OPERATIONAL FACTORS RELATED TO PERFORMANCE OF HEALTH FACILITIES IN IMPLEMENTING NATIONAL HEALTH INSURANCE FUND ONLINE CLAIMS MANAGEMENT INFORMATION SYSTEM

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By

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Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Science (Project Management Monitoring and Evaluation in Health) of

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation titled; **"Operational factors related to the performance of health facilities in Implementing National Health Insurance Fund Online Claims Management Information System",** in (partial) fulfillment of the requirements for the degree of Master of Science (Project Management Monitoring and Evaluation in Health) of Muhimbili University of Health and Allied Sciences.

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Prof. Phare G. M Mujinja, BA (Hons), CIH, MPH, MA (Econ), PhD

(Supervisor)

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Date

DECLARATION AND COPYRIGHT

I, **Paul Kazungu Zacharia**, declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature……..…… **Date**…….....…….....

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DEDICATION

This work is dedicated to my family, especially my dear wife Victoria Selestine and my children James Paul Kazungu, Janeth Paul Kazungu, and Julieth Paul Kazungu for their patience and moral support that they provided to me especially when I faced some difficulties.

I can’t quantify my love to all who are mentioned, GOD Bless You All.

ABSTRACT

Background information

Claims Management Information System is an interconnected modular information system for claim processing and reimbursement transaction introduced by NHIF. It enables a health facility to determine the eligibility of the beneficiary to particular insurance, authorize, approve, submit claims online, track and verify the status of claims, avoid duplication, and timely reimbursement. However, there has been slow adoption of Online CMIS in health facilities and the operational factors related to the implementation of the system have not been explored.

Main study Objective: This study aimed to explore operational factors related to the performance of health facilities in implementing online CMIS.

Methods: Exploratory Cross-sectional study design was employed and data was collected by using in-depth interviews between November and December 2020. A total of 15 participants were purposively selected from three health facilities and interviewed using a structured interview guide. Data collected were analyzed thematically by transcription, translation, coding, sub-themes, and themes.

Results: Results revealed that implementation of online CMIS facilitates timely claims submission and reimbursement, reduced workload, administrative costs, claims rejections, and fraud in studied health facilities. Availability of ICT infrastructure such as computers, software, HMIS, office space, skilled It personnel, top management support, staff engagement in decision making, were the enablers for the early adoption and implementation of online CMIS. Participatory decision-making, regular training sessions, and seminars to build the capacity of staff engaged in the implementation of online claims management information system were also key factors in the implementation of the online claims submission system.

Conclusion: The online claims submission system improved revenue collection as well as timely reimbursement in the studied health facilities. However, the implementation and adoption to be successful depended on the interplay of facility capacity and adoption strategies employed and resources saving benefits of the system.

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LIST OF ABBREVIATIONS

BMH	Benjamin Mkapa Hospital
CMIS	Claims Management Information System
CPA	Complimentary Package of Activities
E-claims	Electronic Claim Management System
EMR	Electronic Medical Record
FBO	Faith-based organization
HIS	Health Information System
HSR	Health Sector Reform
ICD	International Classification of diseases
MoHCDGEC	Ministry of Health Community development, Gender, Elderly and Children
MRI	Magnetic Resonance Image
NEMLIT	National Essential Medicine List of Tanzania
NHIF	National Health Insurance Fund
NHIS	National Health Insurance Scheme
PBF	Performance-Based Financing
SHI	Social Health Insurance
SHIS	Social Health Insurance Scheme
TMJ SSP	TMJ Super Specialized Polyclinic
UAT	User Acceptance Testing
URT	United Republic of Tanzania CHT Community Health Fund
WHO	World Health Organization

OPERATIONAL DEFINITIONS OF TERMS

Authorization: This term refers to when a patient's health insurance plan requires them to get permission from their insurance providers before receiving certain healthcare services.

Beneficiary: The beneficiary is the person who receives benefits and/or coverage under a healthcare plan. The beneficiary of an insurance plan may not be the person paying for the plan, as is the case for dependents covered under their parents or guardian plans.

Clean Claim: This refers to a medical claim filed with a health insurance company that is free of errors and processed on time.

Coding: Is the process of translating a doctor's documentation about a patient's medical condition and health services rendered into medical codes that are then plugged into a claim for processing with an insurance company.

Demographics: The patient's information required for filing a claim, such as age, sex, address, and family information. An insurance company may deny a claim if it contains inaccurate demographics.

Electronic Claim: A claim sent electronically to an insurance carrier from a provider's billing software.

Electronic Medical Record is digitized medical record for a patient managed by a provider onsite. EMRs may also be referred to as electronic health records (EHRs).

Fee for Service: This refers to a type of health insurance wherein the provider is paid for every service they perform.

Fraud: Providers, patients, or insurance companies may be found fraudulent if they are deliberately achieving their ends through misrepresentation, dishonesty, and general illegal activity.

Healthcare Insurance: This is insurance offered to a group or an individual to cover costs associated with medical care and treatment.

Healthcare Provider: These are the entities that offer healthcare services to patients, including hospitals, and private clinics, and other healthcare facilities.

Inpatient: Care occurs when a person has a stay at a healthcare facility for more than 24 hours.

Intensive Care: Intensive care is the unit of a hospital reserved for patients that need immediate treatment and close monitoring by healthcare professionals for serious illnesses, conditions, and injuries.

Medical Coder: A medical coder is responsible for assigning various medical codes to services and healthcare plans described by a doctor on a patient's claims.

Operational factors: Refers to factors related to the working of a system

Outpatient: This term refers to healthcare treatment that doesn't require an overnight hospital stay, including a routine visit to a primary care doctor or a non-invasive surgery.

Premium: The sum a person pays to an insurance Fund on a regular (usually monthly or yearly) basis to receive health insurance.

Process Evaluation: describes a program's services, activities, policies, and procedures. It typically measures implementation in terms of program outputs, or quantitative indicators of the provision of services or activities. It describes who received the services and what services they received.

Provider: A provider is the healthcare facility that administered healthcare to an individual. Physicians, clinics, and hospitals are all considered providers.

Public: means belonging to Central Government or local government authority.

Referral: This is when a provider recommends another provider to a patient to receive specialized treatment.

Reimbursement: This is the repayment of healthcare expenses in a health insurance fund as compensation for healthcare services provided to beneficiaries.

Specialist: A doctor with expertise in a specific area of medicine. Surgeons, Orthopaedic surgeons, Oncologists, pediatricians, Gynaecologists, and neurologists are among the many specialists in the medical field.

Untimely Submission: Claims have a specific timeframe in which they can be sent off to an insurance company for processing. If a provider fails to file a claim with an insurance company in that timeframe, it is marked for untimely submission and will be denied by the company

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

1.1.1 Concept of claim and management

A claim on an insurance policy is defined as demand on an insurance scheme to fulfill its portion of the promise(1). A claim is also described as a notification to an amount is due under the terms of a policy. A claim is similar to a bill, it is a request to be reimbursed for the provision of care. Hospital medical claims management refers to the process of preparing, submitting, and following up on claims to insurance companies to be reimbursed for services rendered by hospitals to the beneficiaries(2). Medical claims processing starts immediately when a patient arrives at the hospital for diagnosis and treatment of an injury, illness, disease, or condition. When care and treatment of the patient are complete, all of the services and items provided are recorded in the patient's file whether electronic medical records or hard copy files(3).

Claims processing is one of the most challenging parts of medical practice thus proper management of claims processing is very important to ensure accurate reimbursement and improved revenue cycle among service providers which also leads to quality healthcare services for beneficiaries(2,3). However, studies reveal that claims processing have recently been transformed by leveraging modern claims system with advanced software intelligence, document and content management system that will improve claims processing efficiency and effectiveness. Claims processing starts immediately when the patient visits the hospital for services, the whole process should be guided by a well-organized claims management system to ensure proper handling(6). The claims management system is influenced by the speed, accuracy, and efficiency with which claims are reimbursed(7).

Faulty claims should not be processed to the final stage to make sure that all the errors are checked before claims submission(8). Thus, a properly managed claims process should be guided by a guideline setting out the broad approach aiming to provide high-quality service. It should specify the nature of claims processing at each stage, the speed of claims service, and assigned responsibilities(9).

Thus for the claims management process to be successful it must involve skilled personnel, backed up with a well-monitored process and technology(10).

1.1.2 Online Claims Management Information System (CMIS)

CMIS is an interconnected modular information system for claim processing and reimbursement transaction beginning from the time a patient signified the intention of using an NHIF benefit and ends when the claim is paid(11). It enables a health facility to determine the eligibility of the beneficiary to particular insurance, authorize, approve, submit claims online, track and verify the status of claims, and be reimbursed after claims submission. Online CMIS enables the service providers to avoid duplication of effort in processing claims particularly if the health facility has an already existing Hospital Management Information System (HMIS) or Electronic Medical Record (11).

The increase in the number of health facilities has consequently led to an increase in claims volumes submitted to insurers by service providers. This has brought several challenges in managing claims such as prolonged claims delay, errors during claims processing, and high expenditures on invalid members(1). In Tanzania National Health Insurance Fund introduced electronic claims submission system (e-claims) in January 2012 aiming at speeding up claims processing for early reimbursement, verifying NHIF valid beneficiaries to save massive expenditure on invalid members, and preventing fraudulent practices in health facilities(11).

