started.

DEDICATION

“A kind gesture can reach a wound that only compassion can heal” – Steve Maraboli. To my late Dad (aka Shwenkuru) who loved education more than the founders, my mum (aka Kaaka) and my core family members – Betty, Monica, Anita, Ivan, Daphine, Audrey, Nina, Aldrine and Mario – you were there for me in this academic struggle and you are precious to my life. I dedicate this Doctor of Philosophy (PhD) degree to you.

ABSTRACT

Keywords: *Innovations, Innovative Health Service Delivery, Information Communication Technology, Health Services Delivery.*

Innovations in health service delivery have over time addressed health education, rehabilitation, treatment, diagnosis and monitoring of health conditions. The aim is to improve healthcare quality, service availability, service affordability and access to healthcare. This study investigated how innovations (ICT and Policies) influence health service delivery in Uganda's government hospitals with a case study of the Kigezi sub-region. Diffusion of Innovation Theory, Four-Level Model of Healthcare and Control Knobs Health System Model underpinned this study. The study used a cross-sectional case study design anchored on interpretivism paradigm. The findings were: (i) Uganda's health industry has improved over time although there are serious challenges that impede public health service delivery, which include, inter alia, underfunding of the sector, shortage of drugs, human resource capacity gaps, poor attitude and mindset of health workers, commercialisation of the health sector, obsolete items and expired drugs, exploitation by the private sector, outdated health infrastructure and lack of coordination among health implementing partners; (ii) Innovative health service delivery ICT platforms, mainly mTrac, RX Solution and the Health Management Information System, positively contribute to speed, efficiency and quality of health services in government hospitals in Uganda; (iv) Decentralisation for health and Public Private Partnership for Health greatly influence speed, efficiency and quality of health services in government hospitals in Uganda. Public Private Partnership for Health was thin on the ground; (iii) Patient centered care (modern way of healthcare delivery) fosters a relationship between the healthcare team and the patient/patient caretakers, thus forging a "home". However, Uganda has no legal and institutional frameworks to support of patient centered care. Basing on the gaps in the health service delivery models in Uganda, health challenges and responses from field, an Integrative Patients' Quality Care Health Service Model was developed to fill the health service delivery gaps.

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LIST OF ABBREVIATIONS AND ACRONYMS

DHO	DISTRICT HEALTH OFFICER
DMO	DISTRICT MEDICAL OFFICER
EU	EUROPEAN UNION
GOU	GOVERNMENT OF UGANDA
HBM	HEALTH BELIEF MODEL
HBMF	HOME BASED MANAGEMENT OF FEVER
HIT	HEALTH INFORMATION TECHNOLOGY
HIV/AIDS	HUMAN IMMUNODEFICIENCY VIRUS/ACQUIRED IMMUNE DEFICIENCY SYNDROME
HMIS	HEALTH MANAGEMENT INFORMATIN SYSTEM
ICT	INFORMATION COMMUNICATION TECHNOLOGY
MOH	MINISTRY OF HEALTH
NDP	NATIONAL DEVELOPMENT PLAN
NHS	NATIONAL HEALTH SYSTEM
OECD	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
OPENMRS	OPEN MEDICAL RECORDS SYSTEM
PNFP	PRIVATE NOT-FOR-PROFIT
PPPH	PUBLIC-PRIVATE PARTNERSHIP FOR HEALTH
SDGS	SUSTAINABLE DEVELOPMENT GOALS
TCMPS	TRADITIONAL CONTEMPORARY MEDICINE PRACTITIONERS
UBOS	UGANDA BUREAU OF STATISTICS
UDHS	UGANDA DEMOGRAPHIC AND HEALTH SURVEY
UNDP	UNITED NATIONS DEVELOPMENT PROGRAMME
VHTS	VILLAGE HEALTH TEAMS
WHO	WORLD HEALTH ORGANIZATION

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

Contemporary literature and evidence from health research shows that healthcare providers have not often delivered services in innovative ways, as their interactions with patients have always been face-to-face (Boulos et al. 2011; Ferlie et al. 2005). The health industry remains fragmented irrespective of the opportunities offered by economies of scale. There is no vertical integration, hence patients' loss of imbedded value (Kumar et al. 2009). Innovations in health service delivery and the need for new medical knowledge have globally attracted public attention as protagonists (of innovations) focus on the positive effects of scientific innovations (Sørensen & Torfing 2011). Paina and Peters (2011) confirm that innovations have forced public healthcare providers and patients to network and interact through Web relationships which have increased the dynamism and scaling up of health service provision.

Information Technology use in Health Service Delivery (Health Decision-Making, Support for Patient Self-Management and Patient Education) has proliferated in all developed countries (Wilson & Risk 2002; Goldzweng 2009; Chan 2010; Goldzweig et al. 2009). Innovative health service delivery and the application of technology are prerequisite conditions for attaining quality gains in health although experience and various studies in some countries indicate that these conditions are insufficient (Berman et al. 2011). Omachunu (2010) asserts that, worldwide, the field of healthcare has experienced significant innovations intended to enhance life expectancy, improve the quality of life, reduce healthcare system costs, and generally improve efficiency and effectiveness. The World Health Organisation (WHO 2008:3) confirms that health services delivery is an important ingredient in the population's health status, combined

with other indicators such as coverage, continuity, coordination, efficiency, accountability, quality, accessibility, person-centeredness and comprehensiveness. Developing countries, according to Chan and Kaufman (2010), have equally had an interest in implementing the Health Information Technology (HIT) but the potential has not yet been tapped. Interest in spurring innovations is due to the related outcomes of lowered costs, increasing access to and the quality of public healthcare. Sustainable healthcare value is attained when it is automated (Sheng et al. 2013; Paulus et al. 2008). Despite these innovations, low- and middle-income states continue to be constrained by poor accessibility to Public Health Services as a result of limitations in purchasing and literacy (Bhattacharyya et al. 2010).

Irrespective of numerous contentions in innovative health service delivery, especially regarding increased medical costs as advanced by OECD (2003), Fuchs and Sox (2001) and Bodenheimer (2005), advancements in medical technology have proved to have more worth than costs in the area of quality of adjusted life (Mullan 2004; Jacobson et al. 2004). When embedded in a business model, innovative health service delivery is more affordable, accessible and convenient (Hwang & Christensen 2008). There is increased scalability and flexibility in health service delivery (Sultan 2014). Most Public, Private and Not-For-Profit Healthcare Organisations at National, Regional and Global levels are focusing on electronic health and telemedicine in management of a myriad of healthcare provision challenges such as diagnosis, limited health information system use, provider-patient relationship and monitoring of treatment (Alvarez 2002; Lucas 2008).

Healthcare innovations constitute new product and service development and introduction, new processes and behaviour with a view to improving health diagnosis, research, prevention, community care, treatment and education (Berwick et al. 2008, p. 765; Bessant & Maher 2009, p. 560). According to West (1990), innovation denotes the purposeful and planned introduction of procedures, processes, products, services and ideas in an organisation or a group. Anderson et al (2004), among the authors in the innovation field, have generally adopted this definition, since it encompasses almost all

the features in the field of innovation such as intended benefit, novelty and an application component (Lansisalmi et al. 2006; Omachunu & Einspruch 2013, p. 3).

This study sought to investigate how innovation has influenced the delivery of health services in government hospitals in Uganda with specific reference to the Kigezi sub-region. The purpose of the study (major objective) was to establish the contribution of innovations to Health Service Delivery in Government Hospitals in Uganda. Information, Communication Technology innovations and Decentralised Health and Public Private Partnerships Policies were the specific innovations focused on whereas Health Service Delivery focused on the dimensions of timeliness, quality, efficiency, effectiveness and patient-centered care. An integrative Patients' Quality Care Health Service Model for Government Hospitals was developed to aid in accelerating quality, speed, effectiveness and efficiency of provision of health services as well as general patient care. The innovative health service model, as the main outcome and contribution of this study, incorporated all these dimensions of healthcare.

1.2 Orientation and Background to the study

Healthcare service providers must innovate for improvement standards of their services to government, public, funders (like donors) and service users and reduction of costs of healthcare delivery. Co-creation of value in health services is the solution if innovation is to be successful whilst meeting the needs of different stakeholders involved in the health service (Naaranoja & Uden 2014, p. 1). Balancing and cutting costs with a view to ensuring healthcare quality require innovation as a driving force. Explicit and tacit components of organisational knowledge have been generally accepted as playing a key role in innovations (Hall, R. and Andriani, P., 2003). With the rapid advancement of Knowledge Management as a discipline, innovations in service delivery have become imperative (Leal-Rodríguez et al. 2013, p. 62).

The field of healthcare has undergone numerous and extended innovations that are focused on extending life expectancy, improvement of quality of life, improved cost-effectiveness, efficiency and serve as diagnostic treatment options in the healthcare

system (Cowing et al. 2009). Herzlinger (2006, p. 2) asserts that the efficient, convenient, cost-effective and effective treatment of today's highly empowered and time-constrained customers in the healthcare sector is greatly impacted on by innovative healthcare delivery. Improving and safeguarding the quality of life with internal capacity development within organisations as a result of process innovation is made easier (Johne 1999; Johnne & Davies 2000 as cited by Omachonu and Einspruch 2010, p. 2).

Traditionally, discoveries and other innovations in the healthcare industry have been limited to and reserved for the drug development (pharmaceutical) industry, medical devices and new therapy development (Chin et al. 2012:3). Over the last quarter of the 20th century, research about innovation grew rapidly, as confirmed by Fagerberg (2004) and Godin (2010). Whereas innovation in the service sector had gained substantial attention by the first years of the 21st Century (Miles 2008), attention paid to public sector innovations has been gathering momentum at a slow pace (Thenint & Miles 2013, p. 72). The current and most recent interest and debates on improved health service delivery have led to prominence in developing strategies for service delivery improvement. These strategies include autonomous facilities, use of new information technologies, output-based financing and management and introducing new workers and new community-based organisations (CBOs) (Berman et al 2011, p. 1).

In low developed economies, many forms of innovations are coming up to inform delivery of health services. These innovations have offered internal views focused on reducing increasing costs, believed to be about \$7 trillion a year worldwide since healthcare consumes an ever-rising part of such nations' income (Ehrbeck & Kibasi 2010, p. 1). Business processes and medical processes constitute the broad areas for the current framework for innovative health service delivery. Medical processes constitute prevention (identification, selection and education of patients who are prone to risk), checking and understanding the conditions of health, treating, monitoring and evaluating ongoing health and rehabilitating as advanced by Bhattacharyya et al. (2008, p. 10).

Innovative health service delivery is built on conceptual and theoretical frameworks such as the Social Capital Theory of Innovation, Public Value Theory, Diffusion of Innovation Theory, Public Choice Theory, Principal Agent Theory, Public Institutional Theory, Public Good Theory, Social Contract Theory, Social Exchange Theory and the Control Knobs Health System Model. In this study, the focus was on Gallouj and Weinstein's theory of innovation, the diffusion of innovation theory, the Four-Level Model of Healthcare system and the Control Knobs Health System Model.

Gallouj and Weinstein's theory of innovation, developed in 1997, has been widely researched on in the field of service delivery (Drejer 2004; Windahl et al. 2004; Devries 2006; Tether & Howells 2007). According to this theory, innovations in the service sector can be traced from (i) service provider competencies (knowledge and skills), (ii) service provider technology that entails new machines, new information technology and new procedures, and (iii) client competencies such as customer provision of information on stock-level to the supplier (Hildebrand et al. 2009:139). This theory is important to the study since the ICT innovations that impact on health service delivery depend on the service provider usage of machines and the use of new procedures on the upstream and the competences of customers in adoption and information provision on the downstream.

The diffusion of innovation theory equally guides innovations and the theory was historically discussed way back in 1903 by Gabriel Tarde, a French sociologist, and later used by Ryan and Gross in 1943. The theory was later popularised in 1962 by Everett Rogers, a professor of communication studies. Many writers and practitioners have always taken this theory as a model of valuable change that guides innovation in technology in which it (innovation) is manifested in various ways that answer and meet the adapters' needs at all levels. The diffusion theory further highlights the key role of peers communicating and networking in the adoption process. An explanation of why, how and at which rate technology and new ideas flourish and spread is emphasised by this theory. Everett emphasises that diffusion encompasses a process where over time innovation is communicated among stakeholders in a social system. The origins of the

diffusion theory vary and cut across various disciplines, including medical sociology, which covers internal medical techniques, health communications and the use of medicines (Kaminski 2011, p. 1).

Specifically, the diffusion of innovation denotes the process that occurs as people adopt new ideas, products, practices and philosophy. Rogers mapped out this process, stressing that, in many cases; the initial few are open to new ideas and adopt their use. As these early innovators 'spread the word' many and more people become open to it, which results into development of a critical mass. Over time, the innovative idea or product becomes diffused amongst the population until a saturation point is achieved. Rogers distinguished five categories of adopters of an innovation: visionaries or early adopters with 13.5 per cent, technology enthusiasts or innovators with 2.5 per cent; pragmatists or the early majority who account for 34%; conservatives or the late majority who account for 34%; and sceptics/slow movers or laggards who account for 16 per cent. Quite often, non-adopters are added as the sixth category (Rogers 1983, p. 248). Whereas this theory emphasises adoption and rate of spread of technology, it equally explains why new ideas and technology are in place. Since the Government of Uganda had introduced new innovations in the healthcare service, the theory helped the researcher to understand whether these innovations have contributed to health service delivery.

Innovative Health Service Delivery is also underpinned by the Control Knobs Health System Model. The proponents of the model view institutions as being the key factor affecting the health systems performance regarding the variables of regulation and behaviour, organisation, finances and payments which lead to quality, effectiveness, efficiency and access to healthcare facilities as intermediate performance measures. Also referred to as the Common Health Data Navigator, the Control Knobs Health System Framework/Model highlights the control knobs in the system. These are payment regulation, health system financing and organisation and behaviour. The model establishes an arrangement between various interventions commonly called the control knobs, the intermediate performance measures (outcomes) and objectives

(performance goals) that enable the makers of policies to bear them in mind as a whole system interaction. In the Control Knobs Health System Framework/Model, the control knobs are also referred to as health system architecture, whereas intermediate performance measures are efficiency, quality, equity, responsiveness and access which are, at times, referred to as health system objectives. Health status, risk protection and customer satisfaction are generally agreed on as performance goals (Bradley et al. 2010, p. 15).

Another model that informs health service delivery is the Four-Level model of healthcare advanced by Ferlie & Shortell (2001). The model assumes that the four levels, which resemble nests, inform the healthcare system. These include a patient in the inner nest, followed by the healthcare team in the outer nest, the care organisation, such as the hospital in the third nest, the political, social and economic environment in the fourth nest and, finally, the operational conditions under which patients, the care team, and individual care providers work as the outermost fifth nest (Reid et al. 2005, p. 19).

Whereas there is great concern and admiration for the pace of innovation by the public with respect to high-tech medical technologies, there is less concern and praise about innovation and the inclusion of innovation models in basic clinical, business, and service delivery processes (Plsek 2003, p. 2). Omachonu and Einspruch (2010, p. 2) assert that, irrespective of investments and growing interest in innovation, various studies and research studies show that the science and art of innovations in the healthcare field are limited. Internationally, Shortell et al. (2010, p. 193) confirm that innovations in health service delivery, such as organization of Patient-Centered Medical Home, Population Health Management and accountable care have contributed to reduction of costs of disease control and management of terminal and chronic illnesses of patients.

In Africa, healthcare innovations include a centre for health market innovations (operating in 122 developing countries but mainly in Africa), Kenya's Wireless Reach Initiative and Jacaranda Health, Unjani Clinics in South Africa, and WE CARE Solar in

Nigeria (Heyns 2014, p. 1). From a wider perspective, the innovation concept in the service industry has been linked to strategic success and adaptability of organisations. Healthcare as a service industry relies on thinking and doing things differently. Plsek (2014, p. 2) asserts that organisations engaged in healthcare service delivery will demand such innovations in the industry sector owing to continued customers' discontent and health service delivery challenges.

Schwartz et al. (2015, p. 2) contend that health service delivery in Uganda has been built on a framework of integration of services that aims at improving a health system focusing on patients' experience, healthcare efficiencies and healthcare outcomes. There is also concern about the values related to patient-centered care, the empowerment of a patient and reducing impediments to healthy lifestyles. Government of Uganda initiated Health Service Delivery innovations via ICT platforms of mTrac and U-report, Health Management Information System and Open Medical Records System (OpenMRS). Decentralised health service delivery and Public Private Partnership for Health (PPPH) policies were also introduced (Bariyo & Ngoboka 2012, p. 7). Considerable progress has been registered in the past decade; major progress has been made in improving National Health Systems performance. Currently, the health service delivery model in mental care, social care, primary care, community services and all hospitals are outdated and old. Its application results in lack of user responsiveness and no value for money. Serious transformation in healthcare delivery is required if the challenges in productivity are to be attenuated (Ham et al. 2012, p. 1).

At the close of 2015 according to WHO (2015), Health Millennium Development Goals number four (Reduced child mortality by two-thirds, between 1990 and 2015) and number five (Improved maternal health with targets of reducing it by three-quarters between 1990 and 2015 and achieving universal access to reproductive health by 2015) had not been achieved by Uganda. Kajungu et al. (2015) contend that citizens' health expectations were not being met promptly and that there was a high level of absenteeism and late coming at health units and centres. In a study conducted in Kabale district by Kwesiga in 2010, it was found that respondents were a little

dissatisfied with public health facilities. Ministry of Health studies on annual health sector performance and health service delivery coverage (quality of care) in Financial Years 2012/2013 and 2013/2014 show that there was poor performance of the Kigezi districts and hospitals (Ministry of Health [MoH] 2013, pp. 82-84).

Many studies have been conducted on health service delivery and innovations. However, research by Hall & Andriani (2003) and Jang et al (2002), respectively, focused on knowledge management with inter-organisational innovation and knowledge production during process innovation. Studies by Bhattacharyya et al. (2010) focused on Innovative Health Service Delivery Models in developing economies. All these have provided abundant information on innovations and innovative health service concepts. Nevertheless, they have failed to explain the influence of this innovation on public health service delivery.

1.3. Problem Statement

Over the last 30 years, the Government of Uganda has struggled to provide better healthcare in line with Sustainable Development Goals (SDGs). This would propel the quality of life and enhance citizens' productivity levels. Using the model of integrative health service, the Government of Uganda has initiated innovative health service delivery ICT platforms of mTrac and U-report Open Medical Records System (OpenMRS) and Health Management Information System (HMIS). The introduction of decentralised health service delivery and PPP for health policies was intended to improve health service delivery as well (Bariyo & Ngoboka 2012, p. 7).

Despite these platforms for the innovative health service delivery and the designing of new policies coupled with the initiation of the integration model in all providers, health service delivery seems to be anchored in ancient and unreliable methods of work that generate poor results, no value for money and limited or lack of responsiveness by users. Similarly, efforts by the Ugandan government, such as decentralisation (including that of the health workforce) as well as incentives for attraction and retention of health workers in lower health centres and hard-to-reach places have yielded minimal results

(Govule et al. 2015, p. 255). This poses a challenge to patient-centred care in health service delivery. The quality of care in hospitals is low (MoH 2013) and, according to Kajungu et al. (2015), the expectations of the citizens are not being met in a timely manner; there is a high level of absenteeism and late coming at health units and centres. Omachonu and Einspruch (2010, p. 2) aver that whereas research on innovation in healthcare has been conducted, it is limited. Many studies, like the ones by Herzlinger (2006), Mitchell (2008), Reed et al (2012), El Arifeen et al (2013) and Acharya (2017), were done on innovations and how they relate to service delivery, but few explain the effect of such innovations on public health service delivery. No appropriate innovative health service delivery model has been developed to guide government hospitals, particularly in Uganda. This study sought to investigate how innovation has influenced the delivery of health services in government hospitals in Uganda with specific reference to the Kabale and Kambuga hospitals. A specific point of concern was how ICT platforms and ICT policy initiatives have contributed to the bringing of services nearer to the people and whether the innovations have improved people's health.

The Diffusion of Innovation Theory informed this study. The theory seeks to answer the questions of why, how, and at which rate technology and new ideas are spread. It also answers why new ideas and technology are in place. Although the theory is important in answering the question of why technology is in place, its emphasis is more on the adoption level than the effect on service delivery. The study was also guided by the Four-Level Model of Healthcare as fronted by Ferlie and Shortell (2001) and the Control Knobs Health System Framework/Model to fill in the gaps envisaged in innovative health service delivery in government hospitals in Uganda. Key questions and gaps in areas of speed of service, efficiency and quality were addressed. Equally important in this study was the Four-Level Model on the system of healthcare since it highlights interdependences and key stakeholder roles and responsibilities in the delivery of health services in Uganda. The model assumes that the healthcare system is informed by four levels that look like nests, including a patient in the inner nest, the healthcare team, the

care organisation, the political, social and economic environment and the operational conditions under which patients, the care team, and individual care providers work (Reid et al. 2005, p. 19). There are various approaches to health service delivery and the core sector variables are influenced by different environments the world over. This model may, therefore, not be uniformly applied. This, therefore, creates a gap that necessitates an investigation. The environments may range from different policy frameworks, the history of the country's delivery systems, the basis and grounds for decision-making in each country, health risks and how they are insured, purchasing power, social and economic status of the medical professionals and their discipline. These parameters provide a deeper understanding as to why quality healthcare may vary from country to country (Ferlie and Shortell 2001, p. 299).

The Control Knobs Framework explains the control processes and building blocks or functions at their integrated levels for the framework to strengthen all the healthcare systems. It disaggregates and operationalises it to the healthcare service delivery points like referral development, technical capacity enhancement and facilities improvement. Despite the model having numerous advantages, it has challenges and encumbrances since operationalisation and functioning of healthcare require a whole systems approach. This systems approach is neither simple nor equivocal and is not a cure in and of it. The different writers on healthcare who support this show that in healthcare systems, the elementary unit is disease and not necessarily a healthy person (Bielecki & Stocki 2010, p. 505).

1.4. Research Questions

Major question of the research

How do innovations influence the delivery of health services in government hospitals in Uganda?

Specific questions

- a) What can be learnt from theoretical and conceptual issues related to innovations and the delivery of health services in government hospitals in Uganda?
- b) What is the effect of Health Service Delivery Innovations on Speed of Health Service in Government Hospitals in Uganda?
- c) What is the effect of Health Service Delivery Innovations on Efficiency of Health Service in Government Hospitals in Uganda?
- d) What is the effect of Health Service Delivery Innovations on Quality of Health Service in Government Hospitals in Uganda?
- e) What is the effect of Health Service Delivery Innovations on Patient Centeredness Care in Government Hospitals in Uganda?
- f) What should be incorporated into the development of a comprehensive innovative health service delivery model for government hospitals in Uganda?

1.5. Research Objectives

1.5.1 Primary Research Objective

To investigate how Innovations have contributed to Health Service Delivery in Government Hospitals in Uganda

1.5.2 Secondary objectives

- a) To establish theoretical and conceptual issues related to innovations and the delivery of health services in government hospitals in Uganda.

- b) To establish the effect of Health Service Delivery Innovations on Speed of Health Services in Government Hospitals in Uganda.
- c) To ascertain the effect of Health Service Delivery Innovations on Efficiency of Health Services in Government Hospitals in Uganda.
- d) To establish how Health Service Delivery Innovations affect Quality of Health Services in Government Hospitals in Uganda.
- e) To find out the effect of Health Service Delivery Innovations on Patient-Centred Care in Government Hospitals in Uganda.
- f) To establish what should be incorporated into the development of a Comprehensive Innovative Health Service Delivery Model for Government Hospitals in Uganda.

1.6 Research Methodology

This study used majorly a Qualitative approach to collect non-numerical and textual information. A quantitative approach was limited to solicit simple numerical data on background characteristics of respondents.

1.6.1 Research paradigm

Mertens (2005) and Bogdan and Biklen (1998) as cited by Mackenzie and Knipe (2006) argue that there are a research dilemma and an academic debate on whether research is qualitative or quantitative or both. This debate can only be put to rest when one gets a theoretical underpinning (framework) that is different from a theory, which is referred to as a research paradigm, that impacts on how knowledge is interpreted and studied. The choice of a study setting is facilitated by the choice of a research paradigm, the intention and motivation of the researcher, the research expectations, basis of

methodology, the research design and the choice of literature to review (Mackenzie & Knipe 2006, p. 196).

Whereas Petty et al. (2012) describe the term 'paradigm' as perceiving the world through reflecting on the underpinning research assumptions in order to form a basis for the study process, Bogdan and Biklen (1998) and Cohen and Manion (1994) as cited by Mackenzie and Knipe (2006) view a research paradigm as a loose collection of logically connected concepts, prepositions or assumptions that orient research and thinking. They view it as a motivator for undertaking research or philosophical intent (Mackenzie & Knipe 2006, p. 198; MacNaughton & Rolfe 2001). The paradigm also provides an alternative definition that encompasses 3 issues namely; methodology, criterion for validity and beliefs about the nature of knowledge (MacNaughton and Rolfe 2001:16).

In view of its qualitative nature, this study adopted an interpretivist paradigm. The interpretivist paradigm is dominated by views derived from conversations with experts or participants that have been affected by a phenomenon under study (Tracey 2010, p. 837). According to Cresswell (2003, p. 8) and Mertens (2005, p. 12) interpretivism is a research paradigm that seeks to understand the world of human experience, suggesting that reality is socially constructed. The researcher relies on the views of participants on the situation being studied and appreciates the impact of their own experiences and background. In this study, the researcher interacted with participants and stakeholders in the health service delivery domain. Views on innovations (ICT and policies) in relation to health service delivery (speed of service, efficiency, quality and patient-centered care) as well as relevant policy documentation, reports and other literature were collected to form a basis for understanding construction of reality on the study variables.

1.6.2 Research Design

A research design according to Wiersma (2000), a research design is a structure where variables are positioned or arranged in the experiment. Kumar (2005) adds that design

is the plan, structure or strategy of the investigation or an array of the conditions for collecting and analysing. This study adopted a cross-sectional case study design. This design helps in collecting data from sampled respondents in a population at the specific or particular period of time, and data is gathered at only one point in time as snapshot descriptions of what is happening. The design usually obtains information about the preferences, attitudes, practices and concerns of a group of people (Amin 2005, p. 200; Saunders & Lewis 2012, p. 20 in Viktoria Schoja 2016). This design helped to study the sample of the desired population during the specified time span of the study (Sarantakos 2012, p. 469). The unit of analysis for this design was individuals.

A Case study design is appropriate for undertaking an in-depth investigation of an individual, group, institution or phenomena (Mugenda & Mugenda 2003, p. 173). Saunders et al. (1977, p. 77) contend that this design provides a basis for in-depth analysis while answering the 'how', 'what' and 'why' questions. The design allows generalization to settings that are like the study area. This is further supported by Amin (2005, p. 201), who argues that exploratory studies use case studies. Leedy et al. (2005) as cited by Patel et al. (2006, p. 72) argue that case studies are qualitative research methods where in-depth data is generated relative to groups, organisations and individuals with the intention of learning the unknown and poorly understood situations. As posited by Sekaran (2003, p. 36) and Yazan (2015, p. 134), a case study was important in correctly understanding the dynamics of the issue being investigated and contextualising it to the study areas of Kabale Regional Hospital and Kambuga General Hospital in their health service delivery domain. The unit of analysis in this design was hospitals.

1.6.3 Population and sampling

Whereas Oso and Onen (2009, p. 68) view a population as things, items and people with the same characteristics that the researcher intends to investigate or know, Sekaran (2003, p. 265) and Babbie (2007, p. 190) view it as a set of objects, cases or individuals with some common observable characteristics. Burns and Groove (2001, p.

83) as cited by Oso and Onen (2009, p. 68) define a population as a group of people sharing or with the same attributes or traits that fall within a researcher's interests. Similarly, Oso and Onen (2009, p. 68) define a target population as a population where a researcher deduces generalisations and conclusions related to the study findings. The study targeted Kabale and Kanungu districts since they are the two districts that have a regional referral hospital and a general hospital respectively in the sub-region.

In this study, the target population was 34 elements. This comprised of the Ministry of Health Permanent Secretary (01), the Director of Kabale Regional Referral Hospital (01), the Medical Superintendent of Kambuga Hospital (01), the Hospital Health Management Committee members (10), Heads of Pharmacies (02), purposively selected admitted patients at Kabale Regional Referral Hospital (10), purposively selected admitted patients at Kambuga Hospital (05), specialised medical staff of Kabale Regional Referral Hospital (03) and medical officers of Kambuga Hospital (01).

1.6.4 Sampling techniques

The study used non-probability sampling technique techniques to select a sample of 34 respondents. In this technique, there are no equal chances of elements in the population being selected and the researcher's knowledge and judgement guide the selection which makes it subjective (Cooper et al. 2003, p.363).

1.6.4.1 Non-probability technique (purposive sampling)

In this study, all the elements in the target population were purposively selected in the sample as key informants since they had the experience and knowledge of the innovations and of health service delivery in the Ministry of Health and the two hospitals. Different scholars, such as Amin (2005, p. 243), Sekaran (2003, p. 277) and Yazan (2015, p. 141) recommend the use of this technique of purposive sampling when dealing with case studies. Thygesen and Ersboll (2014, p. 553) contend that an entire population can be taken as a sample and the main strengths are that data already exists, valuable time has passed and it minimises selection bias. Nonetheless, the major limitation is that the necessary data may not be available. A total of 34 respondents for

key interviews was a sample that is appropriate for such a sampling technique, as supported by Sekaran (2003, p. 277).

1.7 Strategies for the Collection of Data

Qualitative approaches were used in this study to collect primary and secondary data. Interviews and document review methods were employed to collect data. The triangulation method of collecting data comprised the use of document review and interview methods.

1.7.1 Interview method

The researcher interfaced with the respondents' faces to face with the aim of minimising time and costs as suggested by Mugenda and Mugenda (2003, p.84). The method assisted the researcher to pick incidental comments or explanations, respondents' facial expressions, feelings and attitude regarding study variables and also to analyse data without bias. Data from the key informants was collected using the face-to-face interview method. This technique is appropriate for small samples (Sekaran 2003). The main themes addressed are the speed of service, efficiency, patient-centredness and quality of service. Amin (2005, p.187) argues that oral and verbal responses are captured when applying this data collection method.

1.7.2 Document analysis

In document review where secondary data is collected, the researcher deeply studied, analysed and interpreted documents related to the study to give voice and meaning to the study variables (Neuman 2007, p.230). The study reviewed literature from other scholars and journals, as well as reports like the global information technology report (Dutta et al. 2015); Reports on Annual Health Sector Performance of Uganda for the financial years 2005/2006, 2012/2013, 2013/2014, 2014 / 2015, 2015/2016 – 2019/2020; the Global Tuberculosis Report 2013; the world health report 2006; World Health Organization progress report on MDGs health related matters in Africa and existing legislation, guidelines and policies, such as Uganda's 2nd National Development Plan (NDPII) 2015/16 – 2019/20 (Government of Uganda [GoU] 2015); Legislation on

Public Private Partnerships and Decentralization; the National Policy on Public Private Partnership in Health; the Health Sector Strategic and Investment Plan 2010/11–2014/15; the Health Sector Strategic Plan: Promoting People’s Health to Enhance Socio-Economic Development (2010/11-2014/15); and the guidelines for the implementation of Home Based Management of Fever Strategy and Guidelines for Integrated Disease Surveillance and Response in Africa. This information was supplemented by data generated from interviews in the effort to understand the study variables.

1.8 Validity and Reliability (Quality of Data Collection Tools)

1.8.1 Validity of Research Instruments

Various authors, such as Oso and Onen (2008) and Amin (2005), have defined validity as a check on the extent to which research instruments measure whatever they intend to measure. Content construct as well as face and criterion validity were measured in this study. The research instruments were administered to four research experts and thereafter unclear questions were corrected. The coefficient of validity ratio (CVR) formula was applied and instruments were found to be valid in line with Amin’s (2005) view that research instruments with 50% and above validity are acceptable.

$$CVR = \frac{ne - N/2}{N/2}$$

In this formula, ne represents the number of respondents who said YES to the validity of the instruments and N is the total number of respondents. When the formula was substituted with actual figures, the results were as follows:

$$\begin{aligned}
 CVR &= \frac{9 - 10/2}{10/2} \\
 &= \frac{9 - 5}{5} \\
 CVR &= 4/5 = 0.8.
 \end{aligned}$$

The Research Instruments were found valid and acceptable with the CVR of 0.8 (80%) as per Amin (2005).

1.8.2 Reliability of Research Instruments

Reliability refers ability of research instruments to consistently and repeatedly produce the same results (Amin 2005). The test-retest technique was applied as well as reliability tests using the SPSS software package to establish the Cronbach’s alpha as recommended by Mugenda and Mugenda (1999). The instruments were pre-tested in Mbarara Regional Referral Hospital and Itojo Hospital (both are government hospitals). If a reliability threshold of 0.7 and above is generated, the instruments are adopted as reliable.

Table 1.1: Reliability analysis on questionnaire pre-test results

Variables under study	Cronbach’s alpha	Number of items
Innovative ICT platforms	.740	8
Innovative policies	.693	9
Health service delivery	.697	8
All the 3 variables above	.710	10

Source: Field findings

As the table above shows, a pre-test on innovative ICT platforms showed Cronbach’s alpha of .640 with 8 items, innovative policies got Cronbach’s alpha of .693 with 9 items, and health service delivery got alpha .697 with 8 items. While pre-testing all the three variables, the researcher got Cronbach’s alpha of 0.71. This meant that the research instruments designed for and later used in the study were reliable and fit to be administered to respondents in the field for data collection. The reliability coefficient (alpha) can be between 0 and 1, where 0 represents instruments with many errors and 1 represents absence errors. Good and acceptable reliability must have coefficient (alpha) of 70% (0.70) or higher. (Radhakrishna 2007, p. 3).

1.9 Strategies for Analysis of Data

The process of cleaning, sorting, editing, structuring and obtaining meaning from data is referred to as data analysis by various scholars. In this study, data from interviews was analysed qualitatively.

1.9.1 Qualitative data analysis

According to Amin (2005, p.205), qualitative data analysis involves the researcher looking at similarities of events and behaviours on given phenomena. This data was collected from interviews and presented theme by theme. Content analysis was applied using ATLAS.ti software. Appropriate application of this software is dependent on the appreciation of the kind of data being analysed (Friese et al. 2018, p.5, Woods et al. 2016, p.602). Responses were presented in a narrative format and presented objective by objective. Issues of completeness, accuracy, readability and meaningfulness of data were being considered by the researcher. Provision of knowledge and understanding of the research questions and objectives under study were handled using content analysis as advised by Hsieh and Shannon (2005) and Schutt (2011, p. 322).

1.10 Ethical Considerations

The respondents were treated confidentially about the information they give on personal matters. The researcher gave due consideration to the ethical dilemmas of avoiding plagiarism, respect for intellectual property ownership, respect for disadvantaged human beings and concern for copyright. The non-disclosure principle of not revealing respondents' names and other sources of data was adopted throughout the research process. Identification was by use of codes. This made the respondents provide accurate responses (Amin 2005). The research ethical code and the standards of North-West University (NWU) were followed. Written consent to conduct the research with the respondents was sought. While conducting this study, the researcher followed the Ugandan laws/guidelines on research involving humans as research participants.

Before data collection was undertaken, due authorisation was received from Uganda National Council of Science and Technology. The Gulu University Research Ethics Committee provided ethical clearance. Recruitment of skilled research assistants with experience was undertaken. The research assistants were further trained in data collection and management, research ethics and data analysis. Written consent of the identified respondents was sought before the commencement of data collection. The Safe custody will be offered for consent forms by the researcher for the period specified by North-West University Research Guidelines. Sets of data will be under protection for a minimum period of four years and different ways of protecting data will be employed.

1.11 Significance of the Study

Due acknowledgement is made of the fact that innovative health service delivery like ICT platforms and policies greatly influence delivery of health services. Many studies have been conducted on innovations and service delivery. However, studies by Hwang and Christensen (2008), Hillestad et al. (2005), Akter et al. (2013) and Silva et al. (2015) focused, respectively, on electronic medical records and health service delivery, how innovations impact on health in a business-like model, knowledge management with inter-organisational innovation and knowledge production during process innovation. Studies by Bhattacharyya et al. (2010) focused on innovative health service delivery models in developing economies. All these have provided abundant information on innovations and innovative health service concepts. Nevertheless, they have failed to explain the impact of this innovation on public health service delivery. This study, therefore, is envisaged the generation of new knowledge in the field of innovations and their contribution to the delivery of health services.

Study findings will also guide policymakers at national and local government levels in Uganda to formulate relevant bye-laws, ordinances, regulations and policies, for the efficient delivery of health services in government hospitals and health centres. To the hospital managers and boards, the study findings will provide an insight on how to

solve day-to-day challenges of healthcare service delivery in the various health units and hospitals.

A symposium organised at the Ministry of Health headquarters for all Hospital Directors/Medical Superintendents, Hospital Boards and Hospital Health Management Committees shall be organised for dissemination of the study findings. A policy brief on innovative health service delivery in government hospitals will be submitted to the Ministry of Health for onward discussion at the inter-ministerial meeting where an improved model in public health service delivery will be proposed.

1.12 Chapter Outline

Chapter One: Introduction and Orientation to the Study

This chapter, which deals with the introduction and orientation, highlights the general background and overview of the study. It also provides the problem statement, research questions and research objectives. This chapter also provides an overview of the methodological framework of this study and the outline of the chapter.

Chapter Two: Innovations and Health Service Delivery: Theoretical and Conceptual Perspectives

This chapter presents the literature and findings on the theoretical perspectives on innovations in the health service delivery in Uganda's public/government hospitals. Theories and concepts underpinning the study and the legal and institutional framework on innovative health service delivery in government hospitals in Uganda are discussed in detail. A diagrammatic representation of the conceptual framework explaining the study variables is presented showing the variable of innovation with emphasis on ICT platforms like mTrac, U-Reporting, HMIS and OpenMRS. Decentralization for Health and Public Private Partnership for health policy reforms in delivery of health services are discussed as well. The variable of health service delivery in the form of speed of service, quality, efficiency and patient-centeredness is equally discussed.

Chapter Three: Healthcare System in Uganda: Historical and Contemporary Debate

This chapter presents literature on the healthcare exposition in Uganda in general and detailed situational analysis at Kabale Regional Referral Hospital and Kambuga Hospital. Empirical findings on traditional and contemporary Innovative Health Service Delivery are discussed.

Chapter Four: The Effect of Health Service Delivery Innovations on the Speed of Health Services in Government Hospitals in Uganda

This chapter presents arguments from various scholars on how Health Service Delivery Innovations in the form of ICT and policies influence speed of service (in the form of time taken and availability of care workers) in government hospitals. The empirical findings on the same objective are presented and discussed.

Chapter Five: The Effect of Health Service Delivery Innovations on Efficiency of Health services in Government Hospitals in Uganda

This chapter presents and discusses relevant literature on how Health Service Delivery Innovations in the form of ICT and policies affect efficiency (in terms of doing things right, following correct procedures, conforming to the norms and at less cost, and the staff-to-service ratio) in government hospitals. Empirical findings from the field are also presented and analysed.

Chapter Six: The Effect of Health Service Delivery Innovations on Quality of health services in Government Hospitals in Uganda

This chapter presents and discusses relevant literature on how Health Service Delivery Innovations in the form of ICT and policies affect quality (in terms of standards, conformance to requirements, being defect-free, reliability, avoidance of errors, functional medical records, adequate medical supplies and adherence to clinical

guidelines) in government hospitals. Empirical findings (on the objective) from the field are also presented and analysed.

Chapter Seven: The Effect of Health Service Delivery Innovations on Patient-Centred Care in Government Hospitals in Uganda

This chapter presents and discusses relevant literature on how Health Service Delivery Innovations in the form of ICT and policies affect patient-centred care (in terms of free exchange of information, participation in decision-making and convenience) in government hospitals. Empirical findings (on the objective) from the field are also presented and analysed.

Chapter Eight: Development of an Integrative Patients' Quality Care Health Service Model- An Innovative Health Service Delivery Model for Government Hospitals in Uganda

In this chapter, literature on Health Service Delivery Models is reviewed and the design of the model for innovative health service delivery as proposed by the researcher. The proposed appropriate model for government hospitals in Uganda is based on the concepts and theoretical underpinnings in the literature reviewed/supported by study findings.

CHAPTER TWO: THEORETICAL AND CONCEPTUAL PERSPECTIVES ON INNOVATIONS AND HEALTH SERVICE DELIVERY

2.1 Introduction

Internationally, ICT advancement has impacted on every part of the health sector and raised people's expectations with respect to the healthcare service delivery and data management in remote and hard to reach areas in low-developed countries (Dury 2005). The emergence of electronic health as an ICT health service support system culminated in cost reduction in health service delivery and increased effectiveness and efficiency. This was done, inter alia, through better diseases management, better management of data and its transfer and better transfer of knowledge (Oladosu et al. 2009).

Improvement of healthcare delivery systems is a point of concern for nearly all nations. Aging populations and the growth of chronic illnesses have and placed a substantial burden on healthcare systems on both developing and developed countries. Worldwide, over 60 per cent (and approximately 25 million people) die of chronic diseases. Of these deaths, 80 per cent are in middle - and low developing economies. The deaths which occur due to chronic illness are double the number of deaths from infectious diseases (Shortell et al. 2010, p. 190).

The advantages of adopting the technology include: (i) capturing user-entered data potentially for the provision of instant guidance or advice on treatment to promote and encourage behaviours of positive health; (ii) the provision of specific information on diseases, including photos, videos and texts; (iii) reminding patients with alerts on their due treatments; (iv) the provision of links for 'approved' specific social networks; and (v) the enhancement of links of communication among healthcare providers or professionals and patients (Goodnough et al 2014, as cited by Suboh 2016, p. 7).

According to Frankelius (2014) and Sanandaji (2012), innovation is a prerequisite for the improvement of healthcare services and products. This leads to equitable and high-

quality healthcare for all the citizens and nationals in the long run. However, there are innovative healthcare-related barriers. According to Castiaux (2007), old and large organisations such as public health service delivery organisations experience difficulties in getting radical innovations. Instead, they experience innovations in an incremental manner. This is due to the nature of public health organisations that are characterised by highly bureaucratic, hierarchical, conservative and regulated structures. The same organisations have institutionalised and strong expertise, professions and practices that are knowledge-intensive. Siri (2019, p. 4) contends that there are numerous impediments for innovations to take place in healthcare organisations. Many different perspectives of stakeholders must be considered while innovating as there are difficulties in trying out new ideas by healthcare professionals.

This chapter presents both conceptual and theoretical frameworks of innovations and delivery of health services in government (public) hospitals. Structurally, this chapter has various sections. Section one gives the introduction, and section two discusses the theories underpinning innovations and health service delivery. Section three presents the discussion on the concepts of innovation, while section four discusses health service delivery concepts. Section five discusses the linkage between innovations and delivery of health services. Section six presents a diagrammatic presentation of the influence of innovations on health service delivery in the form of a conceptual framework. Section seven presents the chapter summary and shows the linkage with Chapter Three.

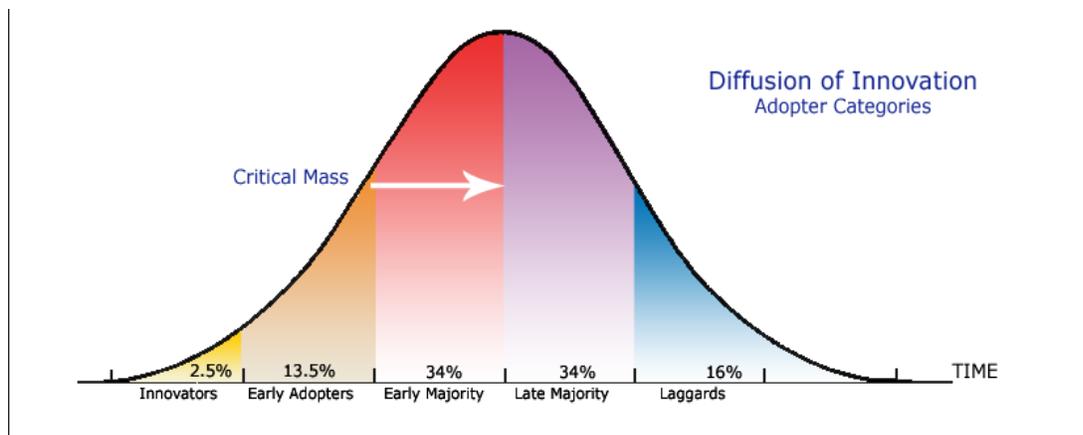
2.2 Theories Underpinning Innovations and Health Service Delivery

2.2.1 The Diffusion of Innovation Theory

Many disciplines, such as medical sociology which encompasses health communications, medical techniques and the impact of medicine use, gave rise to the diffusion theory (Kaminski 2011, p. 1). Discussed first by Gabriel Tarde, a French sociologist, the Theory on the Diffusion of Innovations was plotted with a shape of the letter S or a curve (Toews 2003). Ryan and Gross followed in 1943 by fronting the adapter categories which were later used and popularized by Everett Rogers. Ktz later (1957)

introduced the notion of opinion followers and opinion leaders and how they relate with media to influence the two groups. The diffusion of innovations theory is often taken as an important model in championing change in order to guide innovative technology where innovation is modified and presented in forms that meet needs across all hierarchies and levels of adopters. The diffusion of innovation theory stresses the relevance of peer networking and communication within the process of adoption. When the diffusion is complete, new behaviours, products and ideas are adopted by human beings within the social system and the key to the adoption process is that human beings perceive new or innovative behaviours, idea and product as useful. Adoption therefore will refer to people doing something different from what has been done previously in through using or purchasing a new product, acquisition and performance of a new behaviour etc. It is through these that the diffusion process is possible.

