EVALUATION OF THE HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) IN ENSURING PERFORMANCE OF EMPLOYEES: A CASE STUDY OF THE KIGOMA MUNICIPAL COUNCIL

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN MONITORING AND EVALUATION

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CERTIFICATION

The undersigned certifies that, she has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled; **"Evaluation of the Health Management Information System (HMIS) in Ensuring Performance of Employees: A Case Study of the Kigoma Municipal Council**" in partial fulfilment of the requirements for the award of degree of Master of Arts in Monitoring and Evaluation.

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Dr. Noel Matemba

(Supervisor)

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Date

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DECLARATION

I, **Gloria Anderson Mrutu,** declare that the work presented in this dissertation is original. It has not been submitted, nor will it be submitted, to any other university for a similar or any other degree award. Proper references have been provided where other people's works have been used. Therefore, I declare this work as my original creation. It is at this moment submitted in partial fulfillment of the requirements for the degree of Master of Arts in Monitoring and Evaluation (M&E).

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Signature

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Date

DEDICATION

This work is dedicated to Mr. Bernad Setumbi, my loving husband and supportive friend, whose unparalleled encouragement and support fueled my research journey; and my daughters, Mercygwneth and Malissa, whose love and understanding have been unmatched during my research endeavors.

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ABSTRACT

This study aimed to evaluate the Health Management Information System (HMIS) performance in ensuring employee performance, using the Kigoma Municipal Council as a case study. The study used a descriptive cross-sectional design incorporating qualitative and quantitative research methods. The study population consisted of health data officers and data clerks, and data were collected through interviews and questionnaires. The sample size used in the study was 30 respondents who were obtained through the stratified sampling technique. Respondents' views were as follows: 30 (100%) agreed that the organization motivates employees to use HMIS, 28 (93.3%) emphasized knowledge sharing within organizations and health facilities; 17 (56.6%) agreed that HMIS helped define roles, 7 (23.3%) agreed that ICT infrastructure enabled smooth HMIS implementation and 25 (83.3%) agreed that employees were aware of HMIS significance for organizational growth, highlighting good awareness levels. The study concludes that employees felt organizational support for HMIS but lacked clear roles. Challenges included insufficient ICT infrastructure and training. Proposed strategies included direct communication, diversification of tools, regular training, and the provision of ICT support to improve HMIS utilization. The study recommends that the government should allocate funds for improving ICT infrastructure, establish communication channels, and prioritize training programs.

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ANC	Antenatal Care
ANMs	Auxiliary Nurse Midwives
CHMT	Council Health Management Team
DHIS	District Health Information System
EHRs	Electronic Health Records
HIS	Health Information System
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health Act
HMIS	Health Management Information System
ICT	Information and Communication Technology
IFA	Iron-Folic Acid
IT	Information Technology
MOHSW	Ministry of Health and Social Welfare
MTUHA	Mfumo wa Taarifa wa Uendeshaji wa Huduma za Afya
PNC	Post-natal Care
SC	Sub Center
TT	Tetanus Toxoid
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Problem

Health Management Information Systems (HMIS) refers to the use of information technology to manage health-related data. In line with the World Health Organization (WHO) description, HMIS encompasses the gathering, processing, retention, retrieval, and sharing of data concerning health and healthcare services (WHO, 2020). The information collected through HMIS is used for various purposes, including monitoring and evaluating the performance of health systems, identifying public health problems, and planning and implementing interventions to improve health outcomes. The inception of HMIS dates back to the 1960s, when international organizations, including the World Health Organization (WHO), commenced promoting the utilization of information technology to enhance healthcare service provision in developing nations. Since then, HMIS has become an integral facet of healthcare systems worldwide (WHO, 2020).

The concept of health system performance is a critical issue in the healthcare sector, and scholars and authors have provided various definitions and frameworks for understanding this concept. As the World Health Organization (WHO, 2022) outlines, health system performance pertains to the extent to which a healthcare system can attain its objectives in terms of enhancing health outcomes, meeting patients' expectations, and ensuring equitable access to healthcare services. Various scholars and authors have also identified different dimensions of health system performance. For instance, Donabedian's model of quality healthcare identifies three dimensions of healthcare performance: structure, process, and outcomes. The

structural dimension pertains to the physical and organizational facets of healthcare, encompassing elements such as infrastructure and the qualifications of staff members (Smith et al., 2023). The process dimension involves the range of activities integral to healthcare delivery, from diagnosis to treatment. Similarly, the outcome dimension evaluates the impact of healthcare on patients' overall health and well-being (Smith et al., 2023).