1.1.3 Evolution of NHIF Claims management system

In Tanzania National Health Insurance Fund is the largest social health insurance scheme established by the Parliament Act number 8 of 1999 following the health sector reform (HSR) program which started in 1993(7). During the health sector reform programme, several strategies were employed by the government of the United Republic of Tanzania aiming at improving health care financing. The quality of health services had deteriorated significantly nearly to collapse(12). The NHIF was established as a contributory Social Health Insurance Scheme and started operating in 2001 covering only civil servants and compulsory maintaining a risk pooling Fund of the beneficiaries' contributions and other incomes deposited. NHIF reimbursement covers a variety of medical costs including lab investigations, admissions, radiology, physiotherapy, and surgical services to accredited

healthcare facilities at all levels and in all categories of accredited health facilities i.e. Government, Faith-based Organizations (FBOs), Non-governmental Organizations (NGOs) and Private Health facilities.

NHIF Claims management started in 2001 and commenced with Access Based System which operated between 2001 and 2007, Premia between 2006 and 2007 which was replaced by electronic claims management system (e-claims) 2007 which was initially installed to accredited healthcare facilities with monthly claims above five million already existing computers system to support the installation of e-claim(11). However, e-claims was non-online thus its introduction brought several challenges, particularly to the service providers such as delayed payments due to prolonged claims, massive claims rejections, high administrative costs to employ staffs for manual claims processing to e-claims from claim forms, and purchasing computers to install NHIF e-claims software(11).

In conclusion, several studies have been conducted on modalities of claims management but very little is documented on operational factors for successful adoption or implementation of online claims management information systems in health facilities. The introduction of a new system in health facilities encounters a lot of challenges and most survive only during the pilot stage only to be abandoned shortly after scale-up. Therefore, this study intends to focus on operational factors that contribute to the successful adoption and implementation of online claims management information systems in health facilities.

1.1.4 Theoretical foundation

This section explains major theories on the operational factors related performance of health facilities in implementing online claims management information systems (CMIS). The implementation and adoption of new technology such as Claims Information Management Systems is based on the innovation diffusion theory as proposed by Rogers(27). Another theory is based on medical claims processing and the whole health care reimbursement for services rendered. Reimbursement refers to the compensation or repayment for health-care services for expenses of services already provided before payment is made (28). Therefore, healthcare providers are paid back for services that they have already rendered to the beneficiaries and for expenses, such as supplies they have already incurred(28). In recent years there has been a significant paradigm shift in the

modality of payment for healthcare services from cash payment modality to health insurance modality of payment (29). The shift in the modality of payment for healthcare services has both benefits and challenges which need to be well evaluated. Due to the significance of reimbursement to healthcare providers in our setup today a need has arisen to address these challenges of payment healthcare for services follow.

1.1.5 Introduction of new Technology in Society (Diffusion of Innovation theory)

Diffusion of innovation theory is a set of generalizations regarding the typical spread of innovations or technology within a social system(29,30). Adoption of new technology (innovation) does not occur at once in an organization or rather the social system, it takes time and process and some people can be more apt to adopt the technology while others are reluctant(27). Researchers have established that those who adopt the technology early differ in characteristics from those who adopt the technology later(7). Hence when introducing a new technology or rather an innovation to a certain society, it is important to take into consideration the characteristics of the particular society so that to identify characteristics that will help or hinder the adoption of the innovation(27). Diffusion is the process whereby innovation is introduced through certain channels over a certain period among the members of a social system. Five steps have been identified for the adoption of new technology in the social system; the first step is Knowledge where a person gains knowledge about the innovation and has some ideas on how it functions. The second step is Persuasion whereby a person forms a positive or negative attitude toward the innovation. The third step is the decision of the person whether to engage in the adoption process or reject the innovation completely. The fourth step is implementation where a person puts an innovation into use. The last and fifth step is confirmation where a person evaluates the results of an innovation decision already made(27). The most important feature of diffusion theory is that, for most members of an organization, the innovation-decision depends heavily on the decisions of the other members of the system. The innovation decision is made through a cost-benefit analysis where the major obstacle is uncertainty. People will adopt an innovation if they believe that the innovation may yield some relative advantage(29,(27). Adoption of health information management systems is dependent on how people adopt or rejects technology innovations, researchers have established five adopter categories, even though the majority of the general population tends to fall in the

middle categories, it is still of paramount importance to understand the characteristics of the target population. The adopter categories proposed include the following; first is Innovators these are members of the social system who want to be the first to try the innovation. They are optimistic and interested in innovation. These members of the organization or rather a social system are very willing to take risks and are often the first to develop new ideas. To these people, not much effort is required for them very little, if anything, needs to be done for them to adopt the innovation. The second group is the immediate Adopters. These are members of the organization who assumes to represent opinion leaders. They enjoy leadership roles and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation(29,30). They do not need the information to convince them to change. The third category is the early Majority, these are rarely leaders, but they do adopt new ideas before the average person. That said, they typically need to see evidence that the innovation works before they are willing to adopt it. Strategies to appeal to this category include success stories and evidence of the innovation's effectiveness.

Late Majority: these are skeptical of change members of the social system, and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this category include information on how many other people have tried the innovation and have adopted it successfully. Lastly are Laggards; these members of the social system are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. However, strategies to appeal to this category of population include statistics, fear appeals, and pressure from members in the other adopter groups(29,30).

1.1.6 Reimbursement system

Reimbursement systems for health care are defined according to how money is allocated to the provider of care by health care payers e.g. government, insurers, and patients. Providers can be both individual caregivers such as General Practitioners, specialists, physiotherapists, dentists and institutional providers, hospitals, Polyclinics, and home-based health care agencies(31). Reimbursement systems for health care providers vary from country to country depending on the agreed modality between the insurance company and the service providers. However, there are proposed mechanisms for reimbursement such as fixed and variable systems, retrospective and prospective systems(32). The difference between fixed and variable payment systems mainly depends on the relationship between activities and the amount of payment where the provider and the payer agree with each other. It should be noted that a payment system is considered fixed because the reimbursed amount does not change whether the activities increase or decrease. A payment system is also considered as a 'variable' when change in activities induces changes in payment. Fixed and variable systems are also differentiated by levels such as micro-level and macro-level where the micro-level consists of the provider and the macro level are for payers(28).

1.2 Problem Statement

There is slow adoption of online claims management information systems for medical insurance claims processing health facilities in developing countries(14). Online claims management information system is designed to alleviate the challenges associated with paper-based and manual medical claims processing(13). The use of online claims management information systems for processing medical insurance claims in health facilities has grown rapidly in developed countries in the past few years replacing paper-based claims management(1).

However, the adoption and survival of new technologies such as health information management systems have been reported to be very low to both public and private health facilities in developing countries(14). Studies show that the implementation and survival of health information systems are good during the pilot stage however, during scale-up are associated with a high failure rate of up to 30% or more(15,16).

Low use of the online claims management information system has resulted in several challenges associated with paper-based claims processing thus impairing the revenue cycle of health facilities and hence the quality of care. Paper-based claims management system results in several human errors prolonged time in processing claims, delayed claims reimbursement, high expenditures on administrative costs, invalid members, fraud, and claims rejection are realized(6,17).

Paper-based manual claims processing causes high administrative costs for health insurance claims processing reported in several countries worldwide reaching up to 35% of the claims submitted for reimbursement(4,5,6). Causes of high administrative costs include labour costs such as human resources, capacity building, utility bills, Health information technology infrastructures, transport for submitting claims, and lack of proper record keeping (6,7) The burden of high administrative costs affects both services providers and the insurers in both government and private sector.

In Tanzania, health facilities have also been experiencing several challenges associated with the paper-based claims process. Thus in 2018, the National Health Insurance Fund introduced online claims management information system to five piloted health facilities to address the challenges (21).

The majority of studies on the adoption and implementation of online CMIS in health facilities were done in developed countries which have better ICT infrastructures as compared to developing countries. Tanzania is a developing country and operational factors related to the performance of health facilities in implementing online CMIS are different from those in the developed countries. Therefore this study reports on operational factors related to the performance of health facilities in implementing online claims Management Information systems in developing countries.

1.3 The rationale of the study

This study will contribute to the adoption and implementation of online claims management information systems in healthcare facilities by gathering information on the operational factors that drives the adoption of online claims management information system. The study will also provide information to the administrators of health facilities that will help them to avoid problems that would hinder the adoption of the system. The information generated in this study will enable both service providers and the Fund to come up with good plans and formulate policies that will favor the adoption of CMIS in various facilities during scale-up. It is expected that the vendors will also use the information from this study to develop health management information systems with compatible characteristics that will facilitate the adoption of CMIS in health facilities.

The findings of this study will help all the healthcare facilities in Tanzania by providing Staff with information on operational factors related to implementing online CMIS, ICT infrastructures required before adopting the system. Top management characteristics and the size of the health facilities issues and how to improve the relationship between these factors on the adoption and implementation of online claims management information systems. It is also expected that the findings of this study can be used to improve the claims management process. Study results revealed that health facilities' CMIS reduced delayed reimbursement, reduced claims rejections, reduced administrative costs for processing claims, reduced workload, and hospital billing managers could collect reimbursement on time with implementation of online CMIS(24).

1.4 Research questions

1.5.1 Main research Question

What are the operational factors related to the performance of health facilities in implementing an online NHIF claims management information system?

1.5.2 Specific research Questions

1. What is the capacity of healthcare facilities to implement online claims management information systems?
2. What are the adoption strategies employed by health facilities in implementing online claims management information systems?
3. What does the implementation of online claims management information system contribute to resource (Financial and time) saving?

1.6 Research objectives

1.6.1 Main research objective

To explore operational factors related to the performance of health facilities in implementing the National Health Insurance Fund online claims management Information system

1.6.2 Specific research Objectives

1.To assess the capacity of health facilities to implement online claims management information system
2. To explore the adoption strategies employed by health facilities in implementing online claims management information system
3. To explore resource-saving benefits resulting from implementing online claims management information system in a health facility.