In 2011, Kaminski contended that the process of diffusion of innovation relates to the situation where human beings adopt new philosophies, ideas, practices, products etc. While mapping the diffusion process, Everett Rogers stated that quite often, few people open up to new ideas and initially adopt their usage, but when early innovators spread the 'word' and many people become open, critical mass development inevitably becomes the end result. As time goes by, a saturation point is achieved since there is a diffusion of ideas or innovative products within the population. Everett distinguished five innovation adopters' categories as: the early adopters; the early majority; the late majority; and the laggards. The sixth category of non-adopters is often added. The first categories (five) are often demonstrated in a curved shape, as shown below:



Source: Kaminski (2011) and Zhang et al (2015).

Figure 2.1: The diffusion of innovation adopter categories

The description and discussion of five adopter categories is contextually done in terms of technological innovation adoption and the resultant effect on the processes of innovation and adoption. Everett Rogers made a distinction in the innovative five categories of adopters as follows: early adopter category as visionaries (13.5%); technology enthusiasts or innovators (2.5%); pragmatists/early majority (34%); conservatives/late majority (34%); and sceptics/slow movers/laggards (16%). Often, non-adopters are added as the sixth category (Rogers 1983, p. 248; Rogers, 2010).

Different strategies are applied to appeal to various adopter categories when promoting innovation and innovators are people who always want to be the first to try innovation. They are interested in new products and ideas and are always venturesome. These innovators are very willing to take risks and are always the first to develop new ideas. Very little, if anything, requires being done to appeal to this population of innovators.

The category of early adopters is always referred to as opinion leaders because of their acceptance of change opportunities and their enjoyment of roles in leadership. Early adopters are always keen and informed about the desire for change, hence very comfortable with adopting new ideas. There are various strategies to appeal to this population category, including how to manage information sheets and manuals on the implementation of innovation for change. This category does not need information to

urge and convince them to change. The early majority are less of leaders though they adopt new knowledge and ideas before any average person. They often need to have evidence that the innovation works effectively before they are willing to adopt it. In appealing to this population, strategies like evidence of the innovation's effectiveness and telling success stories must be crafted.

The late majority category is ever skeptical about change and adopts the innovations when majority have tried it out. In appealing to this population, the strategies to be employed involve the provision of information on how many other people have tried out the innovation and successfully adopted. Similarly, the category of laggards is very conservative and bound by tradition. They are equally skeptical of change, and very hard and difficult to bring on board. Many ways can be applied to reach out to this category, including the use of pressure of people from other adoption categories, the use of statistics and fear appeals.

Questions of how, what, and at which rate technology and new ideas are spread are answered by this theory. According to Everett Rogers, in the social system, communication of an innovation is done over a span of time among stakeholders in the diffusion process. In more specific terms, innovative diffusion relates to an occurrence when people receive and adopt new practices, new ideas and new philosophies. According to the mapping by Rogers, in the initial stages few people receive and are open to new ideas and adopt their use. When these early innovators spread the word, many more people open up, hence the development of a critical mass. Later, the saturation point is achieved as innovative products and ideas get diffused over time. Whereas this theory emphasises the adoption and rate of spread of technology, it also answers why new ideas and technology are in place. According to Kaminski (2011, p. 3), the diffusion theory is applicable in the fields of social work, marketing, criminal justice, public health, agriculture and communication. The theory stimulates the adoption of public health programmes that focus on the change of behaviour of social systems.

The diffusion innovation theory has many setbacks which include; usage of adopter categories and evidence that does not originate from public health. The theory was not developed to candidly apply the adoption of new behaviours of public health programmes. The theory does not cater for participatory approaches to the adoption of public health programmes. According to Kaminski (2011, p. 5), this theory works best with behavioural adoption rather than cessation or preventive behaviours. It does not take the resources of individuals or social support to adopt new behaviour (innovation).

2.2.2 The Control Knobs Health System Model

The proponents of the model view institutions as an important issue that affects health systems performance. They deem this factor as taking care of the variables of regulation and behaviour, organisation, finances and payments, which lead to quality, effectiveness, efficiency and access to healthcare facilities, which are intermediate performance measures. Also referred to as the Common Health Data Navigator, the Control Knobs Health System Framework/Model spells out an arrangement of control knobs, namely payment regulation, organisation and behaviour and system of health financing. This control knobs model puts in place a continuum between objectives (performance goals), control knobs (interventions) and intermediate performance measures (outcomes) that facilitate policymakers to consider whole system interactions. In this model, the control knobs are known as health system architecture, whereas intermediate performance measures are equity, quality, access, efficiency and responsiveness, which are at times referred to as health system objectives. Customer satisfaction, health status and risk protection are often referred to as performance goals in the healthcare system (Bradley et al. 2010, p. 15).

2.2.3 The Four-Level Model of Healthcare System

The Four-Level Model that was adopted from Ferlie and Shortell in 2001 provides that a healthcare system is categorized into four 'nested' levels, namely: (i) an organisation for care (clinic, nursing home & hospital) that renders support to the healthcare teams and their development through the provision of resources and infrastructure; (ii) the care

team (professional care providers, pharmacists, family members of the patient, clinicians, the patient); (iii) the individual patient; (iv) the economic and political environment (regulatory and financial environment, markets, policies and laws), i.e. circumstances in which the care organisations, patients, care teams and individual care providers work. Other writers include the operational conditions under which patients, the care team, and individual care providers work as the outermost (fifth) nest) (Reid et al. 2005, p. 19).

The individual patient is a person whose health desires, needs, requirements and preferences are imbedded in the healthcare system that promotes patient-centeredness. The concern and keenness about the needs and the individual preferences have been referred to in the recent healthcare policy changes as customer- or consumer-driven healthcare. Issues like the availability of health information, private healthcare spending and the rising expectations of health users will cause automatic change in the system of healthcare that focuses on timeliness, effectiveness, better quality and efficiency. The patient's contribution has shifted to that of a serious stakeholder and a partner in healthcare delivery from that of a passive receiver of care.

Patients have been compelled to assume critical roles in health service delivery, ranging from the design, coordination, production and implementation, to the monitoring and evaluation of their care. This is as a result of modern fragmented systems and the ever-increasing chronic diseases burden, coupled with the desire for continued and consistent healthcare. The challenge to such roles is the availability of limited information, knowledge, tools, expertise and resources. In view of the goals, responsibilities and requirements/needs of actors in the first level, as well as patients and their connectedness with other stakeholders on other levels of the system of healthcare, evident opportunities are open for the use of the information communication strategy alongside other existing tools to improve healthcare performance.

Patient-centeredness in the delivery of health services can change, beginning with a change in mindset and bias among clinicians and other medical practitioners, so that they can start to take patients and their family members as partners, and then go on to incorporate their needs, wishes and values into health service delivery care processes and patterns. The assumed patients' critical responsibility levels and that of their families differ from one patient to another. Some patients or their families prefer to delegate some of these responsibilities (if not all or most of them) and decision-making to counsellors or trusted medical workers or counsellors in the healthcare system. Either way, the patients or their families require open communication and interaction of views and information with health caregivers, stakeholders in the care team, agencies, implementing partners and organisations that supplement or give infrastructural support to the teams in health service delivery (Reid et al. 2005, p. 20).

In the process of communicating their informed preferences and needs and in order to coordinate, monitor and make decisions about their care, patients need to have access to the existing and accessible information streams the same way as their care team and physicians. The right information is information that supports effective, evidence-based and efficient healthcare. It also includes the medical records of patients, physiological data, updated medical evidence and orders about patient care. Access to decision support, tools of communication and educational and information management that assist in the integration of critical information from various sources is vital to a patient or his counsellor, clinician or family member.

The interconnectedness between the patient and the healthcare system improves the convenience, timeliness, effectiveness and efficiency from the perspective of the patient. Communication within the physicians and patients improves the quality of care in various ways, namely the pace of diagnosis and treatment could be accelerated by real-time and continuous exchange of views on the physiological data of patients with the care providers. This, in turn, reduces the incidence of injuries and complications that result from delays. Diagnosis and treatment make healthcare more convenient for patients when dealing with in-the-home or on-the-go remote monitoring. This

eventually saves them time and improves compliance with public healthcare regimes. The use of appropriate communication strategies has the capacity to change the style of relationships between providers and patients, hence enabling patients to maintain and further develop trust in their relationships with the clinicians. Similarly, significant improvement in quality of care is influenced by asynchronous communication. Easy accessibility to the internet and the World Wide Web facilitates continuous consultations and feedback between caregivers and patients (IOM 2001, p. 37). The patients' ability to interact within the healthcare system and manage their aspects of care has already been changed by the World Wide Web. The third parties' medical information has facilitated the patients to be more informed and, at times, misinformed. Telemedicine is one of the fastest growing users of communication strategies.

The care team is the second level of the system of healthcare that comprises the group of caregivers, the individual physician, health professionals, the patient's family members etc. The collective efforts of the care team results in efficient healthcare delivery to a population of patients or a patient himself/herself. Being the basic building block of a clinical microsystem, the care team is described as the organisation's smallest and replicable unit or organisations that are replicable since they comprise human resources, financial resources and technological resources that perform the required work (Quinn 1992, p. 69). The clinical microsystem within the care team includes the environment of information that supplements the work and efforts of the health caregivers, professionals, the patients and the family, equipment with related facilities, support staff and a defined patient population (Nelson et al. 1998, p. 67). Ferlie and Shortell (2001, p. 43) contend that the major function of any microsystem is connected to the standardisation of care based on evidence available to categorise patients in line with the health or medical needs, customisation of care in order to meet the individual needs of patients with health problems that are complex and the provision of appropriate healthcare evidence in each class of patients. However, most health services are rarely delivered by groups or teams.

Whereas the needs and roles of individual patients have undergone various changes, the ones of individual physicians have had parallel changes. The proliferation of medical specialists, the rising burden of providing chronic care and the high increase in medical knowledge have radically undercut the individual patients' autonomy. This has led to the need for teamwork in healthcare in both individual/single institutions and across the settings of an institution. The pace at which individual clinicians cope with group and team-based healthcare is slow and this is due to many factors, including a repeated and reliable culture of autonomy in the profession of medicine, lack of tools, incentives and infrastructure to aid change, and the limited formal training in techniques of teamwork. In order to deliver patient-centered care focusing on patients' needs and preferences, the individual requires knowledge and equipment in order to serve as an educator, counsellor, medical expert and trusted advisor who encourages participation of a patient designing and delivering healthcare.

Currently, patient centeredness clinical care is dependent on a few precious clinical microsystems or care teams. According to Wennberg et al. (1989) and McGlynn et al. (2003), there are common unwarranted changes in medical practice, including those related to the conditions and populations of patients (whose reasons there are standards), quality requirements and protocols that are patient based stratified in accordance with best practices. There are several and ever-evolving barriers to evidence-based healthcare delivery that are recognised by many clinicians. These include a strong focus on expectations and needs of a patient (individually) as opposed to the needs and expectations of patient populations, the structure of the healthcare professionals, lack of infrastructure and supporting information tools and lack of training in teamwork. These and many others can prevent systems thinking by medical practitioners, a clinical microsystems approach to healthcare delivery and the diffusion of evidence-based medicine. It therefore presupposes that aligning evidence-based care to meet the personal preferences and needs of patients with a multitude of difficult health challenges has remained a goal yet to be attained. The rules of engaging care teams and individual patients must be realigned in order to attain patient-centered care.

Care teams such as individual care providers must take care of the preferences and needs of individual patients and involve them with their families in designing and implementing healthcare to the desired extent. There is need to provide continuous, timely, convenient and quality healthcare to the patients by the healthcare teams. There should be effective communication and coordination among patients and other stakeholders within the healthcare team.

The third level of the healthcare system is the organization, such as a clinic, hospital and a nursing home. The organisation provides resources and infrastructure that are vital in supporting development and work of microsystems and healthcare teams. This level is an important facilitator of change in the healthcare system since it provides the overall climate through various systems of decision making, operating systems and human resource practices (Ferlie and Shortell 2001). The organisation comprises clinical, administrative, human, technical and financial systems which are relevant to the coordination of activities of the care systems. It is the business level where many investments are made in infrastructure and information systems, systems tools and process management systems. In an attempt to respond to the ever-increasing costs of healthcare, there has been a shift of cost burden to the patients and care providers. This has put ambulatory and hospital facilities under great pressure to accomplish more work with less revenue and fewer people.

In order to enhance patient-centered healthcare, care organisations must find ways of mending and bridging the gaps between the caregivers (clinical teams) or methods of delivery and focus on ICT, tools for reengineering systems and other related knowledge management mechanisms. This will amount to successful integration of all stakeholders in the healthcare industry that requires managerial, logistical, technical and material support across the boundaries of the organisation. According to Garvin (1993), it is not enough to make financial investments in ICT and systems engineering tools. There is need for a culture which encourages the development of care teams, working with care agents and clinicians, creating a learning organisation that promotes skilling, creativity,

knowledge acquisition and transfer, and the modification of behaviours to reflect new insights and knowledge for health service delivery.

The final and fourth level of the healthcare model is the economic and political environment that encompasses policies, regulatory and legal frameworks on the political side and the economic/market. It also includes other entities which can influence healthcare performance and the structure of healthcare entities/organisations directly or indirectly. Various players/actors may be influenced by or may influence the economic and political environment in the sphere of healthcare delivery. Governments influence healthcare delivery through regulation, the provision of facilities, drugs, staffing and other support. Other partners and private purchasers or third-party healthcare partners/providers equally influence the healthcare environment through government linkages.

The level, structure and nature of competition among stakeholders and providers are influenced by government regulation. The government can also influence the transparency of healthcare systems by putting in place requirements which are closely linked to the patients' safety together with the tenets of quality healthcare. The role of inspection, monitoring and the projected shape of the market environment influence the performance of health care systems with respect to quality.

Ferlie and Shortell (2001) contend that many forces exist at the environmental level and these include regulatory policies and healthcare service schemes that do not support the objectives and goals of patient-centeredness, high performance healthcare organisations or systems of health service delivery. Since they are the biggest providers of healthcare services, central and local governments regulate, finance and control systems of health service delivery. Nonetheless, non-state agencies and the private sector are well positioned drivers of quality and of affordable healthcare improvement (Ferlie & Shortell 2001, p. 79).

2.3 The Concept of Innovations

Worldwide, the concept of innovation is not new and can be traced in all disciplines. In the technology field, which is always referred to as the world of goods, innovation is viewed in terms of technical and scientific literature. Innovation is also traced in the fields of humanities, arts and social sciences such as political science, psychology, economics, sociology, history and management. The fields of media, public policy and popular imaginary also embrace the concept of innovation as daily vocabulary (Benoît Godin 2008, p. 5).

In the late 19th century, a French sociologist named Gabriel Tarde initiated the first theory of innovation. His interest lay in explaining social evolution or change with respect to grammar, law, economic regimes, religion, art, industry constitution and language. The sociological theory of Tarde distinguished statics from dynamics. He made the term 'innovation' spread widely as a novelty though without an explicit definition. Tarde applied a fully-fledged range of terminology to explain social change, ingenuity, invention, initiative, discovery, originality, imagination and creativity (Benoît Godin 2008, p. 27).

In the theories of innovation that followed the one of Tarde, understanding of the concept of innovation put to rest the controversy on invention and imitation. Since 1920, invention became a synchronic and diachronic process. Some of the sociological theories combined imitation and invention in a linear model or sequence where imitation follows invention (Godin 2009). American sociologists such as Ogburn and Gilfillan were among the forerunners to propagate the meaning of innovation, invention and imitation after reviewing the 19th century arguments (Macleod 2007).

The concept of innovation has been defined and conceived broadly and widely. Innovation relates to and denotes descriptions that are cultural, artistic, scientific, technological, social or individual and organisational in nature. Godin (2017) states that Anthropologist Mason (in 1895) defined innovation as a form of invention that leads to action that ushers in improvement, or a new implement of substance or method. It is

one of the last of many terms that are believed to mean or infer modern practices. According to Levitt (1963) as cited by Benoît Godin (2008, p. 46), innovation is about continuing with the past (to a great extent) and often refers to invention in technology and a break with the past.

According to Trott (2012), innovation is equivalent to commercial exploitation, technical invention and theoretical conception. It lies on the primary invention that calls for manifestation of oneself in commercial activities and provision of value (social, environmental and financial) to organizations. He defines innovation as managing activities that involve generation of ideas, technological development and new product development.

Lansisalmi et al. (2006) refer to the term 'innovation' as involving the process of causing and making changes, small or big, incremental or radical, to processes, products and services that result in introducing something new in any organisation and initiates value addition to stakeholders, thus contributing to the store of knowledge for that very organisation. In healthcare organisations, innovation as a concept has become a critical requirement/capability. Govindarajan (2007) also affirms that, with the new digitalised information, semi-conductor products, genetic engineering and nanotechnology, the healthcare industry is getting revolutionised. This revolution has invalidated the old assumptions and further created prospects for innovation and improved the existing processes and procedures, something which was not anticipated.

Varkey et al. (2006) contend that in the 20th century the health sector saw the widespread and over-proliferation of innovations. The sector aimed at enhancing life expectancy, options of treatment, cost effectiveness, and efficiency of systems in the healthcare delivery. These innovations included, among others, surgical and medical interventions (Varkey, Horne & Bennet 2008). The study carried out by Fuchs and Sox (2001) adds medications (such as angiotensin, which converts enzyme inhibitors, statins, proton pump inhibitors and antidepressants), diagnostic modalities (e.g. magnetic resonance imaging, computerised tomography scanning and mammography)

and procedures (e.g. coronary artery bypass, cataract extraction and graft balloon angioplasty) to the list of the top 10 medical innovations (Omachonu & Einspruch 2010, p. 3).

The disruptive or non-disruptive impact of innovation on different stakeholders informs the varying categorisation. According to Moore (2004), non-disruptive innovations are often referred to as incremental innovations and, evolutionary in nature. According to Govindarajan (2007), they are sustaining (VHA Health Foundation 2006), linear (Hamel 2000), or they add value to anything that is already in existence. This must be in such a way that it allows meeting expanded opportunities or solving the problems that already exist. Christenson et al. (2004) and other researchers advanced a narrower view on how to impact on a company and they argued that they refer to whatever comes up with new resources, values or processes or whatever leads to the improvement of a company's current values, processes and resources.

According to Varkey et al. (2008), healthcare industry innovations are related to product, structure or process. Customers pay for products and these often consist of goods and services such as innovations and clinical procedures. Defined differently, healthcare innovation refers to the discovery of a new service, idea, product, concept/process that aims at improving safety, treatment, outreach, outcomes, education, diagnosis, prevention and research, and with the overarching overall goal of improved efficiency, safety, quality, outcomes and costs (Sullivan 2004, p. 3).

2.4 The Concept of Health Service Delivery

For one to achieve Sustainable Development Goals, it requires strengthening Health Service Delivery mechanisms, which include delivering health interventions that focus on the reduction of malaria, child mortality, tuberculosis and the HIV/AIDs burden. In the healthcare system input-process model/interaction, health service delivery or provision is the closest and immediate deliverable/output. These inputs include procurement and supplies, financing and staffing the healthcare workforce. An increase in these healthcare inputs results in improved health service delivery and enhanced

access to services. Key dimensions in health service delivery are quality care, health research and development and acceptable methods and indicators for healthcare assessment. Patient-centred care is yet another characteristic though there is research dialogue on how to measure it from a patient or practitioner perspective (World Health Report 2008, p. 2).

2.5 Innovations and Health Service Delivery

The concept of innovation in healthcare has continuously remained a key factor in the search for balancing quality of healthcare and containing of costs. According to Varkey, Hor et al. (2006) as cited by Omachonu and Einspruch (2010, p. 3), the 20th century has produced a plethora of innovations in the health service delivery industry that aims enhancing life expectancy, treatment and diagnostic options, quality of life, cost effectiveness and efficiency of the healthcare systems.

Within the health systems sphere, innovations denote new diagnostics, ideas, institutional arrangements, new medicine, objects, new practices and new health technologies that are all perceived as novel by an individual or a unit of adoption. Cutler (2001) contends that in high-income countries as well as in countries with low or middle incomes, innovation is vital in the improvement of health outcomes if the SDGs are to be achieved. Health systems characteristics, institutions within health systems, contextual factors and the adopting entities that are within these organisations and other related institutions collectively meet and interact to influence the receptivity of health systems to advanced and new innovations, as well as the speed and scale of their adoption and diffusion (Atun et al. 2010a, p. 8; Atun et al. 2010b, p. 109 in Adam & Savigny 2012, p. 3).

Most healthcare innovations have been advanced and initiated by healthcare organisations, healthcare professionals, patients' advocacy groups, patients, physicians etc. In some instances, in a bid to solve healthcare challenges and concerns, that government has forced healthcare organisations to initiate changes. When the need to change is identified, other challenges of determination of meeting the need either

internally or externally arise. Once innovation is borne within the healthcare organisation, it must be tested, modified and then implemented. When initiated externally, the healthcare technology that develops tests meets the need, markets and popularizes this technology to the healthcare organizations. Sometimes, the healthcare organization assumes imperfect attempts at innovation in the healthcare organizations and changes it to a finer product which is marketed in the healthcare organization. It is important to recognize internal processes in healthcare organizations like the hospital, managed care companies and nursing homes (Omachonu & Einspruch 2010, p. 12).

One of the cardinal ways in which the production and delivery costs in health service delivery interventions are lowered is through the process of introducing technological innovations. The use of delivery system innovations to advance healthcare reforms has continuously been of widespread interest. The success of specific types of innovation is, however, difficult to generalise since they have been investigated and examined in only a limited number of studies (Smith et al. 2017.p.512).

Everyday, innovative products transform industries and the change pace often accelerates due to high technological break throughs like wireless technology, smart phones and internet. Nevertheless, not all industries were created equally in the field of innovations. Health sector is equally complex and the ecosystem of health service delivery is increasingly under pressure as a result of expectations from patients and rising health costs. Such pressures and other inherent characteristics of the sector render innovations in health more cumbersome compared to the Consumer Products sector. Braking these complexities and champion innovations in health, researchers and inventors must begin overcoming the barriers to development of healthcare products (Grajewski 2015 cited by Roque González et al. 2016. p.655).

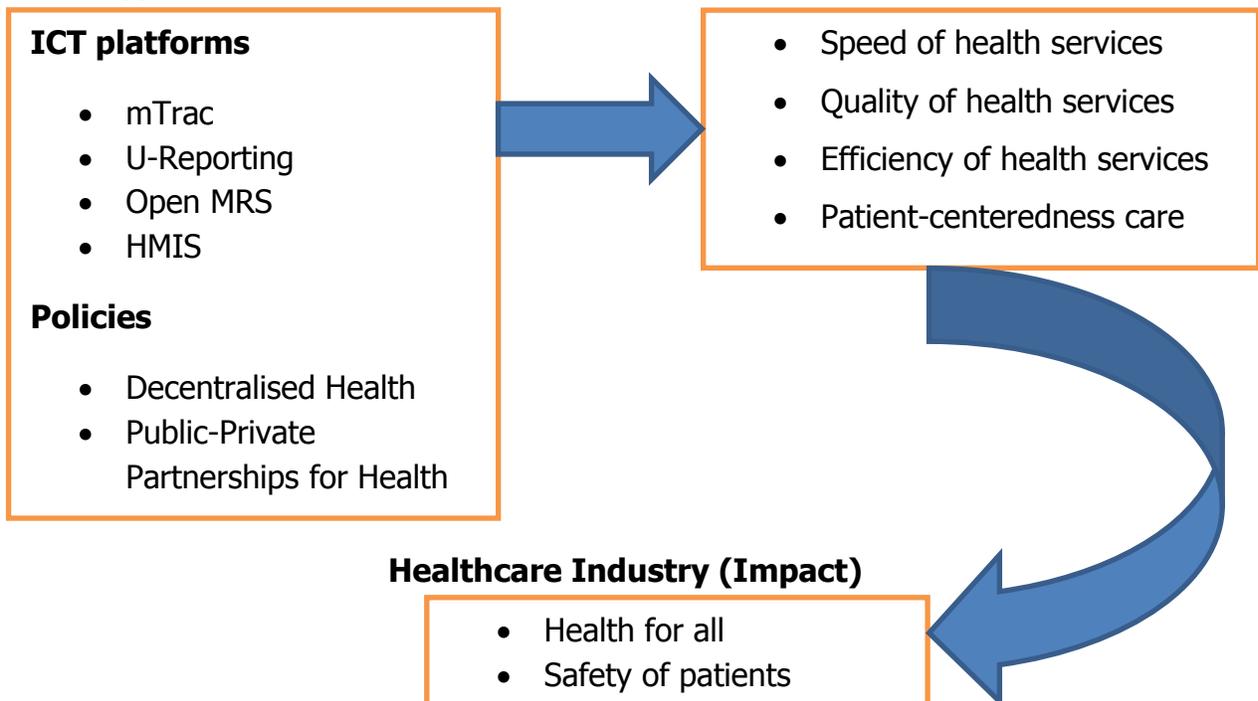
2.6 Conceptual Framework on ICT and Policy Innovations and their influence on Delivery of Health Services in Uganda

In the conceptual framework below it is hypothesised that innovations in the healthcare sector influence health service delivery in government hospitals. The dimensions of the

innovations are ICT platforms (mTrac, U-Reporting, HMIS and OpenMRS) and government policies of decentralised health service delivery and Public Private Partnership for Health. Dimensions of public Health Service Delivery are the speed of service, quality, efficiency and patient centredness. It is presumed that the relationship between these two variables will result in the safety of patients and health for all in the healthcare of the population. The figure is a typical illustration of the effect of innovations on public health service delivery in Uganda. It shows the content scope (boundary of the study) and the indicators of the variables to which the study was limited. The figure presents the possible effect of the independent variable on the dependent variable; hence it is a contribution to the national goals and the sustainable development goals on health. The conceptual framework illustrated below, therefore, indirectly provides a justification for the study since the safety of patients and health for all are the overall goals of the health sector and the Government of Uganda.

Figure 2.2: Conceptual framework on Innovations and Health Service Delivery: Adapted and modified from Bariyo and Ngoboka (2012)

Independent variable (Innovations) Dependent variable (Health Service Delivery)



In the figure above and in line with the literature reviewed, it was found that Uganda has put in place various innovations in the form of ICT platforms of mTrac, U-Reporting, OpenMRS and HMIS (Tashobya et al. 2007, p. 50). It was also established that the government had decentralised health services as an innovative policy (Mayanja 2005, p. 25) and formulated the Public Private Partnership for Health Policy (MoH 2012, p. 13; Bataringaya & Lochoro 2002) to enhance Public Health Service Delivery. These initiatives were intended to deliver speedy/timely, quality, efficient and patient-centered health service delivery. The study, therefore, adopted the above themes to explore how they inform the relationship between innovations and Health Service Delivery in Public Hospitals in Uganda.

2.7 Chapter Summary

Given the challenges identified in innovative health service delivery and the complexity of the ICT innovations identified above (Grajewski 2015), chapter three gives a thorough study of healthcare systems in Uganda. Historical and contemporary debates focused on desired Health Service Delivery systems and the challenges of Health Service Delivery systems in Uganda are discussed in the chapter.

CHAPTER THREE: HEALTHCARE SYSTEM IN UGANDA: HISTORICAL AND CONTEMPORARY DEBATE

3.1 Introduction

The integrated Value-Based Health Service Model of Healthcare delivery and financing has experienced a significant paradigm shift from the fee-for-service model. Public health and the entire healthcare industry are faced with a new and unique window of opportunity to work together towards lowering costs and improving health service delivery, yet both fields have different cultures and speak different languages. The key overarching problem is how to get the most effective and efficient way of adopting patient-centred care supported by public health and the final translation into cost-saving and improved health in the long and short terms (Staley 2013, p. 1).

The effective delivery of health service is the foundation of all health systems. Traditionally and for quite some time, African governments were solely responsible for delivering health services through vast infrastructure. The health service delivery system was a mixture of both private and public providers of healthcare located and operating from various clinical settings. Uganda was not an exception to this rule. For the past 20 years, this public-only delivery system has changed drastically (MoH 2011, p. 57).

Time and again, many reports have been made on challenges in the health facilities of Uganda. These problems have ranged from mistreatment of patients and attendants, drug shortages, health workers' hostility, inadequate staffing levels, and obsolete machines or the total lack of machines, to staff absenteeism, high healthcare costs, discrimination based on gender, and negligent staff (Bakeera et al. 2009). Such challenges and many others have led to the low utilisation of many health facilities. According to the report on Uganda's demographic and health survey from Uganda Bureau of Statistics in 2006, very few Ugandan pregnant women go to deliver at Health Centres. The majority of the pregnant women prefer using traditional birth attendants.

The report revealed that about 41 per cent of the reported births over five years before the survey were at health facilities while 59 per cent took place at home. There is undisputed evidence about the increased use of medical alternatives such herbs and reflexology and this implies dissatisfaction with formal health services. It is, therefore, necessary to follow up on these issues, drawing upon information from studies already conducted and theories proposed about how to make services more attractive and satisfactory (Kwesiga 2010, p. 14).

From the literature reviewed in this chapter, it was evident that before and after independence, Uganda's healthcare system was the best in the region with equipped and well stocked health units (Mukasa 2012, p. 6). However, according to Mubatsi (2013), the performance of Uganda's healthcare deteriorated and was ranked among the worst, marred by long waiting hours, inadequate referrals, poor sanitation, rudeness from healthcare providers, and lack of drugs and equipment (Bulamu 2018). The delivery system has many challenges irrespective of the public sector reforms, existing structures and policies (Komakech 2016). Clients bypass the public health facilities in search of better quality services in private healthcare providers.

Although the literature provided evidence of the evolution and performance of the healthcare systems in Uganda to date, save for Bulamu (2019), most authors provided old literature of the 1990s to 2013. There was a gap on how the health service delivery functions today in Uganda. Literature also fell short of what government is focusing on to address the challenges. These called for the need to close up the gaps in literature, hence the justification to conduct face to face open and interactive interviews. The chapter therefore presents literature on healthcare exposition in Uganda in general and detailed situational analysis in public hospitals. Empirical findings on traditional and contemporary innovative health service delivery are discussed. Section one presents the chapter. Section two presents the historical perspectives on innovations in health service delivery in government or public hospitals. Section three discusses the contemporary debates on the delivery of health services in government/public hospitals

and presents current underpinnings of the current thinking about the delivery of public health services. Section four presents data collection methods and analysis. Section five discusses the empirical findings on traditional and contemporary issues on health service delivery in government hospitals. Section six provides a summary of the chapter and highlights a linkage to the next chapter.

3.2 Historical Perspectives of health service delivery innovations in public hospitals in Uganda

Provision of health services in Uganda is a responsibility vested in the ministries of Health and Local Government, supported by private organisations and non-governmental organisations (NGOs), especially faith-based institutions. Planning and policy development for health services delivery in all public hospitals is vested in the ministry responsible for health. Ministry of Local Government manages health services provision in local governments and other administrative units as private organisations and NGOs offer medical services in clinics, hospitals and dispensaries. Both private and public sectors constitute the national health system. The private health practitioners (PHPs), traditional contemporary medicine practitioners (TCMPs) and private not-for-profit (PNFP) form the private health sector. This sector (private) contributes about 50 per cent of healthcare delivery. The public sector, which also caters for 50 per cent contribution, includes health service departments and units in local governments and ministries and other government health facilities. The Ministry of Health has delegated many functions to national autonomous institutions such as National Drugs Authority and National Medical Stores (Nabukeera 2016, p. 30).

In Uganda, the delivery of health services is decentralised from national to referral, district, health sub-district, sub-county Health Centre III, parish Health Centre II and village/cell Health Centre I levels, with the village/cell Health Centre I being the lowest level with village health teams and volunteers doing health promotion, and encouraging community participation and empowerment (Nakisozi 2014, p. 1). The current health system (in Uganda) is arranged in four distinct levels, namely primary, secondary,

tertiary and quaternary healthcare systems. At the lowest level there are health centres and units that constitute primary healthcare; the rural and district hospitals constitute secondary healthcare; the tertiary level includes general referral hospitals at regional level and the national referral hospitals (Butabika and Mulago) constitute the highest/quaternary level. In the entire original and old 39 districts (in 1992), there is a General Hospital and Health Centres 1-1V. Estimates indicate that about 27% of Uganda's population falls within a radius of 5 kilometres of a health facility and 57% fall within a radius of 10 kilometres (Nabukera 2016, p. 30).

According to Mukasa (2012, p. 6), in the 1960s, Uganda had the best healthcare system within the region, where hospitals were well equipped and staffed and the health units were well connected. He asserts that the 1970-1985 political turmoil ravaged the country's health system. The quality of health services delivery before and after independence in Uganda was superb. Health workers were committed to doing their work efficiently, patients were treated with the greatest care, attention and dignity and health workers exhibited a good heart and professionalism. They (health workers) followed the professional code of ethics and conduct and adhered to the oath they swore. According to Kezaala (2018), quality healthcare in Uganda today is totally different. Media reports show that there are many complaints from users of healthcare systems and patients receive poor health services, especially in public clinics, hospitals and health centres; there is mistreatment of patients and caretakers; there is lack of commitment and care on the part of health workers; there is lack of ethics, procrastination, disrespect for patients, theft of drugs and equipment, lack of a professional code of conduct, demand for bribes for services, absenteeism and general corruption (Kezala 2018, p. 2).

In the late 1980s to mid-1990s, a wave of reforms occurred across the world in the areas of government organisation, the coordination of health sector stakeholders, and health financing involving low-income countries (LICs) in particular. Decentralisation was one of the early reforms, together with restructuring and downsizing central

government ministries and agencies, and the introduction of user fees in health facilities (Bossert & Beauvais 2002). The late 1990s witnessed another wave of reforms, a number of which counteracted the effect of the previous ones. In the 1990s, at the outset of the implementation of the decentralisation policy, the provision of health services, together with planning and budgeting for the same, was transferred to the district and hospital management committees under the office of the District Medical Officer (DMO). The district health teams were, therefore, expected to deal with day-to-day issues like delivery at health units and the management of logistics irrespective of their human resources, financial and logistical constraints. The teams were also left to undertake the corporate roles of coordinating, resource mobilization and planning. It is not doubted that the low capacity to manage decentralised healthcare delivery system registered poor results (MoH 1998).

Additionally, in the 1990s, the district health services suffered other basic capacity constraints. There were geographical related challenges related to limited accessibility to healthcare services as the people staying within a radius of 5 kilometres of a health centre stood at 49%, yet most districts in Uganda had a population of about 500,000 people on average, irrespective of the varying land terrain from district to district. The percentage of people accessing health services increased to 57 per cent by the year 2000 (MoH 1991, 2000).

There were variations across and within districts on the access to basic health services. Some districts reported the populations' accessibility to and settlement close to a health facility in a radius of 5 km being as low as 10 per cent. According to Murindwa (2006), some districts could not offer emergency and obstetric services and there were variations in terms of access from district to district. The health sector in districts was also faced with problems of human resources in both management and physical manpower (Murindwa et al. 2006, p. 99 in Tashobya et al. 2006).

In the bid to implement civil service reforms, government suspended the recruitment of civil servants in late 1980s and early 2000s and this move affected health workers as well. In 1999, the Ministry of Health conducted a study where it was discovered that qualified health workers accounted for only 34 per cent of the positions in the establishment. The other positions were either occupied by untrained nursing aides or were vacant (MoH 2000b). The local governments (especially districts) faced numerous human resource-related challenges that included payment of staff salaries and general management of human resources. Staff salary payment in most districts was irregular despite the releases of unconditional grants from the central government that included the wage bill for health workers. In many districts payment of salaries to health workers was irregular. In some local governments, recruitment of health workers continued even when access to the formal government payroll was a nightmare. Such recruited health workers would be paid either out of sub-county local revenues or the user fees collected at the health facilities though, in fact, the majority hardly got any salary (MoH 2000c).

Thirdly, there was a problem of weak monitoring and supervision of health service provision at all levels. Because of inadequate logistical support and an inadequate number of skilled supervisors, neither the district teams nor the Ministry of Health carried out appropriate supervision and regular monitoring (MoH 2003a). Health services delivery planning that included health supervision at the district was often done basing on the assumption that the required inputs would somehow materialise. Such planning would be done without appropriate reference to the availability of resources such as human and financial resources. The 1990s saw a clear drawback to the decentralised district health services. The health sector was challenged to re-orient itself on addressing the three stated problems in order to improve primary healthcare services delivery with the drafting of the 1999 National Health Policy and the 2000/2001-2004/2005 Health Sector Strategic Plan (MoH 2000).

Ministry of Health devolved health sub district management at county/constituency level in an attempt to strengthen decentralised health service delivery. The National Health Policy (1999) outlined the creating a health sub-district in line with Health Sub-district Strategy Paper (HSDSP) of 1998. The main objective of the creation of a health sub-district was to functionally improve the delivery and management of health services at the local level. The health sub-district takes care of a population close to 100, 000 people in an area close to a county or constituency (Murindwa et al. 2006, p. 100 in Tashobya et al. 2006). Besides the development of the Health Sub-District Strategy and other supplementary efforts to facilitate and improve local-level health services management, the focus of the health sector shifted to the improvement of access to services at Health Centres physically in agreement with the decentralisation concept. Countrywide, various new health facilities have been built while old ones have been renovated and upgraded as part of the health sector reforms. This has been done with support from many stakeholders, including the central government, local governments, communities, external funding agencies and development partners (Murindwa et al. 2006, p. 102 in Tashobya et al. 2006).

In Uganda, delivery of health services has been identified with features and constraints of poor organisation of health services, limited information about the disease burden at local levels, weak public health systems, deficiencies in human and financial resources and general mismanagement. At lower-level health centres, according to Okello et al. (1998) as cited in Nabukeera (2016), there is low demand for health services due to a breakdown of the referral system, lack of clinical support services, lack of diagnostic services, lack of properly trained medical personnel and lack of facilities to transfer patients with complications. There was limited availability or leaking out of drugs in the health system that culminated in patients not receiving the prescribed drugs at the government facilities. There was also a gap and difference in resource availability between government and private not-for-profit organisations, with the former (government) being constantly in a state of despair and inadequate maintenance (Nabukeera 2016, p. 36).

There has been significant improvement in access to child and maternal healthcare as well as a robust response to HIV/AIDS in Uganda. Increased outreach, treatment services and availability of HIV prevention have been made possible owing to funds from sources such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, donor programmes, the Global Fund to Fight AIDS, and USAI. Many Ugandans now live within a radius of kilometres of a health facility. Although some progress has been made in health service availability, the quality of Health Service Delivery is faced with a myriad of challenges, and these include high mortality and maternal rates. Access to primary healthcare remains difficult and the quality of care is inconsistent. Patients ignore tertiary or secondary care owing to the exorbitant costs involved. Hospital referral services are either inadequate or malfunctioning. These, coupled with human resources capacity gaps and lack of financial resources, impact greatly on health quality control and regulation. There is no proper integration of various services, which include, but are not limited to, those related to tuberculosis (TB) and HIV/AIDS in the health service delivery system. Initiatives for quality improvement at health facilities have not been institutionalised uniformly. There is no consistency in implementing evidence-based medicine and investment in preventive and curative public health services is not sufficient or limited in the bid to reduce unhealthy behaviours that have significantly contributed to the increase in non-communicable and infectious diseases (MoH 2011, p. 2).

Not all health services are provided by health facilities in Uganda as expected. It is evident that 79 per cent of modern family planning services are provided at healthcare facilities. Whereas government facilities only offer 89 per cent of the family planning services instead of 100 per cent, private health facilities offer only 49 per cent instead of 100 per cent. In a study conducted by WHO, 71 per cent of the respondents showed that family planning services are least likely to be available in hospitals. Normal delivery services were available in about half of the facilities (53%). The study also found that 47 per cent of all health units can afford to take a patient to a referral facility for maternal related emergencies though services related to emergencies are not always

available. It is also least likely to have support for transportation for referrals (only 33%) at the lower-level health centres, although emergencies are not easily treated at these centres. More pressure is put on higher-level health centre units, such as health sub-districts, by the inadequacy of the referral system (WHO 2010, p. 4).

Upon implementation of the 1st National Health policy, Government of Uganda made a deliberate effort to upgrade and construct health facilities. However, basic infrastructure like means of referrals, adequate staff quarters, security (especially at night), water, communication and electricity are the major challenges to running 24-hour, quality emergency maternal and obstetric care services, especially in remote rural areas. Some of the examples include electricity and safe water supplies at the health facilities. About 24 per cent of health facilities and hardly 14 per cent of Health Centre IIs have electricity or a standby generator with fuel routinely available during health service delivery hours. Similarly, only 31 per cent of the health facilities have access though sometimes intermittent to year round water supplied by tap or available within a radius of 500 metres of the facility; the situation is worse at Health Centre IIs where only 23 per cent of the health centres have regular water supply. For basic patient amenities, only 42 per cent of the health facilities have a waiting area protected from sun and rain, a functioning latrine for clients, and basic cleanliness. The National Development Plan and various government budgets are addressing the said healthcare constraints by prioritising health infrastructure for sustained growth and favourable outcomes in the health sector (WHO 2010, p. 5).

Uganda's National Health Policy and Health Sector Strategic and Investment Plans define the package of health services expected to be provided at health centres and general hospitals. Parkhurst and Ssengooba (2009) assert that a client bypassing some levels of health facilities searching for better quality services is not uncommon despite government planning for various facilities at different levels. Kyomuhendo (2003) contends that some of the key reasons for bypassing proximal facilities include

compromising quality of healthcare in some health units as a result of lack of supplies and equipment plus shortages of human resources for health. Delivering in health facilities is avoided by expectant mothers because of abuse, coupled with disrespect by the providers of health services (MoH 2001, p. 25).

Remoteness and difficulty to reach parts of some districts are some of the challenges that exacerbate inadequate staffing in health facilities. These areas neither attract nor retain healthcare employees. Staffs in the healthcare units more often than not find it complicated to work in areas with no or scarce electricity, security, housing, means of communication, water, transportation facilities and schools for their children. Difficult working conditions also contribute to high levels of absenteeism of health workers, which is a major source of waste. In unannounced visits to a sample of government facilities in 2006, 52 per cent of the health workers were found absent instead of working. In an earlier study conducted in financial year 2002/2003, it was found that on any given day, 37 per cent of health workers were absent from work (Chaudhury et al. 2006, p. 26). In 2006, the Uganda Demographic Health Survey suggested that 40 per cent health worker absenteeism cost the Government of Uganda UGX 45 billion in the 2006/2007 financial year. From the 2010/2011 financial year, the government has developed a range of incentives for health workers in the hard --to-reach and hard-to-live-in areas to address the absenteeism challenges in health facilities (WHO 2010, p. 6).

There are consistent stock outs in the public health facilities and this has resulted into rapid rise in the number of clients seeking delivery of health services in the public sector but buying drugs and medical equipment in the private sector. Quite often, health consumers bypass the public health facilities and go directly to the private providers for medicines, vaccines, technologies and other health-related services. Equipment underutilisation in the government health centres has also been reported. According to Ministry of Health reports, some CT scanners are not used for years owing

to lack of trained personnel and in some government health facilities, some computers are not used owing to lack of staff training or lack of electricity (MoH 2011, p. 66).

In the National ICT Policy, Uganda endeavoured to incorporate ICT in the healthcare sector. In line with Health Sector Strategic Plan, the government embraces Information Communication Technology as a tool for advancing the quality of health service delivery. Health Sector Information Communication Technology policy, action plans and strategies have been developed (WOUGNET 2004). The 2010/11-2014/15 Health Sector Strategic and Investment Plan (HSSIP) for Uganda incorporated the Health Information System among the pillars and important strategic areas for investment (MoH 2010a). Whereas the Health Sector Strategic and Investment Plan does not include any specific indicator for a Health Information System, reporting against the other indicators requires a strong and functional Health Information System, hence investing in Health Information Systems vital (MoH 2011, p. 89).

The use of ICTs has helped medical workers, especially doctors, to consult and carry out diagnoses in remote areas, accessing medical information and coordination of research efficiently. The old Information technology like radios and television, have been of importance in prevention of diseases and responding to epidemics. Evidence on this has been more in Uganda's response to cholera, HIV/AIDs, malaria, many other diseases. Recently, the use of ICTs such as the internet, mobile phones and email has been prominent in medical consultations and sending alerts on health related matters to the public. In spite of ICTs use being of great benefit to the health sector of a low developed country like Uganda, its success is often surrounded with contradictions and challenges. These include, but are not limited to, technology compatibility, the working conditions, awareness levels and skills of the potential users, understanding of policy provisions amongst health care providers and the cost of ICT equipment. Currently, the poor state of Information Technology in Uganda makes it incapable of supporting the likely benefits it owes to render to the health sectors. Almost all hospitals are not

computerized and there is limited access to internet facilities. Access, installation and maintenance costs of internet facilities plus cost of equipment are equally high for less developed countries like Uganda (Litho 2010, p. 4).

Routine Health Information System in Uganda is paper based and some information systems in the national Health Information Systems use a combination of electronic records (through use of mobile phones, computers telephone calls, paper records and SMS. Paper-based and non-computerised forms are used for weekly data collection and generation of surveillance reports on outbreak of diseases. Information flow between the Ministry of Health and districts utilises a combination of methods, including the use of phones, SMS, mail etc. Data flows to the national and district levels from the lowest levels of communities. The Health Sector Strategic Investment Plan (HSSIP) provides that all providers and health facilities, whether private or public, are required to give regular data on provision of health services minimal data is available outside the public sector. The shortage of human resources for HIS is a challenge in Uganda's health sector. The organisational structure provides for an Assistant Records Officer at every health Centre III and higher, yet these positions are hardly filled owing to the challenge of staff retention. The wage bill also constrains the public health facilities and local governments from attracting and recruiting Assistant Records Officers of the right quality and in sufficient numbers (MoH 2011, p. 90).