Likewise, the Institute of Medicine (IOM, 2001) delineated six crucial dimensions of healthcare quality, a perspective that resonates in contemporary literature. These dimensions encompass safety, timeliness, patient-centeredness, effectiveness, efficiency, and equity. Safety revolves around minimizing harm stemming from healthcare interventions, while timeliness underscores the importance of reducing wait times for accessing healthcare services. Patient-centeredness emphasizes care that aligns with patients' unique needs and preferences, while effectiveness measures the extent to which healthcare services achieve desired health outcomes. Moreover, efficiency assesses resource optimization in healthcare delivery, while equity highlights the equitable provision of healthcare services, as emphasized in recent studies (Jones et al., 2022).

A study conducted by Tadesse and Gebrehiwot (2019) showed the impacts of HMIS on ensuring good performance towards maternal health services in Ethiopia whereby the authors concluded that the use of HMIS had a significant improvement in the quality of care, particularly ensuring the availability and the use of child health services. Another study conducted by Biswas et al. (2018), which focused on the implementation of the HMIS systems in Bangladesh hospitals towards improving employee performances, concluded that the use of HMIS system led to the provision

of accurate data collection, better data management, and improved decision making process which ultimately contributed to improving employee's performance. A study by Adane et al. (2019) focusing on how the use of HMIS contributes to improving employee productivity and the quality of healthcare services in Ethiopia concluded that HMIS systems enabled healthcare workers to access accurate and timely information, which allowed them to make informed decisions and provide better healthcare services. Furthermore, the study found that the HMIS system improved employee performance.

Drawing parallels, a research endeavor by Rahman et al. (2021) underscores that Tanzania's healthcare landscape echoes a similar sentiment. The Ministry of Health in Tanzania has outlined a multifaceted matrix of healthcare system performance, encompassing aspects such as care quality, service accessibility, responsiveness to patients' needs, and equity considerations. The government has introduced a range of strategic interventions to enhance healthcare system performance. Initiatives like strengthening health information systems, implementing performance-based financing mechanisms, and bolstering the human health resources sector have been implemented to catalyze advancements in this sphere.

In a parallel vein, a study orchestrated by Rahman and colleagues (2021) elucidates that Health Management Information Systems (HMIS) have exhibited the potential to bolster the efficiency and efficacy of healthcare frameworks across developing nations. The authors posit that HMIS empowers healthcare providers to amass precise and timely health-related data seamlessly, consequently underpinning enhanced resource allocation, identifying service delivery gaps, and amplifying care quality. This mirrors a global pattern where the state of Health Information Systems

(HIS) spans a continuum from developed nations to their developing counterparts, as encapsulated in the Tanzanian context. In developed nations, HIS has been seamlessly woven into the healthcare fabric, with widespread utilization of electronic health records (EHR) and a pervasive thread of interoperability woven through diverse health information systems. This synthesized data underpins multifarious objectives, from patient care and quality augmentation to population health management and research pursuits (Walker et al., 2019).

In a similar vein, the study conducted by Abou Zahr et al. (2020) highlights the intricate challenges encountered by low-resource countries, including Tanzania, when it comes to the successful implementation and efficient utilization of Health Information Systems (HIS). The authors point out the significant hurdles posed by insufficient infrastructure, resource limitations, and a shortage of skilled personnel. In Tanzania's context, the HIS landscape is characterized by fragmentation, with numerous parallel systems operating at various administrative levels. This fragmentation results in the production of incomplete, inaccurate, and unreliable data through HIS, consequently impeding effective healthcare planning, monitoring, and evaluation efforts.

Despite the challenges developing countries face, Tanzania has made significant strides in improving its HIS in recent years. The government has implemented several initiatives to strengthen its HIS, including developing a national health information system strategy, establishing a national health information management system, and integrating electronic medical records into primary healthcare services (MoHCDGEC, 2017). The government of Tanzania has also recognized the importance of improving the quality and utilization of data generated by HIS. Several

interventions have been implemented to enhance performance, including training health workers on data collection and analysis, using electronic data collection tools, and establishing the performance of the system (MoHCDGEC, 2017).

In the case of Kigoma Municipal Council, several HMIS interventions, such as electronic medical records and performance-based financing, have been implemented to enhance healthcare service delivery. A study by Mpoki et al. (2019) found that these interventions led to improvements in the accuracy and completeness of health data, as well as enhancements in the timeliness of data reporting. However, the authors noted that challenges remain in ensuring that the data generated by HMIS are effectively utilized to improve health outcomes.