1.5 Conceptual framework

Successful implementation of online claims management information systems in health facilities is influenced by many related operational factors. Thus for facilities to escape the failure of implementing online CMIS the factors and strategies contributing to a successful adoption must be observed. The first and far most are the capacity of health facility to implement and adopt the system. This encompasses a good number of skilled personnel for implementation processes such as IT technicians, system administrators, clinical staff with computer skills, and appropriate technology ICT infrastructures. In addition availability of space for claims processing office and saver placement. The adoption process is still another component to be taken into consideration in implementing online claims management system. When proper procedures for system implementation are employed the likelihood of success is very high. Stakeholder engagement and user acceptance testing are of paramount importance to ensure successful adoption of the system(25)

The last but not least component to be assessed is the resource-saving benefits contributed by implementing online CMIS in health studied health facilities. The considerations in implementing new medical claims processing system depend on the ability of the system to save resources and the key components of success will reside in accuracy, consistency, and completeness of data. Provider reimbursement will follow insurer norms and automated systems will have to maintain extreme flexibility to meet those requirements. In packaged claims software, the automated functions of eligibility verification and creation of the basic editing, automatic calculation and payment with associated checks, and explanation of benefits are becoming pretty routine(11,16). These determine resource saving in terms of financial and time.

All these components form a cohesive bond in adopting and implementing online claims management information system in a health facility.

CONCEPTUAL FRAMEWORK

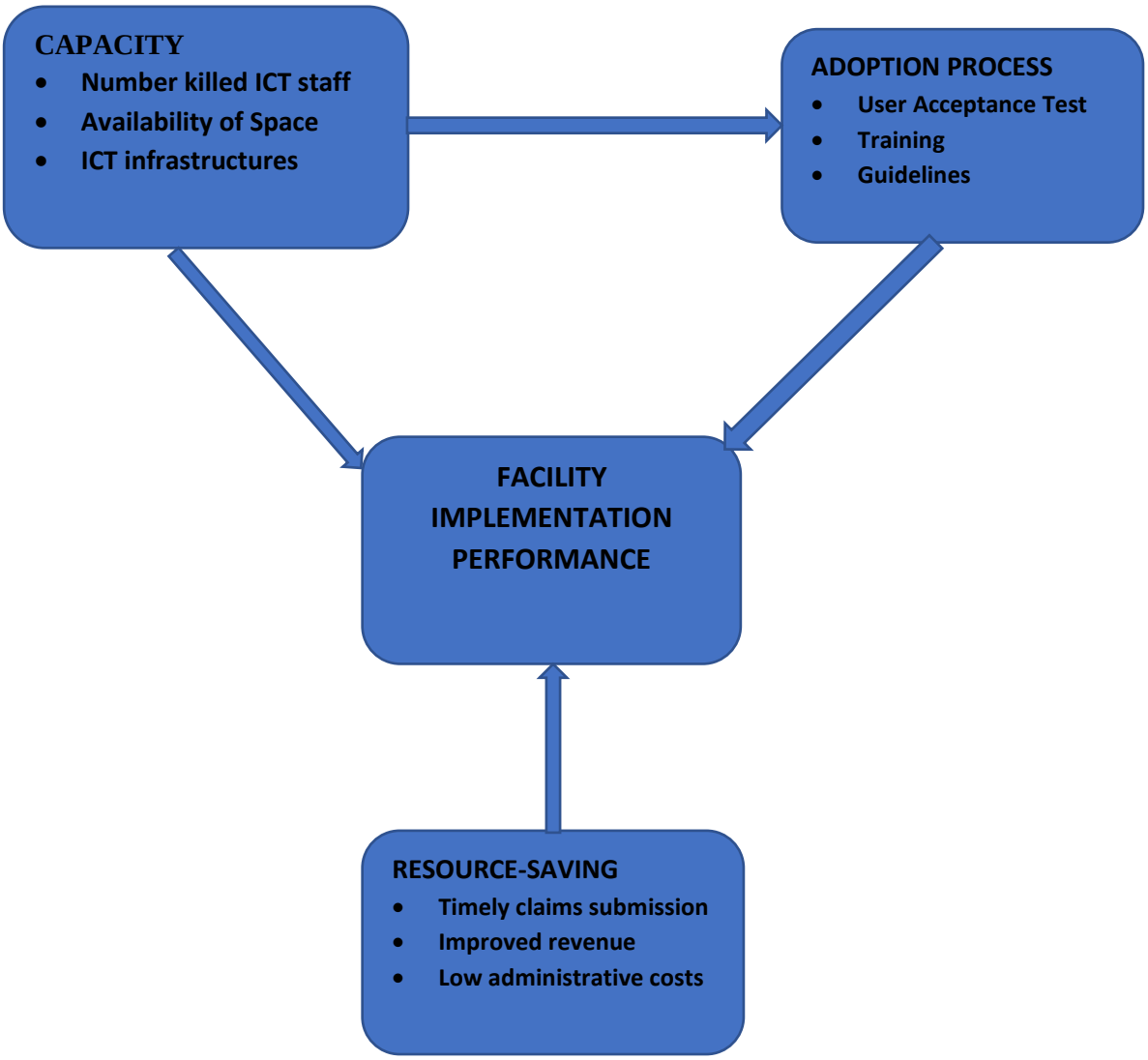

Figure 1: Facility implementation performance for online CMIS

(Source: Author 2020)

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

The review of literature lays a proper foundation for designing a qualitative study so that to gain a deep understanding of the successful strategies for implementation of claims management information systems for reimbursement of health care services. This chapter, therefore, reviews the relevant literature on the factors related to performance on implementing online claims management and associated challenges. The arrangement of the literature review is done topic wise, to include the conceptual framework, Health facility Capability to implement online CMIS, Health facility capacity to implement online CMIS, Implementation of CMIS and resources Saving (Finance and Time), Adoption of online claims Management Information System, and Factors affecting Adoption of online CMIS the health care system, and literature about opposing theories. The chapter also provides a summary of empirical studies and the research gap.

The literature review strategy for this study involved a search of the main topics and searched terms that included capacity, capability, user acceptance testing, medical claims, medical billing, hospital reimbursement, reimbursement model, reimbursement system, and qualitative case study research methods and techniques. I performed numerous online search engines, the Google Scholar search engine, research gate, and Mendeley. The use of the databases to search the topics and terms of this study added in the literature review process by improving access to new, in-depth, valuable electronic peer-reviewed journal articles.

2.2 Health facility capacity to implement online CMIS

Implementation of a new claims management system in any organization depends on the capacity of the particular health facility. The availability of space, financial resources, and a good number of skilled personnel are necessary for the claims management system to be successfully implemented. The enabling environment must be ready for the implementation process so that it becomes easy to install and train the end-users of the system.

A study conducted on the implementation of HMIS showed that for the system to succeed there must be enabling environments such as ICT, financial and motivation support, and proper implementation and maintenance(33). This study noted further that whatsoever good the system is its success will depend on these factors. Another study conducted to assess the implementation of the EMR system in Tanzania demonstrated that the failure rate was high in many hospitals due to a lack of enabling environment for implementing the system. These studies are similar to the implementation of on claims management system thus the same enabling factors must be observed when implementing CMIS.

2.3 Implementation of CMIS and resources Saving (Finance and Time)

Globally, a study conducted in the USA revealed high administrative costs in managing health insurance claims, and service providers for a long time have been concerned regarding the time they spend in processing claims. However, the study did not mention how much time is spent(18). This study was conducted to health facilities and practice administrators thus results from this study can be used to plan on how to curb similar challenges in other facilities implementing such a system for the first time. Some practitioners reported spending up to three hours weekly processing claims, nursing and clerical staff spent much larger amounts of time(18). Another study conducted in the USA on the adoption of online claims submission highly recommended it because online CMIS helps medical practices to reduce the burden of administrative expenses which are mostly associated with manual claims processing and submission(34) This study signify that the use of online claims submission saves not only money but also time to both services providers and the healthcare insurance schemes.

In Tanzania, complaints have been raised by Services providers for a long time due to high costs associated with claims processing and billing staffs, computers, office spaces, and transport of hard copies of claims to NHIF. This has been hindering the provision of quality services as a lot of funds are being used in processing claims. Health facilities have employed staff for billing and posting claims in the NHIF owned system e-claims before submitting them to NHIF. A study revealed that high costs incurred in manual claims management process by both service providers and the Fund, as a lot of money used in printing claim forms.

The healthcare providers also incur a lot of losses because claim forms are processed manually thus some of the forms are incomplete/wrongly filled which results in massive rejections of the claim by NHIF(21). The findings of the study revealed several challenges on manual claims processing on the NHIF side spent a lot of time in manual processing of claims and high cost incurred in printing claim forms plus difficulties in searching drugs and service codes. Rejections of claims by NHIF lead to loss of revenue to healthcare providers and consequently lead to poor services(21).

In general, online claims management information system is well accepted by healthcare providers in several countries since introducing online CMIS in healthcare services will not only achieve savings but also decrease the time spent on administrative tasks(34). However, some issues need to be settled particularly when considering implementation and incorporating procedure codes for services offered by service providers. The study conducted to assess the benefits of electronic claims submission showed that, on average, providers spend five more minutes performing manual transactions compared to electronic transactions(34). Thus automating claims management processes could save providers up to 40 minutes on average(35). To help providers save time and money, advised however that stakeholders should support provider access to electronic data interchange systems(36).

2.4 Adoption of online claims Management Information System

Different approaches are being employed in different countries health facilities in implementing online claims management systems depending on the demand and supply of health services and health insurance schemes. Globally, several countries with health insurance schemes have adopted the use of online claims processing in both private and public facilities. In the United State of America (USA) the use of online claims management systems by health facilities and clinic practices is highly encouraged due to the increased volume of claims(34). This is significant because as the number of accredited HF increases the volume of claims also increases thus it leads to reimbursement delay. Hence the use of online claims submission can reduce the period of reimbursement particularly to HF which submits large volumes of claims monthly.