3.3 Contemporary Debates on Health Service Delivery in Public Hospitals

It has been a struggle for various nations to design establishment and maintenance models of integrated health service delivery that can deliver a comprehensive range of services (Shi et al. 2014). The models are required for the promotion of health services to achieve the desired health outcomes and to respond to the populations' expectations (Bowling 2014). These networks rely on linkages between a diversity of private and public providers, with relevant and appropriate coordination, and a combination of primary care and other services that inform a population's health: specialised

programmes, hospitals, promotion and prevention, logistics and supplies as well as, in some models, social services (WHO 2015). To meet the high demand for equitable access to social health protection and care requires a high degree of social consensus. A relevant and emerging model of well-organised healthcare is that of 'integrated service delivery networks' (WHO 2011, p. 3).

There is a growing interest in more and better alliances and co-operation between the private and public sectors in the field of healthcare delivery, particularly in the developing countries. A range of explanations for this boost in interest can be readily identified. In the first place, it is an undisputed fact that the already scarce resources for healthcare are consistently dwindling and that linkages with the private sector may raise additional resources. There is also the gradual acknowledgement of the need to develop a systemic approach to healthcare delivery. The private sector is an important actor in this system, and can, under certain circumstances, substantially contribute to consistent development of health systems (Axelsson & Aelsson 2006, p. 81).

Healthcare performance and overall service delivery is informed by the efficient use of scarce resources, adequate quality of care to produce health benefits, access and use by those in need and organisations that can learn, improve and adapt for the future. Although better health system designs, advances in medical technology and the availability of more resources will always help, improvement in the performance of organisations that deliver health services offers important and significant promise. There is increased use of innovative strategies for improving service delivery, such as new information technologies, facility autonomy, the introduction of new community-based organisations (CBOs) and workers and results-based financing due to recent interest in strengthening the health system (Berman et al. 2011, p. 10).

Serious changes in the management and governance of public hospitals emerged in the late 1980s in Sweden and in the 1990s in England. According to Saltman and Figueras

(1997) as cited in Saltman et al. (2011), various reforms in the healthcare systems took place that resulted in the emergence of concerns about quality and efficiency. Basing on examples and lessons learnt from the private sector, arrangements for flexibility in service delivery were sought and introduced. Modern governance models which highlight and stimulate the autonomy of organizations were sought and the end result was the integration of effective and more varied health service delivery modes (Saltman et al. 2011, p. 2).

The current debate shows that in middle-income and developing countries, private sector healthcare delivery is more efficient, accountable and sustainable than in the public sector. Conversely, the provision of more equitable and evidence-based healthcare is believed to be public sector led (Berendes et al. 2011, p. 8.). This debate has generally generated sharp and antagonistic positions between those advocating for seeking services from public health facilities and against the supporters of private health service delivery. Advocates of private sector led health service delivery argue that the private sector is the main provider in cases of highly impoverished patients by seeking services from private clinics (Berendes et al. 2011, p. 8). It has been proposed that because of competition in the market, the private sector is more responsive and efficient and that this should trigger the elimination of government corruption and inefficiencies (Rosenthal & Newbrander 1996, p. 11).

In contrast, advocates of public health service delivery highlight inequities in accessing health services arising from poor patients' inability to pay for private health services. They argue that private sector often than not fails to deliver public sector led health goods that include preventive health services and poor coordination in planning with those managing public health facilities, which is a requirement in curbing diseases and health epidemics. It further argued that health efficiency tends to be lower in the private health sector facilities than in the public sector, coming partly from perverse incentives for unnecessary treatment and testing. Services offered by the public sector

have experienced more limited drugs and equipment availability and trained medical workers. Those who critique provision of health services by the private sector believe that the provision of healthcare by the public sector benefits the poor people and view it as the only way to attain equitable and universal healthcare (Basu et al. 2012, p. 5).

Geographical inaccessibility to health centres in rural areas and limitations in finances by the poor are the major roadblocks to health service provision. Under the National Minimum Healthcare Package that development partners and the Government of Uganda agreed on, the integrated approach to health service delivery was championed to focus on specific clusters that include community health initiatives for the control of maternal child health, communicable diseases disease prevention and health promotion (MoH 2009). There is a wide gap between the funds available and the funds required and this has greatly influenced the availability of health workers, drugs and equipment in most health service centres (Mukasa 2012, p. 10).

In Uganda, decentralised health service delivery for improved access, as well as cost-effective and quality services in rural areas are given priority. This is also aimed at solving rural health challenges and empowering the local governance system by building the capacity of rural health workers. It is presumed that under decentralised healthcare, health management committees are empowered, there great attention is paid to health promotion and there is increased support to disease prevention and the empowerment of communities and individuals to manage health-related challenges. From 1988, results have shown growing indicators for the number of antenatal care visits by pregnant women and improved accessibility to health service provision centres in the rural areas (Mukasa 2012, p. 11).

Inadequacy of the resource envelope is Uganda's biggest challenge to health service provision. Irrespective of the existence of many medical training colleges and nursing schools, the country still experiences shortages of health workers, with a ratio of one

doctor to 8,300 people. About 70 per cent of the trained medical doctors work in urban areas, which have 20 per cent of the national population, yet in the non-urban areas (rural), where 80 % of the population lives, the doctor-patient ratio is estimated at 1:22,000. Although government has trained village health teams (rural community health workers), the healthcare situation is still bad. According to various health performance assessments/surveys conducted by the Ministry of Health, there are numerous shortcomings in quality health service provision. There are complaints related to long waiting hours, poor sanitation, inadequate referrals, lack of drugs and equipment and rudeness by healthcare providers. This impedes patients in the rural areas from getting professional healthcare and compels them to have long travel times (Bulamu 2018).

Both public and private health sectors have deficiencies in equipment, supplies and knowledge about appropriate case management of acute illnesses. To significantly improve the capacity to handle such acute febrile illnesses among under five children, availability of supplies and diagnostics and training in proper case management need to be addressed in both public and private facilities. Sustainable interventions at community level, public and private facilities are critical for the improvement of case management of common childhood febrile illnesses. In addition, there is a need to study dispensing practices in both sectors (Buregyeya et al. 2017, p. 15).

The performance of healthcare in Uganda has been ranked by World Health Organization as among the worst irrespective of the government's financial investment in the sector over many years. Out of 191 nations, Uganda's performance position is 186th. Infant and maternal mortality are unacceptably high, with 16 mothers dying as they give birth and 131 per 1,000 children dying before the age of five. In the public domain, there are complaints that the country's health system, especially the government-run hospitals, suffers from shortages of medicine and a chronic shortage of trained health workers. The few trained doctors keep grumbling about their meagre pay and only 38 per cent of existing posts/vacancies in healthcare are filled. For many

health workers in rural areas, the morale and incentive to work have been very low, and over 70 per cent of doctors and 40 per cent of midwives and nurses in Uganda are believed to be stationed in urban areas, yet they serve only 12 per cent of the population of Uganda (Mubatsi 2013, p. 1).

Uganda's health service delivery is still marred by several challenges irrespective of the existing structures, reforms and policies. There are health centres from the villages down to the parishes that are intended to be in close proximity to the people who need the health services but they have been least effective. There are challenges such as high infant mortality rates; long distances to access health centres, high child maternal mortality rates, lack of qualified health professionals and poor health resources, and these have been key drivers of the high deaths rates. The country's health expenditure is not effective as money is invested in non-critical areas of healthcare. Sickness and ill health are also related to many factors, such as corruption, an unjust society, socio-economic inequalities, chronic depression and exclusion of the people from decision-making on health-related challenges (Komakech 2016).

3.4 Data Collection Methods and Analysis

This study used a cross-sectional case study design that adopted a qualitative approach to investigate innovative health service delivery in government hospitals in Uganda with specific reference to the Kigezi sub-region. A case study design is appropriate for making an in-depth investigation of an individual, group, institution or phenomenon (Mugenda & Mugenda 2003, p. 173). Saunders et al. (2007, p. 77) contend that this design provides a basis for in-depth analysis while answering the 'how', 'what' and 'why' questions. Because of the exploratory nature of the study where variables of innovative health service delivery were not well explained and the need for contextualisation (understanding context and environment as recommended by Sauro (2015)), a qualitative approach was appropriate.

The study reviewed the literature and in-depth interviews were conducted to collect data on innovative health service delivery. Interviews were conducted to supplement the existing literature on understanding of healthcare systems, the status of the healthcare system and the challenges in the healthcare system in Uganda. The key respondents, such as the Permanent Secretary, Ministry of Health, the Director and Medical Superintendent, respectively, of the two hospitals (under study), the specialised medical staff and two patients were interviewed. Data was analysed using ATLAS ti 4.1 software by coding, assigning specific codes and final analysis and producing work in text formatted documents. The analysis was intended to identify issues related to contemporary debates on innovative Health Service Delivery in public hospitals.

3.5 Discussion of Findings

This chapter focuses on healthcare systems in Uganda and contemporary issues (current debates). This section presents the findings from the field on the two issues and a cross-reference with the existing literature.

3.5.1 The healthcare system in Uganda

During interviews with most key respondents, it became clear that healthcare to them means health service delivery systems that the government has put in place to reach out to patients or those in need of medical care and health-rated attention to prevent or cure diseases. One of the key respondents described healthcare thus:

The channels or vehicles used to provide wellness or health either by maintaining it, prevention or restoration by using human resources, equipment, drugs, supplies and management of the system.

This definition/description suggests that healthcare is a system/channel consisting of interacting elements, namely people (human resources), machines, materials and management. This ties in with WHO's (2013, p.13) assertion that healthcare is the

improvement or maintenance of health through diagnosis, prevention and treatment of injury, illness and other mental or physical impairments amongst people. Delivery of healthcare is done by professional health practitioners and providers in allied healthcare fields. According to Kamaker (2015, p.1), a healthcare system comprises many factors involved in the healthcare services and products provision. It is the organisation of people, institutions and resources dedicated to the delivery of healthcare services needed by the people.

One respondent (medical officer) described it as:

....an organised system or continuum in a health system government uses to deliver or implement services to the people. It entails prevention, health education, rehabilitation and curative services.

The definitions above agree with Wax's (2019, p. 2) assertion that healthcare means every service and aspect in taking healthcare of the people. Healthcare has become conscripted by governments, media, politicians, political ideologies and third parties to neatly and conveniently define anything they want to give you. Healthcare is not something to be sold, bought or given, but an entire ecosystem with various unique moving parts which are only connected because of the patients' existence. The larger healthcare landscape includes all services, payment mechanisms and goods for health achievement and maintenance. It encompasses the hospitals, radiology centres, pharmacies, group purchasing organisations, offices of physicians, pharmaceutical organisations, laboratories, corporate health systems, therapy centres, pharmacy benefit managers, combinations of insurance and health insurance companies.

However, Habidin et al. (2015, p. 1) extend healthcare to economics, in contrast to the views of the key respondents. They contend that a healthcare system must concern itself with economic growth owing to demographic shifts as well as greater affluence and changing lifestyles. They assert that the healthcare industry must concern itself with critical issues such as medical error, patient safety, quality of care, efficiency and medical cost.

Respondents were asked about the status of the healthcare industry in Uganda and one of them (the Permanent Secretary Ministry of Health) stated:

For quite some time, the performance in Uganda's healthcare sector has not been so bad but not excellent. The country healthcare indices have come down but still Uganda is ranked among the best. Disease burden is high like in any other tropical countries. Our country's maternal mortality and infant mortality rates are coming down. Looking at healthcare investments by government, the focus has been on infrastructure. Focus now is on systems strengthening.

The statement of the respondent agrees with BULAMU (2019, p. 1), which states that in the world, Uganda was among the countries with the worst healthcare systems in the 1980s and 1990s but that the story had changed in 2019. The HIV/AIDS infection rates have dropped to 6.5 per cent from a high of 30 per cent of the population. Today, deaths per 100,000 live births have dropped from 561 to 343. There is a decline in maternal mortality rates by 40 per cent. On the contrary, BULAMU (2019, p. 1) still identifies weaknesses in the healthcare and states that inadequacies of the resource envelope constitute Uganda's biggest challenge to health service provision. Despite the existences of many medical training colleges and nursing schools, the country still experiences shortages of health workers, with a ratio of one doctor to 8,300 people. About 70 per cent of the trained medical doctors' work in urban areas where 20 per cent of the national population live, yet in the rural areas (where 80 per cent of the population live) the doctor-patient ratio is estimated at 1:22,000.

Kezala (2018, p. 2) also agrees that there is a problem with the healthcare situation in Uganda. He postulates that Uganda's quality in health service delivery today is generally poor. Media reports show that there are many complaints from users of healthcare systems and patients receive poor health services, especially in public clinics, hospitals and health centres.

3.5.2 Contemporary issues in the healthcare system in Uganda

During the interviews with the key informants, it was found that Uganda's healthcare is progressing in areas of infrastructure development (primary healthcare, tertiary healthcare related to specialised services and establishment of Health Centre IIIs); accessible distances of 5 km; health promotion for disease prevention, which emphasises health education, immunisation and hygiene; human resource development, focusing on training specialists to increase contact with communities at primary healthcare level; strengthening governance and performance management, focusing on accountability, proper strategic planning, policy development, results-based management, increased efficiency, thinking like the private sector, proper resource utilisation; and building health information systems to scale up planning and help user departments to utilise data for planning and development (e-Health policy and strategy). However, challenges were identified, as one of the interviewees (Head of one of the hospitals) stated that:

Much as there is progress in Uganda's healthcare in infrastructure, health promotion, disease prevention, cure and health education, there is underfunding of the health sector due to small resource envelope and limited Human capital and understaffing especially in upcountry hospitals and health centres.

This was echoed (in general terms) by Hout et al. (2016, p. 94), who asserted that, in practical terms, in Uganda's local governments, several factors inhibit better performance, effective engagement in service delivery and participatory public policy making. Central government funds are frequently delivered late and this is an acute and fundamental roadblock to local councils' performance improvement owing to the fact that local governments depend heavily on central government funds. Another constraint on the capacities of district and lower local governments to implement and monitor programmes is limited resources. This is worsened by the limited capacities of human resources to meaningfully and regularly engage with the constituents, especially those living in hard-to-reach and remote districts.

The views of the respondent are also consistent with some of the statements in 2015/2016–2019/20 National Development Plan II, one of which is that performance review of local governments indicates that they are faced with many problems in service delivery, majorly related to human resource capacity gaps, financing and resource mobilisation. Generally, local governments were constrained in service delivery, with staffing levels at 56 per cent for districts and 57 per cent for municipal councils. The human resource capacity gaps were particularly low within the cadres of doctors, midwives and medical specialists. Whereas physical access to medical facilities within a radius of 5 km had improved to 72 per cent in 2013, the health infrastructure in various general hospitals and other health facilities at lower levels continued to be outdated. The functionality of Health Centre IVs remained inadequate (GoU 2015, pp. 73, 188).

Another key respondent (member of Hospital Health Management Committee) referred to Uganda’s healthcare problems as connected to the health workers’ attitude and lack of coordination. She had this to say:

The other challenges in our healthcare are the attitude and mindset of healthcare workers. They know they are permanent and pensionable. There is also a challenge of fragmented systems as a result of many implementing partners and funders in health sector leading to poor or lack of coordination due to the different interests.

This echoes Kezala’s (2018, p. 2) observation that the issues related to the conduct of health workers: mistreatment of patients and caretakers; lack of commitment and care; lack of ethics; procrastination; disrespect for patients; theft of drugs and equipment; lack of a professional code of conduct; demanding bribes in exchange for services; and absenteeism and general corruption.

When asked about the current debate on Uganda’s healthcare, other respondents emphasised the supply of drugs and equipment. One pharmacist had this to say:

Government should provide enough drugs to the hospital to avoid sending us to private pharmacies and clinics. We spend the whole day lining up only to be told there are no drugs. At times we do not have money to buy them. More equipment and drugs are needed since most patients are poor.

The review of literature supports the view regarding the scarcity of drugs and equipment. As Biryabarema (2018, pp. 1-2) avers, in Uganda's public hospitals, there is a shortage of essential supplies and drugs needed in emergency cases, such as catheters, syringes, gauze, vaccines and drugs, which further lowers the quality of service delivery at the already struggling facilities that have suffered from neglect for years. Many patients in Uganda prefer to seek medical care at public health facilities, although private hospitals whose facilities and services are beyond the financial reach of many are also common. Beyond the scarcity of drugs and equipment, Bukenya and Ssemakula (2018:2) contend that there is commercialisation of the health sector and that the private sector deals in counterfeit drugs and engage in exploitation. They state that the heavy burden of disease in Uganda has persisted owing to the existing difficulty in accessing medicines, especially essential drugs. Over the years, this difficulty, especially in accessing medicines for non-communicable diseases (NCDs), has been worsened by the commercialisation of the health sector, which has become a cause for worry among the citizenry. This is because health has been turned into a private good as opposed to a social good provided by the state as a prerogative service. A report on access to medicines by Hazel Bradley and Richard Laing (2015) shows that 33 per cent of the expenditures on NCDs drugs are out-of-pocket expenditures, implying that those who cannot afford will such expenditures either opt for cheaper medication which is counterfeit and ineffective causing disease resistance, continue to struggle with the illnesses and hope for a spiritual miracle, or die as a result of the medicine stock outs and the state's ineptness in protecting the citizens' right to health. When patients are unable to get the affordable care they need from the public sector (government hospitals, clinics and government drug authorities), they turn to the profit-

driven private sector, which includes the pharmacies, clinics and non-conformist state-of-the-art private hospitals.

3.6 Chapter Summary

From the empirical findings and literature reviewed, it is noted that healthcare refers to an organised system or a continuum of activities in the health industry that focuses on how government can deliver health or medical services to the intended beneficiaries in a more efficient and acceptable manner. These services range from preventive to educative and curative services, and systems maintenance.

It is also noted from the empirical findings that Uganda's healthcare industry has improved in the fields of maternal mortality, infant mortality, infrastructural development, disease burden, health education and promotion for disease prevention, human resource development for health, health information systems, health innovations and governance/performance management (Kiberu et al. 2017, p. 4; Angelidis et al. 2016, p. 395; Huang et al. 2017, p.49). Despite these improvements, serious challenges were identified that impede efficient health service delivery. These were, inter alia, underfunding of the sector, shortage of drugs, human resource capacity gaps, a poor attitude and mindset on the part of health workers, commercialisation of the health sector, obsolete items and expired drugs, exploitation by the private sector, outdated health infrastructure and lack of coordination among health-implementing partners. In chapter four field and empirical findings are presented alongside literature on the effect of health service delivery innovations related to the speed of service (timeliness) of health services in government hospitals.

CHAPTER FOUR: EFFECT OF HEALTH SERVICE DELIVERY INNOVATIONS ON THE SPEED OF HEALTH SERVICES IN GOVERNMENT HOSPITALS IN UGANDA

4.1 Introduction

Information Technology (IT) has been the backbone of the healthcare industry in improving and maintaining both business and clinical operations (Paulus 2008, p. 1239). Whether IT is used for the reduction of medical errors or office automation, the success of its integration in healthcare relies on five constants. These are the role of project management; the implementation process; supportive leadership; involvement of the end user; and usage and maintenance of the budget for IT operations. When adopting and utilising new IT, the efficient and effective use of financial and human resources by healthcare organisations is greatly challenged by these constants (Westbrook et al. 2009, p. 201). Healthcare managers must collectively understand these constants and their interrelationships in order to adopt new technologies and achieve their goals of delivery of quality healthcare with solid technological infrastructure (Bernstein et al. 2010, p. 3)

Wall (2011) contends that hospitals in general have five main operational performance objectives, which include cost management (ability to deliver services at low cost), quality control (the ability to deliver services in accordance with specifications and without error) and speed (ability to respond quickly to patient demands by reducing service request and delivery lead times). Others include being flexible (ability to change the volume of services), being dependable (ability to deliver services in accordance with promises made to patients) and the time taken to provide, the service mix and innovative services (Payne et al. 2003; Asante Antwi 2014, p. 64).

This chapter presents literature on the current arguments by various scholars on how Health Service Delivery Innovations in the form of ICT and policies influence speed of health services in government hospitals. The empirical findings on the same objective are presented and discussed due to the existing gaps in literature. Section one presents introduction to the chapter. Section two presents how ICT innovations influence the speed of service in government hospitals. Section three presents the ways in which Decentralisation and Public Private Partnership for Health policies influence speed of delivering health services in government hospitals. Section four discusses the empirical findings on the health service delivery innovations in the form of ICT and policies and how they inform the speed of health services in government hospitals. Section five summarises the chapter and provides a linkage to the next chapter.

4.2 ICT innovations and their Influence on speed of Health Services in Government Hospitals

4.2.1 Definitions of terms and concepts

Information and communication technology (ICT) refers to components or infrastructure that facilitates modern computing. In spite of the non-existence of a single, universal and generally accepted definition of ICT, the terminology can imply devices, networking components, systems and applications that, when combined, allow interaction between organisations (governments, not-for-profit organisations, businesses etc.) and people in the digital world. ICT comprises both the mobile-powered sphere (wireless network) and the internet-enabled sphere. It also encompasses antiquated technology like radios, television broadcasts and landline telephones. All these are globally being used alongside robotics and artificial intelligence ICT pieces. ICT is more than the listing of components but rather the utilisation and application of the said components (Rouse & Pratt 2015, p. 1).

ICT innovation is a subset of innovations that fix artifacts and computational solutions into the space of innovations. It encompasses a series of products, the use of innovations over time such as diffusion, path creation-innovations, adoption and

incubation. It has a sub-class of information system innovation that is concerned with the innovative application of digital and communications technologies (Swanson 1994 in Kalle Lyytinen 2002, p. 3).

According to Smart and Titus (2011) as cited by AHRQ (2018), timeliness or speed of service in delivery of health services denotes system's ability to provide quick and fast care as and when the need arises. Delivering appropriate healthcare in a timely manner facilitates reduction in morbidity for highly chronic diseases like those related to kidneys and also reduces mortality rates (AHRQ, 2018, p. 1).

Electronic health (e-health) develops substantially when cost-effective and fast wireless and internet communication techniques are incorporated, according to Cheng (2006). In the past, the healthcare industry would overload healthcare providers and patients with paper-based documentation and improper communications such as mail, fax messages and phone calls. Worse still, there were manually prepared medical documents that sometimes led to serious consequences as they were prone to delays and errors. These processes wasted resources, energy and time. With the advent of e-health, solutions to such problems were provided via information sharing and exchanging over the internet that became faster, timely and safer (Balas et al. 1997; Kurtinaityt 2007, p. 1).

4.2.2 ICT innovations and their influence on the speed of health services at global, Continental and Ugandan levels

According to the European Commission (2004), most hospitals in member states of the European Union are well equipped with internet access, access to advanced networks and access to advanced equipment. The electronic health development trend at regional, national and local levels is focused on Integrated Healthcare Communication Systems (IHCS) and the provision of the greatly needed healthcare systems connectivity. This implies that the basis (technical) for the development of electronic business applications is evident in most instances and delivery of patient-centered care using the networks such as the internet is growing. In the European Union countries, about 48 per cent of medical practitioners make use of electronic health records and 46

per cent transmit patient-related data to other healthcare providers for continuity using the internet (Kurtinaityt 2007, p. 13).

Though limited in quantity and rigour, there is evidence emerging that ICTs can address the challenges of maternal and child health and infectious diseases in rural Africa. To date, hundreds of mHealth interventions have been piloted across the continent, for a variety of purposes, including remote consultation, patient data management, referrals, supply chain management and health worker training. Some countries, like Rwanda, have implemented a comprehensive national eHealth system, including programmes for tracking patient records, monitoring infectious diseases, managing drug and supply chains, telemedicine communications with health professionals in distant areas and e-learning and training for healthcare workers (Shekar & Otto 2012, p. 7).

Medical Health (mHealth) in Kenya relates to health access using mobile communication devices. The focal areas for application of mHealth, according to mHealth Info (2013) are: patient monitoring; awareness and education; diagnostics and point of care support; surveillance of outbreak of epidemics and diseases; Health Information Systems; emergency medical response systems; health financing and mlearning. The stated applications have different uses. Epidemic and disease outbreak surveillance tracks infectious diseases cases most times. The provision of continuous professional development and distance learning for health workers is a preserve of mlearning. Mobile payments through vouchers and smart cards are the role of the health financing area. Disease prevention, health promotion and community mobilisation or support to education programmes is the role of the education and awareness sector. The Health Information System links the procurement information to the entire supply chain. Disaster management, accidents and emergency obstetric care are taken care of in the emergency response system. Diagnostics and point of care support services cater for clinical care, screening and support in diagnostics. Patient monitoring focuses on surveillance of patients with respect to adherence to instructions from health workers (Salte 2014, p. 57).

Uganda's policy on ICT (drafted in 2001) was put in place based on the country's acknowledgement of the growing importance of ICT and following the contextual global thinking about the relevance of ICT in service delivery. The main objectives of the policy were to facilitate the implementation of the government's development programmes, like Poverty Eradication Action Plan and Plan for Modernisation of Agriculture. For the programmes to be delivered promptly and efficiently, the policy recognised the need for relevant and timely information whose availability would be through the use of new ICTs. The improved version of the National ICT Policy 2014 focused on the achievement of the country's vision but was specifically aimed at building a knowledge-based human capital, the promotion of innovation in social and economic systems, the expansion of ICT infrastructure and integrating it throughout the country, enhanced innovation and research in ICT services, applications and products, and an improved ICT environment and governance (Dutta et al. 2015, p. 81).

Although the policy does not specifically mention the use of ICT for health improvement in its objectives, the provision for providing better infrastructure and access to ICTs provides a linkage. Health service delivery can make use of technology in the hard-to-reach areas if resources and trained health personnel are available. Implementation and institutionalisation of Uganda's 2014 ICT policy, it is hoped, will supplement and boost the growth of ICT capacities in the country (Nabanoba 2005, p. 65).

The update and maintenance of the Health Management Information System (using new ICTs) promotes efficient health surveillance in Uganda. The provision of education to health practitioners and the facilitation of effective maintenance of that Health Management Information System are supported by new ICT usage (Nabanoba 2005, p. 19). Information collected (manually or digitally) in the country through the HMIS is utilised for the improvement of health units in order to provide quality and optimal curative and preventive health services (MoH 2001, p. 1). Computers are used in keeping health records, the inventory for drugs and equipment and other Health Management Information Systems in various organisations, including hospitals. Health for all through effective health service delivery is the long-term goal of any HMIS and

this can be achieved if the information systems provide relevant, accurate and timely information (Nabanoba 2005, p. 27).

4.2.3 ICT innovations and how they influence speed of health services in government hospitals

Unlike delivery of care, Health Management Information Systems are systems which are designed purposely to facilitate management and planning of health programmes. They operate using data that is needed by clinicians, health service users and policymakers to protect and improve the health of the population. According to the World Health Organisation (WHO), investing in Health Management Information Systems brings many benefits, which include monitoring the progress on achieving health goals, supplying communities and individuals with simplified and timely health-related information, improved quality healthcare provision, policy formulation on health, and the detection and prevention of endemic and emergency health-related problems (Kumar-Sinha 2010, p. 231).

Health Information Technology implementation in the healthcare setting has increasingly been on the agenda for many countries in the past few decades. Today, with the challenging and ambitious healthcare scenarios, healthcare practitioners and providers rely on HIT for quick and accurate health information as opposed to the past when HIT was used only for financial and administrative purposes. The healthcare sector has always been dependent on technologies, and WHO contends that they form the backbone of the health sector in disease and illness diagnosis, prevention and treatment (WHO 2004). In the encounter between patients and health workers, HIT allows healthcare providers in the collection, retrieval and transferring of health-related information. Wilson and Smith as cited by Kumar-Sinha (2010) suggest that in the public health sector domain, innovative use of computer technologies is among the advanced ways to improve timeliness, quality, clear, proper presentation and usage of relevant information (Kumar-Sinha 2010, p. 224).

Technology improves data linkages between the hospital and its central clinics with primary health clinics situated in remote locations. This data network means patients do not have to recall details or repeat their medical history if they go to any of the healthcare delivery units and medical staff do not spend a great deal of time re-gathering information that is already available in the central database. It also allows the use of tele-medicine and video links to communicate in various ways, such as holding virtual consultations with patients in remote areas and having shared on-screen consultations with remote staff and specialists, which reduces the time and costs involved in travelling (Wigglesworth 2017, p. 1).

According to World Health Organization, when used efficiently, Hospital Information System enhances service management and delivery; improves accessibility to classified analysed and sorted information about patients by doctors; it can improve accessibility to remote data that guides in developing comprehensive health policies; ensures effective and efficient financial administration; improves patients' diet management; improves monitoring and evaluation of usage of drugs; reduces transcription errors; and provides healthcare administrators with a wide picture of hospital growth and direction (WHO 2012; Asante Antwi 2014, p. 65).

Health Information Technology is a component that enables health services delivery to far-off places and provides systems and tools that are fundamental. The evolution and growth of electronic health records and computerised Health Information Systems have facilitated access to and the sharing of patients' information during specific period of time. HIT also provides support for continued home-based care and for chronic illness patients. This technology can be integrated into telemedicine to secure patients' information located in outreach rural areas (WHO 2012, p. 21).

The use of HIT helps clinicians to receive up-to-date, timely, reliable, complete and relevant information at all levels, be it local, intermediate or central, in an effort to improve delivery of health services and the achieving health-for-all national goal. HIT applications also help in assessment of performance of health workers and tracking the

patients' health status under their care. Health Information Technology helps in the continuous professional development of health workers when it is linked to and integrated with an online education system. The applications also assist the healthcare providers in avoiding and reducing medical errors by prompting reminders and alerts about the health status of their patients (Kumar Sinha 2010, p. 232).

Gaponova (2017) contends that the application of Health Information Technology systems in health services delivery may save many lives and make access to health services easy since many patients have had to undergo long procedures and walk long distances in search of health information. Access to online professional medical services for patients in the rural areas will be possible once the ICT systems are in place. Digitising the healthcare system will help medical practitioners and all health workers to access the medical records of patients and also facilitate efficient health services delivery (Gaponova 2017, p. 8).

The urgent and dire need for healthcare units to have Health Information Systems in current times is a result of using huge and ever-growing information volumes to make health decisions that are used in administrative and statistical records, therapy and diseases diagnosis. Similarly, reliance on technology by health professionals is steadily rising owing to the patients' acuity and complexities. This technology (Health Information Systems) is needed in patients' recovery, recuperation, diagnosis and patients' disease and illness management (Sandelowski 2000, p. 149).

In a research done by Eichelberg et al in 2006, they illustrated how electronic health records (EHR) are part of the Health Information Management System that contains such information as laboratory results, observations, treatments, administered drugs, therapies, diagnostic imaging results, legal permission and allergies and information related to patient identification. Garets & Davis (2005) also contend that EHR are electronically stored information repositories that show the patients' status and lifelong healthcare. The manner in which they are stored may serve legitimate accounts. Storage of this information is done in various proprietary formats and through many of

the medical information systems available on the market. The creation of EHR greatly contributes to more efficient and effective patient care by providing relevant medical information on patients at different medical sites. The exchange and transfer of patients' information electronically between various sites of medical care accelerate service delivery and reduce the number of repeated prescriptions and medical tests. The reduction of errors, improved productivity and patient care benefits are facilitated by the electronic/automatic reminders due to the use of EHR (Eichelberg et al. 2006; Gaponova 2017, p. 28).

Electronic health records and the use of Health Information Systems improve the quality of healthcare with the use of high analytical capacities and rich expertise from medical practitioners. The trust of patients in a health facility increases because patients are able to read diagnosis results with recommendations from doctors and all information on the patients' cards and other extracts. It is, therefore, important to update and transform the way medical information has traditionally been searched, retrieved, collected, analysed and disseminated by taking advantage of modern methods such as EHR (Shortliffe & Cimino 2006, p. 18).

4.2.4 mTrac innovation and the speed of health services in government hospitals

mTrac is an ICT technique that is built on a web based data generation, aggregation and analysis platform. It is an electronic health device/solution that facilitates regular surveillance and monitoring of diseases, drug stock outs and delivery of healthcare services. This is done through the delivery of short messages on phones and other devices. mTrac was originated by Ugandan government in the Foundation for Innovative New Diagnostics and Millennium Villages Project as a pilot project and was later launched and scaled up in December 2011. The initiative is fully owned and operated by the government. It was rolled out in four phases, with approximately 28 districts being covered during each phase. By 2013, African Development Bank had recognized Uganda's Ministry of Health for introducing mTrac and was ranked among

the top 10 successful e-health initiatives in the country (Franz-Vasdeki et al. 2015, p. 36).

mTrac Solution is operated by hospital/health centre and community health workers to submit weekly reports (at no cost) on ACT drug stock and disease surveillance using their own mobile phones and an installed Health Management Information System. The Solution took advantage of the quick growth in mobile phone penetration, ICT, network coverage and telecommunication infrastructure. The Ministry of Health, through District Health Teams and other national stakeholders, manage the weekly information on a Web-based dashboard by generating reports to help in monitoring and planning for health service delivery. mTrac is a toll-free SMS-based hotline and ensures anonymity when reporting healthcare delivery problems to the community and health workers. The data generated is entered into the mTrac system that produces a report on drug stock outs and disease surveillance (Marshall 2013, p. 20).

mTrac Solution has in-built intelligence features which assist health workers in getting summaries of the reports submitted. The features enable administrators to display any potential errors and send feedback directly to the health workers at the facility. Reminders of late submission of weekly reports are automatically sent to health workers' mobile phones. The district dashboards are configured automatically to collect, clean, verify and analyse data and then generate aggregated reports for Ministry of Health and District health teams. This facilitates easy identification of the outbreak of diseases, consumption of drugs and trends of diseases. Well informed decisions and interventions are taken as well at district level owing to this information (Sujatmiko 2015, p. 46).

The usage of reports generated from mTrac by district health teams facilitates improved quality and timely reporting by the technical and field support staff at health facilities. Village Health Teams (VHTs) at community level communicate weekly on cases like malnutrition, signs of fever and the availability of artemisinin combination therapies

(ACT) in stock. A combination of community data from VHTs and from health facilities gives a more accurate picture of ACT requirements (WHO 2010, p. 16).

The Ministry of Health (at national level) uses the mTrac device data to improve the monitoring of diseases, drugs and the entire health service delivery, which eventually facilitates accountability systems. mTrac improves accuracy of data, reduces waiting times, raises cost efficiency and streamlines health service delivery processes. The African Development Bank (ADB) report of 2013 rated the system of mTrac among the best 10 projects under eHealth. Evidence available shows weak responsiveness of health systems and low reporting rates by end users. There are inefficiencies in the supply chain that lead to inaction on reports of drug stock outs. These problems highlight the fact that the success of innovations in mHealth largely depends on health system capability in which they are initiated (Scrutton et al. 2015, p. 72).

The use of the mTrac device to monitor vaccine supplies helped the Ministry of Health to address stock outs and this raise the DPTI immunisation coverage within one year to 98 per cent from the previous 52 per cent. The system integrated accountability and governance through the use of public dialogue sessions, anonymous hotline calls and feedback from citizens. This enabled district health management teams to address community members' issues, especially those related to the absenteeism of medical personnel and healthcare quality. During Ebola outbreak in 2012, mTrac system released alert SMS messages to various health workers in Uganda, making available hotlines for the response team at national level, indicating suspected cases and affected areas, describing symptoms, and providing case definitions, procedures for isolation and locations of the nearest healthcare facilities (UNICEF 2017, p. 1).

mTrac, which is available on RapidPro, is an innovative way of using mobile telephones and SMS messages to digitalize transfer data into a Health Management Information System. The initial focus of launching mTrac was on speeding up the HMIS reports processed weekly on outbreaks of diseases and drug stock outs, and on providing communication mechanisms for reporting challenges of health service delivery and

empowering district health teams with timely information for taking action. Avoidance of unnecessary stock outs and the promotion of transparency and accountability were the main aims of mTrac because HMIS officers and biostatisticians are enabled to view the trends of incidences of diseases, drug stock levels and the performance of health facilities. Basing on data generated by the system, district health teams are equipped to make informed decisions on the initiation of responses on diseases outbreaks and drugs redistribution (UNICEF 2018, p. 2).

Prior to the introduction of mTrac, there was difficulty in contacting health workers so that they could provide the real-time critical information on emergencies. With mTrac, the Ministry of Health national response team can promptly alert health workers using SMS messages on a disease outbreak and the symptoms of the disease, the location of the nearest health unit, the isolation procedures and the telephone hotline to report suspected cases. When cholera and Marburg broke out, Ministry of Health and District Health Teams were able to send SMS messages to VHTs and most health workers and respond to the outbreak quickly (MoH 2019, p. 3).

Drugs management and operations have been standardised owing to the introduction of mTrac. Expenditures on fuel and other trips to reach the National Medical Stores and the Ministry of Health for enquiries are minimised since SMS messages trigger immediate responses, which finally leads to the delivery of equipment and drugs to health facilities. mTrac supports timely data collection on family health day campaigns in Uganda that has been rolled out in 28 districts. The data collected has helped in improving health planning and decision-making (UNICEF 2018, p. 1).

4.2.5 U-Reporting innovation and speed of health services in government hospitals

A U-Report is a text-based service mobile phone that is designed to collect opinions from young people on community issues and concerns they care about in a bid to create positive change and development that is citizen-led. To join the programme, the U- Reporters send an SMS code named 'Join' to a designed code or following a U-

Report tweet that respond to partner field training or an advertisement. Basic demographic questions about district, age, gender, village and knowledge about U-Report are put to the applicants. These questions enable the analysis of responses and targeted messages (UNICEF 2015, p. 10). U-Report was originally published on 13 November 2014 in Nigeria by Alex Court on CNN.com. The system has been credited for debunking Ebola myths. The technology allows people to ask questions and receive responses in real time and the users can rebroadcast (UNICEF 2016, p. 1).

Uganda launched U-Report in May 2011. By 2015, there were over 700,000 users in 14 states, including Nigeria, Uganda, Indonesia, Burundi and Zambia with an average of 24 and 40 per cent being females to males. UNICEF has received over six million messages sent by U-Reporters with mapped data in real time. Worldwide, over 30,000 young people use U-Reporting weekly (UNICEF 2017, p. 10).

4.2.6 OpenMRS innovation and speed of health services in government hospitals

OpenMRS was pioneered and first developed in 2006 in Rwanda, South Africa and Kenya to give care to Tuberculosis and HIV/AIDS patients. As an electronic health record open platform builds medical record applications. OpenMRS is nowadays helps in management of primary healthcare and other diseases in over 60 underdeveloped and developing economies. The OpenMRS electronic health record (HER) is best programmed to manage records of patients since it provides for immediate information sharing between infectious and non-infectious and infectious areas (using local wireless network) and provides access to full medical histories (Eysenbach 2017, p. 7; Mamlin et al. 2006, p. 529).

OpenMRS is easy to access, just like other open Health Information Systems. Many organisations can afford it and download it from the Web and there exists an opportunity to test the system and ensure it meets their needs prior to widespread deployment. The platform is also available through apps for both iOS and Android

devices, allowing for mobility and portability. The other widely-touted feature of OpenMRS is that it is open to being customised by the users with no knowledge of programming. OpenMRS is far easier to use than any other software options although skills in system analysis and medical informatics are greatly necessary. It is coded using a 'concept dictionary' which stores test results, diagnoses pharmacological information and it does not need more programming to add new forms or diseases. There are enhanced modules available for specific uses as well, which provides for another level of customisation (Aminpour et al. 2014, p. 58).

4.2.7 HMIS innovation and speed of health services in government hospitals

According to Vest and Jaspersen (2010), Health Management Information Systems are among the many building blocks that are vital for strengthening health systems. It is a system for collecting data that was designed specifically for supportive management, planning, decision-making and running of organisations and health facilities. HMIS takes care of data needed by policymakers, users of health services and health providers for improving and protecting the health of the population. This system collects data and manages it well for use. Stakeholders and many decision-makers can evaluate their progress in achieving set health targets and goals using HMIS. (Kabagambe et al. 2008, p. 10).

The main goal of HMIS is the provision of accurate and timely health information that leads to improvement in quality healthcare planning and disease diagnosis. In terms of health coverage, many healthcare users access the services nationwide. Good HMIS are comprised of two main sub-systems, namely the patient management information system and the hospital management information system. Hospital management information systems handle the management of hospitals' clinical information with respect to administration, finance, logistics, operations, human resources, management of stock, accounting, asset management and records management. The patient management information system handles patients' information such as bills, treatment, prescriptions and biodata (Macharia & Maroa 2014, p. 2).

The first attempt at establishing a Health Information System (HIS) in Uganda dates back to 1985. This first HMIS was mainly designed for capturing and analysing data concerning specific communicable and non-communicable disease. It was still a vertical – or disease-oriented – approach, which soon appeared to be too narrow and specific. The need to collect and generate more useful information with a broader impact on management aspects called for a first revision of the HIS in the year 1992. This first revision process introduced an integrated horizontal approach whereby more information on management aspects could also be collected and analysed. This comprised data on human and financial resources, drugs and medical equipment in addition to the routine diseases and activities reports (Mandelli & Giusti 2005, p. 1).

Uganda's 1997 model of HMIS relied more on manual and paper-based tools. These included manuals, databases, registers and reporting forms. All these tools contained different sets of health information and were filled in by lower-level health workers, who compiled and recorded information on many forms. Summarising and tallying health information consumed a great deal of health workers' time owing to the big numbers of registers and forms. This greatly affected the reporting system and accuracy of reports at different health levels because of being labour-intensive. Health management information systems data collection and reporting tools were later reviewed in 2000/2001 with a view to incorporating major health and management aspects. The HMIS has been revised to cater for emerging Ministry of Health needs and to harmonise reporting systems. Stakeholder concerns in areas of malaria care, tuberculosis and HIV/AIDs are also taken care of (MOH 2010, p. 15).

4.3. Decentralisation and Public-Private Partnership Policy innovations and their influence on speed of Health Services in Government Hospitals

4.3.1 Decentralisation policy and the speed of health services in Government Hospitals

According to Okidi and Guloba (2006), to different people decentralisation means different things. Decentralisation is defined as transferring decision-making, planning,

management and administrative authority to local governments from the central government. Muriisa (2008) argues that the aim of decentralisation is to speed up service delivery, make services more responsive, enhance efficiency, free accessibility to service provision and free local governments to make and own their decisions (Lutoti et al. 2015, p. 64).

Uganda's decentralised system of governance has been taken as a model for development by many people. There was a provision for regional governments in the post-independence constitution. When the constitution was abrogated in 1966, regional governments were abolished and all powers were taken over by the Office of the President. Throughout the 1970s, regional governments named provinces and manned by governors under the superintendence of the president were reintroduced. In 1980-1992, the local governance system, running from village to district level, was put in place as a form of devolution. Later in 1993, the Local Governments Statute was enacted by Parliament that paved the way for a proper decentralisation policy. The central government transferred functions, services and powers gradually to the district local governments with the aim being: bringing administrative control and political powers to the actual point of delivery; improving efficiency and accountability in public service delivery; and promoting people ownership feelings in connection with projects and programmes that are implemented in their areas (Nabanoba 2005, p. 62).

Contextually, the organisation and management of delivery of national healthcare services under the National Health Policy of 1999 and the decentralisation policy were restructured by the government. Districts and other lower local governments were given powers to implement the National Health Policy; carry out health promotion as well as planning and managing district health services; provide disease prevention services; provide preventive and curative services; control communicable diseases; provide health education; and collect data on health, management, interpretation, communication and utilisation. Health policy formulation, capacity development, quality assurance, resource mobilisation, standardisation, technical support, national coordination services provision, research, monitoring and evaluation of the performance

of the health sector are functions that were retained by the central government (WHO 2006, p. 23).

As a result of decentralisation, health service delivery in Uganda was devolved to health sub-districts and health service provision zones within the country. The health sub-districts are functional subdivisions in the health systems of local governments purposed to decentralise the administration of day-to-day health service delivery from districts to lower local governments and administrative units. The arrangement was aimed at improvement of health services management and planning in districts and increasing access to and equity in essential services provision. It is hoped that there will be optimal balance between health promotion, disease prevention, curative care and fostering of community engagement to plan, manage and deliver health services (Nabanoba 2005, p. 62).

4.3.2 Public-Private Partnership for Health and speed of health services in Government Hospitals

According to the PPDA Act, 2015, public-private partnership (3Ps) in Uganda are considered as commercially related transactions between government or public entities and private parties where the latter (private providers) assume the functions which were hitherto performed by the former (public sector) in an agreed period of time (PPP Act 2015, p. 10). In the United Kingdom, public private partnerships are referred to as deliberate attempts to involve the private sector in the designing, building, financing and operating public facilities, purposed at delivery of better quality and better maintained facilities which result in value for money (Home Treasury 2015, p. 2).