Another study conducted in the USA revealed the need and acceptance of online claims submission again due to large volumes of Medicare and Medicaid claims(35). However this study despite recommending immediate national coverage of online medical management networks it also suggested including the necessary changes so that the system can be easily adopted by service providers(35).

In Africa, the adoption of online CMIS is still in the early stages, a study in Ghana showed acceptability for the adoption of electronic online claims management system. However, this study recommended that for the systems to achieve better results some adjustments must be made so that it performs well, and must be precisely described before being implemented (37).

Another study conducted in Kenya revealed that adoption of ICT has enabled health insurance schemes to reach members and facilitate the provision of services after introducing Electronic Funds Transfer for payment of contributions, Swipe Cards, Point of sale systems, and reduced the claims process form a month to 14-21 days(10). This is a significant achievement and can help service providers to provide services more efficiently.

2.5 Research gap

Most studies on the adoption and implementation of online claims submission systems are conducted in developed countries where ICT infrastructures are better compared to developing countries. Tanzania is a developing country and health facilities have embarked on implementing online claims management information systems. However, no studies have been conducted on operational factors related to the performance of health facilities in implementing online CMIS. Therefore, this study reports on operational factors related to the successful adoption and implementation of online CMIS in developing countries.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter presents the study methodology. It covers the study area, study design, study population, sample selection techniques, and sample size. It also describes the type of data, data collection method employed, investigation tools, validity and reliability of the study, data analysis, ethical clearance issues, study limitations and delimitations, and budget as presented in detail in the following part.

3.2 Study area

This study was conducted in three NHIF accredited health facilities which included Kinondoni Hospital in Kinondoni and TMJ Super Specialized Clinic in Temeke and Benjamin Mkapa Hospital in Dodoma. These facilities were the first to implement NHIF online CMIS system and have been operating the same for more than one year, thus they would be able to provide more deep information on the implementation process.

3.3 Study design and approach

This was a cross-sectional exploratory study design employing a qualitative data collection approach. The design was selected because the study wanted to explore the phenomena under study and it is cross-sectional because data about the phenomena were obtained at one moment in time.

3.4 Target population

The study population included three (3) health facilities and from each facility, One (1) ICT personnel, three (3) claims processing department staffs, three (3) doctors one (1) facility administrator were interviewed. The participants were selected purposefully from departments and units that are directly involved in implementing NHIF online CMIS. The heads of facilities were asked to list /name people who were directly involved in implementing the system in a particular facility. This process of key informants' selection was based on criteria that they knew the implementation process of CMIS in their facilities. This process enhanced the information maximization during the collection of

data thus increasing the possibility of obtaining information that would answer the research questions more widely and deeply.

3.5 Data Collection instrument

A semi-structured interview guide with three sections was used to collect data focusing on capacity, adoption strategies, and resource-saving benefits in implementing online claims management information system. The interview guide was developed by the researcher containing questions framed based on the specific objectives. The contents of the interview guide were prepared in English and translated into Kiswahili to enable the participants to understand the content. This was again translated back into English so that the content was maintained. The Kiswahili interview guide was used only for interviewees who were not fluent in the English language and felt more comfortable speaking in the Kiswahili language. The questions were followed by probes to explore more and obtain rich information from the participants on the research topic.

3.6 Recruitment of research assistants and training

Two research assistants were recruited to assist the researcher with data collection. The research assistants were required to have a minimum certificate of secondary education so that they can understand the purpose of the research. The training was done for two days by the researcher so that to equip research assistants with an understanding of the objectives of the study. The training covered important areas of the study; research questions to be answered, objectives of the study, study areas and study population, data collection procedures, and tools, the importance of confidentiality, ethical considerations, and timeframe.

3.7 Pre-testing of the tools

The researcher together with the research assistants pretested the designed tools at Muhimbili Orthopaedic Institute (MOI) where CMIS was before the actual data collection. MOI is currently implementing online CMIS under NHIF. The testing was conducted four days before commencing the study to assess whether the tools are correctly understood and participants give the expected responses. The results of this pre-test gave a clear picture on how the responses to the interview guide and the time allocated for a single session. This

also helped the research assistant to get acquainted with the research tools. The results from the pilot study enabled the researcher to improve the tool accordingly. Studies recommend that employing a pilot test usage helps to calibrate and design tools for research and assesses the level of trustworthiness of the findings obtained using framed procedures(38)

3.8 Data collection procedure

The interview guide developed in English was translated into Kiswahili by the researcher so that participants could understand the contents well and be comfortable explaining their experiences. Information provided was translated back to English to maintain contents. This ensured good understanding and enabled the researcher to obtain rich information as participants were more comfortable and confident explaining themselves in Kiswahili. The researcher collected the data between November and December 2020. The researcher went to each facility introduced himself and handed the introduction letter from the university to the health facility management. The researcher introduced the study topic and purpose of the study to the facility management. After approval to conduct was granted the researcher requested the management at each facility to provide a list of staff who were directly involved in the implementation of online CMIS. The interview took place in a quiet place that had no interruptions. The researcher introduced the subject of the research to prospective participants the purposive selection of key informants was done to obtain participants. At the beginning of each interview, the researcher began by thanking the interviewee for taking the time to participate in the interview, introduced himself and the research assistants to the interviewees, and asked them to sign an informed consent form, which also included details on their rights as participants in this research and the researcher obtained their approval for tape recording of the interviews. Along with tape recording, the researcher also took field notes to facilitate data analysis and provide additional inputs for important findings in case of poor quality of audiotapes.

The research assistants helped the researcher to record all responses given by the participant using a tape recorder. Each key informant was interviewed individually and informed that the information collected was confidential and would not be revealed to

anyone except the research team. This ensured the participants that all their responses will be recorded for transcription and use during data analysis only.

The interview began with simple background questions, through which the interviewee was introduced and then more complex questions regarding the research question were asked. During mid-interview, the more complex and demanding questions were asked; towards the closing, the interview easy questions were used again. Eventually, the interview ended with a summary and closure on a good note, so that the interviewee could not feel being exposed and deserted. Key Informants were interviewed on the capacity of health facilities to implement online claims management information systems, adoption strategies, and resource-saving benefits resulting from using CMIS. This was done to guide the participants in providing information that responded to research questions and directed to the study objectives. About 12 days were used to collect data; 4 days were used to collect data at each facility and each interview lasted for a period of forty-five (45) to sixty (60) minutes.

3.9 Data management and analysis

3.9.1 Trustworthiness Strategies

Data quality for this study could be affected by the accuracy of the findings thus data trustworthiness was ensured. The trustworthiness of the findings is very important thus the purpose of trustworthiness is to ensure findings are worth to be maintained(24,25).

In to ensure the trustworthiness of the findings the researcher pretested and tested the data collection instrument at Muhimbili orthopedic institute (MOI). MOI was selected for testing the credibility and trustworthiness of the research instrument because it is one of the facilities that were implementing online claims management information system. This enabled the researcher to ascertain the stability of the data collection instrument, therefore, increased the chance of collecting quality data.

To ensure validity in this study the researcher developed early familiarization with the participating healthcare facilities, purposive selection of individuals to serve as key informants, member checks. Tactics to help ensure honesty in informants when contributing data, by involving the use of a wide range of informants, iterative questioning, frequent debriefing sessions, peer scrutiny of the research project by colleagues, peers, and

academics was welcomed, thick description of the phenomenon under scrutiny and the researcher's reflective commentary in addition to the outside scrutiny discussed above, the researcher sought to evaluate the research, again as it develops.

To enable this study to be transferable detailed background data to establish the context of the study in question was done. To make this study dependable; in-depth description methods of the study were done in detail, so that to enable a future researcher who wishes to repeat the work, to obtain the same results(24,27,25).

Conformability is in preference to objectivity; the degree of neutrality or objectivity in the findings of qualitative studies(42). It means that the findings obtained from the study are based on participants' responses and not any potential bias or personal motivations of the researcher(24,25). For this study to be conformable, a wide range of informants was used to reduce the effect of the researcher's bias. Also, research assistants were involved to reduce the researcher's bias(24,27).

3.9.2 Data Management

Data management started from the field during data collection with the first interview to avoid piling up of the data then all data generated were checked and cleared daily to ensure quality, correctness, completeness, and consistency. To control data quality the transcription of audios was done on the same day of data collection. Comparison of the transcribed data with field notes was also done to ensure that all information from the interview are recorded and documented correctly. The audios and transcribed data were managed with a high level of confidentiality, only those directly involved in the study have access to the collected data. Tape recorders with Audio-recorded data and other collected data were kept in a safe box accessed by the principal investigator alone.

3.9.3 Data analysis plan

A thematic analysis approach was employed in analyzing the qualitative data. The researcher transcribed interview audio data for each interview by listening and typing by using Microsoft word. This technique gave the researcher a unique opportunity to review participants' responses to each question, familiarizing with the data, discovering patterns, and obtaining a picture of what the data portrays. The English-translated data were analyzed through the categorization of participants' opinions. Data from interviews were

then coded with the help of NVIVO version 14 software and analyzed according to defined named and reviewed themes generated for commonalities and contrasts in terms of Capacity, Adoption strategies, and resource-saving to Implement online claims management information system(30,31).