The figure below illustrates the PPPs and actors and their roles in public health service delivery in developing countries:

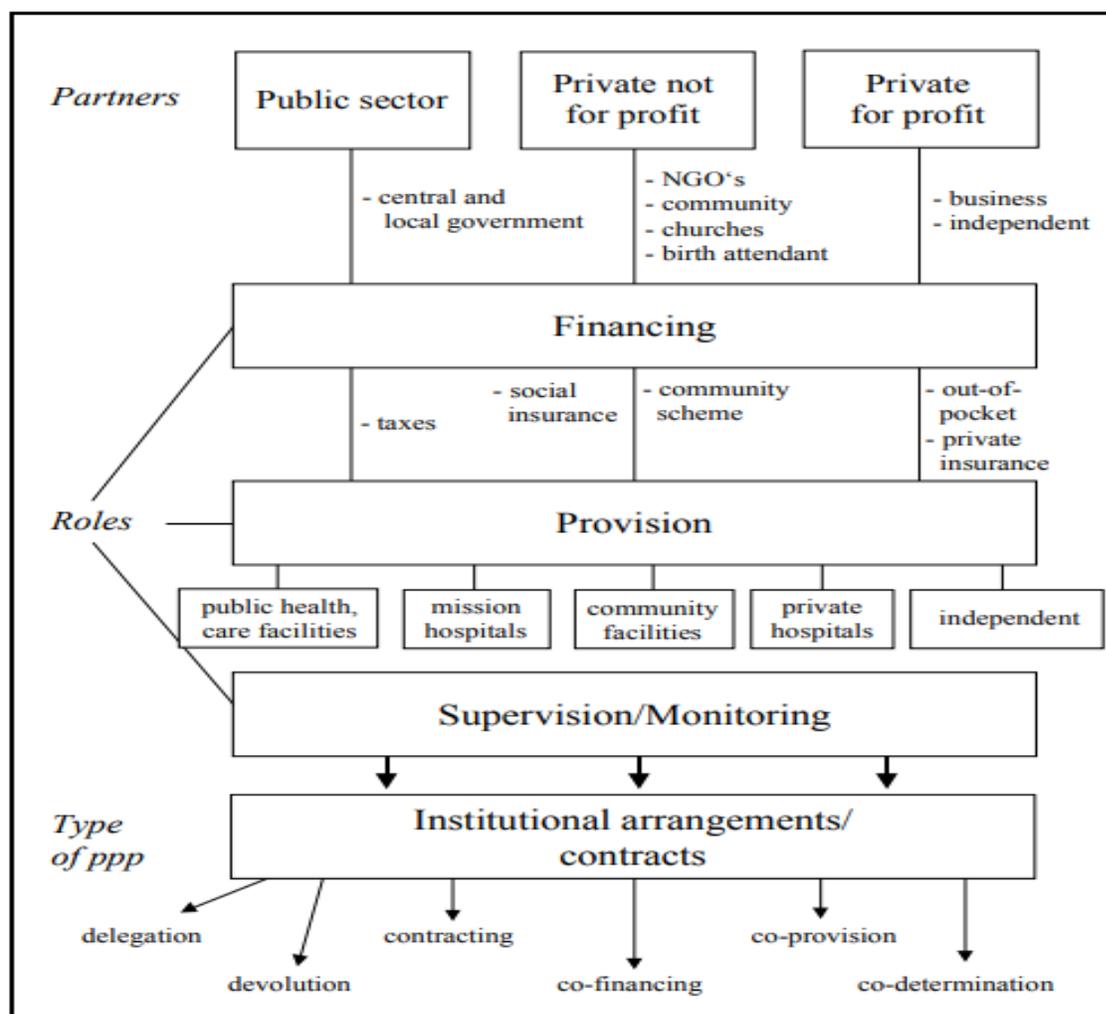


Figure 4.1: Conceptualisation of PPPs in the health sector

Source: Jutting, 2009

Over the last decade, there has been a change in roles between the private sector, the state/public sector and the third party sector. This has been caused by the rapid growth in international development partnerships. In the education and healthcare industries, PPPs have prominently been delivered, redefined and evaluated as key to service delivery in developing economies. Public-private partnerships are seen as offering potential solutions to the inequities in service provision and access to services offered

by the government. They ensure that resource utilisation is effective and equitably targeted (Gideon & Unterhalter 2017, p. 136).

Public and private collaborations or partnerships have emerged as new mechanisms for addressing constraints in the implementation of government programmes. There is growing realisation that, given the opportunity, the private sector can contribute immensely with its expertise. Involvement of the private sector in operational aspects can reduce the bureaucratic aspects (Ranganadhan 2018, p. 32). Public-private partnerships under governments are looked at as ways in which to expand the quality of health services and reduce budgetary pressures. They assist in increasing management capacity, reducing business risks and leveraging capital, which are viewed as private sector best practices. Public sector's increased interest in the adopting PPPs arises from the high costs of health service delivery within an aging population with chronic diseases and the rapid advancement in medical technologies. Though historically embedded in the traditional sectors of water, energy and transport, PPPs have been increasingly applied in the social sectors and, particularly, in health services delivery (World Bank 2016, p. 1).

Lately, PPPs worldwide have become a popular means of solving healthcare problems. According to Barr (2007), there is growing enthusiasm about leveraging PPPs to improve health and welfare service delivery. Globally, organisations like the World Health Organisation, which plays an important role in health policy formulation and putting in place standards for health, have encouraged and welcomed partnering of the state and the private sector in providing, financing, researching and delivering healthcare services (Baru & Nundy 2008). The application of PPPs in the health sector takes on various forms, depending on the responsibility and risk taking expected of the private and public sectors. Frequently, PPPs have shared risks, objectives, rewards and other benefits depending on the type of agreement and arrangement arrived at (Nikolic & Maikisch 2006 cited by Torchia et al. 2015, p. 239).

According to Gwatkin (2003), the development of partnerships with the private providers and NGOs by governments is an alternative to direct service delivery. He contends that NGOs in many countries get support from the public to deliver health service in societies that have vulnerable and poor people. Many NGOs may serve the poor people better than the government or the public sector since they closely work with the vulnerable groups and are deemed better equipped. In terms of flexibility and agility, NGOs are seen as better placed and are more accountable with less bureaucracy and red tape (Mayanja 2005, p. 41).

Gimsey and Lewis (2004) as cited by Torchia et al. (2015) assert that the major objective for implementing PPPs is related to saving costs which arise in the delivery of the project as opposed to the use of the traditional methods. The innovations, efficiency and effectiveness benchmarked from the private sector contribute to the cost saving. In the private sector, greater operational efficiencies are achieved in asset acquisitions and the delivery of services using high experience, innovations, expertise and technology. Profit maximisation and lowering operational costs are achieved throughout the project life when PPPs are applied (Torchia et al. 2015, p. 254).

Globally, PPPs facilitate the extension of many services to rural areas and low-income groups. In countries like Bolivia, an NGO (not-for-profit) was incorporated in the arrangements for Public Private Partnership for Health (PPPH) to provide quality health services to rural low-income earners. Currently, the organisation serves more than 500,000 low-income earners in Bolivia at lower rates than those of government. The number of health centres served/owned has shifted from two in 1985 to 2,000 in 2005. There is growing trust in the health workers by the communities and clients due to health efficiency and the commitment of the staff. Similarly in Ghana, NGOs (not-for-profit), especially faith-based ones, provide over 30 per cent of the healthcare seekers in the rural areas with health services under the popular code '*mission sector*' (Chandana 2000; Mayanja 2005, p. 40).

In Uganda, PPPH was introduced by the Ministry of Health in 1997. In July 2000, Parliament made a resolution to support the implementation of PPPH. The private sector is involved in the PPP via the provision of health services under private for-profit and private not-for-profit arrangements, which can be categorised under a Private Finance Initiative (PFI). Private for-Profit Providers are both informal and formal. The informal ones are more involved in traditional healing, shops and general merchandise (Masereka 2009, p. 1).

The literature reviewed on how Health Service Delivery Innovations was found inadequate to show how such innovations influence the Speed of Service in Government Hospitals. Most of it does not spell out the quick and fast care as and when need arises for health care seekers. Instead, most authors concentrated on how ICT innovations facilitate timely collection of health information, retrieval and transfer, record keeping, information distribution to hard to reach distant areas, virtual consultations and monitoring and reporting on stock outs. Similarly, literature on PPPs and Decentralised Health policy innovations was limited to the intended objective of bringing services near to the people and engaging the private sector for speedy delivery of health services. However, it (literature) fell short of showing how health care users get quick/speedy services as a result of such policies. These gaps prompted conducting of interviews with various respondents. This is in line with Kodama (2018. p 99) who asserted that much as ICT and mobile communications promote strategic collaborations and help consumers to manage their health and lifestyle data, they do not address fast care at the point of need of curative services. Waldman et al (2018.p 31) equally confirm that the speed of health service can be hampered by gatekeeper cultural issues, power inequalities and provider knowledge and expertise.

4.4 Empirical Findings on the Health Service Delivery Innovations and how they Influence the Speed of Health Services in Government Hospitals

4.4.1 ICT Health Innovations and their influence on Speed of Health Services in Government Hospitals

According to the field findings, ICT health service delivery innovations have helped in facilitating the speed of service as they help in the quick aggregation of data and quick reporting, which leads to quick response and corrective action. One respondent (Specialized Medical Officer) had this to say during the interview:

ICT platforms have helped on improving reporting system from service providers. It is easy to report fast. Within a short time, Ministry of Health is aware of what takes place at a facility and feedback on the situation at hand is instant as long as internet is available. It is now easy to follow up patients on chronic care clinics and those with significant conditions and the relevant service is delivered immediately.

In support of the views above, one Hospital Manager confirmed the importance of ICT innovations on speed of service as follows:

mTrac is a perfect tool for surveillance. A case is reported and everyone is alerted. Samples are sent to the Ministry of Health and the National Laboratories who also respond very fast. It is a quick system that facilitates quick service delivery. I would give it 100 per cent. Data-generated information is got in time/instantly like on disease outbreak, then it is forwarded to higher authorities and response is fast. This helps in taking corrective action on areas identified immediately.

The statements above were corroborated by another respondent, who said ICT innovations do not only facilitate fast service delivery but also monitoring and intelligence. She stated:

Of course ICT innovations have helped in generating real timely data, improved quality of data generated, facilitated quick reporting, easy access of healthcare data and enabled fast monitoring and evaluation of health facilities. With ICT, you have an

intelligence system. You can tell which patient visited a facility, when the patient was attended to, who attended to the patient and how many visits have been made.

The responses above are consistent with the views of many scholars and publishers like Asante Antwi (2014), who confirm that when using Health Management Information System, it health workers find it easy to access to patients' information, there is efficient and accurate record keeping, there are minimal errors, proper monitoring of drugs and improved health service delivery (Asante Antwi 2014, p. 65).

According to Sujatmiko (2015, p. 46), mTrac Solution has in-built intelligence features which assist health workers in getting summaries of the reports submitted. The features enable administrators to display any potential errors and send feedback directly to the health workers at the facility. Reminders on late submission of weekly reports are automatically sent to health workers' mobile phones.

Despite the quick data capturing, reporting, monitoring and intelligence contributions, the ICT innovations have challenges. The evidence available shows weak responsiveness of health systems and low reporting rates by end users. There are inefficiencies in the supply chain that lead to inaction on reports of drug stockouts. These problems show that the success of innovations in mHealth largely depends on health system's strength in which they are implemented (Scrutton et al. 2015, p. 72).

The field findings also showed that ICT innovations in health service delivery facilitate and enable the procurement and the logistics function to work faster in ordering, re-ordering, the detection of obsolescence and item distribution. They also facilitate fast recruitment of health workers. This was evidenced by the following statements from the respondents. One pharmacist said:

RX Solution increases speed of service because it facilitates faster making of orders based on data from monthly reports. The system is computerised and helps in instant stocktaking compared to previous times when it would take many days. It is used in stores for logistics management and placing of stores requirements (e-ordering). It helps

in generation of reconciliation reports hence capturing stock levels. It is important in detection of obsolete drugs.

On facilitating recruitment, another respondent (Specialised medical officer) affirmed:

Health electronic recruitment is perfect and extremely fast. One can apply while at home as long as you have internet. No one can reroute or throw away your application. Equal chances are available for all. One can easily follow up.

The above statements are consistent with Macharia and Maroa's (2014, p. 2) assertion that hospital management information systems assist in handling the management of hospitals' clinical information with respect to administration, finance, logistics, operations, human resources, the management of stock, accounting, asset management and records management.

This is further supported by UNICEF, which stated that the avoidance of unnecessary stock outs and the promotion of transparency and accountability were the main aims of mTrac because HMIS officers and biostatisticians are enabled to view the trends of incidences of diseases, stock levels of drugs and the performance of health facilities. Because of the availability of data generated by the system, district health teams are equipped to take informed decisions on the initiation of responses to diseases outbreaks and drugs redistribution (UNICEF 2018, p. 2).

4.4.2 Decentralized Health and Public Private Partnership for Health Policy Innovations and their influence on Speed of Health Services in Government Hospitals

The respondents were also asked whether innovative policies for health service delivery have an influence on the speed of service in government hospitals. One of the responses generated from a member of Hospital Health Management Committee shows that it is a good policy but has associated challenges, as borne out below:

Decentralised health as a policy helps all stakeholders in communicating with each other and sharing of information easily and quickly at all health facilities, hence quick response

and the policy creates quick decisions since there is autonomy to plan and budget but there is problem of quality supervision and service delivery.

This is consistent with Muriisa's (2008) argument that the aim of decentralisation is to speed up service delivery, make services more responsive, enhance efficiency, free accessibility to service provision and free local governments to make and own their decisions (Lutoti et al. 2015, p. 64).

Decentralisation of health service delivery was intended to lead to speedy and improved planning/management of District Health Services. The policy was introduced to lead to increased, equitable access to basic services and to facilitate quick community engagement in management, planning and delivery of health services (Nabanoba 2005, p. 62). However, one of the respondents (Permanent Secretary) remarked:

Decentralised health policy is a good idea but in practice it is not okay. The District Health Officer is answerable to the District Chief Administrative Officer. Ministry of Health expects the Chief Administrative Officer to report yet he is not obliged to. The Regional Referral Hospitals are supposed to oversee General Hospitals but there are no clear guidelines. District Health Officers have more control on the General Hospitals in their districts. They can even bar Regional Referral Hospitals from visiting these general hospitals.

Asked to talk about the contribution of PPPH policy on speed of services in government hospitals, a member of the Hospital Health Management Committee stated:

The policy of Public Private Partnership for Health (PPPH) is not well embraced in the health sector in Uganda. To some extent, this policy exists but not well pronounced. Private not-for-profit (PNFP) and private for-profit (PFP) hospitals exist where government deploys staff and allocates some funds. The Boards set care charges/prices. Government puts in money as a subsidy.

Another respondent (Specialised Medical Officer) remarked:

Public Private Partnership for Health is not a well-entrenched policy. There is improper documentation and practice. There is some payment of user fees for private

rooms/wards but services are not paid for. Only a small charge on operation of a patient is done. We have isolated cases like USAID project on servicing equipment like radiography equipment, Lancet laboratories in private wings but this is not clear PPPH.

Although Rowe (2006, p. 209) and Plummer (2002, p. 24) as cited by Minnie (2011, p. 122) argue that PPPs foster well-coordinated public services, secure efficiencies both in terms of improved delivery and cash savings, bring administrative benefits to the government, increase speed and reduce costs of administration, the respondents seem not to agree with such arguments. Instead, the seeming non-existence of PPPs in the health sector, as claimed by the respondents, is consistent with Minnie's (2011, p. 13) view that whether there is much to show in terms of the real success of PPPs is open to debate because the failure or real success of these PPPs is not receiving much independent attention. It seems when PPPs are established, with great fanfare and posturing, interest reduces and the entire team of commentators focuses on to the next launch of another PPP initiative. One can successfully argue that the activities of PPPs following the establishment can surely have a greater bearing on the success of that partnership than the launching ceremony at its inception.

4.5 Chapter Summary

From the empirical findings and a review of what various authors have written, it is clear that innovative health service delivery ICT platforms greatly influence the speed of health services in government hospitals in many countries, Uganda inclusive. The commonly used platforms are mTrac, RX Solution and Health Management Information Systems. OpenMRS and U-Reporting were not found to be common in the government hospitals included in this study. The challenges identified related to the use of these ICT innovations, such as limited computers, trained personnel, internet connections and networked systems for all stakeholders to access information.

On policies related to health service delivery, decentralised health services were found to be available on the ground and operational both in structure and service provision. However, challenges of the referral system, mandate and reporting mechanisms were

identified. The PPPH as a policy for speeding health service delivery was found to be thin on the ground and only pronounced on paper. Only the fee for service aspect in private wards was found to be in practice but not well entrenched.

The next chapter (Five) discusses the effect of health service delivery innovations on efficiency of health services in government hospitals in Uganda in the aspects of doing the right things right, non-wastefulness, cost effectiveness and value for money.

CHAPTER FIVE: THE EFFECT OF HEALTH SERVICE DELIVERY INNOVATIONS ON EFFICIENCY OF HEALTH SERVICES IN GOVERNMENT HOSPITALS IN UGANDA

5.1 Introduction

The essentials for general and continuous improvement in a population's health status are dependent on the health system's capability to ensure equitable and efficient services (Asandului et al. 2014). Technical inefficiency, just like any other aspect of public service, is a serious problem with health services delivered by the public sector. Poor utilisation of resources is eminent in public health facilities, which are often extremely inadequately utilised. At higher levels, efficiency in allocations is a big problem, with disproportionate flow of resources proportionately to curative, urban and hospital based care. Health Service Delivery in the public sector and other service delivery systems obscure awareness of the cost of services. This structural feature diminishes the capacity and ability to deliver or even identify cost-effective services (Harding & Preker 2000, p. 1).

Efficiency, cost-effectiveness and value for money in the health sector are the key performance dimensions that are mostly discussed in the world today. These concepts point out the inputs injected into a health system with respect to expenditure and other forms of resources in creating health goals that are valued. Efficiency in health, in particular, spells out long-term financial pressures and financial sustainability concerns in the healthcare systems. It also demonstrates how the health resources are put to proper use. Efficiency indicators help planners and decision-makers to allocate resources optimally and measure the performance of a health system (Cylus et al. 2016, p. 2).

Jacobs (2001) postulates that there is increased emphasis on health efficiency measures in hospitals to measure relative performance in view of the challenges of the resource envelope. There have been arguments that healthcare organisations often do

not adhere to neo-classical firm optimisation behaviours and, thus, they are not expected to be sufficient. Nonetheless, owing to high investments and expenditure in the health inputs, there is growing concern about the examination of efficiency and value for money in most hospitals (Jacobs 2001, p. 104).

This chapter presents literature on the current arguments from various scholars on how Health Service Delivery innovations in the form of ICT and policies contribute to efficiency in government hospitals. The empirical findings on the same objective are presented and discussed in order to fill the gaps in literature. Section one presents introduction to the chapter. Section two presents how ICT innovations influence efficiency in government hospitals. Section three presents how decentralisation and PPP policies influence efficiency in government hospitals. The fourth section discusses the empirical findings on the health service delivery innovations in the form of ICT and policies and how they inform efficiency of health services in government hospitals. Section five summarises the chapter and provides a linkage to Chapter Six.

5.2 ICT Innovations and their Influence on Efficiency of Health Services in Government Hospitals

5.2.1 Definitions of terms and concepts

The concepts of efficiency are always defined in line with the scope of the activity analysed and the objective of production. Various studies on efficiency in the health sector show that the objective of production is believed to be the provision of services or achieving of outcomes. The compared activities range from health programmes commonly referred to as alternative healthcare procedures to the entire healthcare sectors across different countries. Technical and allocative efficiency as the two components of economic efficiency are examined. Peacock et al. (2001) contend that healthcare efficiency is measured in terms of achieved outcomes instead of the outputs produced. To them, healthcare efficiency is understood in connection with how well the resources in healthcare are utilised to obtain health improvements that comprise

allocative and technical efficiency. While achieving health outcomes, technical efficiency is or can be achieved when one applies care procedures that are cost-effective in utilising only a few inputs. In a similar way, allocative efficiency can be obtained by selecting a set of technically efficient health programmes that can lead to the yield of the population's greatest possible health improvements (Peacock et al. 2001, pp. 3, 14).

American Quality Alliance (AQA, 2009) refers to healthcare efficiency as encompassing the cost of care related to specific levels of quality. The measures of healthcare efficiency are not well established yet quality measures are. Care costs measure spending in healthcare that encompasses unit prices for healthcare services which are provided to the population and patients over time and the total use of resources. Measuring efficiency in healthcare helps in identifying the cost of providing high-quality care that the International Organisation of Migration (IOM) describes as care that is safe, patient-centred, equitable and timely (IOM 2001; Russo & Adler 2015, p. 39).

The process of measuring healthcare efficiency is a reflection on service performance with regard to clinical, managerial, operational and policy concerns. It serves as a case for not only benchmarking technical efficiency amongst individual providers but also measuring the overall efficiency of the whole health sector. According to Palmer (1991), hospitals do not operate like conventional firms in the market and their appraisal cannot, therefore, be imagined as if they run sets of well programmed and defined production activities. They do not take management decisions under the oversight of a single manager or operator (Peacock et al. 2001, p. 20).

From the above definitions, it can be concluded that efficiency relates to cost-effectiveness, optimum use of resources, doing the right things, implied quality care, ratio of inputs to outputs, the production of desired results in the production process, non-wastefulness, and how well inputs are used to make system improvements.

5.2.2 ICT innovations and their influence on the efficiency of health services delivery at Global, Continental and Ugandan levels

Diagnostic systems and methods, new drugs, medical devices and drug delivery systems provide hope for better treatment and healthcare that is less disruptive, less costly and less painful. Examples are implanted sensors which assist patients in monitoring their diseases more effectively and IT innovations that help to connect a bunch of scattered information in the health system. These can tremendously improve quality of care, lower the costs of delivery and reduce errors, omissions or commissions in health service delivery (Herzlinger 2006, p. 58).

The use of ICT in managing patients remotely has been considered to be a better healthcare delivery method than taking patients physically to medical workers in remote and hard to reach areas. Sub-Saharan African states are now embracing eHealth and eMedicine as benchmarks from the developed countries. ICT usage and other health care related technology solutions have improved quality and access to health services in remote and rural communities with poor and vulnerable populations. Some of the electronic solutions used include text messaging, mobile phones, radios, emails, teleconferencing and online media. These facilitate quick information sharing, faster disease management, the exchange of ideas and building rapport between health workers and patients or care receivers (Kiberu et al. 2017, p. 2).

Improvements in healthcare efficiency and effectiveness in the government (public) sector has been enhanced by a belief in and agreement about the transformation that the ICT revolution brings about. There is growing pressure and need for the adoption of ICT innovations in health service delivery operations by governments. In the 1980s, Malaysia introduced many healthcare innovations and reforms to streamline health efficiency and systems of delivery. This was also intended to streamline the operations and size of the public service to match new realities. In the 1990s, the country made significant improvements in health service delivery by adopting ICT innovations and

these reforms led to national competitiveness, prosperity and national development (Alam Siddiquee 2008, p. 195).

Roger Entner did a study on workplace efficiency in the United States Wireless Industry and discovered that mobile devices improve productivity of workers in different ways i) by improving communications and empowering small businesses; ii) through logistics improvement; iii) through a reduction in unproductive time for travel; and iv) by enabling fast decision-making. The study findings revealed that in 2011 alone, the wireless industry increased productivity by 33 billion US dollars, where one-third (11.2 billion US dollars) was from the health sector. The research projected further gains in medical sector productivity worth \$305.1 billion in the next 10 years. Further analysis of several evaluation studies of physician practices and mobile devices indicates several benefits, including (i) fewer errors in hospital discharging and medication prescription; (ii) improvement in recordkeeping practices and data management; and (iii) prompt responses to the medical test results by physicians with mobile devices (West 2015, p. 4).

The University of Michigan conducted a related study and discovered that there was a change from the use of paper to electronic records usage and this reduced the outpatient care costs by over 3 per cent. It was estimated from this study that there was a monthly saving of 5.14 US dollars per patient because of using electronic health records. The study revealed that approximately 270 million Americans who own mobile phones utilise them for healthcare reasons. ICT links patients with healthcare professionals, especially in distant and hard-to-reach areas and places that do not have healthcare and specialist facilities/services. The use of tele-monitoring systems, telemedicine, emails, webcam and smartphones to share medical information is high. They aid in diagnostics management, education, counselling and support (AIMS Education 2016, p. 2).

The design of the framework for using technology in delivery of healthcare services was advanced by reviewing goals of each technological innovation related to health

efficiencies. Many reasons were advanced, including the need for access to health in some geographical areas such as electronic health in India and TeleDoctor in Pakistan. The 2nd main common purpose was improvement in managing data, e.g. Nacer21 utilises internet and telephone networks for medical workers to access Peru and capture health-related data of the people and remotely distribute it to the health experts for proper analysis. The third purpose was to improve diagnosis; the fourth was to facilitate patient communications outside regular health visits; the fifth was to streamline financial transactions; and the sixth was treatment to mitigate abuse and fraud (Lewis et al. 2012, p. 2).

In a study carried out in 41 hospitals in Texas that addressed health information technology (HIT), it was discovered that health facilities that used IT in the delivery of services had relatively low costs, few health complications and lower maternal mortality rates compared to those that had less advanced HIT. Conversely, the study found that the hospitals that were referred to as highly digitised (most wired) had accumulated more costs than the less digitised (less wired), although there were lower mortality rates for patients with heart attack in these hospitals (Buntin et al. 2011, p. 467).

In a related study conducted in Italy, innovations were found to have a great impact on efficiency among healthcare providers in terms of costs and saving time. It was claimed that before the adoption of electronic medical records (EMR), nurses took long to get laboratory results, but that this reduced by 40 per cent with the adoption of EMR at health facilities. There was also a reduction in the time nurses took to fill in and file information about patients and prepare medical reports. There was a 50 per cent decrease in the time spent on various activities owing to the adoption of EMR ICT. The waiting time to get images and reports from X-ray machines (from the time of order to exposure) reduced by 45 per cent according to clinicians. There was a perceived reduction in the use of paper records by information systems to share information and this led to cost savings, reduced waiting times, quick access to information, lower printing costs and a general improvement in health service delivery in Italy (Cucciniello & Nasi 2014, p. 105).

In Africa, countries like Sierra Leone, Nigeria, Morocco, Kenya and Liberia experienced a serious impact of mHealth. In Kenya, patient visits were shortened by 22 per cent, time for doctors to attend to patients reduced by 58 per cent, and waiting time for patients at clinics reduced to 38 per cent owing to the adoption of digital medical records. A total of 10,691 patients were helped in 47 clinics using mobile platforms (phones) to solve the existing healthcare problems. According to well documented research, using electronic health records improves efficiency and quality of healthcare delivery. The provision of mobile phones to women also improves access to medical facilities and reduces maternal mortality rates. Morocco, Kenya and Sierra Leone have implemented mHealth solutions to assist in maternal health and primary healthcare (West 2015, p. 12).

In Uganda, ICT Innovations like the mTrac system initiates real-time SMS 'alerts' to warn district and national stakeholders when certain actionable data is reported, such as cases of viral haemorrhagic fever and cholera, to provoke immediate and appropriate interventions. mTrac is the primary source of weekly HMIS data for the DHIS2. District biostatisticians analyse the data collected through mTrac using DHIS2 to review trends in facility reporting performance, disease incidence rates and drug stock levels. Following the introduction of mTrac, stock outs of ACTs decreased from 25 per cent to 14 per cent over an 18-month period. Reporting rates for the surveillance form 033b, which were around 50 per cent in the first week of 2015, reached 68 per cent by December 2015, the highest proportion for the public sector since the form was introduced. In addition, data was gathered from over 2,000 non-government health facilities (Huang et al. 2017, p. 11).

5.2.3 ICT innovations and their influence on efficiency of Health Services in government hospitals

The efficiency, quality and general performance of the healthcare industry in the public sector are significantly affected by ICT adoption (Goldzweig et al. 2009, p. 282). The rate of medical errors, quality improvements, timely decision-making, cost-effectiveness

and growing efficiencies are influenced by integrated health information systems that are designed to manage financial, technical, clinical and administrative issues in a hospital (Walker et al. 2005, p. 7). Additionally, use of Integrated Health Information Systems is majorly to get rid of the slow manual processes which have been identified as hindrances to healthcare performance with respect to the provision of health services efficiently. However, healthcare innovations have also experienced numerous challenges from external and internal forces (Ahmadi, 2015, p. 167).

According to Raghupathi and Raghupathi (2014, p. 3), there is potential to improve the quality and efficiency of healthcare while reducing costs if healthcare facilities adopt ICT innovations in managing big data to support clinical decisions, surveillance of diseases and population health management. Aggelidis and Chatzoglou (2009) further confirm that using IT improves effectiveness, quality and efficiency and also reduces expenses in the health sector. Health researchers believe that hospitals which do not adopt information systems in delivering services lose trust from their patients and become inefficient and that this could be the reason hospital information systems have gradually subsumed the traditional operational procedures (Aggelidis & Chatzoglou, 2009, p. 115).

Using a Hospital Information Management System is important in cutting costs, growth of revenue and in ensuring performance that is oriented towards quality. There are three significant positive contributions of ICT to innovations and performance in hospitals, such as efficiency in hospital processes, increased revenue and increased quality of patients care. Additionally, IT and the use of innovation relate well to measures of performance that are ICT-enabled and as a result (i) there is reinforcement of the effect of ICT on performance due to innovations; and (ii) there are indirect and direct effects on the performance of hospitals via innovations in ICT (Arvanitis & Loukis 2016, p. 414).

Systems of HIT such as EHR and physician computerised order entries are important in improving quality as they reduce costs. The design of these systems in itself improves

communication within distant health providers in healthcare organisations. It is worth noting that the systems assist in implementing tools for decision support and care guidelines that are important in preventing process errors. The Institute of Medicine in America opted for the use of physician computerised order entries because of its role in inpatient errors reduction (McCullough et al. 2010, p.1).

Studies conducted by Tamrat and Kachnowski show that mobile health, often referred to as mHealth; is vital in the reduction of time barriers and enabling urgent care when handling emergency referrals in obstetric cases. Introducing mHealth also improves mechanisms for collecting and analysing data since the data collection by health workers is in tandem with delivery and the execution of various and complementary health services/programmes like immunisation and referral care. The application of mHealth also enhances health promotion through information exchange by the use of short messages to expecting mothers. This presents a platform that is new and pervasive for handling prenatal and new-born health since the platform empowers pregnant women to share information with health workers (Tamrat & Kachnowski 2012, p. 1098). All in all, mHealth is an enabler in the health workers' collaborations to deliver improved health services since it facilitates comprehensive expedition of emergency referrals in obstetrics. Similarly, mHealth is vital in preventive healthcare as it provides neonatal, antenatal and prenatal health education. In spite of the praises earned by mHealth, available literature from various project evaluations and studies reveals that there are no proper policy frameworks and management arrangements to guide, integrate and coordinate mHealth-related services into the greater health management system (Higgs et al. 2014, p. 171).

In developing countries, piloted mHealth projects have indicated that the use of mobile telephones improves communication and the delivery of information and its retrieval process between health workers and patients in far and hard-to-reach remote areas (Tamrat & Kachnowski 2012). The mobile phones facilitate access to healthcare units, enable consultations amongst health workers, facilitate monitoring and surveillance in

remote areas and facilitate training for health workers. This eventually improves health service delivery. All these lead to increased effectiveness and efficiency in health facilities that are under-resourced, which eventually translates into patients' satisfaction and improved attitudes (Bloch 2010; Ranck 2011; Chib et al. 2015, p. 4).

Different studies in various countries reveal that the use of technology improves efficiency in health service delivery. In India and Sri-Lanka, the Real-Time Bio Surveillance Programme on Disease and Epidemic Outbreak shows that mHealth systems assisted in the early detection and notification system for disease and epidemic outbreaks in hospitals. Colecta-Palm for Patient Monitoring and Support was started in Peru under the initiative of the University of Washington and Universidad Peruana Cayetano Heredia Lima and targeted HIV/AIDS patients for antiretroviral treatment and reducing HIV transmission through safer sex behaviour. The Child-Count Programme was started in July 2009 in Sauri, Kenya under the partnership of the Millennium Villages Project, The Earth Institute at Columbia University, UNICEF Innovation Group, Sony Ericsson and Zain. Under this project, more than 9,500 children under five years of age were monitored for community-based management of acute malnutrition. The M-Money for Women with Fistula for Health Financing Project was started in Kenya as a combination of mobile banking, public information and free treatment. Mobile Midwife for Health Education and Awareness was started in East Ghana, under a programme called Mobile Technology for Community Health (MOTECHE). The objective of this project is to improve the antenatal and neonatal care of rural women. Health workers register the patient using MOTECHE forms on mobile phones and issue a particular patient ID number. The patient then receives voice or text messages regularly regarding health information and information on essential vaccination and childhood diseases after birth (Rehalia & Kumar 2012, pp. 55-57).

In Indonesia, low health literacy limits access to health facilities and contributes to poor communication between health providers and patients. Owing to low health literacy, many patients limit themselves to waiting until the serious stage of a health condition to

obtain medical assistance. Hospitals in the country report that there is little early detection with cancer patients, who often visit physicians at terminal stages. Cervical cancer kills one woman every hour in the country (Van Ginneken et al. 2013, p. 17). Many Indonesians believe that patients are reluctant to ask their health providers questions owing to cultural beliefs. Increased use of cell phones provided by government hospitals and the spread of text messaging amongst the citizens present new opportunities and help medical workers to offer the required health services with less cost. Using the SMS Info Obat Murah and Icon Led User Interface, the subscription-based Nokia Life service provides the required drugs and quick and easy access to health information. When choosing healthcare information, subscribers can select from the categories of mother and child care, men's and women's health (health and fitness) and topics related to health such as diabetes, heart health, respiratory health and digestive health. Users are given the option to personalise their profiles (Maharani et al. 2012, p. 14).

Malawi introduced mHealth in Salima and Nkhotakota districts in 2010 under the K4 health project which employs the SMS-based mobile phone network and uses frontline SMS. The major goal was the provision of reliable, quick and cheap communication between district health teams and community health workers (Campbell et al. 2014, p. 26). The project achieved various outputs that include quick tracking of stock outs, fast reporting of emergencies, access to general information by patients, easy requests for general information and technical support, confirmation of meetings and fast responses in case of emergencies. Categorisation and monitoring phone messages enabled the district health teams to discover numerous trends that affected the healthcare delivery systems. The cases reported by community healthcare workers have since helped to detect inefficiencies in the health system and these uncovered the problems inherent in the logistics and transport sectors (Lemay et al. 2012, p. 107).

A study was conducted in Yaounde (Cameroon) to obtain the experiences and views of HIV patients on highly active antiretroviral therapy (HAART) with adherence reminders,

such as text messages by Cameroon Mobile Phone SMS (CAMPS). The results showed that over 50 per cent of the respondents confirmed that they were unable to take medicine on time with delays that varied from time to time (minutes and hours) and they were appreciative of the device which reminded them (Bigna et al. 2014, p. 606). The participants appreciated the ICT device and especially its ability to relieve them of stress in remembering time for medication (Mbuagbaw et al. 2012, p. 47).

In a study conducted between 2009 and 2010 in Kenya, a cluster-randomised controlled trial (RCT) of a novel intervention designed to improve the management practices of health worker malaria was done in 107 public health centres/units. The major objective of this study was to establish how the use of mHealth SMS messages facilitated efficient health service delivery. This was a test on how SMS messages used in mHealth facilitate efficient health service delivery. The study outcome revealed a positive significant relationship between message texting and improvement in the management practices of health workers. The results showed that text messages were an acceptable intervention and an efficient means that provided medical workers with timely reminders in the management of malaria cases. The text messages were not only acting as reminders but also contributing to the maintenance of behaviours for frontline medical workers (Jones et al. 2012, p. 6).

5.2.4 MTrac innovation and efficiency of health services in government hospitals

The use of technology-enabled platforms such as mHealth and mTrac has generally been adopted in low-developed countries, Uganda inclusive. The platforms are believed to facilitate improved health service delivery with respect to access to health information, especially in rural areas. Mutual benefits have been registered in the surveillance and control of diseases. Nonetheless, most of these are taken as proof of mere concepts demonstrated in context but lacking sustainability (Najjuma 2019, p. 35).

According to Franz-Vasdeki (2015), because of its infancy and initial stages of usage, the effect of mTrac is yet to be seen. There is weak responsiveness to the health system with regard to inefficiencies in the supply chain, with no action being taken on drug stock out reports. The success of mHealth initiatives depends on the health system strength and any inefficiency that arise highlight that the initiatives are not succeeding fast. To the contrary, mTrac was well focused from the start and has been seen as an mHealth model through its coordination of stakeholders in the private and public sectors, fostering of minimised health investment and expenditure by the government, alignment of e-health systems with the existing government institutions, policies and existing structures, and designing of implementable and compatible systems (Franz-Vasdeki et al. 2015, p. 37).

mTrac and other ICT models have been utilised by different communities in implementing attitude and behavioural change interventions, especially by faith-based organisations in Sierra Leone, Democratic Republic of Congo and Mozambique. Technologies like mTrac empower healthcare workers to quickly report on drug stock outs and disease incidence levels. U-Report equally helps the youths in Uganda to gainfully engage in information-sharing and facilitates improved targeting of issues and accountability, creating novel efficiencies even in low-bandwidth environments. According to Ruchman et al. (2016), such ICT innovations and improvement in systems have had a serious effect on delivery of health services whenever they were well implemented, adapted and exchanged at appropriate times across borders and disciplines (Ruchman et al. 2016, p. 739).

mHealth plays an important role in the rapid assessment and modification of health-related behaviours that transform the decision-making capabilities of patients about their health. The initiative provides for the potential to align the delivery of health services among the minority groups and the underserved populations. They are able to access health communication and all the required resources (Schnall et al. 2015, p. 86). Currently, the state of mHealth is demonstrated by the tools that help in improving

healthcare systems through interconnected electronic ecosystems. In the western parts of Africa, historically drums would be sounded as a means of communication across distances. The discovery of mHealth tools like mTrac has helped in communicating disease outbreaks and medical requirements, and reporting in the healthcare industry (Mechael et al. 2014, p. 216).

In Uganda, several e-health applications are in use to enhance efficient service delivery, and to reduce response time and operational costs (Foster 2012; Nsubuga et al. 2010). These e-health applications include Integrated Diseases Surveillance and Response System, Health Management Information System and Vital Registration Management Information System. However, in case of reaching the rural community and improving users' mobility and flexibility, mobile e-health systems have also been introduced in Uganda. These include the SMS system, MobileVRS and mTRAC (Abandu & Kivunike 2017, p. 123).

The benefits of mobile e-health include: the expansion of access to communications; the transmission of voice and data at the precise time they are required; and providing citizens with access to healthcare information anywhere and anytime. In Uganda, mobile e-health has specifically enhanced efficient communication about medical healthcare services between the Ministry of Health and districts through phone calls, emails and SMS (MOH 2011; Abandu & Kivunike 2017, p. 122).

mTrac as an mHealth tool serves both as a data collection and auditing tool since it specifically collects, verifies, analyses and interprets data that lower-level health facilities and communities generate. With financial support from DFID (Department for International Development) mTrac operates in three different ways, namely: (i) operating an anonymous hotline that provides complaints on service delivery toll-free where members of the community report issues on health services that include essential drug stock outs in health facilities and health centre operating hours; (ii) using SMS messages, weekly surveillance reports are transmitted on the outbreak of diseases

and anti-malarial stocks from health centres to Ministry of Health and district offices; and (iii) using U-Report mechanism, stakeholders represent the community in providing regular feedback on issues of development and engage their representatives for discussion and finding solutions (Franz-Vasdeki et al. 2015 , p. 36).

Access to ICT platforms like mTRAC, however, may not necessarily warrant benefiting from eHealth technology. The socio-economically disadvantaged people are deterred from using the eHealth technologies because of their status and unfamiliar interface or difficulty with such mobile technology. There has also been a significant observation (within the low-income communities) of the gaps in trusting health-related information obtained from internet and digital sources. The existence of mistrust of health information and digital inequalities pose a threat to the mHealth potential in the low-income communities to guide in self-diagnosis of acute symptoms and tracking or management of health conditions that are chronic (Teong 2015, p. 40).

The electronic healthcare innovations targeted to achieve the SDGs have experienced numerous challenges beyond the adoption and implementation of the technology itself. These range from social to organisational, cultural and managerial, as observed by the World Health Organisation in 2016. Specific hindrances include (among others) lack of a trained workforce in the communities to use digital technologies, governance-related problems and limited funds (Novillo-Ortiz 2018, p. 107).

Uganda embraced eHealth service provision in a bid to improve the delivery of health services and this has had a positive impact, although the initiative is taken as the mere proving of a concept that lacks sustainability and plans for scaling down. Many factors have been advanced as obstacles to full implementation of telemedicine in the country. These include lack of readiness for the innovation, limited knowledge and skills, resistance from medical workers and lack of a supportive policy and institutional framework. The presumed failure of these eHealth projects is also attributed to lack of readiness for technology, poor change management techniques, limited skills in

computing, poor research design and poor planning at initial stages. Before more investments are made into developing and implementing the systems, there is need for establishing facts on the effect and readiness for these eHealth systems in Uganda (Kiberu et al. 2017, p. 7).

5.2.5 U-Reporting innovation and efficiency of health services in government hospitals

The overall objective of U-Report is to empower young people in accessing interactive platforms. U-Reporting does not target specifically the most vulnerable, although the polling tool allows for targeting questions to individuals in vulnerable situations in all social service sectors, including health. Additionally, specific issues mentioned by U-Reporters often address the needs of vulnerable children. In Uganda, polls of this nature have been on high primary school dropout rates in the rural areas which , subsequently, led to the 'Back to School' initiative, as well as the poll on the effectiveness of Uganda's child protection services in meeting the needs of victims of child abuse (UNICEF 2012, p. 12).

This SMS-based platform commonly referred to as U-Reporting was developed by the Uganda National Drug Authority (UNDA) and is used in the management of supply chains and national procurements. The Ministry of Health in December 2011 also launched and started implementing mTrac as a rapid SMS-based HMIS tool that uses a mobile telephone to strengthen health service delivery. The major reason for the launch was to facilitate timely responses and accountability when giving reports on the surveillance of diseases and tracking of medicine in over 5,000 health units in Uganda. To a great extent, this has been achieved (Kiberu et al. 2017, p. 3).

Conceived as a system for social monitoring that uses RapidSMS, U-report has offered youths in Uganda an opportunity to voice their concerns and opinions on issues that they care about by facilitating them to gain access to a free SMS service. The system allows them to send fast text messages, respond to polls, and receive factual information and poll results. In Uganda, the areas of priority under UNICEF are health,

child education and protection and social policy. The system also accommodates monitoring and reporting any issues that concern the children and youths. This U-Report system was first piloted in Uganda by UNICEF in collaboration with the Uganda Scouts Association. Software was developed by UNICEF Uganda and built on a Web platform to manage interactions and communication between central managers, U-Reporters and scouts reporters. The information was later discussed and disseminated on radio programmes for scouts (UNICEF 2012, p. 12).

According to UNICEF (2016), the use of U-Reporting has registered significant recognition, ranging from awareness creation to sharing information, development in the community and policy development at parliamentary level. By 2016, over 250 polls had been posted on the U-Report website (<http://ureport.ug/>) and the U-Report poll results are featured on radio and television shows weekly as well as in pullouts in the newspapers. Members of Parliament use U-Reports in updating their policy and legislative work as they account to the U-Reporters by answering toll queries and other concerns throughout the country (UNICEF 2016, p. 13).

5.2.6 OpenMRS innovation and efficiency of health services in government hospitals

Nguyen et al. (2014) as cited by Modi (2017) argue that this electronically designed medical record, often referred to as EHR, is a medical record of a patient that is in electronic format and can be accessed on a network using computers for purposes of healthcare provision and any other healthcare issues. Maintenance of medical records has evolved from paper-based to computer-based systems, hence the terminology of OpenMRS and electronic medical records (Modi 2017, p. 66).

EHR systems like OpenMRS provide useful and suitable information for making the best decisions about the health care services to deliver to individuals. Along with improving healthcare, applying EHR enables medical errors to decline. Regarding the necessity of accepting health and medical informatics software, open source solutions have been considered in the healthcare institutions. Open source software are

intermediary tools for development of health care applications and at the same time have a high potential for supporting the health information systems. Over the past years, serious efforts have been made to create open source electronic health record systems. The greatest benefit of OpenMRS is its flexibility to adapt to the specific needs of any centre. Creating OpenMRS systems through reducing the cost of installation, maintenance and update of the electronic health record systems will lead to more cost savings for physicians and other providers of healthcare services. They can result into better information management of patients and improvement in quality and efficiency of healthcare services (Bashiri & Ghazisaeedi 2017, p. 3950).

Health Information Technology (HIT) systems like EHR or electronic medical records (EMR) can be developed in order to serve people that have limited access to healthcare services. EMR transforms the management of information in healthcare settings, by providing efficient and cost-effective clinical management, reminders for drug prescription, and warnings in cases like drug incompatibility or abnormal lab result. Despite all the challenges facing the developing world, some countries are trying to use their limited resources to create and implement EMR systems owing to their myriad benefits. Some of the existing EMR systems include the Computerised System for the Control of Drug Logistics (SICLOM) in Brazil, EMR in Lilongwe, Malawi, the highly active antiretroviral therapy (HAART) in Botswana, Partners in Health (PIH) EMR in Peru, HIV-EMR in Haiti, the PEPFAR Project in Tanzania, the Mosoriot Medical Record System (MMRS) in Kenya, and the Careware system in Uganda (Ahlan & Ahmad 2014, p. 1288). OpenMRS implementation overall proved beneficial. Clinical staff saved time on information gathering (as a result of the shift from manual to electronic records) and there was accurate reporting with fewer human errors. Staff were excited to learn how to operate OpenMRS (Thompson et al. 2010, p. 4).

OpenMRS was introduced in Morogoro, Tanzania in 2008 as a demonstration project and by the end of that year; more than 11,000 patients had successfully been enrolled on three deployed sites. The system had collected data on over 58,000 visits and most

patients' health reports had been printed with the help of OpenMRS. The system was positively welcomed with a university consultant independently deployed to maintain and run it, generating reports for the National AIDS Control Programme (NACP) (Shao et al. 2015, p. 22). Implementation of OpenMRS assisted in serving as a database for the HIV/AIDS registry of NACP although the system at Morogoro ceased to function and operate by June 2009 because of computer failures and the expiry of the consultant's contract. The system was subsequently reengineered and Morogoro now uses OpenMRS as a vehicle for HIV registry data capturing. Medical workers at the Ocean Road Cancer Institute and Tumbi continue to use OpenMRS for patients and communicating of electronic data on HIV/AIDS to NACP instead of using the traditional HIV register forms (Tierney et al. 2010, p. 371).

In Uganda, NACP and the Ministry of Health arranged and facilitated a demonstration project at three sites in different locations and university affiliations and of different sizes. Masaka Regional Hospital, Mbarara Regional Referral Hospital (with an affiliation to a university) and Mbale Regional Hospital were chosen. OpenMRS was successfully installed and used. The most substantial and effective use was at Mbarara University Teaching Hospital in Uganda. This led them to be accepting of innovations and actually depend on data for both clinical care and research (Tierney et al. 2010, p. 373).

The coming up of EHR as open sources for use in health service delivery amidst resource constraints is a good step in a proper direction. These HER open sources help to reduce health-related costs and tend to lower EHR adoption thresholds. Examples are OpenMRS that health workers (in resource-constrained areas) prefer to use than computers during patients care. The system provides options that can allow healthcare providers to complete patients' encounter forms numerically and check for coded answers in boxes. Upon the implementation of OpenMRS and during the post-implementation time in Uganda, the time for patients to see providers and the time taken by caregivers to attend to patients significantly reduced (Were et al. 2010, p. 242).

The use of EMR can improve the delivery of health through the provision of better-quality data by health workers, easy retrieval of data, quality data analysis and dissemination of the same data. Moving the EMR into hospital and medical practice offers the potential to bring all aspects of the patient's clinical record online. The EMR provides improvements in workflow and higher efficiency, coupled with improvements in patients' safety and quality healthcare. In addition, among the greatest benefits that arise from evidence-based medicine and support to clinical decisions is that many healthcare providers are able to share information using accepted EMR standards (Modi 2017, p. 71).

5.2.7 HMIS innovation and efficiency of health services in government hospitals

Lately, health sector and medical informatisation have had reforms purposed at improving efficiency in the management and delivery of health services. The creation of hospital information platforms in support of the integration of medical data has led to proper examination of patients since data is easily transferred between patient and caregiver positions. It is now easy to disaggregate patients' data and also query patients' status during examination (Wang & Wang 2019, p. 2).

When public sector hospitals adopt Hospital Information Systems, they play very important roles in providing efficient and convenient healthcare facilities (Wu et al. 211, p. 590). The common people benefit through getting better and cheaper medical treatment than they would afford in private clinics. The doctors acquire innovative ways of prescribing treatments and the patients' medical history and other medical information can easily be retrieved from the computers. This culminates in doctors getting rid of paper-based medicine prescriptions and obsolete systems for admitting patients (Buglio & Tunio 2014, p. 1).

Malawi introduced a simple, manageable but rather comprehensive HMIS in 2002. This has helped in the collection of uninterrupted monthly data on agreed health indicators

for all health facilities at district and national levels. All public health facilities and district health teams use the HMIS to reach their catchment areas and the populations they serve (Kanjo 2012, p. 12). When an HMIS is utilised, healthcare providers and patients agree on the quality and standard of care than when a manual health card is consistently used. The completed wall charts help medical practitioners and healthcare users to know the level of health problems, rates of healthcare service utilisation and overall results, resulting in improved efficiency. Using health passport booklets and wall charts has greatly contributed to enhanced understanding of health service delivery in society. Operating an HMIS has led to broad understanding of the prevailing health conditions and management of any upcoming health-related epidemics, hence proper decision-making (Chaulagai et al. 2005, p. 378).

Ramani (2004) and Athavale and Zodpey (2010) found that Information Systems play a supportive role in the effective functioning of government healthcare centres, as attested by Aggelidis and Chatzoglou (2008) and Palasamudram and Avinash (2012). Aggelidis and Chatzoglou (2008) contend that using health sector based ICT improves provision of quality services and the effectiveness and efficiency of health workers, and reduces expenses at the facility. In agreement with Pandey et al. (2012) and Sharma et al. (2011), Moghaddasi et al. (2011) affirmed that e-health records enable accessibility to all information on health at global, country, regional and institutional levels. This allows the integration of patients' data from all information systems in all geographical locations (Garg et al. 2012, p. 57).

In their study about technology for efficient, affordable and inclusive healthcare in India Pradnya and Bhoyar found that community healthcare workers are assisted by innovative technology in the provision of patient-centered/personalised, affordable (cheap) and high-tech healthcare. They observed that wireless technology helped various providers of healthcare to provide affordable and quality health services. They recommended cooperation between organisations that embrace technology-driven quality healthcare and government/corporate organisations. This will help in delivering

quality and affordable health services to both the urban and rural poor (Chitrao & Bhoyar 2017, p. 508).

Kleis et al. (2012) argues that using ICT contributes to and supports an organisation's innovative activities in three ways, i.e. improvement in data management and knowledge used in the innovation process, efficient innovation with external partners and direct contribution to innovative production in many ways. Brynjolfsson and Saunders (2010) contend that ICTs result into producing new services and increases variety and personalisation of services and products that would otherwise not be operationally feasible and economical without the use of Information Communication Technology. There is also considerable improvement in quality, enhanced timeliness, and other unique features that are regarded highly in developed economies (Katre & Jain 2016, p. 14).

5.3. Decentralisation and Public-Private Partnership Policies and their influence on Efficiency of health services in Government Hospitals

According to World Bank (2000), the paradigm shift to the decentralisation of public healthcare systems in most developing economies has been engineered by various reasons. Dissatisfaction with efficiencies in delivery of services coupled with centralisation of government services has spurred the need for decentralisation. These inefficiencies have quite often been pegged to challenges associated with the coordination of various activities in rural settings from centralised locations (Akin et al. 2005, p. 1418). PPP arrangements have attracted serious and continuous debate in respect to service provision by government versus service provision by the private sector and their intervention in the economies of various countries (Hodge & Greve 2007, p. 545).

5.3.1 Decentralisation innovative policy and efficiency of health services in Government Hospitals

Habibi et al (2001, p. 2) and Schneider et al. (2010, p. 514) believe that health efficiency and equity at macro levels have been steered by institutional innovations in a

bid to achieve sustainable development. These have culminated in fiscal and macro-economic crises that resulted in fiscal and political decentralisation in most developed economies, like Latin America, eventually spreading to developing countries

According to Cheema and Rondinell (2007), low developed countries have been implementing decentralisation policy in the last quarter of a century with the types of administrative, political and fiscal. Under political decentralisation, the local citizens are allowed to elect their representatives and to make their own policies and bye-laws and ordinances. In fiscal decentralisation, the local jurisdictions are empowered with autonomous powers to plan, collect revenue and spend on their priorities. Administrative decentralisation allows for the creation of administrative units and structures, and the placement of human resources in those units (Mitchell & Bossert 2010, p. 669).

For many decades, the concept and application of decentralisation has been marketed by health sector reformists (Siddiqi et al. 2009, p. 17). In the initial stages, the concept was seen as a reform in administration meant for the improvement of efficiency and quality services and later for the promotion of good governance in the form of democracy and accountability to the local population. Decentralisation was seen by many advocates as a major reform in and of itself (Bossert 1998, p. 1513).

The health sector has made great strides owing to the international push for decentralisation. Decentralisation, like the case of the health sector, encourages participation of citizens in the delivery of primary care services and to provide support to outreach efforts in delivering efficient and cost-effective services. In line with New Public Management principles, decentralisation supports improved efficiency in the delivery of services. Supported by reforms in health financing, decentralised health has been registered as a means of improving the performance of the health sector and of enabling socio-economic development (Mitchell & Bossert 2010, p. 674).

The great zeal for the implementation of decentralised health policies in many developing economies was as a result of a push from international donors engaged in

healthcare provision. Many policy documents, such as the 1981 Health for All by the Year 2000 and WHO's Primary Healthcare Declaration of Alma Ata provided a basis for primary healthcare promotion and the role of the communities in the planning and provision of health services. Many authors state that primary healthcare promotion was not compatible with centralised healthcare systems (Collins & Green 1994). Nonetheless, concerns about equity and not economic efficiency precipitated the efforts to decentralize (Akin et al. 2001, p. 3).

In Ghana, the Ministry of Health introduced reforms in the health sector in order to improve healthcare efficiency through a decentralised mode. There was separation and devolution of roles where health planning at national level, policy formulation, resource mobilisation and coordination of donors were retained by the Ministry of Health while general health service delivery was devolved to Ghana Health Services. Tertiary hospitals were given autonomy. Health planning and budgeting, health performance monitoring, financial management and health management capacity development were all decentralised, and the decentralisation was accompanied by the establishment of regulatory bodies and the enactment of enabling legislation (Osei et al. 2005, p. 2).

In a study conducted by Daniel Osei and others on efficiency of public health facilities' in hospitals in Ghana, it was found that owing to decentralised health policy, the poor people in local areas received basic promotive, affordable and preventive care services from health centres. The location of these health facilities is important in scaling up government health interventions that are pro-poor and cost-effective and this facilitates the achievement of the MDG on health (Osei et al. 2005, p. 10).

In a study conducted by Nanyonjo and Okot on decentralization, it was found that health institutions in about 31 districts out of 44 were technically efficient. Those in about 13 districts were technically inefficient under variable returns to scale. This implied that the health resources were not efficiently used in health institutions of the 13 districts. Health institutions in 25 (56.8%) districts and 20 (45.5%) out of 44 districts were operating at optimal scale in 2008/09 and 2009/10, respectively. Those in the

remaining districts were scale-inefficient, of which 17 (38.6%) and 19(43.2%) districts operated in 2008/09 and 2009/10, respectively, and the remaining were operating under increasing returns to scale (IRS). The study also established that local governments in Uganda suffered from weak institutional capacity, particularly through inadequate staffing levels which, posed a big threat to implementation of effective and efficient health services (Nannyonjo & Okot 2013, p.148).

5.3.2 .Public-private partnerships innovative policy and the efficiency of health services in Government Hospitals

Grimsey and Lewis (2007) contend that integrated PPPs are long-term contractual arrangements and investments that result in shared risks, mutual commitments and efficient outcomes, unlike short-term contracts. There is a perceived high return on investment due to performance over time that makes it difficult for either party to jump out of the collaboration. Payment to the private providers is hinged on performance-related outputs and this leads to quality standards. Sekhri et al. (2011) confirm that risks associated with costs, delays, poor training of staff, insufficient and inefficient care are shifted to the private partner by the government. The risks of paying for services to ensure quality and good access for the people are retained by the government. Ownership of assets is also retained by the government, an arrangement that differs from pure privatisation where the private partner owns the assets (Sekhri et al. 2011, p. 1501; Grimsey & Lewi 2007, p. 42).

Cost saving and inherent efficiency are the major reasons for starting PPPs instead of delivering projects using traditional ways. According to Grimsy and Lewis (2004), greater efficiency and innovations in the private sector as opposed to the public sector account for the cost savings. The private sector applies innovations/new technology, experience, expertise and high-level commitments in order to achieve high operational efficiency. This as a whole is applied to the procurement of assets and general service delivery. The overall cost saving of the project is achieved by maximising costs and lowering the total project life costs. Service delivery in areas of health, roads and

education has benefited from these partnerships (Cheung et al. 2005 in Torchia et al.,, p. 2013 243).

Public Private Partnership is the most common argument for developing partnerships in economic/financial, though not seen as the only initiative. This could be with respect to an increase in resources, such as paying for the delivery of services, reduced costs, for example outsourcing cleaning and catering services etc. In all the cases, each partner focuses on the long- or short-term financial gains arising from the partnership. There are expectations that by contracting out any services to the private providers by the public entity/government, costs are reduced and such services are delivered cheaply. Such reduced costs and saving are inherent in efficiency, especially in reduced marginal costs and costs related to delays and bureaucracies in government, which is bound by rules and policies (Mitchell 2008, p. 8).

In the United Kingdom, Public-Private Partnerships for Health (PPPH) was introduced in mid-1990s under the Private Finance Initiative (PFI). The move was as a result of the desire to modernise the outmoded hospitals faster than would have been possible under conventional government funding and public procurement models. For the period between 1996 up to 2009, 75 per cent (101/135) of the new health projects got completed under PFI arrangements. This was majorly due to limited alternative funding sources and open politically motivated decisions in favour of these arrangements (PFI) no matter whether there were other workable choices. Under PFI in the health sector, health infrastructure in France, Italy, Portugal and Spain has been modernised through the construction of major modern hospitals. Post-Soviet states and Central Europe have also have modern hospital infrastructure in sight, with the biggest, worth approximately 380 billion US dollars, being in Russia, which planned to invest in the infrastructure from 2010 to 2020. Most of finances are envisaged to be contributed by the private sector. Many PPP hospitals are close to the completion stage. Both those who support and those who agitate against PPP argue for their adoption and implementation because of the perceived quality and efficiency of the infrastructure since there is a

linkage with quality targets achievement and high-level performance (Barlow et al. 2013, p.149).

Contracting out public healthcare services to private providers as a form of PPP reduces costs and waiting times in the case of contracted services. According to the World Bank, contracting effects differ from country to country and according to the types of healthcare services. In a country like Cambodia, it was found that the non-contracted districts had costs of 26.4 US dollars per person, compared to 22.7 US dollars for the contracted districts per person per annum. Nevertheless, there were no statistical significance tests. The study only highlighted secondary analysis reports at 17 per cent savings as a result of contracting. In South Africa and Zimbabwe, studies on contracting show unchanged costs through contracting although they were lower in Zimbabwe after contracting (Basu et al. 2012, p. 9).

In Lesotho, government awarded a contract to Tšepong Ltd replacing Lesotho's only tertiary hospital, Queen Elizabeth II Hospital. In this integrated partnership, the major objective is for better neutral and squared costs, implying that it is actually structured to hold operating budgets and costs at current levels while expanding the service volume that is provided. The government specifically negotiated partnership commitments in order to accommodate a 24 per cent increase in outpatient visits and a 21 per cent increase in inpatient visits. Care users and patients are made to pay similar out of pocket funds/charges at the new health facilities like those paid at the existing ones (Sekhri et al. 2011, p. 3).

Healthcare expansion has been taken by many considerable drivers of Public Private Partnership adoption in Sub-Saharan Africa. Countries like Lesotho (Yescombe 2018; Widdus et al. 2011, pp. 713-720), Uganda and Rwanda have adopted PPPs in either the management or development of social infrastructure and management of most sector related constraints (Kabanda 2014, p. 2-5). Throughout many nations, public private partnerships have thrived more in countries where governments are constrained by

serious debt burdens, where markets have the potential to allow the recovery of costs and where there is sizeable aggregate demand. PPPs require macro-economic stability since these partnerships flourish in countries that have low inflation rates (Kabanda 2014, p. 5).

Whereas the literature reviewed reveals how Innovations (ICT and Policies) influence health service delivery in government hospitals, it concentrates more on cost of care and leaves out other dimensions of efficiency such as ratio of inputs to outputs, attainment of predetermined goals, the degree to which hospitals use right things, procedures in a shorter period and aspects of non-wastefulness. Not much was found on how Innovations (ICT and Policies) may not positively influence health service delivery in government hospitals. To fill the gap, empirical evidence was needed from the health care stakeholders hence the findings below.

5.4 Empirical findings on innovations and efficiency of health services in government hospitals

5.4.1 Findings on ICT Innovations on efficiency of health services in government hospitals

According to the field findings, there were mixed reactions to whether health service delivery innovations (ICT and policies) positively influence efficient health service delivery in government hospitals. Whereas some respondents agreed that they did and thus affirmed the views of some scholars, others expressed misgivings, pointing out many challenges. One of the Specialised Medical Staff who agreed gave the following view on ICT platforms helping to do the right thing right:

ICT platforms facilitate timely reporting and getting feedback. We look into new methods of work and correct what needs to be corrected hence leading to improvement in particular reported indicators. In December 2018, we were able to tell the number of HIV patients not attending clinic. We used the report to make search lists and looked for them and brought back our retention within acceptable ranges of above 90 per cent

Another respondent (Specialised Medical Staff) expressed support for ICT innovations (mTRAC in particular) on the basis that it leads to efficiency:

mTRAC has helped us to trace the number of cases reported and amount of drugs distributed. It has helped us to treat malaria positive cases. Drugs are matched with cases reported

Some scholars are in agreement with these respondents. They state that in addition to ICT innovations, other factors, such as the organisational environment, affect the efficiency of health services. Bresnahan et al. (2002) as cited by Agha (2013) found that often both the adoption of ICT and complementary technical and organisational innovations lead to efficiency. Similarly, Cutler (2010) believes that that a mixture of ICT innovations and organisational transformation reduce inefficiencies in the healthcare sector. Their arguments are that HIT is vital in reducing costs and in increasing quality care, but that this is impossible without focusing on the incentives of care providers and organisational structures, which are equally important (Agha 2013, p. 28).

Similarly, Adejirinde et al (2018, p, 78) argues that successful health service delivery is dependent on extent to which proper alignment of innovations to health service delivery is done, perceived usefulness of the innovations and healthcare user confidence and skills.

On whether ICT platforms help to reduce costs in health service delivery in government hospitals, one member of the Health Management Committee responded as follows:

The costs of reporting and transport have come down with the use of phones and other technologies. You may not be informed about something happening but because of use

of ICT in health service delivery colleagues help you online, hence no wastage of time and money.

Another respondent (pharmacist) commented on the reduction in transport costs as follows:

Before use of technology, any vaccine one wanted to study, it would require the district to get money and send someone to Entebbe for training but now one gets findings fast, hence less costly/cost-effective

One of the Hospital administrators linked the use of the biometric machine (as a Health service delivery ICT innovation) to time management, cost reduction and doing the right thing (efficiency) in the following terms:

The biometric machine helps to reduce costs. Staff will report and keep time and results achieved on the same day. It generates good outputs because there is less absenteeism and idleness.

These respondents' views on cost reduction are shared by Hauck et al. (2019), who investigated the cost-effectiveness of health systems and how to strengthen such systems. Investing in a shared platform improves the efficiency of a system, which includes how inputs are utilised to produce outputs. Some of these investments can be in a new information system, training a new workforce or improving laboratory services. The improvement in efficiency will, in turn affect cost-effectiveness of existing interventions and quality of care thus reduction in unit costs and improved health outcomes (Hauck et al. 2019, p. 144).

Similarly, Buntin et al. (2011) support investment in ICT platforms in order to reduce operating costs. They argue that HIT improves quality, saves health costs and improves individuals' health and health providers' performance, leading to greater engagement of patients in managing their healthcare. Buntin et al. (2011, p. 464) and O'Carroll et al. (2003) cited by Achampong (2012, p. 2) concur that ICTs have facilitated lowering of

healthcare costs and in improvement of the delivery and improving effectiveness in delivery of healthcare services through improved disease management, safety of patients, and provision of decision support for practitioners. Many systems have been developed to support healthcare delivery, such as local area network-based patient information systems and online health information for patients and health practitioners.

Another respondent concurred that investing in ICT avoids wastage of resources in healthcare delivery and remarked:

Open MRS summarises actual number of patients and their regimes, which helps in making accurate orders hence non-wasteful. There are no over requests and over-supplies hence no wasted drugs and no stock outs. It is like a just-in-time technique hence efficiency. RXSolution captures stock expiries as well. One can tell dates of drugs expiry and decisions are taken on redistribution and reverse logistics to National Medical Stores.

This view supports Ferguson and Keen's (2006) assertion that integrated information systems that function efficiently have the potential to eliminate wastage of resources, reduce health costs and health contract monitoring costs by providing updated information, reduce waiting times at hospitals and reduce unwanted procedures. Innovations and organisational changes result in proper information sharing and appreciating common goals, which reduces the costs of business transactions (Ferguson and Keen 2006, p. 32).

In spite of the comments in support of ICT innovations positively influencing health service delivery in government hospitals, there were differing views from the respondents, implying that there is no automatic cost reduction, no automatic accuracies, no automatic elimination of resource wastage and no doing the right thing right. One of the specialized medical staff stated:

Not all innovations lead to efficiency because not all stakeholders have ICT knowledge. Some computers lie idle and some records staff prefer manual to automated systems. Nonetheless, phones have helped health workers to do their job right.

Another pharmacist remarked as follows:

ICT platforms concentrate on capturing data and reporting. Unless medical workers read reports on notice boards then these cannot help in doing the right thing right. These platforms only help administrators and managers like in ordering for drugs and accountability. This mTRAC system cannot generate good results in case of missing information. It is too procedural. Some staff fail to fill complete data hence less efficiency and loss of revenue.

Some authors share that view that ICT innovations do not necessarily lead to efficiency. Agha (2013) believes that after the adoption of HIT, health expenditures are bound to increase by almost 1.3 per cent as a result of the higher charges for hospital inpatient stays. There is no precise measure of increased costs and no evidence of savings after years of HIT adoption. Inpatient stays at the hospital and the numbers of patients attended to by doctors do not necessarily change as a result of HIT adoption (Agha, 2013, p. 29). This is further supported by Dranove et al. (2012), who researched on the impact of EMR adoption on the operating costs of a hospital and found that the adoption of EMR is slightly correlated with high costs of operation, and cost-saving is realised within a period of three years after HIT adoption in rural hospitals with high concentration levels (Agha 2013, p. 28).

In general, with regard to contracting using ICT, Ferguson and Keen realise some linkage with efficiency but not in totality. They argue that if ICT adoption to some extent reduces the acquisition costs and usage of contract information and by linking buyers and suppliers together on digital networks increases the number of potential providers that can compete for a specific service, then they may account for the increased competitiveness of the internal markets. ICT adoption may or may not increase the efficiency in the contracting process (Ferguson & Keen 2006, p. 33).

5.4.2 Findings on policy Innovations and their influence on efficiency of health services in government hospitals

The respondents were also asked regarding how health services delivery innovations (policies) influence the efficiency of services in government hospitals. One of the hospital administrators stated:

Health service delivery policies guide in ordering, management of stock and accountability for stock received. The HR for Health policy has helped in having the right health cadres in the right numbers and what they are supposed to do at a facility. This helps to provide the right services at the right time. All the 24 hour duties are well covered

The respondent's view on human resource policies improving health service delivery is supported by Dussault and Dubois (2003), who describe a good human resource policy as one that helps in planning. The World Health Organisation shows that good policies are important in forecasting the vision of an organisation, in determining long-, medium- and short-term preferences, in setting of priorities, in setting strategic objectives, and in defining strategic and action plans. Dussault and Dubois (2003) also state that good health policies support the decision-making processes in line with public awareness of benefits and costs related to proposed health options. Health policies also provide for monitoring and evaluation frameworks since a criterion for actions to evaluate is set while focusing on strategies, priorities, resource requirements, expectations and objectives. Legitimation of the actions of health professionals and other stakeholders in the health sector is facilitated by the existence of a health policy (Dussault & Dubois 2003, p. 3). This description is demonstrated in the figure below:

misuse, hence disadvantaging health service delivery. Local institutions with less trained and experienced personnel were left with too many responsibilities, which resulted in poor planning and poor policy implementation. There was too much concern about income generation by district administrators, legislative branch managers and medical practitioners (Kristiansen and Santoso, 2006, p. 255).

Dougherty et al (2019) also argued that decentralization and health service delivery (in respect to life expectancy) are not statistically correlated. They stated that much as decentralization can reduce expenditure on public health, excessive decentralisation is connected with increased public health spending and lowering life expectancy with reversed cost saving (Dougherty et al. 2019, p.4)

The Permanent Secretary of Ministry of Health had mixed views and remarked:

Decentralised health service as a policy creates quick decisions since there is autonomy to plan and budget but there is a problem of quality supervision and service delivery. The policy has not been ably supervised by the central government. The District Health Officers report to District Chief Administrative Officers and other senior officers in the local governments. There are plans to recentralise in order for the centre to attract, transfer and discipline such officers.

This view is supported by Peckham et al. (2008). Decentralisation is also a key element of the government's policy on improving healthcare services. It is, the process of throwing off the constraints and shackles which are perceived to be part of working within the public sector and achieving greater responsiveness, with managers taking greater responsibility. Therefore this appears to be the answer to the problems of an unresponsive, lumbering central bureaucracy and is seen as improving the National Health Strategy. However, such a simplistic view of the effect of decentralisation is deceptive. There is a substantial literature examining the use of decentralisation in the public sector. There is, however, little clarity about where decentralisation is leading, and a lot of ambiguity in its use and meaning (Peckham ET al.2008, p. 561).

Martínez-Vázquez and McNab (2003) as cited by Rodríguez-Pose et al. (2007) also agree that decentralisation increases efficiency but there is need for robust research to establish this assertion. Decentralisation can affect government efficiency. Transferring of some expenditure and resources to the local levels may allow accurate matching of local population and end-user preferences with public spending, thus increased efficiency of governments (Martínez-Vázquez & McNab 2003). Despite the argument that a decentralisation policy improves government efficiency appears to be widely accepted amongst states and governments and within the international community, there is scanty empirical proof for this assertion. The absence of concrete and factual evidence is connected to the difficulty in quantifying efficiency of government. Therefore, research that focuses on testing allocative efficiency through political or fiscal decentralisation hypotheses should instead focus on alternative measures of efficiency such as size of government or growth of the economy (Rodríguez-Pose et al. 2007, p. 3).

The sentiments on whether decentralisation as a health services delivery innovations policy influences the efficiency of services in government hospitals and the proposition that it may not could be the reason why Norway decided to recentralise health service delivery, as by Magnussen et al. asserted (2007). Norwegian healthcare system since the 1970s has been anchored on a belief that decentralising both policy and financial authority to the county level would yield cost effective and efficient solutions. Norway abandoned this model in 2002 and embraced one based on the belief that recentralization of the same powers would generate the desired effects. In comparison, the period 1999–2001 ('before') with 2002–2004 ('after'), whereas cost efficiency on average fell by 0.7 per cent per year before the decentralization reform, it increased by an annual average of 2.3 per cent after. Similarly, technical efficiency increased by an annual average of 0.4 per cent before the reform, compared with 2.5 per cent after. Therefore, efficiency was seen increasing as a result of decentralization reforms (Magnussen et al. 2007, p. 2130).

The respondents were further asked how PPPH as a health services delivery innovations policy influences the efficiency of services in government hospitals. One respondent (pharmacist) had this to say:

With Public Private Partnership for Health under voucher project with Marie Stopes, medical workers follows procedures. There is no wasting time since there is payment for work done. They do everything right without gaps.

Fabre and Straub (2019) agree with the respondent on the efficiency derived from PPPs since they state that PPPs bring about gains in efficiency and high performance-specific indicators like wide coverage and quality. PPPs also allow governments to outsource the requirements for performance and tie penalty payments to the private providers, which results in incentives and a motivation to deliver at minimised costs. Incentives have often led to the private providers increasing performance efforts and scaling down costs, especially in large projects like construction and other infrastructure projects. PPPs allow project risk-sharing and allocation and the risks are pushed to a partner that is well positioned to manage them (Fabre & Straub 2019, p. 5).

The findings of a study conducted in Singapore on PPPs and healthcare efficiency also agree with the views of the respondent. Singapore gains good value from the adoption of PPPH. Healthcare users can enjoy accessibility and make a choice between public health facilities, which constitute 20 per cent of such facilities, or private health facilities, representing 80 per cent, for both inpatient and outpatient care. There is a steady stream of well-heeled foreign patients (over 200,000 in 2001) who fly to Singapore for medical treatment and the medical workers enjoy a high reputation. In a survey conducted nationwide, it was found that the average length of stay at a public hospital is five days and that there was a high level satisfaction by patients discharged from corporate public health facilities (Meng Kim Lee 2003 cited by Masereka 2009, p. 11).

A member of the Hospital Management Committee affirmed the contribution of PPPs as follows:

Yes when we had cost sharing in form of PPPs arrangement, patients were paying some money and health workers were always there at the health facilities to do their work. They would be there in time, do the right thing. They would not be tempted to steal drugs. They were efficient because there was some motivation.

Plummer (2002) agrees with the respondent and supports the argument that PPPs can be used to unlock effectiveness and efficiency by highlighting the added value that a private partner can bring into motivating and empowering personnel through the implementation of comprehensive training programmes and the introduction of performance management systems. It is also believed that the private partner can align personnel to a customer-focused approach (Plummer 2002, p. 22 in Minnie 2011, p. 110). When structured and implemented well, PPPs can solve investment-related challenges, reduce costs, enhance quality services and deliver efficient health services (Torchia et al.2015, pp. 239 -240).

In spite of these responses and positions of authors on the positive effect of PPPs on delivery of health services, others believe that not much is seen other than mixed feelings on the positive and negative impacts. Fabre and Straub (2019) argue that in PPP the effect on health service delivery is inconclusive. There are mixed reactions and limited evidence regarding the effect of PPPs on satisfaction among patients, and on quality services and outcomes related to healthcare delivery. There are strong arguments in support of PPPs in infrastructural projects since they deliver efficiency gains in the delivery of services (Fabre & Straub 2019, p. 3).

The mixed feelings could be as a result of the conceptualisation, implementation and sustainability challenges which a number of authors put forward. Almalki and Al-Hanaw (2018) state that PPPs got serious attention from research centres, communities, governments and NGOs worldwide when it was evident that socio-economic development process relies on utilization of full potential and capabilities available in society that include expertise and resources in both the private and public sectors. PPPs enable most organisations to start and manage projects of different types and sizes

after each independent organisation has had opportunities and faced challenges in the effort to achieve their set development goals (Almalki & Al-Hanaw 2018, p. 10).

Likewise, Tashobya et al. (2007) reaffirm that there are challenges associated with conceptualising PPPs, confusing it with funding irrespective of it (funding) being in advanced stages of PPP development. In Uganda, this has led to the understanding of PPP for Health in terms of how governments relate with private not-for-profits (PNFPs) and how the latter's facilities benefit from funds from governments. Public Private Partnership for Health is also viewed as a threat to private sector autonomy and, as a result, these PNFPs and other private stakeholders in health fear that the arrangement could be a government ploy to take over privately owned institutions, like it was the case was in the 1960s with missionary-founded schools. Such a challenge may continue to affect service delivery at local government levels where private providers are viewed as competitors (Tashobya et al. 2007, p. 49).

Fabre and Straub (2019, p. 28) argue that, according to the Health Research Institute (2010), substituting health service provision by the public sector with provision by the private sector may bring efficiency gains, although there is no evidence of the effect of private finance initiatives (PFI) on the health sector. Fabre and Straub (2019) further contend that whereas some evidence exists about efficiency gains arising from PPP implementation, especially in education and infrastructure, one cannot conclude that PPPs offer the best solutions because there is limited knowledge of PPPs and how they relate to health service delivery (Fabre & Straub 2019, p. 68).

5.5 Chapter Summary

The results generated from the empirical findings and literature review showed that innovative health service delivery ICT platforms (mTRAC, OpenMRS, the health management information system and U-Reporting) greatly influence efficiency in government hospitals in many countries, Uganda inclusive. mTrac, OpenMRS and the Health Management Information System were found to be commonly used. In the hospitals under this study, mTRAC and HMIS were the platforms used. U-Reporting was

not found to be common in the government hospitals in this study. Just like under the speed of health services, challenges were identified that were related to the use of these ICT innovations such as limited number of computers, a dearth of trained personnel, limited internet connections and inadequate networked systems for all stakeholders to access information.

On policies related to health service delivery and influence on efficiency, human resource policies in health, decentralised health policy and the PPP for Health policy were found to have an impact on efficiency in healthcare. Nonetheless, conceptualisation, implementation and sustainability problems were discovered. Some findings that pointed recentralising health services, as is the case of Norway in order to get better results.

The next chapter (Chapter Six) discusses the effect of Health Service Delivery innovations on Quality of Health Services in government hospitals in Uganda in terms of efficacy, standard and serving the intended purpose.

CHAPTER SIX: THE EFFECT OF HEALTH SERVICE DELIVERY INNOVATIONS ON QUALITY OF HEALTH SERVICES IN GOVERNMENT HOSPITALS IN UGANDA

6.1 Introduction

In order to assess how effective healthcare delivery is on a global scale, measuring quality of healthcare is one of the acceptable criteria (Kleinman & Dougherty 2013). Globally, health systems are searching for means of delivering care in better and efficient, cost-effective ways. There is growing emphasis on the improvement of quality and the outcomes of care, unlike in the past where concern was about cost reduction in healthcare. This is majorly due to advanced research in health service provision that has shown changes in healthcare outcomes and healthcare processes in technology-led economies like the United States (Ferlie & Shortell 2001, p. 281). The delivery of public social services has arguably not been responsive and accountable, as there are various stories on the mistreatment of patients in public health facilities by staff. There are both consumer and clinical quality-related problems as well (Harding & Preker 2000, p. 1).

Prior to the 1960s, the history of quality of healthcare portrayed non streamlined and fragmented events that were not related. In an attempt to understand how such events evolved as the basis for quality healthcare improvement, many categories have evolved to identify innovations globally in United States, Europe and Asia. To a great extent, most of this history is incorporated in the day to day medical practices and activities related to quality improvements which have often been taken for granted (Sheingold and Hahn 2014, p. 18).

Quality, which is integrated into the Australian frameworks, focuses on customers in the system and its dimensions are similar to those of the concept of performance. Systems are considered to be performing well when they deliver best quality results in an efficient and cost-effective way. In Australia, improvement in safety and quality are the

focus of many national initiatives, such as the Australian National Council of Clinical Studies, the Australian Council of Safety and Quality Healthcare, the National Health Policy and the National Health Priority Action (Arah et al. 2003, p. 387).

A quality assurance checklist includes the existence of health equipment, complete HMIS accounts, client assessments of health service provision, health treatments, health consultations, systems structured for reviewing records of deaths, and audits of registers and medical records (WHO 2009, p. 17). There are three proposed innovative ways of making health service provision cheaper and better (quality), namely: (i) changing the way in which consumers use and buy healthcare; (ii) using ICT in new product development and treatment to improve care; and (iii) the generation of new business models that take care of the vertical and horizontal integration of independent health service organisations (Herzlinger 2006, p. 2).

This chapter presents the literature on how ICT and Policy Health Service Delivery innovations influence quality of health services in government hospitals. The chapter also shows the gaps in literature and the justification for collection of data to fill the gaps in literature. Empirical findings are discussed alongside views of various authors to show agreement or disagreement on the study variables.

6.2 ICT Innovations and their Influence on Quality of Health services in Government Hospitals

Knowledge and Innovations in healthcare industry are components of human history and are not new issues in the management of hospitals. There has been a general tendency in the social sciences and humanity disciplines to underestimate how innovation has grown in hospitals yet medical innovation as part of technical care systems is at the centre of health service delivery. Hospital innovations are predominantly initiated by the medical profession and hospitals, which are managed by

medical professionals, are meant to offer an open-ended and extensive range of services that provide for quality dimensions (Djellal & Gallouj 2007, p. 181).

Increasing interest is growing in measuring quality improvement in the healthcare in many countries due to increased healthcare costs, limited resource envelopes, high demand for health and evidence of changes in the practices of clinical medicine. In the UK and the US, improved quality healthcare is high on the national agendas. According to Roland et al. (1999) and Schuster et al. (1998) as cited by Campbell et al (2000) emphasis has moved from cost and activity assessment to quality assessment focusing on efficiency and cost-effectiveness in resource utilisation in healthcare (Campbell et al. 2000, p. 1611).

Hospital quality standards and the provision of medical services were introduced first in 1917 in the US. There was increased interest in international standards requirements and total quality management aspects in the international trading in manufactured goods after the 2nd World War in 1947. Worldwide, continuous improvement and total quality management have become common concepts in the manufacturing industry following success stories in Japan. The application of these concepts has been extended to the healthcare industry and this precipitated the 1990s healthcare reforms in developing economies that resulted in the outsourcing and privatisation of services and goods. The impact of these reforms led to increased interest in the achievement of improved quality and efficiencies in both private and public settings (Mills et al. (2002) cited by Montagu (2003, p. 7).

Healthcare quality is among the requirements for determining quality of life and it is a serious political issue in some countries. Quality healthcare is increasingly becoming a priority since care receivers are beginning to exercise their inherent human rights in choosing who to involve in their healthcare provision. There will be need for healthcare organisations to focus on how quality health outcomes can be meaningfully felt by the

patients. Health leaders and patients' advocacy groups should now focus on the safety of patients and conduct investigations that are geared towards a reduction in hospital-acquired infections, medical errors, pressure sores or wrong site surgeries more than before (CGI 2014, p. 4).

Success has been registered by a number of healthcare organisations in implementing health information infrastructure, which has assisted medical workers in improving access to knowledge that eventually leads to improved safety, efficiency and quality of health services. Although a lot remains to be achieved, there is need to consistently apply ICT benefits in the healthcare systems in the health information infrastructure. A national health information infrastructure supports quality improvement in the areas of knowledge, information, data and decision-making at all health sector domains, be it public health, medical research, health service delivery, personal health and health investments (Detmer 2003, p. 1).

6.2.1 Definitions of terms and concepts

6.2.1.1 Definition of quality

Nelson et al. (2005) citing Reeves and Bednar (1994) confirm that quality has metamorphosed into the main concept of business, with many disciplines being applied and with serious growing implications for value in businesses. Quality is therefore defined as being related to value or conforming to specifications or excellence or meeting one's expectations. To them, the mentioned quality notions are interrelated and play a considerable to shape the perceptions of consumers (Nelson et al. 2005 as cited by Akter et al. 2010, p. 5)

According to Donabedian, quality denotes the ability to achieve desired objectives using means that are legitimate. If a system delivers quality care or results hence achieving desired goals, it is said to be performing according to the Austrian quality framework.

IOM takes quality to be the process of achieving the desired and targeted health outcomes in line with the application of professionalism, effectiveness principles and avoiding underuse and overuse (Arah et al. 2003, p. 393). According to Prahalad and Krishnan (1999, p. 110), traditionally, measurement of quality has been related to the ability of a product to meet specific specifications. There are other views that focus on quality as measurement of adaptability of a product to meet needs of customers and the ability of a product to encourage innovation.

From the definitions above, quality is seen to be multidimensional. Care in the health field is said to be of high quality if it embraces safety, effectiveness and timely taking care of patients' needs. The parameters used to deliver and measure quality care developed by OECD include: the product's acceptability; care of the environment; the product's accessibility; appropriateness of the product; equity; competence levels; capability of the product; safety; sustainability/continuity; timeliness/speed of service; efficiency and effectiveness; clinical focus and patient-centeredness (Onyebuchi et al. 2006, p. 8).

6.2.1.2 Definition of quality care

According to the Institute of Medicine as cited by Lohr (1992) quality care is the degree to which individuals' and population's health increase the likelihood of desired health outcomes (Campbell et al. 2000, p. 1614). Quality care embraces patient safety and is also related to standards and the degree to which populations and individual health services increase consistent and desired health outcomes. Recent quality care components include safety, effectiveness, timeliness, patient-centeredness and equity, with safety being the foundation for all (Mitchell 2008, p.4 cited by Arah et al. 2003, p. 393).

6.2.2 ICT innovations and their influence on the quality of health services at global, continental and Ugandan levels

With the influence of emerging information technologies, times are truly changing in the healthcare industry. Detection and analysis methodologies on checking medical conditions have and will be often revised and extended. The support which upcoming information communication technologies are offering are real, necessary and have emerged at real and best time (Yang et al. 2015, p. 3).

Quality healthcare provision is a vital requirement because of the twofold consequences (as advanced by Bowers and Kiefe 2002) of improved human health status and relief of suffering. The delivery of healthcare has, however, since the 1990s experienced serious challenges. The connectivity of healthcare networks and the excessive rush for systems of managed care have led to the realisation of real competition by healthcare providers. It is crucial for healthcare recipients (for them to be successful or survive) to be given the services which exceed or meet their expectations in the seemingly hostile environment (Lee et al. 2000 cited by Büyüközkan et al. 2011, p. 9409).

India's service organisations (as is the case in most developing economies), such as hospitals, have put emphasis on service quality by integrating IT at the centre of the delivery. IT adoption and application in health service provision has gained importance. ICT has not only revolutionised the economy, culture, industries, financial markets and politics; it has also affected the health sector in terms of timely decision-making (Itumalla 2012, p. 433).

Traditionally, UK government-run healthcare services have not received large funding for IT, and this has led to a situation in which disparate IT systems have produced pockets of efficiency and quality alongside serious shortcomings in organisational processes and services. Using Web-enabled IT systems as a way of empowering e-government within healthcare, the UK government has embarked on the largest civil IT programme in the world to reengineer organisational processes and services to enhance

quality patient care. The current wave of Web-enabled IT systems is expected to play a large role in how the UK government fulfils its agenda for public reform in healthcare (Currie & Guah 2006, p.7).

Various hospital studies in the US suggested that there are high returns arising from the adoption of IT in health. In a study conducted in 2005 and 2006 in Texas hospitals by Amarasingham and others, it was found that there was more high-quality care with the adoption and use of IT in hospitals (Amarasingham et al. 2008, p. 39). In a similar study conducted by Feleciano Yu and others on the computerisation of hospital patients' safety, it was discovered that most wired or computerised hospitals with physician order entries performed better than the less wired/computerised in terms of quality healthcare (Yu et al. 2010, p. 17; McCullough et al. 2010, p. 650).

The use of telemedicine in health service delivery has the ability to contribute to improvement of access to health services at reduced costs. Using IT facilitates quality and accessibility to communication and information which, in the long run, empowers the poor and rural communities. IT enables these communities to get health services that are hitherto far beyond their reach. Telemedicine, when influenced by wide communication and information, ably responds to health needs and the priorities of the communities. Use of IT in areas of Lumimba and Chitungulu (Lundazi district) in Zambia has led to government offering quality services as this is a commonly flooded area near a river bank (Mupela et al. 2011, p. 9).

The application of ICT in Health Service Delivery to Namibian patients is anticipated to produce: (a) increased patients outreach; and (b) quality healthcare improvement. These expected benefits related to quality service improvements as a result of ease in accessibility of health information and quicker disease diagnosis have globally been acknowledged. In a study conducted by Shivute, Owei and Maumbe in the regions of Oshana and Khomas in Namibia between July and August 2006, it was found that most hospitals rely on ICTs for quality health service delivery (Shivute et al. 2008, p. 4).

The Ugandan government designated ICT as a priority in the policy development framework and is promoting ICT for national development. There is slow penetration of ICT in Uganda's healthcare system though most health training institutions and big hospitals use computers in administrative services. The health sector has greatly and increasingly been impacted by the use of ICT in the improvement of administrative efficiency (Solanas et al. 2014, p. 77). There are challenges and deficiencies in health service delivery in most developing nations as a result of deficient delivery mechanisms, upkeep of equipment and facilities, access inequalities in rural communities, inequitable allocation of resources, and poor stakeholder engagement (Fraser & McGrath 2000). The application of ICT systems may, however, improve the quality of services through the provision of reliable information and using resources efficiently (Rwashana & Williams 2008, p. 146).

6.2.3 ICT innovations and their influence on quality of health services in government hospitals

Quality Health Care demands are increasingly becoming imperative with the advanced technology as well as increased needs in the healthcare industry. ICT now plays a central role in shaping healthcare centres to provide quality services and this, in turn, will boost the service quality of hospitals. As hospitals evolve for posterity, ICT is making the quality health service provision possibilities infinite (Itumalla 2012, p. 436). The use of IT supports and improves healthcare quality. It is now imperative for healthcare units to embrace ICT in the enhancement of quality services. Hospitals utilise IT in the registration of patients, payment transactions and medical records retrieval. Other important areas of healthcare that utilise IT are patient support, diagnosis, pharmacy, nursing, and related support services for quality care (Mosadeghrad 2014, p. 550; Itumalla 2012, p. 433).

In the UK, the implementation of the Web-based IT system in the National Health Strategy, if well implemented, was envisaged to: (a) provide patients with more

appropriate and timely care that results in quality clinical services and outcomes; and (b) facilitate easy attraction and retention of more staff of high quality. All these would happen if systematically and well adopted within the whole health sector (Currie & Guah 2006, p. 16).

In the healthcare industry, HIT aims at providing reasonable information to healthcare providers, health policymakers, managers in decision-making positions and professionals in treatment and care centres. HIT provides quick data on health that is economical, secure and up-to-date. This data is important in improving quality and efficiency in health services delivery (Kumar Sinha 2010, p. 228).

Kalyanina (2010) avers that using computer technology allows for the creation of electronic models of objects like patients' medical records in the interests of various users and for different reasons or purposes. These models should ideally conform to the interests of all concerned parties and enhance quality improvements in patients' health management processes, though it is impossible to solve all quality issues at once. The development should be done gradually (Kalyanina 2010, p. 12).

For the health administrators, HIT facilitates them with routine and non-routine tools of data collection, analysis and reporting to other levels. Data generated via HIT provides a deeper understanding of community needs in healthcare as means for community health programmes improvement. Where there are disease outbreaks or disasters, HIT is integrated with other IT applications like telehealth and telemedicine to assist health workers in the delivery of quality services to larger groups of patients inside or outside the areas under coverage (2010 Kumar Sinha 2010, p. 232).