The analysis was carried out in three stages as suggested by Virginia Braun and Victoria Clarke(45) first, the line-by-line coding and transcripts; second, the in-depth examination and interpretation of the resultant codes and their categorization into descriptive and analytical themes; and third, the development of an overarching theme. The coding involved the development of concepts, i.e. the data were split into discrete elements to expose underlying thoughts and meanings. The generated codes were further interpreted and categorized into descriptive codes. These latter codes were further distilled into abstract analytical themes around which results were presented. The researcher focused on a few key issues as analyzed to be themed.

The table below shows how data coding was done from the themes and how the sub-themes were generated.

Table 1: Thematic analysis Framework

THEMES	CODE	SUB-THEME
	Trained staff	
	Reducing of the persons	
	Decreased employees	
	Six to four	
	No need for more people	Fewer employees needed
	Number is reduced	
Availability of ICT infrastructures	Internet security	Analog to digital transformation
	Empowered by the NHIF	
	Need of ICT	
	Human error	
	Reduced the work of writing	
	Automatic	Software
	Network system	
	Printing hardware	Hardware
	Computer	
Timely claims submission	Paperwork in bulk	Manual claims processing
	Paperwork	
	Paper system	
	Claims Collected for a whole month	Time-saving
	Number of days for claims submission	
	Spend more than a month	
	Three to four months	
	Saves time	
	Took 30 days	
	Money 30-60 days	
	We get our money in 15-40 days	
	Keep up with the times	
	No delay	

Reduced administrative costs	Revenue control	
	The revenue has been huge	
	Is easy to get paid	
	Has simplified even payment	
	The number of patients who come here has increased	
	Successful in processing these claims	
	Rare rejections	
	Human resources	Administrative costs
	Transport	
Top management support	Department cost	
	Sessions/discussions	Participatory decisions making
	Training was provided	
	Internal meetings	
	Best leadership	
	Cooperation of NHIF	
	Management committee	
	NHIF training	Training
	Computer literacy	
	People needed a little training	

Source: Field Data (2020)

3.10 Dissemination Plan

The research findings have been presented at the department of development studies and MUHAS School of Public Health and Social Sciences. The final report will be submitted at MUHAS Library for free access by all students and staff. This study will also be published in a reputable journal so that the findings can reach a wide range of stakeholders

3.12 Ethical consideration

The participants in this qualitative study were billing staff and managers, health facilities administrators, It technicians, and Medical doctors that worked for three different health facilities in Dar es Salaam and Dodoma. Before participants were selected, the researcher provided potential participants with information about their prospective roles in my study. The researcher fulfilled the ethical requirements of this study by discussing the informed consent, confidentiality rights, options to withdraw, the ethical review board process, and maintaining participant confidentiality. The consent procedure and my ethical behavior aided the researcher in protecting the participants' rights in this study.

To reduce the incidence of harm, all participants for this study were over the age of 18 and were not be members of a protected class. Furthermore, the interview questions were neither offensive nor threatening and did not create any risk to employment as the questions would not pertain specifically to the individual claims processing practices. The interview guide strictly adhered to the MUHAS IRB's ethical rules and procedures.

The researcher explained to study participants their role, risks of participation, and rights before participation in the study. All participants for this study volunteered for participation without coercion and understood and signed the informed consent. All participants were given a copy of the informed consent. There were no negative impacts on any professional relationship due to participation or non-participation in the study thus conflict of interest was not an issue.

Participants were informed that had the right to withdraw from the study at any time during the interview process without penalty. The participant could withdraw from the study at any time by notifying the researcher via phone call. There were no incentives offered for participation in this study. To adhere to MUHAS research standards, I protected participants' rights and identity by maintaining locked storage of audiotape recordings.

The researcher protected the identity of the participant and ensured privacy and confidentiality of each participant and health facility in this study by giving identification labels, such as Participant 1 (P1), Participant 2 (P2), Private facility one (1), and Private facility two (2).

Adherence to MUHAS's Institutional Review Board (IRB) process guaranteed ethical standards compliance before conducting the study the researcher submitted the IRB application and the research proposal and the informed consent to the IRB to ensure the study met the ethical standards of the ethical clearance committee of MUHAS and awaited review and approval. Data collection began only after receipt of approval by the MUHAS's IRB (Approval Ref No. DA.282/298/01.C/).

CHAPTER FOUR

4.0 FINDINGS

4.1 Introduction

This chapter presents findings of the study which explored the operational factors related performance of healthcare facilities in implementing the National Health Insurance Funds online claims management Information system. A total of fifteen (15) study participants were interviewed from three health facilities located in Dodoma and Dar es Salaam. The findings of this study are based on the three specific objectives and therefore analyzed data generate three themes which are described in this section. The first objective that made the first theme presents the capacity of health facilities to implement online claims management information systems. This theme was subdivided into three sub-themes which are the availability of ICT infrastructures, skilled of employees, and availability space.

The second theme was concerned with the adoption strategies employed by health facilities in implementing online claims management information systems. This theme had four sub-themes namely; top management support, participatory decision making, and training change management. The third theme was on resource-saving benefits resulting from implementing online claims management information system in a health facility this had four sub-themes including timely reimbursement, reduced administrative costs, decreased workload, and Improved revenue collection.

All the themes and sub-themes are made open and expounded by the participants, whose responses are dealt with in this chapter.

4.2 Demographic Characteristics of participants

The study interviewed a total of 15 study participants female were six (6) and male participants were nine (9). The study participants had different levels of education, those with master's degree levels were six (6), bachelor degree levels were five (5) and Diploma holders were four (4). The participants were categorized according to position in the health facility e.g. facility administrator, IT Technician, Claims to process staff, and Clinicians.

Table 2: Demographic distribution study participants

Number of Participants (N) = 15		
Sex	Males	9
	Females	6
Age	All	Ranged between 25 years - 60 years
Education level	Master's degree	6
	Bachelor degree	5
	Diploma	4

Source: Field Data

4.2 Capacity of health facilities to implement online CMIS

4.2.1 Availability of ICT Infrastructure

Study participants were asked about the capacity of the facilities to implement online claims management information systems and on this theme, three sub-themes emerged which are skilled of employees and availability of IT infrastructure and space.

ICT infrastructures are the core factors for the implementation of online CMIS. All healthcare facilities reported the availability of hardware (computers, printers, savers), and software (network, internet security) as the facilitating factors enabling the implementation of an online CMIS. One participant from a privately owned reported that;

"The necessary infrastructures which were required to be in place before implanting the claims management information system were purchased such as. Computers, printers, and savers to get connected to the NHIF networks." [Participant P4]

Another experienced IT technician, a participant from a government-owned facility reported that;

"*We had to purchase computers for all doctors' office so that we can install the software of the system and savers for data storage and internet security were also put in place ensure stable internet connectivity" [Participant P11]*

However, some participants in the administrative position complained that they did not have a fund allocated for the purchase of the required ICT infrastructures hence had to use funds allocated for other use. A participant from a private facility stated;

"We did not have funds already allocated for the purchase of the computers, and servers so we were forced to reallocate funds planned for other activities" [Participant P5]

4.2.2 Adequate skilled ICT staff

Participants were asked regarding the skills of the employees directly involved in the implementation of CMIS and skilled employees were mentioned by the majority of the participants from all three facilities as one of the enabling factors for the implementation of an online CMIS. The study participants reported that the availability of skilled employees such as IT Technicians has enabled the online CMIS to function well. As one of the study participants from a government-owned facility reported that:

> *"We had IT technicians here who helped us in the implementation process right from the beginning." [Participant P4]*

Similarly, another participant from a privately owned facility reported that:

> *"Our IT experts helped us a lot, we were lucky we already had enough IT technicians in our facility working on HMIS" [Participant P1]*

Study participants in the three facilities were asked about employees and their required skills working in claims management system majority of participants reported having enough employees with the necessary skills working on CMIS.

However, some participants from a public facility reported that they did not have specific IT technicians for implementation of CMIs thus had to relocate employees from other departments to work on CMIS operation as one participant said;

> *"We did not have IT, technicians, purposely for the implementation of the CMIS system thus we had to relocate some IT staff from other departments so that they help on the system." [Participant P2]*

4.2.3 Availability of space

Availability of space is one of the important prerequisites for the implementation of online claims management information system. Thus all facilities are required to have a space special for the system installation of servers and offices for the IT technicians. Participants were asked about the availability of space for servers and offices for claims management in their facilities majority of them reported having a working space and offices special for claims processing where all computers are connected to the system. They also reported having a special room where servers are kept. IT technicians also have a separate office. Nevertheless, some participants reported having experienced challenges in obtaining a space for the newly introduced system. As one participant from a privately owned facility said;

> *"Getting a space for the system was a bit challenging because we had to spend money to construct a new office for the servers so that they can be kept safe thus we had to shift other employees from their offices to arrange for the system."[Participant P14]*

However other participants reported not having a special office for online claims submission, therefore, had to renovate a special office for use on ICT and online CMIS as explained by a participant from a public facility;

> *"We did not have a special room for online claims management system but renovated an office so that it can be used for online claims processing system only"*

4.3 Adoption strategies employed by health facilities in implementing online CMIS

4.3.1 Top Management Support

Management support is of paramount importance in the implementation of the online claims management information system in healthcare facilities. Participants were asked regarding support given by their facility management and most of them reported positive management support in the whole implementation process. Management support was reported in all facilities to be the most important factor for the successful adoption and implantation of the online CMIS. One participant from a government-owned facility reported that;

> "*Our institute management has been very supportive right from the beginning, if it was not for the management to support this process it could not be possible to implement this system because we had to purchase a lot of equipment before implementation of the online CMIS". [Participant P8]*

Similarly, another experienced participant from a privately owned health facility said;

> "*The top management was very positive to start the implementation of the online claims management system and we were the first in the country to implement the system."[Participant P9]*