According to Kalyanina (2010, p.22) as cited by Gaponova (2017), it seems that the first step in using ICT in healthcare is to gather and process patients' information so as to be attended to by the health workers. Well-built computer systems that have database

management systems which are specialised improve quality indicators dramatically; these indicators include relevance, internal consistency, completeness, accuracy and ease of access, and use of information. Any system that does not generate such accrued benefits to the IT users will be rejected and resisted for not being beneficial to real relief at work.

HIT can potentially make a serious contribution to the improvement of quality and access to health services as costs are contained. The varied contribution of HIT to healthcare is registered in community education, the improvement of nutrition and hygiene, the provision of long-term, elective and emergency clinical care and improvement of living conditions. Ultimately, these cause changes in socio-economic development as well as advancement in the quality of the health sector (Kumar Sinha 2010, p. 225).

6.2.4 MTrac innovation and quality of health services in government hospitals

As a governance and service delivery tool, mTrac operates through RapidSMS. It provides a disease-specific application of a mHealth tool. It is a user-friendly system when utilised consistently, even without any additional supervision or financial incentives. The operational costs are very low and it utilises facilities such as phones that staff already own, minimising costs. Once fed well with accurate data, it generates quality reports, hence quality healthcare outcomes (Otto et al. 2015, p. 19).

MHealth, which Nigeria adopted, had facilitating factors for deployment that include wide penetration of the mobile phone network, availability of mobile devices, as well as the need for mHealth and identified healthcare inadequacies in the health system of Nigeria. mHealth has been used to offer solutions, as seen in similar healthcare interventions in developing nations; therefore it has the potential to help address the health gaps in Nigeria and, especially, address patients and health workers in remote locations. mHealth can bring about a paradigm change and a rise in the potential of

medical workers to improve the quality of health service delivery through timely health interventions (Fabiya et al. 2017, p. 573).

The success of the roll-out of mTrac in Uganda suggests that this type of routine data system can be adopted by various states to achieve efficiency, save costs and monitor demand and supply indicators of health in distant and hard-to-reach areas with high health vulnerability. Second, adopting multiple reporting mechanisms can maximise the quality of information received. In the case of mTrac, this is achieved by cross-checking the SMS data submitted by health units with information received from the unknown SMS hotline as well as independent reports sent by volunteer health teams at the community level. Third, RapidSMS reporting holds vast potential to enhance the inclusivity and effectiveness of service delivery systems (Cummins 2012, p. 2).

6.2.5 OpenMRS innovation and quality of health services in government hospitals

Standards of the Health Information and Management System Society analytics and International Standards Organization show that patients' medical records can be referred to as Electronic Medical Records, Electronic Health Record and Personal Health Record. The use of Electronic Medical Records in form of a health information carrier makes it possible for the upcoming information communication technologies to offer high potential to facilitate quality improvement and research in the practice of medicine (Yang et al. 2015, p. 4).

Terminologies like electronic computer-based patient record (CPR), electronic medical record (EMR), computerised medical record (CMR), electronic patient record (EPR) and personal health record (PHR) can impliedly be talked about as electronic health records (EHR). In Canada, Health Infoway was developed as one of the systems for storing and processing health information. With a swelling budget of over 1.2 billion US dollars in investment, Canada Health Infoway is one of the OpenMRS-related projects for Canadians that focus on efficiency in the delivery of health services. It ensures the confidentiality of patient information and accessibility to fast, accurate and complete

patient information, and facilitates better health decisions, treatment and diagnosis. The overall outcome is sustained healthcare with cost savings, high productivity, accessibility and high-quality levels (Aminpour et al. 2014, p. 59).

Like other OpenMRS systems, EHR is an important part of medical informatics. EHR provides an opportunity for health-providing institutions to improve quality for patient safety and care with the potential to influence cost reduction and improve workplace efficiency (Mandl et al. 2012, p. 599). Using electronic records is more advantageous than using paper records in terms of increasing speed, and enabling easy access to records from rural and hard-to-reach areas and easy records retrieval. These result in reduced prescription errors and the elimination of prescriptions that are handwritten. The end result is quality and efficient healthcare (Akanbi et al. 2012, p. 1).

OpenMRS is a not for profit and collaborative multi-institution led by the Regenstrief Institute and Partners in Health to install and develop medical record systems in concert with local users is a good example in Rwanda. OpenMRS teams use open-source, non-proprietary strategies where software programming code is available for use by everyone to see, share and enhance. The main objective is to create medical record systems and implementation frameworks which enable self-reliance and systems development within environments that have resource constraints for quality health service delivery. To date, many countries in Central and Latin America and others in Africa including Uganda, Mozambique, Tanzania, Rwanda, Zimbabwe, Lesotho, Kenya, South Africa and Ghana have implemented OpenMRS (Gerber et al. 2010, p. 234).

6.2.6 HMIS innovation and quality of health services in government hospitals

As an open system that attempts to integrate and facilitate information flow inside and outside the hospital, a Hospital Information System equally provides for the application of such information in all functions of the hospital. The system supports providers of healthcare to obtain information about patients, prepare operation documents, track patient movement history in various locations, compile hospital data, reduce

transcription work and access multiple types of information (Nguyen et al. 2014, p. 784). If well designed, an integrated HIS at any hospital leads to improved productivity of staff and this enables any service centre or department to control its own processing of information, thus contributing to quality of patient care. Hospital information technology (HIT) also integrates telehealth and telemedicine to enable delivery of quality health service. This enables managers and administrators of health service industry to monitor and evaluate the community health status and performance of health facilities (Kumar Sinha 2010, p. 231).

In China, price bidding is internet-based with potential providers of health services publishing the pharmaceutical product needs and their attendant quantities on the pharmaceutical procurement information platforms. Similarly, the maximum prices payable for any product are indicated on the platform, with all manufacturers and suppliers of pharmaceutical products making offers to particular tenders online provided they are registered. The competitive procurement/bidding follows three rounds and the bidders offering high prices are automatically eliminated. Although price is an important factor in the bidding process, an essential criterion is that the quality of the products must meet the required standards (Tang et al. 2012, p. 9).

Kenya's Annual Health Sector Report of 2005-2007 specifies that the goal of Hospital Management Information System (HMIS) is to generate and use health information in policy development, planning, budgeting, management, implementation, monitoring and evaluation of health programmes in the sector. HMIS in Kenya is, however, not delivering the goal and, thus, quality healthcare has not yet been achieved. HMIS is a stand-alone at the health ministry and focuses on a single vertical function. The district and county health information systems that are meant to feed the national system are fragmented and limited to the management of health service units and hospitals within their regions. The public hospitals' healthcare quality systems have benefitted to only a limited extent from HMIS. The challenges facing the systems include limited number of

doctors, inadequate in-patient beds shortage of patients' vital medicine, long waiting times for surgery, strikes by doctors and nurses and negligence of personnel (Macharia & Maroa, 2014, p. 2).

In Uganda, data generated by HMIS facilitates the assessment of districts and other local governments by comparing the achievement of health sector performance indicators (WHO 2003; MoH 2004). Sets of selected health indicators to be monitored in the health sector strategic plan are identified using the HMIS. These include the proportion of children below one year who complete immunisation, the number of deliveries made in health facilities, outpatient utilisation etc. Annually, HMIS generates data that districts extract from various reports for decision-making. On the basis of district performance rankings (worst to best), rewards are given during national health conferences, which stimulates competition within districts and between health workers and finally leads to quality health service delivery and progressive health improvements (Kintu et al. 2005, p. 51).

6.3. Decentralisation and Public-Private Partnership Policies and their Influence on Quality of health services in Government Hospitals

In the process of structural and functional evolution of a hospital, there is always necessity to have transparent and clear interventions and efforts in place if efficient and quality health services are to be realised. This will necessitate decentralising services to local communities and organisations from the public hospitals. More importantly, the arrangement requires well planned coordination amongst healthcare delivery levels, good accountability strategies by all stakeholders and better information systems (Saltman, et al. 2011, p. 21).

Due to the evolution of the public health system roles, the movement from direct service provision to the formation of partnerships is taking shape. These partnerships are needed in order to undertake community health planning and actions to improve community health (Health Resources and Services Administration 1995; Centre for

Studying Health System Change 1996; Sofaer 1992). Care organisations have come on board to form alliances with governments in the interest of health promotion and disease prevention (Bazzoli et al 2007, p. 534). For a health system to function properly, there is need to organise capabilities and competencies from various stakeholders to contribute to shared quality healthcare. The stakeholders, be they private or public entities, will bring on board different expectations and logic (Saviano et al. 2014, p. 200).

6.3.1 Decentralisation policy and quality of Health Services

In China, under the decentralised health policy since 2007, almost all community hospitals and health centres in districts/counties in Beijing, Chengdu and Hangzhou have applied the principles of separating revenue and expenditure systems (SRES). The implementation of SRES has impacted on four aspects, namely: (i) quality of care; (ii) community health workers' perceptions; (iii) changes in expenditures on health; and (iv) quantity changes in the services provided. These findings were obtained from the published Chinese literature drawn from assessment studies conducted in some cities that piloted SRES (Tang et al. 2012, p. 8).

The Catalonia region in Spain, with a million inhabitants, seems to have greatly benefited from decentralisation of health services. Benefits arise from the sense of community engagement and the historical bondage of complementary and social structures. Authorities introduced market mechanisms which aim at preserving a high sense of public control while utilizing private providers who are outsourced by the local authorities at the health facilities. As a result, the quality healthcare service has been realized (Martin-Moreno et al. 2009, p. 1170).

Most of the health cases referred to in Latin America, Asia and Africa show that with the introduction of the decentralisation policy, either there has been a decline in the quality of serviced provided by the public sector or it has remained unchanged. Evidence obtained from the *IDS Bulletin* points to no or little improvement in access to quality

services by the poor after transferring powers and responsibilities from the centre to lower-level local authorities (Robinson 2007, p. 3).

Although decentralisation was focused on improving quality services in all sectors, including health, a number of challenges and criticisms have arisen. In the initial stages of implementing decentralisation, health workers' motivation and morale became eminent as staff transfers, assignment of new responsibilities and roles and the creation of new structures cropped in. Staff members were concerned about the uncertainty of their future and the overall effect of the policy of decentralisation on quality health service delivery. Such uncontrolled anxiety may compel health workers to seek jobs elsewhere, like the private sector within their countries and abroad (Kolehmainen-Aitken 2008, p. 8).

Kolehmainen-Aitken (2008) argues that if decentralisation isolates decision-making on human resource development and health at national level from staffing decisions at the local level, the ensuing conflict and lack of coordination have potential serious consequences for the affordable, equitable and competent staffing of health facilities, hence affecting healthcare quality (Kolehmainen-Aitken 2008, p. 9).

Irrespective of the implementation of the decentralisation of health policy in Uganda, both the rich and the poor still prefer getting services from NGOs and private for-profit health providers rather than the government facilities, which are less expensive (Hutchinson 2001). Most government health facilities are confronted with unutilised human and physical capacities, a limited number of trained medical staff, and shortages of drugs and equipment (Okello et al. 1998 as cited by Lindelow et al. 2003, p. 3).

6.3.2 Public-private partnerships (PPPs) policy and quality of health services

In their study on involving Public Private Partnerships in health service sector, Rroehrich et al. (2014) contend that inbuilt quality in hospitals is not better in Private Finance Initiatives and that services related to facility management provide lower Value for Money compared to non-Private Finance Initiative hospitals. While focusing on the case

of United Kingdom, Liebe and Pollock (2009) argued that under Private Finance Initiatives, the cost of finance is high as Facilities Management Services provide lower value for money when compared to non-Private Finance Initiative hospitals. Comparing with the education sector, Patrinos (2009) also confirms that there is not much evidence to prove that Private Finance Initiatives lead to saving of costs (Fabre & Straub 2019, p. 27).

From the public sector perspective, when PPPs are effective, they yield more skills, resources, capabilities, funds and flexibility in the delivery of services. These facilitate the sector's ability to provide responses to increased demand for services and upscaling programmes for national development. At national level, collaborations under PPPs empower nations to do resource mobilisation and direct such resources to undertake research, fund high-priority activities and improve quality healthcare programmes (Ritu et al. 2019, p. 6).

PPPs have the potential to influence the quality of healthcare by producing innovative health strategies and cost-effective consequences for proper public health goals, hence solving serious health problems. This stems from leveraged expertise, resources and ideas from various partners (Reich 2002). It is argued by Sharma and Seth (2011) as cited by Torchia et al. (2015) that PPPs offer a wide range of health benefits that include efficiency and quality in the existing health infrastructures, alleviating poverty and speeding up public service delivery. PPPs also fill in gaps left by the public sector in the prevalence and spread of healthcare infrastructure (Torchia et al. 2015, p. 251).

In India, government developed a Public Private Partnership Model for filling in inefficiencies and quality inadequacies in the health sector as there was a serious shortage of primary and community healthcare sub-centres. PPPs have thus emerged as the most viable way of facilitating health sector growth as the public goals are kept

in focus. The overall concerns of PPPs are improved accessibility, quality, efficiency and acceptability of health services (Saviano et al. 2014, p. 210).

In their study about new faces of private providers in low developed countries, and their attendant effects on implications on Public Health, Palmer et al (2003) suggested the need for collaborations and partnership between private and public sectors in health service delivery. Their arguments were based on the prepositions on virtue of competition theories in improving choices of customers and public sector responsiveness by giving contracts to the private sector to increase competition with publicly managed facilities and the pragmatic approach (bringing the private sector in to put in additional resources and capacity in public-run facilities). It was emphasised that evidence suggests that general practitioners in public health facilities regularly offer technical quality that is questionable, more so with regard to the disease diagnosis quality dimensions and to using the required drugs, indicating that there is chance for healthcare quality improvement (Palmer et al. 2003, p. 295).

Economically, when PPPs are embraced, a direct, the pyramydical structure of management is replaced by the contracting relations between providers and purchasers and this eventually increases quality and quantity as well as transparency of pricing methodology and competition, which leads to efficiency gains. However, it is argued that under contracting out (as a form of PPP), private providers take advantage of the ignorance of patients and they provide them with poor quality health services, which emanates into losses in health and welfare (Jutting 1999, p. 8). In his study on PPPs and social protection in low developed countries, Jutting (1999) further shows in Table 3 below that the private providers have a strong comparative advantage in healthcare than the public, hence there is a need for partnership.

Table 6.1: Comparative advantage in private and public sectors for healthcare social actors

	Moral hazard	Adverse selection	Covariate risks	Cost efficiency	Quality	Equity of access
Public sector*	--	+++	+++	--	-	++
Private for-profit sector**	+	--	++	++	+++	---
Private not for-profit sector	++	-	?	+/-	+/-	++

+++ strong comparative advantage / (---) strong disadvantage

* insurance universal

** insurance not mandatory

Source: Jutting, 1999, p. 10

In Uganda, during the introduction of health reforms under the PPP arrangement, payment of user fees by service users in hospitals and other health facilities was introduced to improve quality service delivery. It was expected that user fees would raise resources and improve equity and the quality of healthcare, which did not happen. The revenues collected were far less than the 5 per cent of overall hospital and health sub-district expenditure, hence made a minimal or no contribution to the efficiency and quality of health services. The abolishment of user fees in 2001 was a response to a 1999 World Bank report that pointed to an outcry over limited access to health services and declining standards of healthcare (Okuonzi 2004, p. 1173).

6.4 Empirical Findings on Health Service Delivery Innovations in the form of ICT and Policies and how they influence Quality health services in Government Hospitals

Literature reviewed above reveals that Health Service Delivery innovations are correlated to quality of health services in government hospitals. None the less, most authors focused on the primary objectives of the innovations on quality service

provision and not what actually has taken place. A lot is talked about desired quality health outcomes, perceived timeliness and equity, response to health needs/priorities and provision of reliable information that is envisaged to improve quality. However, the influence on case by case and cited in specific hospitals was not given. The perceived increased quality healthcare was also not detailed by many authors. On the innovative health services delivery policies, most authors were silent on how implementation of such may not necessarily lead to improved quality health care hence the negation of reverse relationships.

The gaps identified therefore called for justified further probing from government hospitals stakeholders on how Health Service Delivery Innovations in the form of ICT and Policies influence Quality health services in Government Hospitals. The field findings are as follows:

6.4.1 ICT Health Service Delivery Innovations and how they influence Quality health services in Government Hospitals

Like in the area of innovations that affect efficiency in health service delivery, field findings showed mixed reactions regarding whether health service delivery innovations (ICT and policies) positively influence quality in government hospitals. Some respondents agreed that they do and were thus in support of some scholars, others expressed sentiments that raised many challenges. One of the respondents (Hospital Administrator) who agreed stated, with regard to ICT platforms influencing quality in healthcare, that they (platforms) help one to get the required medication, as follows:

ICT platforms ensure that quality care is provided to patients because one is able to track them and provide them with the required medication. The platforms help to eliminate obsolete drugs and management of stock outs.

The respondents' views are consistent with Sreejith et al.'s (2016) that ICT platforms are intelligent remote patients' monitoring systems that integrate patient monitoring with many sensitive parameters and integrated mobile and information technology

solutions. They also act as systems of decision-making that reduce the time before treatment. In addition to being decision-making tools, IT solutions via wireless technologies generate and forward alert messages to the relevant healthcare providers. Applying various wireless technologies like GPRS, GPS and Bluetooth facilitates the remote monitoring of patients and these result in quality healthcare (Sreejith et al. 2016, p. 486).

Another respondent (pharmacist) said that health service delivery innovations alone cannot lead to quality service delivery. He observed:

Health service delivery innovations alone cannot produce quality healthcare. Other factors like availability of drugs and staff levels must be taken into consideration. Not much is done on quality due to innovations. Information and policies are not enough.

David Himmelstein and colleagues as cited by McCullough et al. (2010, p. 652) aver that ICT has little to do with improved quality. They state that the effect of computerising made low-quality difference in the 3,310 hospitals where they conducted the study in 2001-2005 in areas of heart failure, pneumonia and acute myocardial infarction (McCullough et al. 2010, p. 652).

Regarding the specific contribution of mTrac to the quality of health in government hospitals, one medical officer and member of Hospital Management Committee said that it (mTrac/DHIS2) helps to communicate accurate data which aids proper care responses. He stated:

DHIS2 has helped us to improve the quality of care and provides quality and accurate data. At the quarterly review meetings all discrepancies are identified from the data captured by the system. Solutions are provided and corrective action taken.

The response from the field agrees with Lee et al.'s (2011) findings in their study on innovations in the supply chain and performance of organisations in healthcare. They concurred that the performance of healthcare organisations is correlated positively with the innovation factors on the supply chain constructs. They conclude that supply chain innovations significantly impact the cooperation and selection of good service providers,

improved efficiency in the supply chain and overall practices in Total Quality Management.

The respondents were further asked how HMIS influence quality of health in government hospitals and one Specialised Medical Staff reacted as follows:

Data from HMIS reveals quality performance. This is further reviewed based on performance and action points are planned. Continuous medical education (CME) is conducted and internal support supervision done from performance review meetings hence improved quality service.

In support of this respondent, Shaikh and Rabbani (2005) wrote that HMIS are instruments that help in improving satisfaction among patients with respect to health services while tracking service quality dimensions. Riedl et al. (2009), in support, argue that comparing the perceived services delivered and the level of standards expected helps in checking quality. They further argue that HMIS should help in recording information on events of health and ascertain service quality in the healthcare at all levels (Riedl et al. 2009, p. 210). Shaikh and Rabbani (2005) contend that patient assessment forms an important part of the processes in health quality improvement. Some of the intended benefits include enhanced awareness about quality of services, improved communication, improved community awareness and better use of health services (Shaikh & Rabbani 2005, p. 192).

Some respondents showed mixed reactions to the question. Much as they agreed that health service delivery innovations fostered quality services, some could not confirm this and others challenged this view. One of them (Hospital Administrator) stated:

I cannot say we are giving quality services because of innovations. You can get right information but because of lack of equipment and materials and drugs, you cannot give quality service. We try though.

Shivute et al. conducted a study in 2008 on how ICT for health influences service delivery in Namibia. Their findings agree with the respondents' views as they concluded that health service delivery has several constraints, of which two are discussed below:

- (i) Budgetary constraints. Finances are inadequate to purchase all the necessary ICTs to help in the process of service provision to patients.
- (ii) Lack of primary infrastructure that supports the delivery of health services. It was observed that in some health units, like those in rural settings, lack primary infrastructure such as electricity, which is a serious constraint on the use of IT such as emails and personalised computers.

(Shivute et al. 2008, p. 286)

Another respondent (Specialised Medical staff) stated in connection with the perceived challenges regarding the collection of wrong data:

At times there is a mismatch on data generated and what is on ground. Some clinicians rush and do not have time to study their patients. Some reported diseases/conditions that are captured are different from what the final results show. The end result is doing a wrong thing hence no quality.

The views above are consistent with those of Currie and Guah (2006), who did an analysis of ICT innovations implementation in the health sector in the UK and agreed that, irrespective of the vision to have IT systems transform the health strategy, the public health sector had not been successful. The failure rates ranged from 60 per cent to 80 per cent, according to Brown (2001). According to the National Audit report of 2004, IT-enabled projects had a history of failure, with characteristics of poor performance, abandonment, overspending and delays, irrespective of annual expenditure of over 2.3 billion pounds on IT in the public sector (Currie & Guah 2006, p. 8).

6.4.2 Decentralised Health and PPH Health Policy Innovations and how they influence Quality health services in Government Hospitals

Asked whether innovative healthcare policies influence quality in health service delivery, one Specialised Medical staff in support answered:

Healthcare policies help in management of stock outs, managing obsolescence, having good coverage of stock for patients and help in continuously improving systems and processes hence quality in health service delivery.

One District Health Officer and member of the Hospital Management Committee added;

Much as decentralization of health sector is important in managing quality services, local governments have limitations in human resource capacity, necessary equipment, funds and morale to keep the quality standards. Local politics of interference is killing the would be quality.

Critics of decentralization agree with the respondents that there is no or limited trust in local authorities in the bid to ensure quality healthcare. This is due to limited capacity, resources and powers to produce or initiate production of goods and services with high health related benefits (Sang 2018, p.12). Mills et al. (1990) also contend that health-related policies affect quality healthcare. They confirm that during the process of implementing decentralisation, and in spite of the economic crisis, there has been an increase in overall investment in healthcare. The construction of buildings, renovations, budgetary allocations and filling human resource capacity gaps have been undertaken, hence influencing quality, though decentralised units rely on the central governments for funding.

On Public Private Partnership for health as a health service delivery innovation in improving quality health services, one of the respondents (member of Hospital Management committee) had this to say:

Quality health services are relative and depend on who defines them. Much as the policy on Public Private Partnership for health had good intentions, it had strong ground in hospital user fees and health workers were delivering with one heart. However, government scrapped it for no reason. Some people also argue that when applied in construction, private businessmen hide behind PPPH and compromise quality due to delays in payments by government.

The statement above is re-echoed by McKee et al. (2006) who argued that; generally, procurement under public private partnership model in health is more expensive than the traditional methods. Quality, time and cost (budget) were considered in the traditional methods but it appears now quality has been compromised. When problems arise, there is a tradeoff amongst the 3 variables. Many hospitals built under the Private Finance Initiative model have raised concerns on quality hence significant problems. (McKee et al.2006, p.893)

6.5 Chapter Summary

From a review of writings by various authors and from field findings, it is clear that both ICT platforms and health delivery policies positively influence quality in health service delivery in government hospitals. Though not much literature was unearthed on ICT platforms like U-Reporting and OpenMRS, there was sufficient literature on innovative policies, HMIS and mTrac. It was also found (in reviewed literature and field findings) that not all healthcare innovations lead to quality in health service delivery. Other considerations, such as organisational set-up, human resource gaps, finances etc. were raised during the study. It was also found that under PPPH, the quality of health services provision may be compromised.

The next chapter (Chapter Seven) is on the effect of Health Service Delivery Innovations on Patient Centeredness Care. The latter (Patient Centeredness Care) focuses on patients receiving right/standard care, being involved in decision-making

about their medication/treatment, getting explanations/information about their treatment and being consulted on how to be treated. Views from the medical workers, patients and patients' attendants are embedded in the chapter.

CHAPTER SEVEN: THE EFFECT OF HEALTH SERVICE DELIVERY INNOVATIONS ON PATIENT-CENTRED CARE IN GOVERNMENT HOSPITALS IN UGANDA

7.1 Introduction

Contemporary literature shows that Patient Centeredness Care is a pertinent theme in shaping and designing delivery of clinical and health care services. Recent literature recognizes the invaluable input which consumers of healthcare can make/have made in the achievement of clinical design characteristics which enhance consumers' and patients' experiences (Delaney 2018, p. 119). Patients are becoming regularly getting engaged in their healthcare, with a higher stake in the journey than before. Patients are now better informed than ever before. Information about treatment and medical conditions is now easily available on the online. To some extent, this has shifted the focus of the relationship between providers and patients to towards the patients. The advent of social media is also driving interactions in the healthcare new ways. Patients are exploiting these resources to discuss procedures, treatments, procedures and individual practitioners (Staley 2013, p. 3).

Knowledge management has evolved over time. Today, patients are knowledgeable about their ailments and how they should be treated. The provision of healthcare has evolved metamorphosised from application of the traditional doctor knows best thinking which was partnerlistic in nature to Patient Centeredness Care approaches. Traditionally, health practitioners prescribed treatment without inputs from patients and their caretakers or/and families. Current studies show and recognise the importance of patients in the provision of medical services in the healthcare continuum (Delaney 2018, p. 119). According to Sutcliffe (2017), engagement with patients is good and can be achieved when there are channels that allow understanding of their needs and/or frustrations as they begin their journey from good to ill health and the creation of a declarative agenda for integrated research beyond the pill (Sutcliffe 2017, p. 6).

This chapter presents the literature on how ICT and Policy Health Service Delivery innovations influence patient centeredness care in government hospitals. The chapter highlights literature gaps and advances reasons for conducting further research with empirical facts on ground from key stakeholders (health workers and patients). Cross referencing is done to indicate agreement/disagreement between various scholars and the views of the interviewees on the study variables. Patient centeredness care focused on whether hospitals offered services that solved health care needs/problems of patients, whether health care workers gave patients information related to their (patients') sickness and treatment, whether patients were consulted by health workers on their health problems/illness and the appropriate medication/treatment and whether patients participated in making any decisions regarding their treatment and stay at the hospitals.

7.2. Definitions of Terms and Concepts

7.2.1. Definition of Patient-Centred Care

According to Catalyst (2017), Patient Centeredness Care relates to the process when the patient's (individual) specific health related needs and the attendant desirable outcomes influence decisions of healthcare delivery and measurement of health quality. It is when patients relate and pattern with providers of healthcare and they (patients) get treatment from providers based on the mental, emotional, social, spiritual, financial and social perspectives not the clinical perspective (Catalyst 2017, p. 1).

Patient Centeredness Care according to Reynolds (2009) is concerned with the patient and the individual's particular needs of healthcare. The main focus of patient centeredness care in the healthcare industry is to build capacity of patients to become active participants in their care. It (Patient Centeredness Care) is related with a higher rate of adherence to suggested life style changes, patient satisfaction and better outcomes coupled with cost effective care (Reynolds 2009, p. 134).

The focus of patient-centred care, according to Bechtel and Ness (2010), is on the important health outcomes relevant to the patient. These outcomes must address questions related to whether quality of life will improve as a result of the treatment, the best options for a patient and how implications of any given treatment or therapy will affect the patient's family (Bechtel & Ness 2010, p. 915).

Viewed from the perspective of the Institute for Healthcare Improvement, patient-centered care refers to that type of care that integrates the patients with their loved ones to the care team who, in collaboration with health professionals, make decisions on clinicals when while holding the self-care and monitoring issues in the hands of a patient together with the support and tools needed to accomplish those responsibilities. Patient-centered care ensures coordinated, efficient and respectful transitions/settings in the healthcare between the patients, departments and providers (Snyder et al. 2011, p. 212).

Gerties et al. (1993) as cited by Baker (2001) identified various dimensions of patient-centered care. These include (i) the integration and coordination of care; (ii) physical comfort; (iii) the involvement of friends and family; (iv) education, communication and information; (v) emotional support that relieves anxiety and fear; and (vi) respect for the values, expressed needs and preferences of patients (Baker 2001, p. 79).

7.2.2 Definition of patient care

These are individuals from different disciplines that come together to care for patients in a healthcare environment by demonstrating teamwork that shares unique characteristics of clear goals with measurable outcomes, division of labor, effective communication and well understood clinical and administrative systems (Brumbach & Bodenheim 2004, p. 4).

According to Epstein and Street (2011), patient care involves, but is not limited to, coming up with efforts to help patients get treatment and attention, and sharing information. It involves health systems, clinicians and patients' families (Epstein & Street 2011, p. 7).

7.3 Evolution of Patient Centeredness Care in Health Service Delivery: Contemporary Debates

Healthcare institutions in the contemporary world operate on the philosophy of patient-centered care, thus moving away from the culture of defining patients by their types of illness. Whereas this philosophy somehow succeeds in meeting the needs and complaints of patients, it neglects caring for the broader life of a patient, their family and their loved ones. It excludes the family from communication in the doctor-patient interactions. The illness of a patient affects the family, the family's health and wellness and the entire patient's outcome. Patient-centered Care (PCC) takes care of fulfilling all the patient's needs, which include quality care, reduced costs and access to supportive services (Mersin 2019, p. 5).

The main goal of healthcare is cure and relief of suffering, where possible. These two goals are embedded in a concept of healing relationship (Crashaw et al. 1995 cited by Baker 2001). In an attempt to achieve these goals, interpersonal and technical care interactions must be shaped to answer the preferences and needs of individual patients. Owing to high variations in the preferences of patients, Barry et al. (1995) in Baker (2001) contend that clinical workers should not assume the powers to make the best decisions for the patients because they (patients) are increasingly in need of obtaining information and want to be integrated into healthcare decision-making. Improvement of the outcomes of the desires of patients lies in meeting the major aim of patient-centered care, especially by involving them in decision-making (Mahler and Kulak 1991; Stewart 1995 cited by Baker 2001, p. 79).

The term 'patient-centered care' is globally becoming a familiar and popular phenomenon in the social sciences and healthcare as it is used in describing standard care which compels the placement of patients at the centre of health service delivery. Rooted in the humanistic psychology in the works of Heron (1992) and Rogers (1980), patient-centered care is not a new concept. In the literature of healthcare, synonymous concepts have been used, such as family-centered care, Personhood Centered Care, Client Centered Care, Relationship Centered Care, Woman Centered Care and Person Centered Care (McCance, T., McCormack, B. & Dewing, J. 2011, p. 1).

Patient Centered Care has ascended to centre stage in discussions of quality health care. Enshrined by the Institute of Medicine's 'quality chasm' report as one of the sixth high quality care elements, planners of health, representatives of congresses, healthcare institutions and departments of public relations in hospitals now include patient centeredness care in their day today vocabulary (Epstein & Street 2011, p. 2).

Millenson, M.L., Shapiro, E., Greenhouse, P.K. & DiGioia III, A.M. (2016) contend that patient-centered care, sometimes referred to as patient-family-centered care (PFCC) focuses on respecting values of patients in individual decisions of care as well as the roles played by families of the patient, the patient and other important stakeholders in the improvement of care practices. It has features of two-way partnerships whose importance is growing with payment for value as compared to payment for volume (Millenson et al. 2016, p. 50).

Patient and Family Centeredness Care according to Berwick (2009) revolve around quality dimensions where care is customized and individualized to a patient and family; in which both have a voice and control over health care decisions. In the bid to achieve total patient and family centeredness care in the health care delivery cycle and within the health providers, clinicians must reconfigure their relationship with patients (Hughes 2011, p. 4).

The major benefit and objective of patient centeredness care is not simply health outcomes of the population but the improvement of patient's/individual health, though the former might equally improve. This can be done through personalised medicine care, care in the doctor's office and care in the hospital. Healthcare providers, health systems and patients benefit. This results from better productivity and morale among health workers, reduction in expenses, improved resource allocation, improvement in satisfaction scores within the patients and caretakers, improved reputation of healthcare providers and an increase in the financial margin within the healthcare continuum (Tuckson et al. 2017, p. 1587).

Similarly, Patient Centered Care is beneficial for the healthcare provider and the patient. As a medical worker, you want to know that your patients are informed and educated about their condition. This can lead to better compliance with treatment and the prevention of complications (Jackson et al. 2013, p. 174). When healthcare providers deliver patient-centered care, it also helps patients feel more in control. Having a medical condition or injury can make a person feel helpless or like they have lost control. By playing a role in the care they receive, patients may feel they are getting some control back, which can improve their outlook (Brown 2014, p.3).

Most patients have been frustrated by their non-participation in making decisions, not being heard, not giving needed information and inability to participate in care systems that should be responsive to their needs (Angel & Frederiksen 2015, p. 1529). However, some patients say that more often than not, medical personnel are courteous and that, to them (patients), amounts to treatment with respect and means that their basic needs are given due attention. However, upon discharge, the transition is abrupt, with the patients not being provided with information on the resumption of activities, care for themselves, the side effects of medicines to monitor and how their concerns will be answered. All in all, patients cite difficulties in accessing the information they want, whether in clinics, in doctors' offices or in hospitals (Baker 2001, p. 78).

Although patient-centered care has been highly valued, there is controversy about what patients need and know. The most widespread assumption is that judgment on whether a transaction is patient centered or not depends on the patients. Though this is understandable, sometimes what a patient thinks he/she wants is not actually what he/she needs, e.g. drugs are not what he/she needs. Doctors' responses to patients' requests for unnecessary treatment can make patients happy yet the inappropriateness of the prescription is hardly an indicator of patient-centered care. The variance and gap between understanding/ participation in care and the perceived high satisfaction of patients is significant with people with cognitive impairments, socially disadvantaged, those with low literacy and poor English fluency (Epstein & Street 2011, p. 7).

7.4 Patient Centeredness Care in Health Service Delivery at Global, Continental and National Levels

Patient-centered care was initiated in 1987 by the Picker Commonwealth programme which picked its categories from focus groups of patients while emphasising their importance in the context of ethics as respecting patients' individuality as a key foundation of humane medical care. These categories were further described by the National Academy of Medicine (then IOM) in 2001, which emphasised that patient-centeredness forms part of the six goals of the 21st century healthcare systems encompassing quality healthcare in its right (Millenson et al. 2016, p. 50).

In Australia, the principles of Patient Centeredness Care have been reflected in all organisations' mission statements of all healthcare providers. The principles emphasise respect for patients' values, needs, beliefs and need for support and communication during health provision (Huynh et al. 2016, p. 248). Practising Patient Centeredness Care has been going on in Australia for a period beyond a decade and has incorporated in the Health Care Charter (2007) and Safety and Quality frameworks for Health Service standards of 2011. Documents emphasise on the individual patient being at the centre of her/his care and must be consulted prior to any decision on the medical treatment

that has to be decided on. PCC is recognised as being an integral part of the safety and quality of the healthcare system and its application has yielded results in clinical take overs and this enhanced increase in the appearances and availability of members of the family during health visits (Delaney 2018, p. 120).

In North Carolina, patient-oriented communication was prioritised with emphasis on managing the concerns of patients by putting aside education and pre-operative testing. In one year of embracing patient-centered care, the rate of surgical infection dropped to zero per cent from 3 per cent, the satisfaction levels of patients moved from 80 to 93 per cent and patient average cost fell to 12, 074 US dollars from US 13,014 dollars (Millenson et al. 2016, p. 53).

The American Academy of Paediatrics proposed in 1967 inclusion of patient centeredness care in respect to coordination of care. However, this idea did not get on ground until the 1990s. The idea was later embraced and popularized by the American academy of family medicine in 2002. The National Committee for Quality Assurance confirms that patient-centered medical homes in America embrace the direct relationship between medical workers and patients, hence are a platform for coordination between healthcare professionals and patients. These homes eventually lead to quality care (Coulter & Cleary 2001, p. 246).

The Royal United Hospital of Bath in England embraced patient family-centered care (PFCC) to address patients' concerns and provide end-of-life care. Prior to its implementation, medical workers did not have confidence in handling critical care decisions. There was lack of confidence by medical workers in talking with dying patients and their family members as nurses feared to voice opinions about treatment withdrawal to doctors. There was rampant poor documentation, discomfort and unsupported care decisions. Within a few months of implementation of PFCC, there was 100 per cent proper documentation of end-of-life discussions by physicians, with every

patient shifting from zero per cent, while the reporting percentage doubled from 50 to 100 per cent. Evidence on advance or pre-care planning communicated to the members of the care team moved from zero to 100 per cent (Millenson et al. 2016, p. 54).

In the Netherlands, patient orientation of care and patient centeredness are related to or imply high quality care. It is a major issue in the Dutch health policy to strengthen the right of patients and improve their health position. The policy and government regulations aim at protection of patients in the system and ensuring that due care is accorded to them. Three new Acts were introduced and implemented in the Ministry of Health, Welfare and Sports of Netherlands in addition to the Care Institutions Quality Acts. The legislations regulate rights of complaint by the patients, patients' participation and informed consent. The new Acts are; The Participation by Clients of Care Institutions Act of 1996, The Clients' Right of Complaint Act of 1995 and Medical Treatment Agreements Act of 1995 (Sluijs & Wagner 2003, p. 227).

In a study conducted in Namibia about the effect of patient education and empowerment through targeted training as part of patient-centered healthcare on the quality of patient-provider interaction, positive results were realised, which was not the case with untrained patients. It was found that trained patients occasionally asked questions to healthcare providers which would lead to their contribution in decision-making and quality healthcare (Maclachlan et al. 2016, p. 625).

In Egypt, patient-centered care is enshrined in the bill of rights of patients, which was introduced in 2005 into the Egyptian Hospital Accreditation Programme Standards and later enforced countrywide in all hospitals (USAID 2005). This Egyptian bill of rights is focuses on health education for patients, choice of care, access to health, choice of care participation in planning treatment, safety, environment, dignity, privacy, confidentiality, informed consent and attending to complaints of patients (Ghanem et al. 2015, p. 160).

In Uganda, a written policy on patient-centered care seems to be lacking although medical practitioners practice it as part of their profession. The existing collaborations are focused on medical research, especially on non-communicable diseases (NCDs). There is collaboration between Uganda's Makerere University with Yale University of Haven to provide medical education and clinical care at Mulago Teaching Hospital (National Referral Hospital). Conceived in 2011, the collaboration has focused on the integration of NCDs into healthcare worker training and health service delivery research and implemented amidst NCDs management challenges (Schwartz et al. 2015, p. 2).

7.5 ICT Innovative Health Service Delivery and Patient-Centred Care in Government Hospitals

Patients have many ways in which to get information from and give information to their clinical workers, including the use of electronic systems. There are Web portals that facilitate communication between physicians and patients on clinical appointments, access to results from laboratory and X-ray tests and any other health records. Many studies have indicated that the use of SMS using ICT has globally improved the perceptions of patients about quality healthcare and patient-doctor communication. This satisfaction has improved on the patient-centred care phenomenon with respect to the involvement of patients in their care by providing information. Portals for patients have been seen as relevant platforms for patient education and coaching with a focus on conditions that are chronic like heart diseases and diabetes, and high health risks like smoking and hypertension. Cancer centres have equally implemented patient portals with a focus on identifying and monitoring symptoms (Snyder et al. 2011, p. 215).

Tools of ICT improve the workflow when information sharing is prioritised and contextual individual patient situations are detected. This, in turn, promotes strong interpersonal and inter professional relationships which, when scaled down, benefits the patients and care institutions (Snyder et al. 2011, p. 212).

Health information Technologies (HIT) are an enabling component in the delivery of health services over distances, providing fundamental tools and systems of electronic health records (EHR). In addition, computerised health information systems have improved the sharing and real-time access to patient information at any given time. HIT also provides support for continuous home-based geriatric care and for patients with chronic illness. The technology can be integrated with telemedicine to obtain information on patients living in outreach areas (Thompson & Brailer 2004, p. 193).

Collecting and interpreting patients' structured information informs and guides clinical care. For example, assessment of patient reported outcomes on a regular basis in areas like monitoring symptoms and health related quality of life monitoring has been proved to improve care of patients by improving communication between providers and patients and identifying psychosocial challenges and treatment symptoms (Snyder et al. 2011, p. 216).

HIT facilitates better management of patient care by healthcare providers through health information sharing. In America, secure private EHR were developed for all Americans, which made electronic health information available whenever it was needed. This improved quality of healthcare and patient-centered care by reducing costs and enabling patients to consult or be consulted. With HIT, health care providers are able to access complete and accurate information on patients' health. In the long run, providers can offer the best possible healthcare, during or before routine visits or during medical emergencies. They are also in a position to access health information to assist in the diagnosis of health problems faster and hence reduce medical errors, thus providing safer and cheap healthcare (Silva et al. 2015, p. 270).

7.6. Decentralisation and Public-Private Partnership Policies and their Influence on Patient-Centred Care in Government Hospitals

Today, remote monitoring, wearables, faster wireless communication devices, robust EHR platforms, virtual health visit capabilities, and, eventually, prescriptive intelligence, are making it less necessary for patients and physicians to always interact within the four walls of a hospital or clinic. Whereas such technology previously was reserved for the purpose of providing care in the most remote areas, an entire industry is increasingly leveraging the power of 'mobile health' to connect patients with providers. Patients are linked to the hospital through remote monitoring technology and receive daily visits from a physician and other caregivers (e.g. nurses, respiratory therapists, and physical therapists) (Ramdas & Darzi 2017, p. 4).

Together, connectivity and decentralisation have a big potential of addressing current greatest challenges of health systems and most importantly, resulting into better citizens' health outcomes, the financial burden on the patients' and public purse is reduced. Implementing decentralization successfully demands a serious combined and concerted efforts of healthcare professionals, health institutions like hospitals, patients, community based health facilities and policy makers (Care 2014, p. 8).

Canada together with her peers worldwide are fronting two common strategies in addressing healthcare growing constraints and these are: (a) Decentralising healthcare in the communities by moving health institutions and healthcare delivery models in communities and homes and (b) usage of health information technologies and processes to connect all stakeholders and processes in the healthcare delivery systems for quick and proper sharing of information wherever and whenever it is needed (Care 2014, p. 8).

When patient-centered care embraces partnerships between care providers, patients and their homes and the private providers, the result is organizational, personal, quality and professional relationships. Patient Centeredness Care promotion efforts should take into account health systems, patient centeredness of a patient and his/her family and clinicians. When patients are helped to be more active in their healthcare consultations, it changes the domineering physician led dialogues to one which engages patients in active participation (Epstein & Street, 2011, p.7).

In Australia, patients were included in the transfer and sharing of their health information. Sharing, according to Philpin (2006), greatly enhanced the accuracy of communication and information. The involvement of patients in their care also helped to identify errors and omissions on the reported information, which eventually increased patients' and clinical staff' satisfaction hence leading to patients' safety improvement (Robinson et al. 2008; Coulter et al. 2008). The Patient Centeredness Care approach brings about Partnerships/ Collaborations in planned care and decrease in levels of suspicion and secrecy in respect to medical decisions and medicare (Delaney 2018, p. 121).

In Lesotho, with decentralised health services and PPP arrangements, the Tsepong consortium deliver all health related services, with a major goal being to provide high standard health care services at reasonable costs. The project is designed to treat all patients that present themselves at the hospital or clinic, irrespective of the type of condition. Upon comparing the operational costs, the Government of Lesotho decided not to pay much more for the PPP than it had been spending on Queen Elizabeth II Hospital, yet it would receive vastly improved facilities, patient care and overall medical services (Coelho & O'farrell 2009, p. 2).

Although the reviewed literature revealed that there is a relationship between Health service delivery innovations and patient centeredness care, the evidence was scanty

and not specific. Most authors had not interviewed patients to get real views. Similarly, literature reviewed ignored the challenges patients face while receiving healthcare, the specific and detailed issues in patient centeredness care, the limitations to decision making by patients in patient centeredness care and alternatives to policies in support of patient centeredness care. These gaps and many others warranted conducting face to face interviews to get views from patients and healthcare givers whose views/responses are stated in the next part (7.7) of this chapter.

7.7 Empirical Findings on the Effect of Health Service Delivery Innovations on Patient-Centered Care in Government Hospitals in Uganda

7.7.1 Findings on the Effect of ICT Health Service Delivery Innovations on Patient Centered Care in Government Hospitals in Uganda

During the study, the respondents were asked about innovative health service delivery and the influence on patient-centered care. The healthcare workers and administrators were mostly asked about patient-centered care as a policy and practice in the government hospitals. The responses received showed that practices were being enforced in the absence of written policies.

One of the Specialised Medical staff who agreed that ICT platforms enhance patient-centered care stated:

ICT platforms like use of phones help in giving feedback to the patients on their healthcare needs, drugs availability, visiting days to the facility. OpenMRS helps to pick patients who are lost to follow up and others not responding well to medication hence care. With ICT platforms, patients are consulted on phones, especially the HIV/AIDS cases on follow-ups for their treatment. Patients give responses and inputs on services due to improved communication.

Another Hospital Administrator added:

ICT innovative devices such as CT scan machines, X-rays and others help to detect and display the illness or source of ailment for the patients. In the end, patients visually see the source of illness and it becomes easy to explain to them the required treatment. That way, they participate in the curative process and their problems are finally solved

The study findings agree with those of Silow-Carroll et al. (2012) that stated that EHR encourage patients to assume active roles in their healthcare. According to Carilion, when patients use their health portals, they begin to drive their healthcare decisions and get more involved in the management of chronic diseases and symptoms (Silow-Carroll et al. 2012, p. 17).

It was also found out from the respondents that ICT innovations and healthcare policies do not necessarily bring about patient-centred care. Instead, through personal initiatives, some patients collectively came up with plans to undertake medical education, which gave them a platform for negotiated patient-oriented treatment. One of the medical specialists said:

ICT platforms and policies do not necessarily bring about patient-centred care. Some patients like those with diabetes and hypertension formed their own associations. They have clinics on Wednesdays where they consult among themselves and health workers. Patients train each other, especially in HIV/AIDS cases, on their rights, demand for rights and care, self-explanation through peers.

This innovative arrangement is in line with the literature reviewed, which shows that patients are key stakeholders in their care and should demand information. Increasingly, patients are turning into key stakeholders in their own healthcare journeys by asking for transparency while accessing information about their care and, more importantly, demanding quality service provision. Patients now want to schedule appointments where and when it is convenient to them and not the care provider. They demand to be provided with the most recent quality drugs or medical trials and an end to prolonging waiting times when going for surgery. Patients want to be given the option of going private without incurring any personal costs (CGI 2014, p. 4).

7.7.2 Findings on the effect of Decentralised Health, PPPH and other Policy Innovations on Patient-Centered Care in Government Hospitals in Uganda

Asked whether there was a policy in place to guide the delivery of patient-centered care, all the medical doctors, specialists and administrators stated that it was not there but that they applied values attained from medical school and what is stated in the clients' charter. One of the Hospital administrators revealed:

We do not have a specific policy that specifies how patients must be handled apart from the medical training. The client charter outlines what the patient should get in form of information appropriate to their understanding. Many patients do not know about the charter set by the Ministry of Health

One of the respondents (Specialised Medical staff) confirmed that there is no written policy in Uganda on patient-centred care but the rights of patients that specify care and compassion compel the medical practitioners to do patient-centred health service delivery. He attested:

There is no policy guideline on patient-centred care. We only have it as part of our generally accepted principles in the medical profession. It is only the patients' charter that spells out patients' rights and responsibilities of a health worker.

Another respondent (Specialised Medical staff), however, said that even when a charter that spells out the rights of patients exists, not all patients benefit from such rights. The respondent admitted:

Patients' charter that explains what patients should expect is applicable in our hospitals but not all patients get their rights. Only patients in anti-retroviral therapy get them. In other words, patients do not get. Tracking tools on HIV do not yield anything. Tracking tools on HIV patients using ICT platforms helps

One specialised Medical staff was asked on consulting patients as per policy and she confirmed that, in practice, medical workers explain to and consult the patients on the verdict of their treatment. She responded thus:

Patients or caretakers are explained to the conditions of sickness and the verdict like an operation. They are asked if they accept or not. If they choose a NO, then counselling is done. I am not sure if there is a written policy to this effect but this is a practice

The respondents (patients) were asked whether in delivering services healthcare workers gave them information related to their sickness and treatment and explained the information to them. One patient responded in the affirmative:

Yes, health workers give me information. Treatment is explained to me and how it works. I am consulted on the change of drugs if some fail to work. They explained my sickness to me and referred me to Mulago Hospital but I did not go due to lack of money. The sickness and possible length of stay here were explained to me.

Another respondent (Specialised medical staff) confirmed that treatment of patients follows the patient-centred care approach, especially those in the HIV/AIDS unit/clinic:

In the anti-retroviral therapy (ART) clinic and other few wards, a patient is counselled upon arrival and when administering drugs, patients are told what to do but also asked to make decisions on their treatment. Discussions are held and the patient makes the final decision. There is no use of force.

This approach to care is important in the relationship between patients and health workers and consistent with what Staley (2013) affirmed. Staley stated that patient-health worker relationships bring with them convenience, optimal health to patients in their life time and comfort to the patients. There are gains related to the maintenance of a patients' registry, systematic performance reporting, management of individual care teams, collaborations in health action planning, and strengthening of patient-provider relationships (Staley 2013, p. 3).

One of the patients who supported the assertion that not all patients had their rights respected and that they were neither consulted nor took part in decision-making concerning their treatment and care stated:

I cannot dictate anything to the health workers. I don't take any decision. You cannot decide what treatment to get. I'm not consulted if medication favours me or not or has side effects.

Another patient (respondent) said that some patients' requests are accepted and others are rejected. She stated that she had been consulted about her discharge:

Some patients are discharged against their will when they still need medication. Others seek for discharge and they are allowed. I have been consulted before and I took part in the decision to discharge me.

Whereas patient-centred care was found to be a routinely applied approach in line with the patients'/clients' charter and the professional values of medical practitioners, this was found to be different in the case of mental care. Under mental care, some patients are brought by the government, hence are seen as extreme/urgent cases, and others come on their own. One respondent (Specialised Medical staff) revealed that where mental treatment is not sought voluntarily, there is no need for consulting patients and involving them in decision-making. He stated:

Under the voluntary order in the Mental Treatment Act, patients come by themselves unlike under urgency/government order which is government-initiated. Decision-making by patients is allowed under voluntary order only.

All the patients interviewed were pleased with the services offered at the government hospitals and confirmed that they would recommend the services available at these hospitals to any patient. They appreciated the speed of service, efficiency by health workers and cost-effectiveness. Much as the services were appreciated, there were issues of inadequate drugs and some patients were hesitant to say that the hospital solved their healthcare problems. One of the patients received are as follows:

The standards are good but some drugs are not available and some of the services are not satisfactory. There is no protection room for women as health workers attend to them. However, the health workers try hard. Yes, the services solve my needs. By the time I came here, I could not even see and I was about to die. Health workers helped me a lot and I am now fair.

Another patient reported to hospital solving her needs and availability of drugs and equipment as follows:

I cannot say much but I have high hopes the services at this hospital will solve my healthcare needs/problems even when I have no money. More equipment and drugs are needed since most patients are poor. Government should provide enough drugs to the hospital to avoid sending us to private pharmacies and clinics. We spend the whole day lining up only to be told there are no drugs. At times we do not have money to buy them.

7.8 Chapter Summary

From the field findings and the review of related literature, it was crystal clear that Patient Centeredness Care is one of the modern ways to deliver healthcare. Patient Centeredness Care fosters a relationship between the healthcare team, the patient/patient caretakers and the medical system, thus forging a “home”. In the developed countries, the concept of patient-centred care is found in policy documents and in practice, and has yielded results.

On the contrary, developing countries like Uganda have no legal and institutional frameworks that support patient centeredness care. The medical training in the values and provisions of the patients’/clients’ charter is the only basis for the implementation of patient-centred care. The practice is discretionary depending on the condition of the patient, awareness of the patient and the values cherished by the health practitioners. Nonetheless, patients (respondents) appreciated the care given in terms of quality, efficiency, timeliness, involvement in decision-making, cost-effectiveness and health care workers answering their health needs irrespective of shortage of drugs and equipment in hospitals.

Though in place, ICT and policy innovations were not found to be solely and directly responsible for influencing patient-centred care in government hospitals in Uganda. No specific policy guideline was in place to address patient-centred care in hospitals in the country. Respondents did not give any specific comments on whether of Decentralised Health, PPPH and other Policy Innovations had influence on Patient-Centred Care in Government Hospitals. Neither ICT platforms nor policies were necessarily seen to bring about patient-centred care in government hospitals. This gap gave rise to consideration of a health service delivery model incorporating patient centeredness care component in the next chapter.

The next chapter (Chapter Eight) focuses on the development of an Integrative Patients' Quality Care Health Service Model for Government Hospitals in Uganda. The chapter presents literature on the existing health service delivery models and their critique and proposes an appropriate model for better health service delivery. Gaps in literature and views from the respondents on the appropriate model are taken into consideration as well.

CHAPTER EIGHT: INTEGRATIVE PATIENTS' QUALITY CARE HEALTH SERVICE MODEL- AN INNOVATIVE HEALTH SERVICE DELIVERY MODEL FOR GOVERNMENT HOSPITALS IN UGANDA

8.1 Introduction

The new economics of integrated health delivery systems calls for the development of suitable and up-to-date models of delivering health services. The Health Service Delivery organisational landscape is being rearranged. There are mergers and consortia of hospitals moving into partnerships and consolidations based on specialised medicine. Medical practitioners are now practicing online, in shifts and groups as hospitals force strategic alliances and strive for health accreditation. Vertical and horizontal integration, in addition to web arrangements focusing on primary care, wellness, patient-centered care, home care, long term care, hospice care and health insurance dictate the emerging organisational models that focus on integrated delivery systems, commonly referred to as integrated delivery networks (Shortell et al. 2004, p. 48).

Much literature has been documented on the appropriate preventive and curative interventions for proper health service delivery. The Institute of Medicine (in America) in their report on "Crossing the Chasm" summarises how to undertake medical and disease management. It highlights standard medical interventions such as the provision of drugs and undertaking surgery. Nonetheless, there seems to be a disconnect between what is prescribed and the situation on the ground (Glasgow et al. 2003, p. 1264). The existing health service delivery gaps and the rising costs of healthcare call for developing an appropriate health service delivery model.

This chapter presents reviewed literature on conceptualization of health services models, existing models of healthcare delivery and discusses designing an appropriate innovative health service delivery model as proposed by the researcher. The proposed appropriate model for government hospitals in Uganda is based on the concepts and

theoretical underpinnings found in the literature reviewed and is supported by study field findings.

8.2 Conceptualisation of Health Service Delivery Models

8.2.1 Definition of a model

Magnani et al (1999, p.16) describe a model as a mode of representation between a phenomenon and expressions in works and language coupled with intermediate forms of representation that facilitate conceptual changes. It can be simulative or non-linguistic constants to mental mechanisms and logic and facilitate understanding existing phenomena and decision making with reconstructed scientific reasoning.

Whereas Reigeluth (2013, p.21) defines a model as scientifically thought through set of ideologies that describe different phenomena and explain problems so as to predict achievement of desired outcomes, Van der Waldt (2013, p.1) describes it as representation of reality which is formulated to fill identified gaps as solutions of given phenomenon being studied. Similarly, Hokanson & Gibbons (2013, pp.2, 3) recognize a model as that which helps to answer the why and how questions of given phenomenon with a view of providing innovative solutions.

Models are mere constructs of the human mind that help individuals to appreciate better the world differently and can have different styles and manifestations. They are significant in the provision of a supposedly acceptable representation and description of the real world (Gabaix & Laibson 2008, p. 294). Well-constructed models must be characterized by empirical consistency, generalizability, predictive precision, conceptual insightfulness, parsimony, tractability and falsifiability, comprehensive, consistent with study variables and targeted (Ford, 2009, p. 50; Van Der Valk et al. 2007, p. 479).

8.2.2 Methodological approaches to model development

Graham et al (2014, p. 14) citing Whetten (1989) state that models are constructed and conceived through a process of thinking about the how, why and what factors and how the variables or factors relate to each other. Picciano et al. 2013, p. 37 confirm that theory and model development is important in the process of creating knowledge and believes that theories and models by nature make an attempt to visualize scholarly community activities and establish common language and understanding. In support of this, Burkhardt & Schoenfeld (2003, p. 6) contend that a stable model or theory gives a clear and sound view of important issues with a planned design to provide solutions to important problems.

Van der Waldt (2013, p.5) avers that by reviewing current structures in place in the bid to examine the relationship with the proposed structure, models innovate a new structure different from an existing one. According to Geigel (2015, p. 18) theories are arrived at through abstractions aimed at phenomena explanation as opposed to a model which is purposefully represents reality. Whereas theories generalise to explain phenomena, models help in understanding phenomena with reality. Models are realistic and experimental and theories are abstract in nature.

Ennis (1985, p. 45) avers that critical thinking is reflective and reasonable thinking which focuses on which and what practical issues should be believed. Unlike Hokanson & Gibbons (2013) who believe in design thinking, this study adopted critical thinking of in designing an integrative patients' quality care health service model because the latter denotes to deciding on what to believe or do in practical terms. Critical thinking is a skillful, active and disciplined intellectual process that involves skillful conceptualization, analysis, application, synthesis and evaluation of information critical thinking as the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reasoning and reflection to guide action and

belief. It is a process of thinking about thinking. (Scriven & Paul, 2007.p.1, Tempelaar, 2006) Snyder & Snyder, 2008, p. 90.

In critical thinking, there is response which is rational to questions which may not be answered or whose related information is not available. It entails exploration of phenomena, situations, problems and questions to arrive at a conclusion or hypothesis whose information can be justified convincingly. The end result of critical thinking is a decision or experiment or position paper (document) and the overall new way of understanding, reasoning and approaching significant issue in real life and one's actions. (Kurfiss, 1988, p. 20)

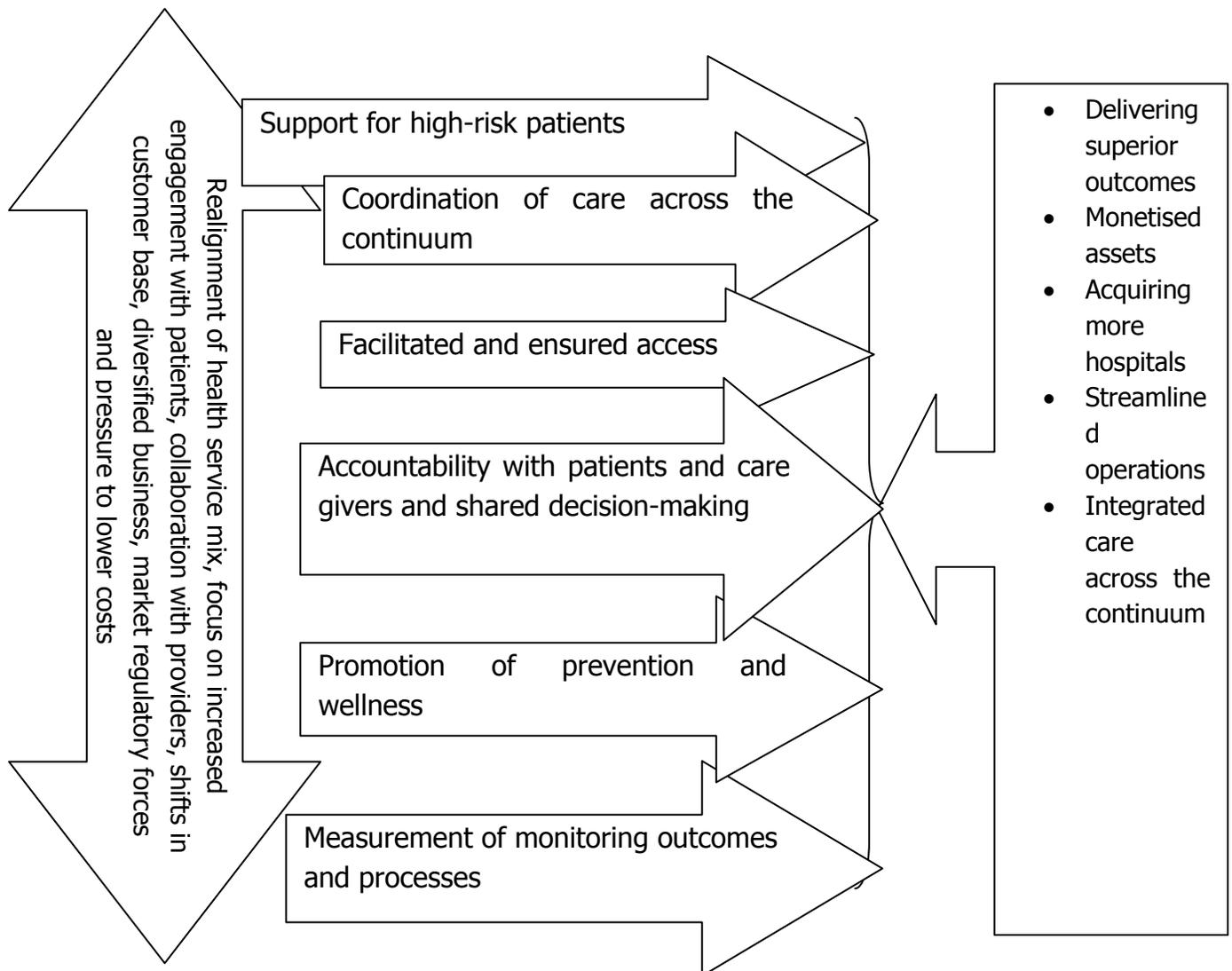
In designing an integrative patients' quality care health service model the critical questions whose answers are not easily known were asked. These include: (i) what is appropriate for health service delivery in Uganda? (ii) How can government reach out to everyone in delivery of health services? (iii) How can government deliver affordable health services? (iv) How can government involve health users in the delivery of health services? The proposed model makes an attempt to provide an understanding and providing solutions to the underlying questions.

8.3 Innovative Health Service Delivery Models (Global and Continental)

8.3.1. The Value-Based Health Service Delivery Model

In the United States, the healthcare system is undergoing serious reforms from Volume to Value Based Delivery. During this transformation, primary stakeholders such as customers, taxpayers, suppliers, employers, healthcare systems, medical service providers and government face opportunities and challenges. These challenges include diversifying into other forms of business, collaboration with providers, re-alignment of the health service mix, shifts in customer base, focus on increased engagement with patients and pressure to minimise costs. When these changes are addressed by various stakeholders, quality and access must be managed and maintained, and there must be cost reduction (Staley 2013, p. 1).

Figure 8.1: Value-Based Health Service Delivery Model in the United States



Source: Staley (2013).

Value-based health service delivery in the model above is maintained focusing principally on the prevention and promotion of wellness, accountability and shared decision making with care givers, supporting high-risk patients and the total coordination of care across the health continuum. This is envisaged to, among others, lead to the delivery of superior health outcomes and accountable care organisations (ACOs).

A new and unique window of opportunity to collaborate and produce together to reduce costs and focus on improved Health has opened up for healthcare systems and the entire public health system. Nonetheless, both fields speak different languages and have different cultures. Finding an efficient way in which public health can facilitate the adoption of a health system with improved patient-centered healthcare systems coupled with reduced costs is the biggest challenge. Amidst health sector transformation, there is growing concern for healthcare delivery and health financing systems to adopt a value based financing and integrative healthcare service delivery model (Staley 2013, p. 1).

8.3.2 The Behavioural Model of health service delivery

Rickett and Goldsmith (2005, p. 277) assert that internal health system processes like contact hours, health workers' skills and competences, conducive infrastructure and waiting time which facilitate access to services as measures of health system effectiveness do not get much attention in health service delivery systems. Conversely, in practice, health-seeking behaviours individually or collectively hugely depend on the responsiveness of the health system to local needs and demands, the perception of the benefit of utilisation and the quality of care. As a result of the importance health sector carries in social programmes, debates in policy-making have concentrated on variables like affordability, coverage, health worker ratios and, recently, the behaviour of health workers.

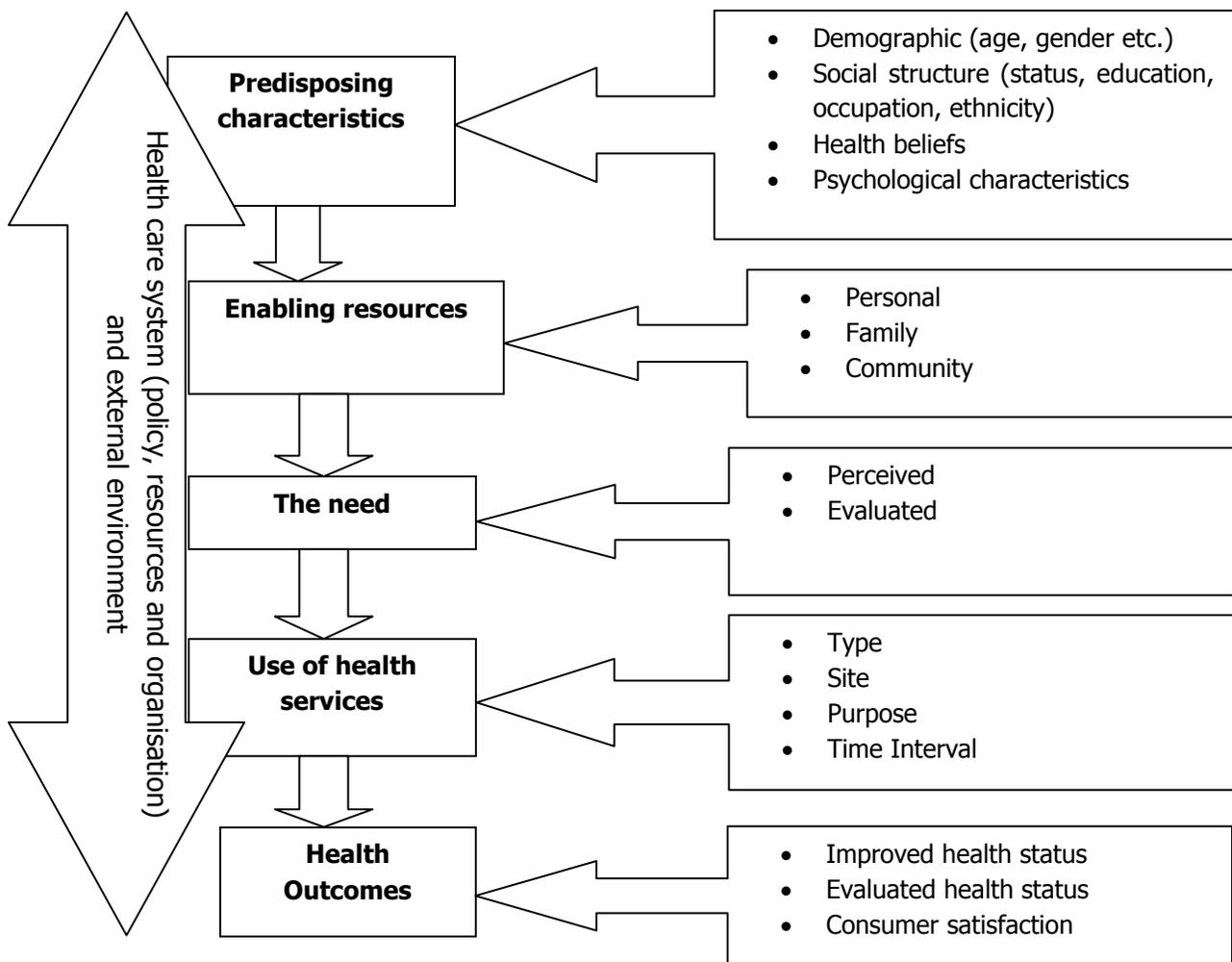
The utilisation of healthcare is dependent on client management, consumer satisfaction and the nature of health policy that can influence users' experience of services, hence creating a behavioural effect. Ricketts and Goldsmith (2005, p. 277) contend that patients will either continue to utilise services if they are satisfied with the quality of care and achieved results, or are unlikely to return after navigating through the system's flaws and receiving an unsatisfactory level of service, which is a behavioural matter. Health providers' attitudes towards consumers, among other

challenges such as inadequate drugs and quality of care, play a significant role in patients' healthcare-seeking behaviours.

In the Behavioural Model below, it is hypothesised that the predisposing human characteristics (status, education, occupation, ethnicity, health beliefs and psychological characteristics), the enabling resources for the individual, community and family and the evaluated and perceived needs influence the health delivery systems. These later result in improved health status and client satisfaction and, finally, better health outcomes.

The Behavioural Model of Health Service Delivery

Figure 8.2: The Behavioural Model



Source: Modified from Anderson (1995)

8.3.3 The Health Belief Model (HBM) of health service delivery

Developed by social scientists in the 1950s in the US, the Health Belief Model (HBM) of health service delivery was intended to explain people's failure on adoption of strategies for disease prevention and test screening for detection of diseases. The Health Belief Model was later used on the compliance checks for responses of patients towards medical treatment or symptoms of sickness. This model postulates that someone's belief in a disease or threat of illness and the belief in the effective recommended actions or health behaviours predict the likely adoption of that behaviour.

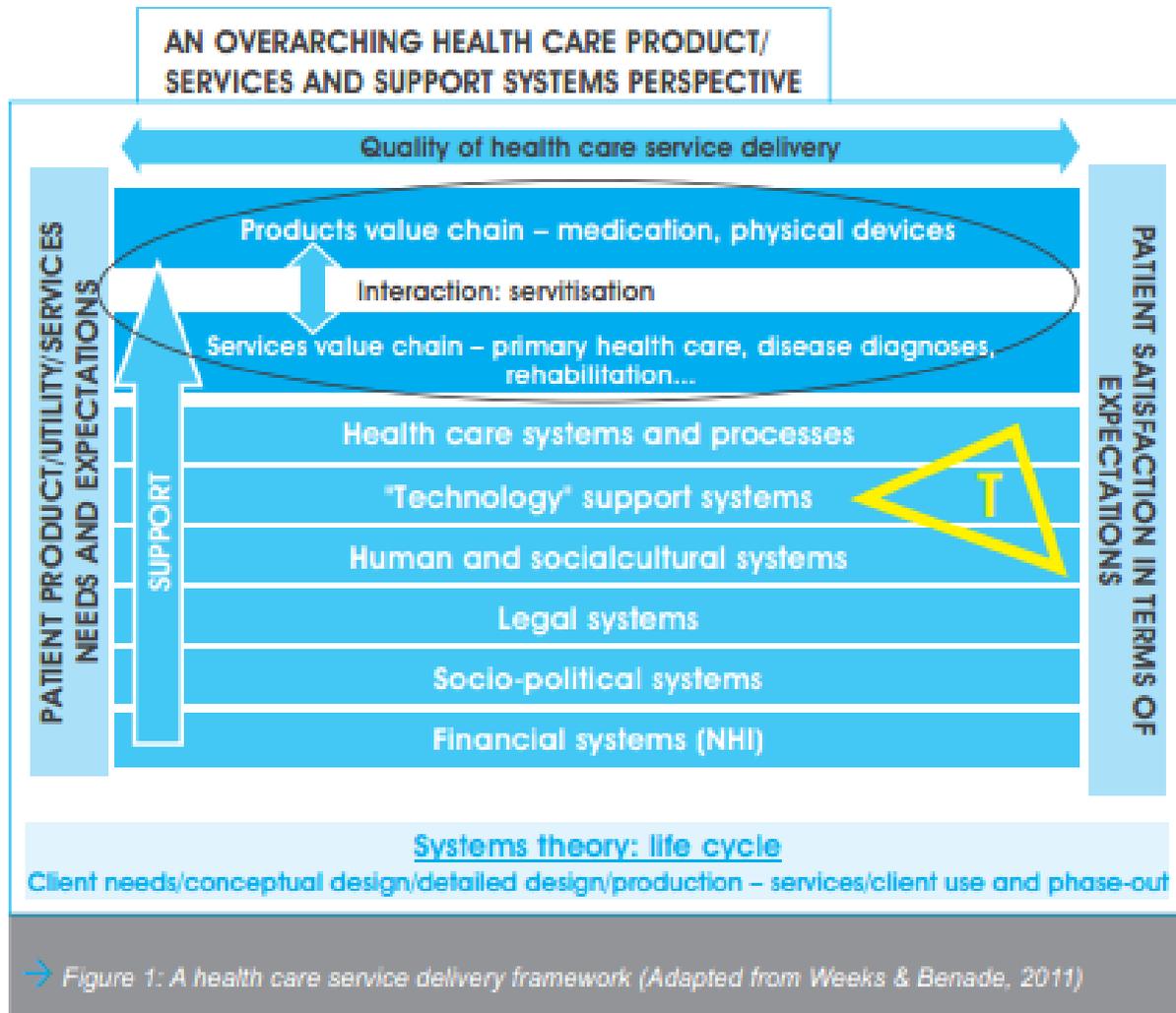
Deriving from the psychological and behavioural theories, Health Belief Model focuses on two components of health-related behaviour. These are: (i) the belief that a specific health action will prevent or cure illness; and (ii) the desire to get well (if already sick) or avoid the sickness. Health Belief Model is informed by six constructs and of these, four have been named as the first tenets of Health Belief Model. With the evolution of research about HBM, two more were added. The six constructs are: (i) perceived severity; (ii) perceived susceptibility; (iii) perceived benefits; (iv) perceived barriers; (v) the cue to action; and (vi) self-efficacy. Although HBM has been applied worldwide, there are many challenges that hamper its utilization in the health sector and these include:

HBM falls short of catering for beliefs, attitudes and other people's personal determinants which control a person's acceptance of certain health behaviour. HBM also ignores individual habitual behaviours which influence the process of decision-making on any recommended actions.

It does not consider behaviours arising from performance of non-health related reasons like social acceptability and social responsibility. Health Belief Model negates the economic and environmental factors which promote or prohibit any recommended actions. It is built on an assumption that patients and all healthcare users have same information on their diseases or illnesses in equal amounts.

8.3.4 Healthcare product/services and the Support Systems Model

Figure 8.3 : Healthcare product/services and the Support Systems Model

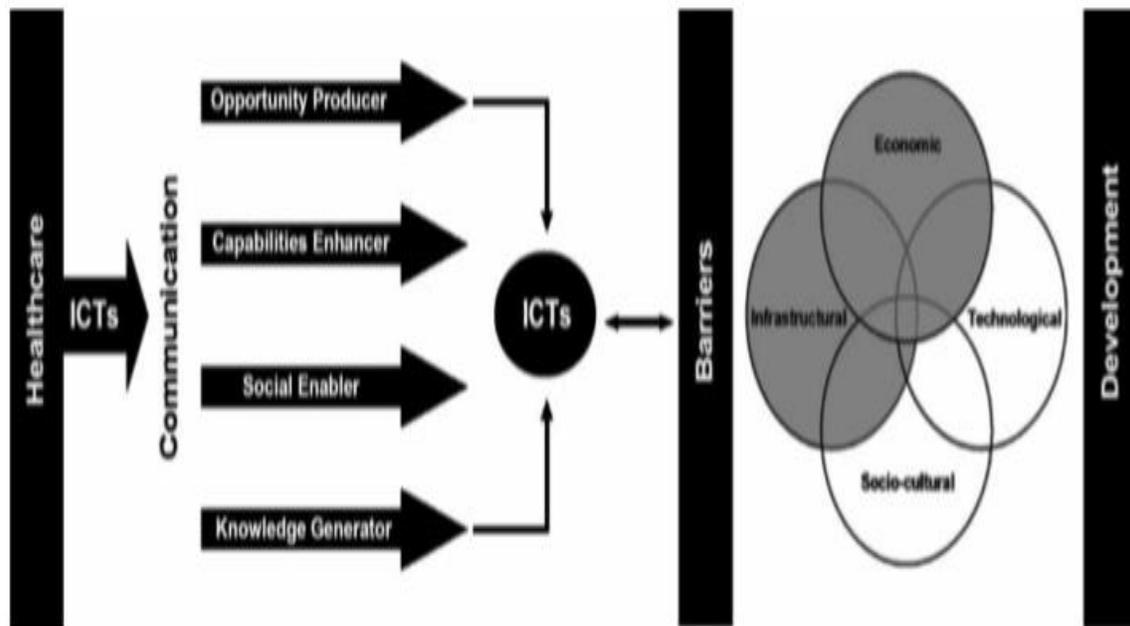


Source: Weeks, D. (2013). *Healthcare service science: The innovation frontier*

In the above model, patient satisfaction with health service delivery is believed to be as a result of the interaction of different units in a health system. These include financial, technological, socio-political, legal, human and socio-cultural sub-systems. The sub-systems act as processes/activities influencing patients' needs and expectations as inputs to produce quality healthcare as the final output (Weeks 2013, p. 72).

8.3.5 The Model of Value of Information Communication Technologies to health

Figure 8.4 : The Value of Information Communication Technologies in Health Model



Source: Extracted from Chib et al. 2008, p. 351.

The Value of Information Communication Technologies (ICTs) in Health Model was derived from the Value of Information Communication Technologies in Education Model as advanced by Banuri et al. (UNDP 2005 as cited by Chib et al. 2008, p. 350). This model displays the vital role that ICTs play in the development of healthcare. When viewed from the side of producers of opportunities, ICT is seen as facilitating work-related productivity and increasing the numbers of patients attended to by caregivers, thus creating space for increasing financial benefits to the providers of health services (Martinez & Villarroel 2003). ICTs enhance capabilities and make it easier for medical workers to make referrals that are timely to better equipped and advanced health facilities (Musoke 2001).

Viewed from the social enabler point of view of this model, ICTs, according to Toussaint et al. (2004), enhance professional and social engagement between the community, healthcare workers and healthcare providers. From the perspective of knowledge generators, ICTs appear to improve access to health information for health workers and the community. Information sharing between the urban and rural areas using ICT increases the availability of health information and timely updates on such information, especially for the remote and rural communities (UNDP 2005).

Whereas the Value of ICTs in Health Model has been credited for its inherent value, it has been openly criticised for its theoretical shortcomings. The model falls short by not identifying well documented and widespread barriers to the use of ICTs in developing countries. In the Value of ICTs in Education Model, the dimension of impediments/barriers is strongly recognised by testing the efficacies of additional considerations of the impediments in the ICTs realm for the development of healthcare. The model introduces more variables, such as social, cultural, economic, and technological variables, as serious barriers if ICT use is to achieve the intended benefits (Maxfield 2004).

In developing economies, Neelameghan (2004) identified the comparative high ICT adoption costs for individuals as a serious economic barrier and the fact that the economic background of an individual affects ICT adoption. To Howkins and Valantin (1997), low-income per capita leads to little or slow proliferation of ICT and low community technological literacy and these become serious technological barriers. Underutilisation of ICTs could be because of perceptions by intending adopters that ICTs embrace behaviours and values which pose a challenge to traditional practices and values (Dyson 2004; Vichianin 2007).

Gender inequality barriers are products of the traditional social structure. According to Gajjala (2004), Western developments in technology do not recognise gender concerns as important factors in adopting modern technology in developing countries. Women

are believed to face more challenges than men in the acquisition of technical skills (Mitter 2005).

In summary, the preponderance of social, cultural, technological, infrastructural and economic barriers means that the use of ICTs in developing economies adds little value. Where there is a need to extend practical and theoretical knowledge in health service provision, these hurdles need to be explored.

8.4 Innovative Health Service Delivery Models in Uganda

Uganda's National Health Plan II is geared towards achievement of better health standards for all citizens purposed at promotion of healthy and productive livelihoods. Core focus areas of government include: strengthened health systems through decentralised health; the reconceptualisation and organisation of monitoring and supervision of healthcare systems at all delivery levels; the establishment of integrative functions of the private and public sectors in health service provision and the management of human resources in the sector (MoH 2015, p. 23).

The National Health System (NHS) in Uganda is comprised of all structures, institutions and actors whose actions have the primary purpose of ensuring achieving and sustaining good health. It is made up of the public and the private sectors. The public sector includes all government health facilities under MoH, health services of the Ministries of Defence (army), Internal Affairs (police and prisons) and the Ministry of Local Government (MoLG). The private health delivery system consists of private health providers (PHPs), private not-for-profit (PNFPs) providers and the traditional and complimentary medicine practitioners (TCMPs) (MoH 2010, p. 1).

Public health services in Uganda are delivered through Health Centre IIs at parish level; Health Centre IIIs at sub county level, Health centre IVs at county/constituency level, General Hospitals, Regional Referral Hospitals and National Referral Hospitals. The range of health services delivered varies with the level of care. In all public health facilities, rehabilitative, preventive, curative and promotive health services are free, with

user fees having been abolished. Although user fees were abolished in 2001, public health facilities have maintained private wards. Public health service utilization in Uganda is limited irrespective of 72% of households living in a distance of five kilometres of a public or Private Not for Profit health facility. The reasons for this include lack of drugs, limited manpower, limited or no accommodation facilities, poor infrastructure and other constraints that pose a challenge to quality health service delivery (MoH 2010, p. 5).

At national level, MoH is responsible for the provision of leadership for the entire health sector. The ministry champions the central roles of delivering promotive, palliative, curative, rehabilitative and preventive health services to Ugandans in line with the 2nd Health Sector Strategic Plan. Health service provision in Uganda was decentralised to health sub-districts (at constituency level) and districts. There are existing structures from National Regional Referral Hospitals at the top down to Health Centre 1 where there are VHTs that link communities with other health facilities (MoH 2010, p. 2).

Central to MoH are the functions of strategic planning, health resources planning, policy development, quality assurance and control, setting standards, monitoring and evaluation, resource mobilisation, advisory services, capacity assessment and building, technical support supervision and other oversight functions. The ministry also takes care of coordinating health emergencies, health disaster preparedness and management, prevention and control of epidemics, coordinating health research and overall management of the performance of the health sector. There are other functions that were delegated to autonomous institutions at national level, such as the Uganda Cancer Institute and the Uganda Heart Institute for specialised clinical services, Uganda Blood Transfusion Services for specialised clinical support services, Uganda Virus Research Institute, National Drug Authority, National Medical Stores, Uganda Natural Chemotherapeutic Research Laboratory, Uganda National Health Research Organisation and other research institutions for regulation and research. The Health Service Commission handles human resource-related issues from recruitment to retirement at national level, while District Service Commissions handle such issues at local

government level. The Uganda AIDS Commission coordinates the multisectoral responses to the HIV/AIDS pandemic.

In the National Hospital Policy, which was adopted in 2005, the roles and functions of hospitals at various levels in the National Health Service are spelt out and these are operationalised in the National Health Sector Strategic Plan. All Hospitals are to provide technical support for referrals and give support services to district health services. Non-Governmental Organizations and Private Not for Profit Organizations provide other health services. All National Referral Hospitals offer comprehensive specialist services and undertake health training and research in addition to provision of services offered by general hospitals and Regional Referral Hospitals. Similarly, Regional Referral Hospitals give specialised clinical services (like laboratory and pathology) ear nose and throat services, ophthalmology, clinical support services, psychiatry, and higher-level medical and surgical services. They equally engage in training and research and all these are done in addition to provision of services offered at the general/district hospitals. District or General Hospitals offer promotive, curative, surgery, blood transfusion, preventive, imaging and laboratory services, in patient and maternity. They equally offer consultation and research for community based health programs and in service training. The health sub-districts Health Centre IVs provide preventive, promotive, outpatient curative, maternity services, inpatient health services, emergency surgery, blood transfusion and laboratory services. Health Centre IIIs provide basic preventive, promotive and curative care as well as support supervision to the community and Health Centre IIs under their jurisdiction. There are provisions for laboratory services for diagnosis, maternity care and first referral cover for the sub-county. The Health Centre IIs provide the first level of interaction between the formal health sector and the communities. The Health Centre IIs provide outpatient care and community outreach services only. An enrolled comprehensive nurse is key to the provision of comprehensive services and linkages with the VHT. A network of VHTs has been established in Uganda and is facilitating health promotion, service delivery, community participation and empowerment to access and utilise health services.

The private sector plays a vital role in health service delivery in Uganda, which covers about 50 per cent of the reported outputs. The private health system comprises of the private not-for-profit organisations (PNFPs), private health practitioners (PHPs) and the traditional and complementary medicine practitioners (TCMPs). The contribution of each sub-sector to the overall health output varies widely. The PNFP sector has greater presence in rural communities. The Private Health Practitioners majorly operate from urban areas whereas traditional and complementary medicine practitioners are in urban and rural areas. While those in rural areas generally adhere to traditional practices, those in the urban areas mostly use imported alternative medicines. Government of Uganda appreciates the private sector’s role in provision of subsidies to PNFPs and other PNFP training institutions and hospitals. Table 8.1 illustrates this structural model

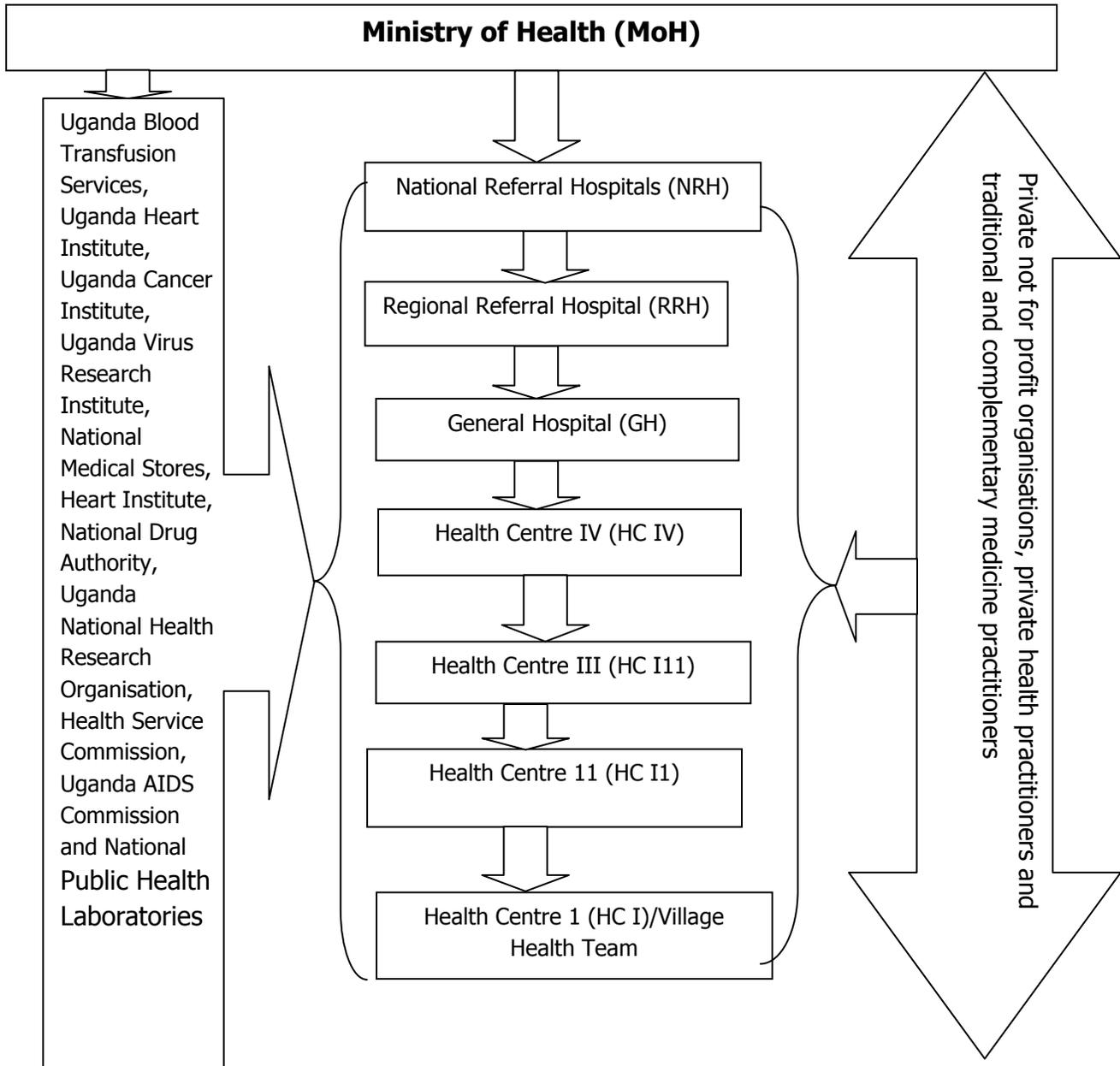
Summary of the health care system hierarchy with capacity expected at each level
1. National Referral Hospitals (30,000,000 population)
2. Regional Referral Hospitals (2,000,000 population)
3. District Health Services (District level, 500,000 population)
4. Referral Facility - General Hospital (District level - 500,000 pop) or Health Centre IV (Country level - 100,000 pop)
5. Health Sub-District level (70,000 population)
6. Health Centre III - (sub-country level - 20,000 population)
7. Health Centre II - (Parish Level - 5,000 population)
8. Health Centre I - (Village health Team - 1,000 population)

Source: Uganda MoH, 2000

Table 8.1: Healthcare system hierarchy in Uganda with corresponding population levels

HEALTH SERVICE DELIVERY SYSTEM & STRUCTURES IN UGANDA: THE STRUCTURAL MODEL

Figure 8.5: Structural Healthcare Model in Uganda



Source: Modified from MoH (2010), MoH (2015), Nabukeera (2016)

8.5 Critique of existing Health Service Delivery Models and justification for a new Health Service Delivery model

Uganda's health service delivery system is built on the structural model. Access and utilization inequalities in Uganda's health service delivery system have persisted in almost all government health facilities as a result of inadequate facilities due to insufficient number of health personnel, equipment and drugs. The policy of decentralization (on which the Uganda's structural model for health service delivery) was introduced purposed to improve health services (among others) did not solve the historic institutional challenges of weak scattered local governments that are incapacitated fiscally and administratively to deliver quality healthcare to the citizens (Malish 2017, p.55). Evidence shows healthcare utilization and access reduction at health facilities due to inadequacy in services at health facilities (Okwero et al 2010, p.23). Bakeera et al (2009) as cited by Malish (2017, pp.51, 52) confirm that most poor community members do not access the health facilities due to non-availability of nearby public facilities and end up utilizing local private and expensive drug shops.

The current healthcare delivery system in Uganda is characterised by various barriers in respect to access and utilization beyond the popularity that was perceived. Long distances and transportation costs have led to poor access to treatment centres and many people have died due to avoidable infections for which treatment should be available. Shabbar et al (2004). The distance from referral facilities is long and transportation costs are very high (even by ambulance) considering the transfers from remote areas (Nakahara et al., 2010). (Madinah, 2016. p, 33). According to Nannyonjo & Okot (2013), there are more constraints of qualified manpower, lack of drugs, inadequate facilities and long distances from a facility to another (Nannyonjo & Okot, 2013, p.144).