However, despite positive support the extent of management support seemed to differ from one facility to another as reported by exemplified by a participant from one privately owned facility:

> *"Our management supported as a lot we were provided with all the necessary equipment and incentives to make sure the system functions well and soon."[Participant P4]*

Nevertheless, some participants complained that they were not provided with enough support from the management because they required working offices but was not provided on time and the computers were not purchased on time. One of the participants from a privately owned facility said;

"It's like our management was reluctant to implement this system initially because the required infrastructure and support was being delayed a lot" [Participant P5]

4.3.2 Staff involvement in decision making

To enable the adoption of an online CMIS, health facilities used participatory decision-making by conducting internal meetings with boards, discussion sessions with staff, and good cooperation from the management committee and NHIF. Good leadership was also reported as one of the key strategies to persuade staff to adopt the online system. It was reported by the majority of the participants that they were involved in decision-making in different meetings before the implementation of the system. As one participant from a privately owned facility reported that;

"*We were involved in several meetings before the decision was made to adopt this online claims management information system a special committee was also formed to make sure that the necessary steps for implementation of the system are followed" [Participant P6]*

Similarly, another participant from a government-owned facility reported that;

"Our top management wanted to use this system right from the beginning to facilitate claims processing and insisted" [Participant P4]

Furthermore, another participant from a privately owned facility reported that;

"I think due to the best leadership here. They had the desire to move to a digital system. Also great cooperation of NHIF especially the Temeke office contributed to us entering this system" [Participant P1]

Participatory decision-making associated with internal meetings, leadership, cooperation, and sessions/discussion as well as involving the management committee was one of the strategies to facilitate the adoption of an online CMIS.

4.3.3 Staff training

In addition to the above-employed strategies, another strategy was the training of the users on the benefits of an online CMIS, and how to operate it. Study participants from the three facilities were asked whether they underwent any kind of training on how to operate the

system. Coded and transcribed data revealed that the majority of the participants from a government-owned facility reported having undergone several training sessions on how to use the system. The NHIF in collaboration with the vendor trained the facilities staff and provided them with guidelines on how to use the online CMIS. As one of the study participants reported:

> *"Claims processing staff and IT technicians were first involved in the early stages of logging into the system so training was provided first about the system thus when the system started operating all employees were trained." [Participant P2]*

Similarly, another participant from a privately owned facility presented that;

> *"The NHIF people were very close to us during the early stages of implementing the system, our claims processing staffs, doctors and nurses underwent several training sessions to make sure that we do not make mistakes which could lead to rejections"[Participant P3]*

However, some participants complained that training sessions interfered with other hospital activities as they were scheduled during busy days when some of the staff were required to be in other areas such as theatre and clinics as a participant from a government-owned facility said;

> "*The training sessions were scheduled in busy days we were required to attend patients at the outpatient clinics and some of us were required to be in theatre so there were a lot of interferences"[Participant P4]*

4.4 Resource-saving benefits resulting from implementing online CMIS in a healthcare facilities

4.4.1 Timely Reimbursement

Participants were asked about resource-saving benefits resulting from the implementation of the online majority of participants from all facilities reported reduced time for reimbursement of claims through the use of an online CMIS. Transcribed and coded data on the resources saving notion revealed that in all three facilities claims submission and reimbursement duration was reduced significantly compared with the time it took before

implementation of online CMIS. The delay was due to double work before the online CMIS facilities submitted their claims manually on papers which necessitated double-entry of the NHIF forms first on the hard copies and later on in the e-claims system ultimately leading to excessive loss. Hence the implementation of the online CMIS was reported to be time-saving, reduced time is taken for reimbursement. To emphasize this a participant from a government said that:

> *"Before online claims management information system we used to take up to ninety days or more to be reimbursed and wait for up to six months without being reimbursed but nowadays we are submitting claims daily and the NHIF pay, us within few days as we speak claims for last month has been paid already" [Participant P1]*

Similarly, another participant from a privately owned facility reported that:

> *"Before we would submit claims after 30 days of collecting the claim forms and get reimbursed after thirty to sixty days but now we send then in fifteen days we are reimbursed" [Participant P2]*

The implementation of an online CMIS in the three facilities was reported to improve revenues collection of the studied healthcare facilities. Increased revenue was reported to be associated with, minimized human errors on a collection of claim forms, good control of the revenue, being paid on time, decreased claims rejections, as well as an increased number of patients due to reduced hospital waiting time. Study participants from a government-owned facility stated that:

> *"When we started using the system claims we were submitting to the NHIF was very low claims eight hundred million only but nowadays it has significantly changed we are claiming about one billion and two hundred million shillings". [Participants P4]*

4.4.2 Administrative costs

The claims processing department costs in all three facilities were reported to have decreased significantly compared to the prior implementation of online CMIS. The majority of the participants in all health facilities reported reduced administrative costs; these include a number of employees whereby facilities used to hire volunteers to help process the manual files. In addition, the online CMIS was reported to reduce, administrative costs in terms of papers and this are both to health care providers and the NHIF, transport costs for submitting claims as well as operational cost. As one experiencing claim processing participant from a public facility said;

> *"Before the adoption of the CMIS we used to have a lot of paper works printing and photocopying a lot thus, at the time of submission we had to go with the forms to NHIF but now we just send it from here" [Participant P12]*

4.4.3 Workload

Transcribed and coded data showed that the majority of participants from all three facilities reported that the introduction of CMIS has reduced workload to the staff since the information is filled electronically, compared with the time when claims forms were filled manually (hard copies) and then they transfer information to the computer. Similarly one of the participants from a privately owned facility presented that;

> *"Currently the number of employees for claims processing has decreased a lot before implementation of online CMIS claims processing unit had more than eight employees" [Participant P1]*

The transformation from paper-based claims processing to online claims management information system was reported to reduce the workload since there is no more use of papers to fill client information; hence it saves time and energy. The participant from a government-owned facility said;

> *"The workload has been reduced a significantly compared with before introducing this system there is no more double work" [Participant P11]*

4.5 Study Limitations and mitigation plan

The limitation of this study was on permission to collect data some of the health facilities, particularly private facilities, were reluctant to allow the research team to conduct a study in their facilities due to fear of disclosure of their business process. However, the researcher managed to assure them of confidentiality of the information they provide thus they allowed us to conduct the study.

Another limitation was difficulties in meeting the participants for an interview, the data collection team in this study faced difficulties to meet some of the participants because of their busy clinic schedules especially doctors and nurses. However, the research team attempted several times to make appointments to conduct the in-depth interviews based on the availability of each participant. In addition, this study involved one public facility at a tertiary level and the private facilities involved were at district and polyclinic levels thus cannot be enough to generate more information, but it can help to direct further studies. Therefore, the key findings of this study cannot be generalized. Nonetheless, this study has attempted to provide a comprehensive analysis of operational factors related to the performance of health facilities in implementing online claims management information systems.

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This chapter covers a discussion of the findings of the study generated by qualitative research instruments a key informant type. Discussion focuses on the Capacity of Health facilities to implement Online Claims Management Information systems, Adoption strategies employed by health facilities on implementing Online Claim Management Information systems, Factors affecting adoption to online CMIS, and Resource-saving benefits resulting from implementing online CMIS in a health facility.

5.2 The capacity of Healthcare facilities to implement Online CMIS

5.2.1 Availability of ICT Infrastructures

The capacity of the health facility in terms of availability of Information and Communication Technology (ICT) Infrastructures facilitates the implementation process of online Claims Management Information Systems in health facilities. This suggests that ICT infrastructures are very important in implementing online CMIS however, ICT infrastructures are expensive thus repair and replacement can be challenging hence can interfere with the functioning of the system.

This finding is in line with another study conducted in Malaysia on factors influencing the adoption of information systems in private hospitals which also revealed that the availability of ICT infrastructures is among the important factors for the adoption of the system(27). Similarly, this finding complies with another study conducted on e-health implementation by medical doctors in public hospitals in Zimbabwe which showed the necessity of ICT infrastructures before implementation of the system(27,50).

These findings are also in line with another study conducted on the Application of ICT in strengthening health information systems whereby the availability of ICT infrastructures such as Computers, Servers, stable internet connectivity was mandatory before implementation of the system(47). This implies ICT infrastructures as necessary prerequisites for facilitating in implementing online CMIS thus it is important to consider the issue of ICT infrastructures replacement for successful adoption of online CMIS.

5.2.2 Skilled ICT staff

The study found that the availability of a skilled ICT workforce facilitates the implementation of online claims management information systems in healthcare facilities. Skilled IT technicians are those with the knowledge and skills to operate the system in implementation. For the adoption of new technology in health, the facility is of skilled employees are of paramount importance for it to succeed. This suggests that human capacity development entails the capability of the health care facilities to have skilled personnel and develop existing personnel to support effective implementation and use of online CMIS.

This finding corroborates with another study on factors influencing the implementation of health management information systems showed that a skilled ICT workforce is an indispensable ingredient for the effective and efficient use of ICT in healthcare. Systems professionals, services providers, and project team leaders with high skill levels and experience in a health facility are important components of success(48).

Therefore skilled ICT workforce is an essential ingredient for the effective use of online claims management in a healthcare facility. Hence it is very important to ensure that the skills are present in the health facility and the skills which still need to be trained to build capacity.

5.2.3 Availability of space

Availability of space for offices is very important for facilitating the implementation of online claims management in health facilities. Availability of space entails a designated room for online claims processing and a special room for installing servers used to store data. In this study, facilities had designated space for claims processing and a special room where servers were installed. This implies that enough space facilitates the implementation and adoption of technology such as CMIS. This finding is in line with another study on considerations in implementing a new medical claims processing system which showed that space for installation of servers and working office are very important (26)

Hence the availability of space is one of the important prerequisites for the implementation of online claims management system in health facilities.