The organizational efficiency and behavioural models of health service delivery (like the structural model), have been praised for customization of health service delivery and improving healthcare. They also facilitate strengthened local capacity at local

government levels. However, the models are criticised for failure to be flexible in health planning and budgeting. They have focused more on health teams and ignored individual health service users an opportunity to participate in planning for healthcare needs. Strong health structures at local community levels facilitate resource mobilization and ownership of health programmes (Malish 2017, p.55).

Much as most models on health service delivery explain and contextualize phenomena, the Health Belief Model is not explanatory but descriptive in nature. The model negates explaining and presenting workable strategies on how to change healthcare related actions. Other studies have shown that perceived susceptibility, barriers and benefits of preventive behaviours are related to the desired health behaviour. The model, though useful in presenting health beliefs cannot work in isolation of the environmental factors hence need to integrate it with other models (Abraham & Sheeran, 2005, p. 65).

Similarlry, the Value Based health Service Delivery model has been critiqued by many scholars including Cormier et al (2012) who argued that the quality of healthcare is difficult to measure and define. That the quality of healthcare in practicing medicine goes beyond survival since treatment affects various aspects of life. The model cannot work independently since research has not succeeded in linking quality components alongside quality measurable indicators. Therefore it is imperative to define quality healthcare metrics in particular health conditions and take into consideration full cycle of quality care and multiplicity of dimensions of care (Cormier et al, 2012, p.500). Bozic (2013) also states that for this model to succeed, there is need for accessing relevant and actionable healthcare data by providers, policy makers and patients to inform policy making and clinical decisions (Bozik, 2013, p.369).

The structural model is criticized for diluting the health delivery system with bureaucracy which has led to poor and inefficient healthcare delivery system. It is believed to have led to increase in corruption and weak accountability systems at district level leading to wastage of resources (Hutchinson, 1999, pp. 74, 76). Further creation of districts has also weakened government systems as the latter cannot raise

resources required to facilitate the health facilities (Murindwa et al, 2006, p.99, Malish 2017, p.30). According to Mitchell et al (1998), there is need for a well an organized healthcare delivery system to reduce fragmentation and the parallel or competing health service delivery approaches. The system should be comprehensive focusing on the individual client, partnerships with communities, taking care of community needs, acceptable, cost effective, accessible and holistic in nature (Mitchell et al. 1998, p. 44).

From the challenges, shortcomings and criticisms of the existing models of health service delivery, it was imperative to design a comprehensive and all-embracing model for health service delivery in Uganda hence the justification for an Integrative Patients' Quality Care Health Service Model

8.6 Development of an Integrative Patients' Quality Care Health Service Model for Government Hospitals

8.6.1 Description and Rationale for the Integrative Patients' Quality Care Health Service Model

The Proposed Integrative Patients' Quality Care Health Service Model is a hybrid health service delivery model that was derived from other existing models and takes care of the gaps in healthcare, especially in Uganda. These models are, but are not limited to, the Structural Model, Behavioural Model, Systems Model and Value-Based Healthcare Model. The model aims to take care of improved performance, competitive advantage, process efficiencies, superior quality services, greater responsiveness and greater flexibility. All these are envisaged to lead to patients' satisfaction in government hospitals and better health for all.

In the Integrative Patients' Quality Care Health Service Model, Ministry of Health, assisted by the Ministry of Defence and Veteran Affairs (through military hospitals), Ministry of Internal Affairs (through Police and Prison Hospitals) and the Ministry of Local Government (through decentralised hospitals and health units) are recognised as apex structural overseers of health service delivery in Uganda. The model proposes that

the Ministry of Health supervise National Regional Hospitals (as the case has been), below which are Regional Referral Hospitals (as the case has been), followed by District Hospitals (modified from General Hospitals to ensure that each district has a hospital). Below District Hospitals are Health Centre IIIs (which eliminates Health Centre IVs/health sub-districts and advocates well-equipped and well-staffed Health Centre IIIs), then Community Healthcare Homes (CHCH), which are grass-roots and patient-centered care centres. Health Centre IIs are eliminated in the model and staff are to be deployed at the Health Centre IIIs. Health Centre Is (VHTs) are eliminated in this model. District Hospitals and Health Centre IIIs are to provide outreach services to the communities/homes.

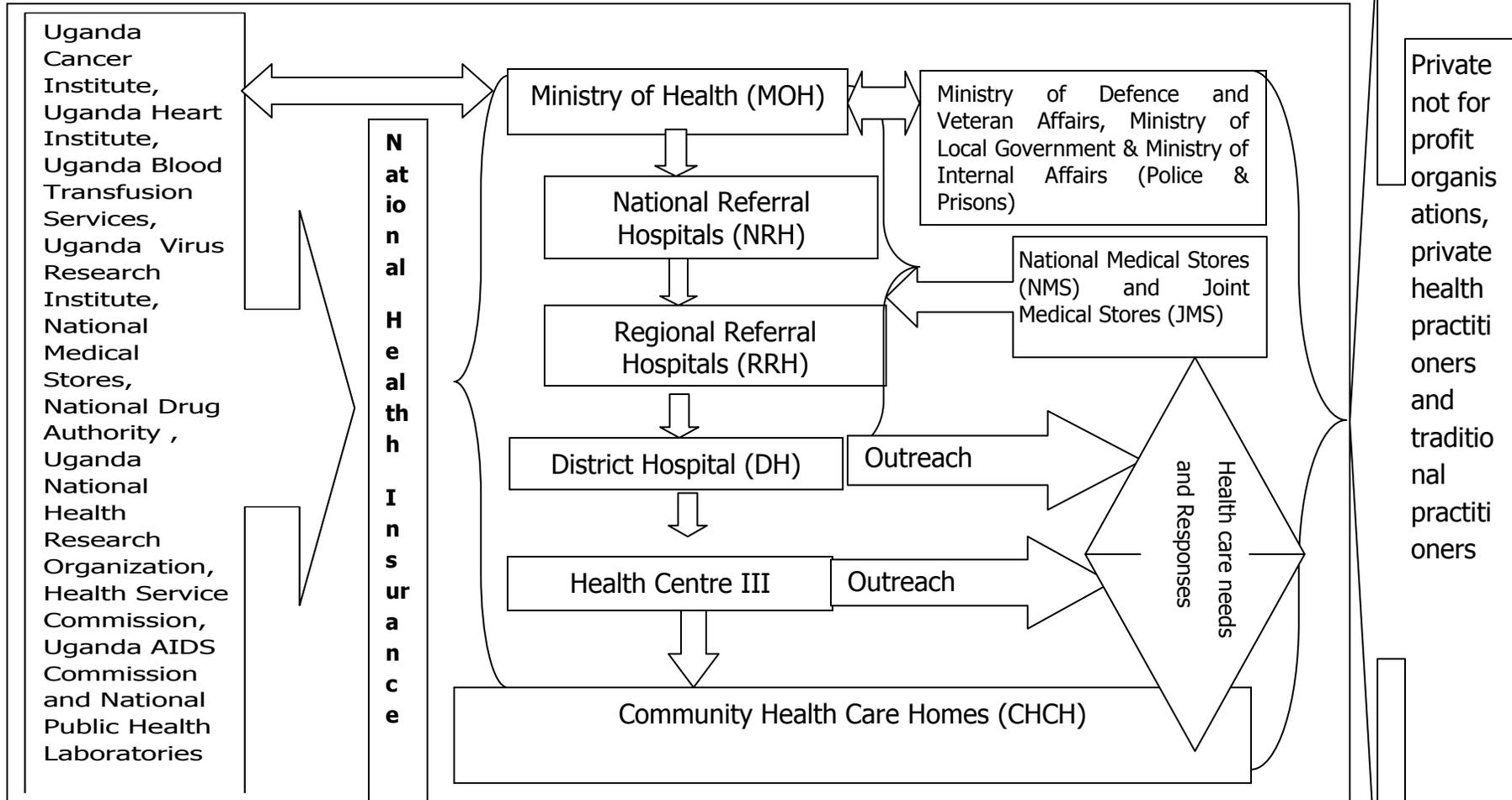
Community Healthcare Homes (CHCH), just like Patient-Centered Medical Homes (PCMHs), help to integrate patients as active participants in the health service delivery systems in their own wealth and health. Medical teams coordinate issues of acute, preventive, chronic disease needs use of the evidence and technology available to take care of patients. This model is convenient for patients and gives them comfort and optimal health throughout their lifetime. Key components of these CHCHs include performance reporting, building patient-provider relationships, maintenance of patient's registry and management of care for people who use care teams and other related action plans. Patient-Centered Medical Homes Model provides link with the community, support for patient self-management and preventive public health services (Staley 2013, p. 3).

The model recognises National Medical Stores and Joint Medical Stores for drugs and equipment supply as has been the case down to District Hospital level. Other key stakeholders, such as the Health Service Commission, Uganda Blood Transfusion Services, National Drug Authority, Uganda AIDS Commission, Uganda Heart Institute, National Public Health Laboratories, Uganda Virus Research Institute and other partners in health service delivery are recognised. Support from PFP and PNFP and PPTMC in health care service provision is recognised as well. The model proposes a Comprehensive National Medical Insurance Scheme for all Ugandans at all health

service delivery points. The Government of Uganda should share the health costs with the citizens at 85: 15 per cent ratio and issue health insurance cards or promote the use of national identity cards for all through biometric machines. This will (inter alia) help in the achievement of the country's health-for-all vision.

8.6.2 Diagrammatic representation of the Integrative Patients' Quality Care Health Service Model

FIGURE 8.6: PROPOSED INTEGRATIVE PATIENTS' QUALITY CARE HEALTH SERVICE MODEL



Source: Researcher's own developed model

Figure 2: A **developed comprehensive health service delivery model**

8.7 Chapter summary

In this chapter, various health service delivery models as applied in various countries were discussed. These include the structural healthcare model, the value of ICTs to health model, the healthcare product/services and support systems model, the health belief model of health service delivery, the behavioural model of health service delivery and the value-based health service delivery model. The applicability and shortcomings of these models were discussed as well.

A new innovative health service delivery model called an Integrative Patients' Quality Care Health Service Model was developed. This model takes care of patient-centered care, which is not policy-supported in Uganda. The model also focuses on the integration of aspects of successful models elsewhere, and addresses value addition and quality aspects. An all health service delivery stakeholder engagement concern is addressed and it is hoped that health for all at less cost will be achieved in Uganda with the proposed health insurance scheme and the reduction of bureaucratic structures in health service delivery.

8.8 Overall Concluding Remarks and Policy Implications

The study sought to investigate the influence of health service delivery innovations (ICT and policies) on health services delivery in Uganda's government hospitals focusing on the Kigezi sub-region. This arose from the glaring health service delivery challenges in the Ugandan hospitals. The study confirmed and concluded that ICT (mTrac, U Reporting, HIMS and OpenMRS) and policy (Decentralised health and PPPH) innovations positively contribute to the delivery of health services in terms of efficiency speed of service (timeliness) and quality. Public-Private Partnership for Health (PPPH) as a policy on health service delivery was thin on the ground since hospital user fees were abolished although some hospitals practice it under private wards,

Although findings confirmed that that patient-centered care is one of the modern ways of healthcare delivery in fostering a relationship between the healthcare team, the patient/patient caretakers and the medical system, thus forging a "home", there was no

linkage found between ICT (mTrac, U Reporting, HIMS, OpenMRS) and policy (Decentralised health and PPPH) innovations and patient centeredness care since there are no legal and institutional frameworks in support of patient-centered care in Uganda. Nonetheless, medical workers somehow practice it under the clients' charter and following the generally accepted principles in the medical profession.

It was also found that overtime, there has been great improvement in Uganda's healthcare industry in the fields of maternal mortality, infant mortality, infrastructural development, reduced disease burden, health education and the promotion of disease prevention, human resource development for health, health information systems, health innovations and governance/performance management. This has been due to the good working relationship between government and other healthcare providers like Non-Governmental Organizations, Private Not for Profit Organisations, private health practitioners and traditional and complementary medical practitioners. It was therefore concluded that the harmonious relationship between government and other health service providers is (in one way) responsible for improved health service delivery in Uganda.

The study also found and concluded that inspite of the healthcare improvements in Uganda, there are serious challenges that impede efficient and quality health service delivery and these include, inter alia, underfunding of the health sector, shortage of drugs, human resource capacity gaps, poor attitude and mindset of health workers, commercialisation of the health sector, obsolete items and expired drugs, exploitation by the private sector, outdated health infrastructure and lack of coordination among health implementing partners.

It was found that Uganda's health service delivery system is built on the structural model with the Ministry of Health on top of the hierarchy for policy direction and Health Centre 1 (HCI)/Village Health Teams at the lowest level. This model is however not guiding in the proper health service delivery as there are challenges such as; utilization inequalities, inadequate facilities, weak scattered and incapacitated local governments,

long distances and transportation costs unqualified manpower and lack of drugs. Arising from the field findings and review of related literature on health service delivery models globally and the one of Uganda, an Integrative Patients' Quality Care Health Service Model was developed to take care of the gaps in health services delivery system especially patient centeredness care in Uganda.

The Integrative Patients' Quality Care Health Service Model will bring services nearer to the people through community care homes and referrals from the Regional Referral Hospitals and the District/General Hospitals. The hitherto services provided at the HCIVs will be closer (at the sub county) with medical officers stationed there. It proposes reduction in bureaucratic ladders by eliminating Health Centre 11 and Health Centre IV. The model proposes a National Health Insurance scheme to help citizens the burden of ever increasing health costs. All these proposals (when adopted by Government of Uganda) call for serious commitment (of government, leaders, healthcare providers, funders of health and citizens), revision and framing new policies in the health sector.

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NORTH-WEST UNIVERSITY
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**Basic and Social Sciences Research Ethics
Committee**

Tel: +27(16) 910-3483

Web: <http://www.nwu.ac.za>

Email: bassrec@nwu.ac.za

7 January 2019

Dear Mr A Beinebyabo

Application: NWU-HS-2018-0135

Project Title: Innovative Health Service Delivery in Government Hospitals in Uganda: A case of
Kabale ad Kambuga Hospitals in Kigezi sub-region

Supervisor: Prof. Hofisi

Validity: 7 January 2019 – 6 January 2022

PhD Public Management and Governance

Risk Level: Low

Date of BaSSREC approval: 7 January 2019

Thank you for a revised application and additional material based on a decision by the BaSSREC
Chairperson where additional documentation was requested.

This letter serves as notification that the revised application submitted to BaSSREC is approved and
will be ratified via round robin. There is an adequate risk/benefit ratio and the protocol is
acceptable.

A certificate will be issued for the duration of the applicant's period of research, with a maximum
period of 3 years, and communication will be kept for progress tracking purposes.

Congratulations and best of wishes with the completion of your project.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Jaco Hoffman', written over a horizontal line.

Prof Jaco Hoffman

Chairperson

APPENDIX II



NORTH-WEST UNIVERSITY
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Faculty of Humanities
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Committee.

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03 JUNE 2018

Mr A Beinebyabo (Review 1)

Student no: 28468740

Research title as approved by the VCHRCM committee:

**INNOVATIVE HEALTH SERVICE DELIVERY IN GOVERNMENT HOSPITALS IN UGANDA:
A CASE OF KABALE AND KAMBUGA HOSPITALS IN KIGEZI SUB-REGION**

Dear Mr BEINEBYABO

This letter serves to confirm that your PhD-thesis research proposal has been approved by the Vaal Campus Humanities Research Management Committee.

Committee members involved:

Present (C-CAD reviewers)	Non-CAD external reviewers
Dr C Gouws	Prof G van de Waldt
	Prof M.T. Lukamba

The ethics application is referred to the:

* Research Ethics Committee- BaSSREC: X

* Research Ethics Committee-HHREC: _____

You will find the details on the procedure that you will have to follow to submit to the Ethics Committee on the NWU-website. For the CAD-records, please inform Ms Lebo Serobane as responsible person to folder the ethical submission when your submission has been successfully completed and approved (Lebo.serobane@nwu.ac.za).

Yours sincerely

Prof C Hofisi

Chairperson, Vaal Campus Humanities Research Management Committee



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: <http://www.nwu.ac.za>

Research Ethics Regulatory Committee
Tel: 018 299-4849
Email: nkosinathi.machine@nwu.ac.za

07 January 2019

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Basic and Social Sciences Research Ethics Committee (BaSSREC)** on 07/01/2019, the Basic and Social Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Research Ethics Regulatory Committee (NWU-RERC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Innovative Health Service Delivery in Government Hospitals in Uganda: A case of Kabale and Kambuga Hospitals in Kigezi sub-region.																															
Study Leader/Supervisor (Principal Investigator)/Researcher: Prof. Hofisi																															
Student: A Beinebyabo																															
Ethics number:	<table border="1"> <tr> <td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>0</td><td>8</td><td>1</td><td>8</td><td>-</td><td>1</td><td>8</td><td>-</td><td>A</td><td>7</td> </tr> <tr> <td colspan="3">Institution</td> <td></td> <td colspan="5">Study Number</td> <td></td> <td colspan="2">Year</td> <td colspan="3">Status</td> </tr> </table>	N	W	U	-	0	0	8	1	8	-	1	8	-	A	7	Institution				Study Number						Year		Status		
N	W	U	-	0	0	8	1	8	-	1	8	-	A	7																	
Institution				Study Number						Year		Status																			
<p><i>Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</i></p>																															
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Commencement date: 07/01/2019	Risk: <table border="1"><tr><td>Low</td></tr></table>	Low																													
Low																															
Expiry date: 06/01/2020																															
Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.																															

Special in process conditions of the research for approval (if applicable):

<p>General conditions:</p> <p>While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:</p> <ul style="list-style-type: none"> The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the BaSSREC: <ul style="list-style-type: none"> annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study. The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the BaSSREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited. Annually a number of studies may be randomly selected for an external audit. The date of approval indicates the first date that the study may be started. In the interest of ethical responsibility, the NWU-RERC and BaSSREC reserves the right to: <ul style="list-style-type: none"> request access to any information or data at any time during the course or after completion of the study; to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process; withdraw or postpone approval if: <ul style="list-style-type: none"> any unethical principles or practices of the study are revealed or suspected;
--

- *it becomes apparent that any relevant information was withheld from the BaSSREC or that information has been false or misrepresented;*
- *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
- *new institutional rules, national legislation or international conventions deem it necessary.*
- *BaSSREC can be contacted for further information or any report templates via BaSSREC@nwu.ac.za.*

The BaSSREC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the BaSSREC or the NWU-RERC for any further enquiries or requests for assistance.

Yours sincerely



Prof
Chair NWU Basic and Social Sciences Research Ethics Committee

Original details: (22351930) C:\Users\22351930\Desktop\ETHICS APPROVAL LETTER OF STUDY.docm
8 November 2018

APPENDIX IV



Certificate

October 1, 2018

This is to certify that Mr. Adrian Beinebyabo has successfully completed the Macquarie University Human Research Ethics Online Training Module for the Social Sciences and Humanities.

Macquarie University

INTERVIEW GUIDE FOR PERMANENT SECRETARY, MINISTRY OF HEALTH

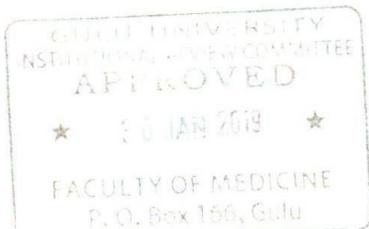
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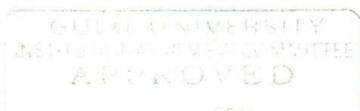
Site Location:.....

My name is Adrian Beinebyabo, a student pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus in South Africa. My Research topic is "Innovative Health Service Delivery in Government Hospitals in Uganda: A Case of Kabale and Kambuga Hospitals in Kigezi Sub-Region". The primary research objective is to investigate the effect of innovations introduced by the Government of Uganda on health service delivery in government hospitals with great emphasis on speed of service, efficiency, quality of service and patient centeredness healthcare. Other participants in this study are Director of Kabale Regional Referral Hospital, Medical Superintendent of Kambuga Hospital), Hospital Health Management committee members, Heads of Pharmacies, specialized medical staff and patients. You are one of the key respondents identified and I request for your time and maximum cooperation in answering the questions. It is important to note that what you say will be held and kept with utmost confidentiality. The results of the study will be used for academic purposes and the responses will be kept by the university for a duration specified by the relevant policies. The interview will take 60 minutes to complete and your participation is voluntary. A consent form has been provided to confirm this. This is therefore to once again request you to participate in this study by attending to this interview.

Your participation will be greatly appreciated.



1. What has been the performance of the Uganda's health care sector in the recent past compared to the international and regional standard requirements?
2. What has government done to improve the health care industry in Uganda in the past few years?
3. What ICT innovations have been introduced in the Uganda's health care sector to improve service delivery?
4. Which government policies have been introduced to facilitate health service delivery in Uganda?
5. In your view, how successful have Innovative ICT platforms been in improving health service delivery in government hospitals?
6. How have health care related policies introduced by government helped in improving health service delivery in government hospitals?
7. As the top technical person in the Ministry of Health, what is your view on the specific effect of ICT platforms and health care policies introduced by government on speed of service, efficiency, quality health care and addressing patient centeredness needs/demands?
8. What could be the challenges affecting health service delivery in government hospitals?
9. Which plans or policies are there or being proposed to improve health service delivery in Uganda.
10. Which appropriate model would you propose to improve health service delivery in government hospitals in Uganda?



**INTERVIEW GUIDE FOR HOSPITAL MANAGERS, SPECIALIZED MEDICAL
STAFF, HOSPITAL HEALTH MANAGEMENT COMMITTEE MEMBERS AND
HEADS OF PHARMACIES**

Date:.....

Time:.....

Site Location:.....

My name is Adrian Beinebyabo, a student pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus in South Africa. My Research topic is *“Innovative Health Service Delivery in Government Hospitals in Uganda: A Case of Kabale and Kambuga Hospitals in Kigezi Sub-Region”*. The primary research objective is to investigate the effect of innovations introduced by the Government of Uganda on health service delivery in government hospitals with great emphasis on speed of service, efficiency, quality of service and patient centeredness healthcare. Participants in this study are Permanent Secretary, Ministry of Health, Director of Kabale Regional Referral Hospital, Medical Superintendent of Kambuga Hospital), Hospital Health Management committee members, Heads of Pharmacies, specialized medical staff and patients. You are one of the key respondents identified and I request for your time and maximum cooperation in answering the questions. It is important to note that what you say will be held and kept with utmost confidentiality. The results of the study will be used for academic purposes and the responses will be kept by the university for a duration specified by the relevant policies. The interview will take 60 minutes to complete and your participation is voluntary. A consent form has been provided to confirm this. This is therefore to once again request you to participate in this study by attending to this interview.

Your participation will be greatly appreciated.

1. What is your understanding of the term innovation in the healthcare field?
2. How do you understand the concept of health service delivery?
3. What innovative ICT platforms have been introduced in the health service sector in Uganda in the recent past?
4. Which innovative ICT platforms are being utilised in this hospital?
5. How are the innovative ICT platforms introduced in the health service sector in Uganda being applied in this hospital?
6. Which healthcare related policies have been introduced by government to facilitate service delivery in this hospital?
7. What is the effect of health service delivery innovations on the speed of services in this hospital?
8. What is the effect of health service delivery innovations on efficiency in this hospital?
9. What is the effect of health service delivery innovations on quality of service in this hospital?
10. What is the effect of health service delivery innovations on patient centeredness care in this hospital?
11. What should be incorporated in the development of a comprehensive innovative health service delivery model for government hospitals in Uganda?
12. Suggest any successful models that have been implemented elsewhere to address health service delivery in Uganda.



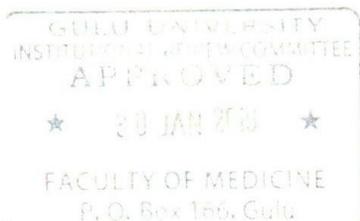
INTERVIEW GUIDE FOR THE PATIENTS

Date:.....

Time:.....

Site Location:.....

My name is Adrian Beinebyabo, a student pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus in South Africa. My Research topic is "Innovative Health Service Delivery in Government Hospitals in Uganda: A Case of Kabale and Kambuga Hospitals in Kigezi Sub-Region". The primary research objective is to investigate the effect of innovations introduced by the Government of Uganda on health service delivery in government hospitals with great emphasis on speed of service, efficiency, quality of service and patient centeredness healthcare. Participants in this study are Permanent Secretary, Ministry of Health, Director of Kabale Regional Referral Hospital, Medical Superintendent of Kambuga Hospital), Hospital Health Management committee members, Heads of Pharmacies, specialized medical staff and patients. You are one of the key respondents identified and I request for your time and maximum cooperation in answering the questions. It is important to note that what you say will be held and kept with utmost confidentiality. The results of the study will be used for academic purposes and the responses will be kept by the university for a duration specified by the relevant policies. The interview will take 40 minutes to complete and your participation is voluntary. A consent form has been provided to confirm this. This is therefore to once again request you to participate in this study by attending to this interview. Your participation will be greatly appreciated.



1. For how long have you been using the services of this hospital?
2. Are you satisfied with the services of this hospital? If No why?
3. Would you recommend any patient to get services from this hospital?
4. How fast are the health workers in offering services to the patients at this hospital?
5. For the period you have used the services at this hospital, do you find the staff doing well what they are supposed to do?
6. When getting services at this hospital, do see the staff following correct steps and procedures when delivering the services?
7. How do you compare the cost of service at this hospital with other health facilities?
8. How do you find the services at this hospital in terms of standards?
9. How do you find the services at this hospital in terms of solving your health care needs/problems?
10. In delivering their services, how do the health care workers give you information related to your sickness and treatment?
11. How often have you been consulted by health workers at this hospital on your health problems/illness and the appropriate medication/treatment?
12. How have you participated in making any decision regarding your treatment and stay at this hospital?
13. What would you suggest on how best government can provide health services to the

INFORMED CONSENT DOCUMENT

TITLE OF THE STUDY: INNOVATIVE HEALTH SERVICE DELIVERY IN GOVERNMENT HOSPITALS IN UGANDA: A CASE OF KABALE AND KAMBUGA HOSPITALS IN KIGEZI SUB-REGION

INVESTIGATOR(S): ADRIAN BEINEBYABO (PHD STUDENT)

INSTITUTION(S): NORTHWEST UNIVERSITY (SOUTH AFRICA)

INTRODUCTION: DEAR PARTICIPANT, I AM ADRIAN BEINEBYABO; A PHD STUDENT AT NORTH WEST UNIVERSITY, VAAL TRIANGLE CAMPUS IN SOUTH AFRICA. MY RESEARCH TOPIC IS ON INNOVATIVE HEALTH SERVICE DELIVERY IN GOVERNMENT HOSPITALS IN UGANDA: A CASE OF KABALE AND KAMBUGA HOSPITALS IN KIGEZI SUB-REGION AND HAS BEEN APPROVED BY THE HUMANITIES AND HEALTH RESEARCH ETHICS COMMITTEE OF NORTH-WEST UNIVERSITY. MY SUPERVISOR/PROMOTER IS PROFESSOR COSTA HOFISI. IDENTITY AND ALL INFORMATION COLLECTED IN THIS STUDY WILL REMAIN CONFIDENTIAL. YOUR PERSONAL IDENTITY INCLUDING YOUR ADDRESSES WILL BE PROTECTED WITH A LOT OF CAUTION NOT TO BE REFERRED TO IN ANY REPORTS, EXTRACTS AND/OR QUOTATIONS. SHOULD YOU WISH TO HAVE FURTHER CLARIFICATION ABOUT ANY PART OF THIS RESEARCH OR THE RESEARCH INSTRUMENTS, PLEASE DO NOT HESITATE TO ASK THE RESEARCHER BEFORE ATTEMPTING TO ANSWER THE QUESTIONS. AS YOU PROCEED TO PARTICIPATE IN THE RESEARCH, IT IS VERY IMPORTANT THAT YOU ARE FULLY SATISFIED WITH THE GIVEN INFORMATION AND THAT YOU CLEARLY UNDERSTAND WHAT THIS RESEARCH IS ABOUT AND WHAT CONTRIBUTION IT MAKES. I AM WRITING TO SEEK YOUR CONSENT TO PARTICIPATE IN THIS

A BRIEF DESCRIPTION OF THE SPONSORS OF THE RESEARCH PROJECT

THIS RESEARCH IS PART OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF DOCTOR OF PHILOSOPHY (PHD) SPONSORED BY GOVERNMENT OF UGANDA IN COLLABORATION WITH ADB IV HEST PROJECT.

PURPOSE:

THE STUDY SEEKS TO DETERMINE WHETHER THE INNOVATIONS IN THE HEALTH INDUSTRY IN FORM OF INFORMATION, COMMUNICATION AND TECHNOLOGY (ICT) AND HEALTHCARE RELATED POLICIES HAVE HAD ANY EFFECT ON HEALTH SERVICE DELIVERY. THE STUDY FINDINGS WILL HELP TO DEVELOP AND PROPOSE A MODEL TO IMPROVE HEALTH SERVICE DELIVERY IN UGANDA HENCE ACHIEVING "HEALTH FOR ALL" PERCEIVED IMPACT.

PROCEDURES:

YOUR PARTICIPATION IN THIS STUDY WILL INVOLVE ANSWERING QUESTIONS PUT TO YOU BY THE RESEARCHER AS HE **RECORDS/WRITES DOWN** YOUR RESPONSES. THE RESEARCHER WILL ^{1ST} EXPLAIN TO YOU THE PURPOSE OF INFORMED CONSENT AND BENEFITS OF PARTICIPATING IN SUCH STUDIES. WHILE CONDUCTING THIS STUDY, THE RESEARCHER WILL FOLLOW THE UGANDAN LAWS/GUIDELINES ON RESEARCH INVOLVING HUMANS AS RESEARCH PARTICIPANTS, ETHICAL GUIDELINES AND PRINCIPLES OF THE NORTH WEST UNIVERSITY(NWU), VAAL TRIANGLE WHICH GUIDELINES ARE ALIGNED/ADHERE TO INTERNATIONAL STANDARDS IN RESEARCH. IT MIGHT BE NECESSARY FOR THE RESEARCH ETHICS COMMITTEE MEMBERS OR RELEVANT AUTHORITIES TO INSPECT THE RESEARCH RECORDS TO MAKE SURE THAT THE RESEARCHER IS CONDUCTING RESEARCH IN AN ETHICAL MANNER. IN ADDITION THE STUDY HAS BEEN APPROVED BY _____

UNIVERSITY RESEARCH ETHICS COMMITTEE AND SANCTIONED BY THE UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY.

WHO WILL PARTICIPATE IN THE STUDY?

YOU HAVE BEEN CHOSEN TO PARTICIPATE IN THIS STUDY BECAUSE YOU ARE PART OF THE PRIMARY STAKEHOLDERS IN THE HEALTH SERVICE DELIVERY SYSTEMS (HEALTH WORKERS, ADMINISTRATORS, HEALTH MANAGEMENT COMMITTEE, PATIENTS AND HEALTH POLICY INITIATORS AND IMPLEMENTERS). ONLY 34 RESPONDENTS WILL PARTICIPATE IN THIS STUDY. THE INTERVIEW WILL LAST FOR APPROXIMATELY 60 MINUTES OF YOUR TIME.

RISKS/DISCOMFORTS:

THERE IS NO FORESEEABLE RISK OF HARM OR DISCOMFORT THAT WILL ARISE FROM YOUR PARTICIPATION IN THIS STUDY. THE ONLY RISK OR DISCOMFORT WILL BE THE INCONVENIENCE IN TERMS OF TIME SPENT DURING THE INTERVIEW.

BENEFITS:

AS PART OF THE BENEFITS, YOUR PARTICIPATION WILL BE COUNTED AMONG THE NATIONAL EFFORTS TO IMPROVE HEALTH SERVICE DELIVERY IN UGANDA. YOU (RESEARCH PARTICIPANT) WILL GET FEEDBACK ON FINDINGS AND PROGRESS OF THE STUDY. ANY INFORMATION THAT AFFECTS THE STUDY AND STUDY FINDINGS WILL BE MADE AVAILABLE TO YOU (RESEARCH PARTICIPANTS).

CONFIDENTIALITY:

YOUR IDENTITY WILL NOT BE REVEALED TO ANY ONE AS WE SHALL ONLY USE CODES TO IDENTIFY PARTICIPANTS. INFORMATION OBTAINED WILL ONLY BE ACCESSIBLE BY THE RESEARCH TEAM. SECRET

COPIES OF THE DATA WILL BE PROTECTED BY PASSWORD AND HARD COPY FILES WILL BE KEPT UNDER LOCK AND KEY. CONFIDENTIAL INFORMATION WILL ONLY BE ACCESSED BY THE PRINCIPAL INVESTIGATOR.

ALTERNATIVES:

YOU DO NOT HAVE TO PARTICIPATE IN THIS STUDY IF YOU ARE NOT INTERESTED. YOU WILL NOT LOSE ANY BENEFIT IN CASE OF NO PARTICIPATION.

COST:

THERE WILL NOT BE ANY ADDITIONAL COST INCURRED AS A RESULT OF PARTICIPATING IN THIS STUDY.

QUESTIONS:

IF YOU HAVE ANY QUESTIONS RELATED TO THE STUDY, OR YOUR RIGHTS AS A RESEARCH PARTICIPANT, YOU CAN CONTACT THE PRINCIPAL INVESTIGATOR, MR. ADRIAN BEINEBYABO ON TELEPHONE NUMBER 0772-404715 OR VIA EMAIL ON BEINEADRIAN@GMAIL.COM

STATEMENT OF VOLUNTARINESS:

PARTICIPATION IN THE RESEARCH STUDY IS VOLUNTARY AND YOU MAY JOIN ON YOUR OWN FREE WILL. YOU HAVE A RIGHT TO WITHDRAW FROM THE STUDY AT ANY TIME WITHOUT PENALTY. IF YOU HAVE ANY ISSUES PERTAINING TO YOUR RIGHTS AND PARTICIPATION IN THE STUDY, PLEASE CONTACT THE CHAIRPERSON, GULU UNIVERSITY RESEARCH ETHICS COMMITTEE, DR. GERALD OBAI TE : NO. 0772305621; EMAIL: LEKIDAI@GMAIL.COM, LEKIDAI@GMAIL.COM OR THE

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY, ON PLOT 6 KIMERA ROAD,
NTINDA, KAMPALA ON TEL 0414705500.

STATEMENT OF CONSENT

MR. ADRIAN BEINEBYABO HAS DESCRIBED TO ME WHAT IS GOING TO BE DONE, THE RISKS, THE BENEFITS INVOLVED AND MY RIGHTS AS A PARTICIPANT IN THIS STUDY. I UNDERSTAND THAT MY DECISION TO PARTICIPATE IN THIS STUDY WILL NOT AFFECT ME IN ANY WAY. IN THE USE OF THIS INFORMATION, MY IDENTITY WILL BE CONCEALED. I AM AWARE THAT I MAY WITHDRAW AT ANY TIME. I UNDERSTAND THAT BY SIGNING THIS FORM, I DO NOT WAIVE ANY OF MY LEGAL RIGHTS BUT MERELY INDICATE THAT I HAVE BEEN INFORMED ABOUT THE RESEARCH STUDY IN WHICH I AM VOLUNTARILY AGREEING TO PARTICIPATE. A COPY OF THIS FORM WILL BE PROVIDED TO ME.

APPENDIX VII

Tel: +256 - 417 - 712260
PS' Office: +256 - 417 - 712221
Toll free: 0800100066
E-mail: ps@health.go.ug
Website: www.health.go.ug



THE REPUBLIC OF UGANDA

Office Of The Permanent Secretary
Ministry Of Health
P.O.Box 7272
Plot 6, Lourdel Road - Wandegaya
KAMPALA, UGANDA

IN ANY CORRESPONDENCE ON

ADM.130/313/05

THIS SUBJECT PLEASE QUOTE NO.

12th June, 2018

Director General
Uganda Management Institute
P.O Box 20131
KAMPALA.

INTRODUCTION OF MR. ADRIAN BEINEBYABO INTENDING TO CONDUCT RESEARCH IN THE MINISTRY OF HEALTH IN UGANDA.

Reference is made to your letter Ref CG/49 dated 6th June 2018 addressed to me in connection with the above subject. This is to confirm that permission has been granted to Mr. Adrian Beinebyabo to conduct his research in the Ministry of Health, Kabale Regional Referral Hospital and Kambuga District hospital leading to the award of a PhD degree in Public Management and Governance.

His Research topic of **"INNOVATIVE HEALTH SERVICE DELIVERY IN GOVERNMENT HOSPITALS IN UGANDA: A CASE OF KABALE AND KAMBUGA HOSPITALS IN KIGEZI SUB-REGION"** is relevant to the Ministry of Health.

By copy of this letter the staff of the Ministry of Health, Kabale Regional Referral and Kambuga hospitals are informed and requested to accord him maximum co-operation.

A handwritten signature in blue ink, appearing to be 'Diana Atwine'.

Dr. Diana Atwine
PERMANENT SECRETARY

Copy:

Prof. Costa Hofisi/North West University (Vaal Campus)
Under Secretary/Ministry of Health
Director/ Kabale Regional Referral Hospital
Medical Superintendent/Kambuga Hospital

TELEGRAMS:
TEL: 256-486-22727
FAX: 256486-22727
E-mail: hospitalkabale@yahoo.com



OFFICE OF THE HOSPITAL DIRECTOR
KABALE REGIONAL REFERRAL HOSPITAL
P.O. BOX 7, KABALE-UGANDA

THE REPUBLIC OF UGANDA

MINISTRY OF HEALTH

Date: 29th June, 2018

Our Ref: KRRH/05/01

Mr. Adrian Beinebyabo
PhD Student
North West University.

CONSENT TO CONDUCT RESEARCH AT KABALE REGIONAL REFERRAL HOSPITAL.

Please refer to a letter dated 12th June 2018 Ref. ADM.130/313/05 from the Permanent Secretary Ministry of Health addressed to the Director General Uganda Management Institute and copied to me among others. In the same letter permission was granted to you to conduct your research at this hospital and Kambuga hospital.

This letter serves as proof of consent allowing you to conduct your Doctoral research at Kabale Regional Referral Hospital after obtaining ethical approval from the relevant Institutional Review Boards. Necessary support will be accorded to you by management staff and all stakeholders in regard to interviews and perusal or relevant documents provided necessary ethical values are adhered to.

We hope to gain from your study findings in order to improve health service delivery in the region.

Handwritten signature of Dr. Namutebi Anne Marion.

Dr. Namutebi Anne Marion



FOR: HOSPITAL DIRECTOR

Cc. Permanent Secretary /Ministry of Health.
Cc. Under Secretary/ Ministry Of Health.
Cc. Prof. Costa Hofisi /North West University.
Cc. Principal/ Kabale Regional Referral Hospital

GULU

P.O. Box 166 Gulu Uganda
Website: www.gu.ac
Email: guluuniversity.rec@gmail.com



UNIVERSITY

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Mob: +256772305621/776812147

RESEARCH ETHICS COMMITTEE

January 30, 2019

APPROVAL NOTICE

ADRIAN BEINEBYABO
NORTH WEST UNIVERSITY (VAAL TRIANGLE CAMPUS)

Re: Application No. GUREC-018-19

Type of review:

Initial review

Amendment

Continuing review

Termination of study

SAEs

Other, Specify: _____

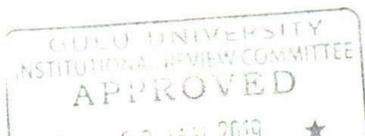
Title of proposal: **"INNOVATIVE HEALTH SERVICE DELIVERY IN GOVERNMENT HOSPITALS IN UGANDA: A CASE OF KABALE AND KAMBUGA HOSPITALS IN KIGEZI SUB-REGION"**.

I am pleased to inform you that the Gulu University Research Ethics Committee (GUREC) approved the above referenced application.

Approval of the research is for the period of **30th November 2018 to 29th November 2019**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the **GUREC** for re-review and approval prior to the activation of the



changes. The **GUREC** application number assigned to the research should be cited in any correspondence.

3. Any unanticipated problems involving risks to participants must be promptly reported to the **GUREC**. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for the **GUREC** review.
4. Only approved and stamped consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The **GUREC** may conduct audits of all study records, and consent documentation may be part of such audits.
5. Regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the **GUREC** eight (8) weeks prior to the above expiration **date of 29th November 2019** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely manner may result in suspension or termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.
6. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following documents have been approved in this application by the **GUREC**:

	Document	Language	Version	Version Date
1	Protocol	English	Version 2.0	8 th January 2019
2	Data Collections tools	English	Version 2.0	8 th January 2019
3	Informed consent Document	English	Version 2.0	8 th January 2019





Uganda National Council For Science And Technology

(Established by Act of Parliament of the Republic of Uganda)

Our Ref: SS 5231

Adrian Beinebyabo

Principal Investigator

Uganda Management Institute, Kampala

Re: Research Approval: Innovative Health Service Delivery in Government Hospitals in Uganda: A Case of Kabale and Kambuga Hospitals in Kigezi Sub-Region

Am pleased to inform you that on **15th February 2019**, the Uganda National Council of Science and Technology (UNCST) approved the above referenced Research Project. The approval of the Research Project is for the period **15th February 2019 to 15th February 2020**. Your Research Registration number is SS 5231 and this number can be cited on all correspondences with UNCST in regard to this research project.

As the Principal investigator, you MUST fulfil the following obligations during your study:

1. All co investigators must be kept informed of the status of the research.
2. Changes, amendments and addenda to the research protocol or the consent form (where applicable) must be submitted to the designated Research Ethics Committee (in your case GUREC) for review and approval prior to activation of the changes. UNCST must be notified of the approved changes within five (05) working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to National Drug Authority.
4. Unexpected events involving risks to research subjects/participants must be reported promptly to UNCST. New information that becomes available which alters the risk/benefit ratio must be submitted promptly to UNCST for review.
5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.
6. A study report must be submitted electronically to UNCST within four weeks after every 12 months. Failure to do so may result in termination of the research project.

Find here below the documents approved with this application:

	Document Title	Language	Version	Version date
1.	Research Proposal	English	2.0	February 2018
2.	Interview Guide for Permanent Secretary, Ministry of Health	English	2.0	February 2018
3.	Interview guide for Hospital Managers, Specialized medical staff, Hospital Health Management Committee members and Heads of Pharmacies	English	2.0	February 2018
4.	Interview Guide for patients	English	2.0	February 2018
5	Informed Consent	English	2.0	February 2018

Yours sincerely,

Hellen. N. Opolot

for: Executive Secretary

UGANDA NATIONAL COUNCIL OF SCIENCE AND TECHNOLOGY

Copy to: Chairperson, Gulu University, Research Ethics Committee

LOCATION/CORRESPONDENCE

Plot 6 Kimera Road, Ntinda
P.O. Box 6884
KAMPALA, UGANDA

COMMUNICATION

TEL: (256) 414 705500
FAX: (256) 414-234579
EMAIL: info@uncst.go.ug



NOTICE OF SUBMISSION

Notice of intention to submit for examination must be given to Higher Degree Administration **three months** prior to submission

Student title, first names and surname:

Address (correspondence):

Email:

University no:

Cell nr:

Promoter/Supervisor:

Qualification currently registered for: DOCTOR OF PHILOSOPHY (PhD)

Title:

(it should be exactly the same as registered/approved title)

This title must appear exactly as registered by the faculty. **No deviation from the registered title will be accepted** on the Title page for examination copies and final copies

Titles in Title Case only (ALL CAPS). are not accepted as an NWU style for Title registrations

Intended submission date:

Ethics clearance number:

Signature of student:

ORCID:

Adrian Beinebyabo
Digitally signed by Adrian Beinebyabo
Date: 2019.03.06 15:16:27 +02'00'

Date:

I, COSTA HOFISI, the promoter/supervisor of abovementioned student hereby confirm that:

- the student will most likely be ready to submit by abovementioned date;
- the title for the study has been registered;
- the registered title mentioned above is correct;
- and that the examiners have been appointed.

Promoter/Supervisor

Signature: **Costa Hofisi**
Digitally signed by Costa Hofisi
Date: 2019.03.06 15:17:26

Date:

Date: 4 November 2019

Ref: 06/11/2019

Dear Sir/Madam

Re: MR ADRIAN BEINEBYABO

This is to certify that I have edited Mr Adrian Beinebyabo's PhD thesis entitled **Innovative Health Service Delivery in Government Hospitals in Uganda: A Case of Kabale and Kambuga Hospitals in Kigezi Sub-Region.**

I am a professional editor at Fountain Publishers, one of the leading publishing houses in the Great Lakes region, Africa, where I have worked since 1997. I also do freelance editing.

In the course of editing, I take care of the following:

- Checking documents for coherence and completeness.
- Ensuring consistency in style and formatting.
- Correcting grammatical, spelling and other language errors.
- Where necessary, reworking the language with a view to ensuring elegance.
- Raising queries in cases of vagueness, inconsistency and questionable authenticity.
- Identifying gaps in the content.
- Where they exist, checking figures, graphs and tables to ensure that they are correctly done.
- Scrutinising the reference or bibliographical lists to ensure that they follow the agreed format/style and, where necessary, making corrections.
- Liaising with the author of the document whenever the need arises.
- Using the 'Track Changes' command and submitting the edited work in two versions – one in which the changes are still tracked and the second with the changes accepted (and/or the changes shown, if they have been tracked).



Publishing without limits

P.O.Box 488, Kampala, Uganda

Tel: +256 782 859 842

+256 758 822 999

Email: jocwinyo61@gmail.com

Beinebyabo's thesis, therefore, comes in two versions – one with the changes still tracked and the other with the changes accepted.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Julius Ocwinyo'.

Julius Ocwinyo

Kampala, Uganda