5.3 Adoption strategies employed by healthcare facilities on implementing Online CMIS

5.3.1 Top Management support

The introduction of an online CMIS is a business decision that requires the overt support of senior management within the relevant health facility. This study found that adopting online CMIS in health facilities top management support was very important guarantees a successful process by ensuring staff that the necessary infrastructures for the implementation process can be present anytime they are required. If the facility's top management is not interested in the system or has other priorities it will not support its implementation hence its adoption cannot be successful.

This finding is in line with another study that looked at the impact of organizational capabilities on information security. The study showed that top management support and expertise are important characteristics for organizational successful adoption of new technology(6,17,53). This implies that top management support should be highly sought and encouraged for the successful implementation of the online claims management information system.

5.3.2 Staff involvement in decision making

This study found that staff involvement in decision-making on implementing the online claims management information system was one of the factors which improved the implementation process. When facility staff is involved in decision making they feel to be part of the process thus it makes it easier for the implementation process to take place. This suggests that helps in the change management process to enable health services providers to change from manual claims processing to online claims management systems. This finding is in line with another study conducted in Kenya on factors influencing technology adoption(30). Thus staffs engagement in decision-making should be considered greatly to ensure full participation and a sense of ownership of the system.

5.3.3 Staff Training

Staff training to build capacity on how to effectively and efficiently operate the system particularly to those who are directly involved in the implementation of the system facilitates easy use of the system hence early adoption. Training empowers staff with the ability to operate the system thus IT technicians must undergo the training earlier in the

facility so that they can also transfer knowledge to other employees in the facilities so that they help to facilitate the use of Online CMIS. This study corroborates with another study conducted in Kenya (29,30). This finding is also in line with the study on Information Technology Supplement to the American Hospital Association's 2012 annual survey of acute care hospitals show that 42 percent of US hospitals have telehealth capabilities.

The study showed that hospitals more likely to have telehealth capabilities are teaching hospitals where most of the training to ICT people, doctors, nurses, pharmacists, and other health workers involved in routine training and during innovations of new technologies used in management information systems and, those equipped with additional advanced medical technology. Therefore training of staff helps to facilitate an easy adoption process of online claims submission systems in healthcare facilities both private and public facilities.

Hence, investing in capacity building and training in ICT and will ensure more successful implementation of an online CMIS.

5.4 Resource-saving benefits resulting from implementing online CMIS in a healthcare facilities

5.5.1 Efficient Reimbursement Process

In this study, the findings show that implementing online CMIS in healthcare facilities facilitates the reimbursement process. Reimbursement refers to the time taken to process claims, submission, and payment by the health insurer. The results suggest that facilities with online CMIS can process claims on time and get on time. This finding is in line with another study conducted in the USA which showed that online claims submission helps providers save time and money. However, this study advised that stakeholders should support healthcare facilities' access to electronic data interchange systems(36). This study also corroborates with another study conducted in federal development of health and human which showed that Several pharmacies and a national pharmacy chain noted that real-time pharmacy claims transactions statuses in their respective facilities therefore there is a decrease in the delay of payment after submission and timely reimbursement of money to facilities due to the use of online CMIS (50). This implies that the online claims

management information system facilitates the reimbursement process in healthcare facilities.

5.5.2 Reduction in administrative costs

The study found the adoption of the online CMIS helps to reduce the number of employees for claims processing in health facilities. The number of employees involved in claims processing depends on the system used and the infrastructures available. If a manual system is employed in processing claims mostly it will involve a lot of workers to process claims.

This finding is in line with a study conducted in the USA that showed that electronic claims processing reduced the number of employees for claims processing consequently administrative costs were reduced (17). The study also revealed eliminated paperwork this is because there no manually filled claim forms anymore; this reduced hospital stay time for patients hence, reducing administrative costs significantly. The implementation of online claims management information system has reduced also improved revenue collection and reduced claims rejections among the adopting facilities.

These findings are in line with a study done in the USA and United Kingdom on the adoption of online claims submission showed that online CMIS highly recommended it since CMIS helps medical practices to reduce the burden of administrative expenses which are mostly associated with manual claims processing and submission and reduce the time taken to respond on the claims to health facilities(51). Similarly, another study done in Tanzania showed that most (87%) of health care workers operating NHIF forms from patients agreed to the development of a data exchange module between Care2x and NHIF claim management system to increase accuracy in filling forms, reduce patient waiting time and time spent in filing claim forms(21).

Furthermore, the study conducted to assess the benefits of electronic claims submission showed that, on average, providers of health services in facilities with good technical support on information communication technology ICT spend five more minutes performing manual transactions compared to electronic transactions(34). Reduction of administrative costs in health facilities and adequate collection of revenue is a significant implication of proper implementation of online Claims management information system.

The study found that implementation of online CMIS improved revenue collection in the facilities and reduced rejections and increase the number of NHIF clients. The system has facilitated the billing process hence hospital waiting time decreased and the number of clients increased. This has resulted in an increase in revenue collection by these hospitals have been huge for instance at facility No. 1, they were reimbursed seven hundred million to nine hundred million Tanzanian shillings but are currently reimbursed more than one billion Tanzanian shillings. This suggests that the use of online CMIS has improved revenues collection therefore facilities should adopt the system.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

This chapter presents concluding remarks research gap and recommendations. It is meant to provide a conclusion and recommendations on what can be done about issues that emerged in the research. Conclusions were made based on the research's specific objectives while the recommendations were based on the issues that emerged in the research.

6.1 Conclusion

The study explored operational factors related to health facilities' performance on implementation of NHIF online claims management information systems (CMIS). The study explored the capacity of Health facilities to implement an Online Claims Management Information System, adoption strategies employed by health facilities to implement online CMIS, and resources saving benefits resulting from implementing the system. A total of 15 participants from three health facilities were involved in the study.

The broad objective of the study was "to explore factors related to the performance of health facilities on implementing online claims management information system." Specifically, the research assessed the capacity of health facilities to implement online claims management information systems thus availability of skilled IT staff was explored; availability of space and ICT infrastructure was also assessed. With these objectives, a total of four main themes were generated which are skilled employees, Availability of ICT infrastructures, availability of space, and financial capability.

Resource-saving benefits resulting from implementing online claims management information system in a health facility timely claims submission reduced administrative costs, early reimbursement and improved revenue collection in the facilities were among the positive factors for the implementation of online CMIS. The study revealed that the change from manual claims processing to online claims processing and submission has led to a decrease in the number of employees required to process claims in health facilities. These facilities reported that the availability of ICT infrastructures as a prerequisite for

online CMIS implementation simplified the work to the staff from paperwork and double filling of forms to an automated online management information system.

The adoption strategies employed by health facilities in implementing online claims management information systems were top management support, training, supportive supervision, participatory decision making, and engaging staff facilitated the implementation process of online claims management information system. Positive management support is one of the significant factors on adoption strategies employed by health facilities in this study without support from the management of the implementing facility it poses challenges for the adoption of online CMIS in a health facility. Internal meetings, training sessions, seminars, CMEs, supportive supervision, user acceptance testing, and motivation of staff on using CMIS are the reasons for the successful adoption of online claims management information system.

These are factors that are likely to hinder the adoption of online CMIS mainly involving resistance to change from manual to digital health information systems as well technical factors. However, in developing countries, some challenges hinder most health facilities are still reluctant to adopt the online system because the majority of health facilities do not have ICT infrastructure in place to facilitate, an inadequate number of skilled employees particularly IT technicians, lack of stable internet connectivity in many facilities causes hesitance of these facilities to transform from manual paperwork to online claims submission. Lack of space for to install IT equipment such as servers is another challenge that is likely to hinder the implementation of online CMIS.

Resource-saving benefits resulting from implementing online CMIS in health facilities have facilitated an increase in revenue collection as well as timely reimbursement from NHIF in health facilities s reported in this study was mainly due to the use of online Claims management information system. Decreased administrative costs especially in processing manual systems have tremendously decreased due to the adoption of online submission systems.

6.2 Recommendations

1. Realistic and sustainable financial plan for ICT Infrastructures and skilled employees

   The National Health Insurance Fund when considering the introduction of online CMIS in a health facility should make sure that realistic financial plans for all the costs required in the implementation process to ensure continued support of the system financially as well as ICT, capacity and infrastructure requirements. Plans for sustainability are clearly expressed ensuring that capital investments and costs are identified upfront.

2. Training sessions for capacity building should be scheduled appropriately to avoid interference with other activities

   Healthcare facilities should schedule training sessions such that all staff is involved in the training to ensure that they acquire skills to operate the online claims management information system. Training should be ongoing in the facilities to ensure that staffs change from previous methods of claims processing which was manual to new technology. This is because it is very difficult to change from previous institutionalized practices to a new ones.

3. Increase the adoption and use of online claims management information system

   Health facilities are encouraged to adopt and use online claims management information systems for medical insurance claims processing to improve their billing hence revenue collection.

4. Further research

   The researcher recommends further research to explore the performance of online claims management information systems (CMIS) in processing claims.

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APPENDICES

Appendix I: Informed Consent

ID NO: …..……

Introduction

Dear Participant,

Greetings! I want to thank you for taking the time to meet with me today.

My name is Paul Kazungu Zacharia a student of Master of Science in Project Management Monitoring and Evaluation in Health (MSc. PMMEH) at Muhimbili University of Health and Allied Sciences (MUHAS). I am researching Operational factors related to the performance of health facilities on the implementation of NHIF online claims management information system.

Purpose of the Study: The purpose of the interview is to collect information on the capacity and capability to implement online claims management information system in your facility. You are kindly requested to participate in this study because we believe that you have particular information that may be important for the study.

Methods of the study: As part of the study In-Depth Interview will be done and the interviewer will record your responses. You will be interviewed once for approximately 35-45 minutes. Data will be collected at a single point that is after this interview with you; we are done with you

The procedure of the study: information is provided for you to decide whether you wish to participate in the present study. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship researcher.

Do not hesitate to ask any questions about the study either before participating or during the time that you are participating. I would be happy to share our findings with you after the research is completed. However, your name will not be associated with the research findings in any way, and your identity as a participant will be known only to the researchers. This is for assuring your confidentiality as my informant.

The expected benefits: There are no direct benefits for your participation, however, the information you provide will help the facility to improve the adoption process of the online claims management system, therefore, improve the reimbursement process. There is no harm is expected as a result of your participation in the study and you are free to ask the interviewer questions any time during the study whom to contact. In case of any question or query concerning this study, please contact the principal investigator Paul Kazungu Zacharia MSc. PMMEH) from MUHAS, P.O BOX 65001, Dar es salaam mobile number 0713395562 or my supervisor Prof, Phares G. Mujinja. If you have any questions about your rights as participants you may contact Dr. Bruno Sungunya, Chairperson of Research and Publications Committee, MUHAS. P.O Box 65001, Dar es Salaam-Tanzania, Tel +2552150302-6.

I……have read the contents of this form and understood it, my questions have been adequately answered, I agree to participate in this study.

Please sign your consent with full knowledge of the nature and purpose of the procedures.

A copy of this consent form will be given to you to keep.

Signature of Participant……Date…….

Researcher's Signature…… Date……

Appendix II: Fomu ya ridhaa Kiswahili version

Namba ya Utambulisho…….

Utambulisho

Habari,naitwa Paul Kazungu Zacharia, ni mwanafunzi wa shahada ya uzamili ya sayansi ya usimamizi,ufuatiliaji na tathimini ya miradi ya afya katika chuo kikuu cha afya na sayansi shirikishi Muhimbili.Utafiti huu unaangalia mchakato wa utekelezaji wa matumizi ya mfumo wa kuchakata madai wa NHIF katika hospitali yako.

Madhumuni ya Utafiti

Dhumuni la mahojiano haya katika utafiti huu ni kukusanya taarifa juu ya utekelezaji wa matumizi ya mfumo wa kuchakata madai wa NHIF.

Unaombwa kushiriki katika Utafiti huuu kwasababu tunaamini uzoefu wako na taarifa zako ni muhimu katika utafiti huu.

Mbinu za Utafiti

Kama sehemu ya utafiti huu tutafanya mahojiano ya kina, mhojaji atanakili kwa kinasa sauti majibu yako.Utahojiwa kwa taktibani dakika 35 hadi 45 kwenye eneo binafsi.

Taratibu za utafiti

Ushiriki wako kwenye utafiti huu ni wa hiari hii inamaanisha kuwa hutakiwi kushiriki ikiwa hutaki kufanya hivyo.waweza kukataa kujibu swali lolote ambalo hujisikii kulijibu na waweza kusitisha mahojiano wakati wowote. Taarifa utakazotoa ni siri na zitatumika kwa ajili ya utafiti pekee. Wanaohusika na utafiti huu ndiyo wanaweza kuizpata taarifa hizi. Jina lako halitaaandikwa kwenye fomu hii na halitahusishwa na taarifa,namba za siri zitatumika kutambulisha taarifa ulizotoa.

Faida: Hakuna faida za moja kwa moja utakazopata kwa ushiriki ila taarifa utakazotoa zitasaiadia hospitali katika kuimarisha utekelezaji wa matumizi ya mfumo wa kuchakata madai wa NHIF na kuboresha ulipaji wa madai ya watoa huduma. Hakuna hatari zozote zinazoweza kukupata kwa kushiriki kwenye utafiti huu. Waweza kumwuliza mhojaji maswali wakati wote wa utafiti.

Mawasiliano: Kama utahitaji ufafanuzi zaidi juu ya utafiti huu usisite kuwasiliana na mtafiti mkuu Paul Kazungu Zacharia, mwanafunzi wa shahada ya uzamili ya sayansi ya menejimenti, ufuatiliaji na tathimini ya miradi ya Afya (Msc.PMMEH) katika chuo kikuu cha afya na sayansi shirikishi Muhimbili S.L.P 65001, Dar es salaam au namba ya kiganjani 0713395562. Kama una swali juu ya haki zako unaweza kuwasiliana na Dk.Bruno Sunguya ambaye ni mwenyekiti wa kamati ya utafiti na Machapisho,S.L.P 65001, chuo kikuu cha Afya na Sayansi shirikishi,Muhimbili S.L.P 65001 Dar es salaam au namba +2552150302-6.

Mimi……Nimesoma/nimesikia na kuelewa madhumuniya utafiti huu na maswali yangu yamejibiwa ipasavyo.Hivyo nimeridhia kwa hiari yangu kushiriki.

Unaweza ukapaewa nakala ya fomu hii kama utapenda.

Saini ya Mshiriki……..tarehe……..

Saini ya Mtafiti…….……tarehe……..……..

Appendix III: Interview guide Claims processing staff

INTERVIEW GUIDE FOR CLAIMS PROCESSING STAFF

Aim: To determine the capacity of health facilities to implement online claims management information system.

Facility name ……..…….

Interviewee name…….

Title……..

Age……Sex…….……

Education……..

Date of interview……..

Q1.Please describe the existing claims management process of your healthcare setting

a) How NHIF claims processing done in your facility?
b) what are the stages,
c) How many stages do you go through in processing claims
d) How do you find these stages
e) How do you find these steps Which stage is the most difficult and why
f) Each stage how do solve the challenges in processing claims.
g) How do you address the difficult part?

Q2. What is your opinion on a number of staff involved in claims processing in you facility

a) Are they enough
b) How do you compare the number of staff prior to online submission
c) What is their education background?
d) Were they trained to do this work
e) What is the process of claims processing
f) How many staffs are processing clams at each stage
g) How were they trained to build capacity
h) What are the challenges in claims processing at each stage
i) How do you address them

Q2. What does the hospital's daily operations looks like in terms of clinical, administrative, Information technology, billing, and practice work flows?

Q3. In your opinion can your current IT infrastructure support the new system?

a) How many IT staff do you have in you facility?
b) What are the roles or job description of the department?
c) What were their roles in the introduction of the system?
d) What is their current role in the implementation of the system?
e) Which ICT application does the department stated above use?
f) How many Departments/Wards have access to the Internet facility?
g) How many Departments/Wards do not have access to the Internet facility?
h) Do you have inter-connected communication system that connects the various department/wards? (Yes/No) If Yes

a) How many department/wards are connected?
b) Does the hospital have constant electricity supply in all departments?

Appendix IV: Interview guide for ICT Personnel

INTERVIEW GUIDE FOR ICT PERSONNEL

Aim: To determine the Adoption and implementation process of online claims management information system

Facility name ……..…….
Interviewee name…….
Title……..
Age……Sex…….……
Education……..
Date of interview……..

Q1.How was the implementation of online claims management information system introduced in your facility?

a) When did it start in you facility?
b) What does the system entail?
c) How does the system work?

Q2. What were the motivations for introducing the system?

a) What were the projected benefits of the system?
b) Do you have any special reasons for choosing that particular system?

Q3. How do you explain the measures taken before the acquisition of the system?

a) How was the decision reached for the implementation of the system?
b) What were the requirements prior to implementing online CMIS in your facility?
c) Whom did you involve in the decision making process.
d) How were they involved in the decision making process?
e) What were concerns raised by them and how were their addressed? If No,
   a) Are there any special reasons for their non-involvement in the decision making process.

Q4. In your opinion was how ready your facility was ready for the system?

(a)What were the required infrastructures prior to implementing the system
(b) Please tell me the testing process you went through before launching the system?

(c)Were there any challenges encountered during testing?

(d) At what stage were the challenges?

(e)How were they addressed?

Q5. Tell me the testing process you went through before launching the system

a) How were the processes in each stage

b) Were there any challenges during the testing process

c) How were they addressed

d) Were the users taken through any training?

e) Was the user acceptance testing passed by end users?

f) Finally how did you come to the decision to implement the system?

g) Is the system currently in use (at the department of implementation)? Yes/No

h) If No, Why is the system not in use?

Q6. From their response, would you say 'the users' are satisfied with the system? Yes/No

If yes, how satisfied are the users with the system?

If No, why are the users not satisfied with the system?

Q7. What do you think has contributed to the implementation of an online CMIS in your facility?

Appendix V: Interview guide for facility staff

INTERVIEW GUIDE FOR FACILITY ADMINISTRATORS

Aim: To determine how the online Claims management information system has contributed to resource saving in health facility

Q1. Demographic data

Facility name ……..…….

Interviewee name…….

Title……..

Age……Sex…….……

Education……..

Date of interview……..

Q2. How has your facility benefited by implementing the system?

a) In your opinion do you think claims submission duration has improved after introducing the system? Can you explain how?
b) Are there claims rejections after introducing the system,
c) How do rejections come about
d) How do you address them?
e) How do you compare the rejections before the system and after the system implementation
f) How has the introduction of the system helped you to reduce administrative costs
g) How many staff are involved in processing claims
h) How many staff were involved prior to the system

Q3. How has the introduction of the system improved the reimbursement process?

a) How long does it take for claims to be reimbursed now as compared with the old system
b) What is your opinion on the revenue after introducing the Online claims management system as compared with the old system

Q4. In your opinion do you Is there any plan to make the online CMIS the core system for claims processing in your facility when fully implemented?

a) Probe for reasons why?

Q5. How do you explain the system in general?