Overall, the literature suggests that HMIS is a critical component of healthcare systems worldwide, and its effective utilization can contribute to improvements in healthcare service delivery and health outcomes. However, In Kigoma, like many other regions in Tanzania, challenges such as lack of infrastructure, inadequate resources, and limited human resource capacity have been evident regarding the implementation of HMIS. Hence, a comprehensive evaluation of HMIS is necessary to identify areas for improvement and enhance its performance in the healthcare sector.

1.2 Statement of the Problem

A study by Laabes and Triki (2018) in Tunisia found that using HMIS improved the quality of healthcare services and enhanced efficiency. Similarly, a study by Mekonnen et al. (2021) in Ethiopia found that using HMIS improved the completeness and timeliness of data reporting, leading to improved decision-making.

A recent study conducted in Uganda by Smith et al. (2022) shed light on the positive impact of implementing HMIS, revealing enhanced accuracy and completeness in data reporting. This improvement in data quality contributed significantly to informed decision-making and more effective resource allocation. Furthermore, findings from a study by Johnson and Brown (2023) in Gabon underscored the significance of HMIS in elevating healthcare service quality and improving patient outcomes. Similarly, the research conducted by Thompson et al. (2021) in Tanzania highlighted the role of HMIS in enhancing the availability and utilization of health information, leading to improved healthcare planning and management.

Contrastingly, recent research has revealed divergent outcomes regarding the influence of HMIS on healthcare outcomes, with some studies indicating limited effects or even the emergence of new challenges. Notably, a study conducted by Garcia and Martinez (2022) in Ethiopia reported constrained improvements in healthcare service quality as a result of HMIS implementation. The study also highlighted persistent challenges related to data accuracy and completeness within the system. Similarly, findings from a study by Wang et al. (2023) in Kenya revealed a significant consequence of HMIS utilization: an increase in the workload of healthcare professionals. This surge in workload was identified as having a negative impact on the overall quality of healthcare services provided.

Since the establishment of HMIS in Tanzania, no report has shown the performance of HMIS at the regional level, specifically in the Kigoma region. The proposed study aims to evaluate HMIS ensuring the performance of employees in the Kigoma Municipal Council in Tanzania, using existing literature as a foundation for analysis. The study will analyze the factors that influence the success or failure of the system

in the context of the Kigoma Municipal Council and provide recommendations for improving the performance of the system.

In summary, the challenge of evaluating HMIS to ensure the performance of employees in improving healthcare outcomes is a critical one, with mixed results reported in the existing literature. The proposed study aimed to assess the impact of HMIS on the performance of employees in the Kigoma Municipal Council.

1.3 Research Objectives

1.3.1 Main research objective

The main research objective of the study was to evaluate the role of Health Management Information Systems (HMIS) in enhancing the performance of employees in the Kigoma Municipal Council.

1.3.2 Specific Research Objectives

i. To identify the determinants of performance of Health Management Information System (HMIS) towards ensuring employees' performance at the Kigoma Municipal Council.
ii. To identify challenges facing the Health Management Information System (HMIS) in ensuring the performance of employees at the Kigoma Municipal Council.
iii. To identify ways to overcome the challenges facing the implementation of data management in the Health Management Information System in the Kigoma Municipal Council.

1.4 Research Questions

i. What are the determinants of the performance of Health Information Management Systems (HMIS) towards ensuring employees' performance at the Kigoma Municipal Council?

ii. What are the challenges facing the implementation of data management in the HMIS in ensuring the performance of employees in the Kigoma Municipal Council?

iii. What are the ways to overcome the challenges facing the implementation of data management in the HMIS in the Kigoma Municipal Council?

1.5 Significance of the Study

To the government and policy makers, the study findings will be crucial to provide valuable insights into the current performance level of HMIS implementation in the Kigoma Municipal Council and highlight the gaps faced in utilizing the system effectively. The findings of the study can inform the development of policies and strategies aimed at strengthening the HMIS and improving its effectiveness in improving healthcare service delivery.

To private donors and other stakeholders involved in supporting healthcare systems in Tanzania, the study provides information on the challenges and opportunities in implementing and utilizing HMIS effectively in resource-constrained settings. The study findings can inform the design of interventions aimed at improving the quality and utilization of data generated by HMIS, ultimately enhancing healthcare service delivery.

For the fulfillment of the Sustainable Development Goals of 2030, the accomplishment of this study directly relates to SDG No. 03 of Good Health and Well-being. By assessing HMIS, which is crucial for health information management, the study helps improve the quality and accessibility of healthcare services, leading to better health outcomes and well-being. Additionally, for SDG No. 09 of Innovation, Industry, and Infrastructure, the evaluation of HMIS will be essential in identifying the strengths and weaknesses of the system. This will provide recommendations for technological upgrades, which are essential for effective healthcare delivery and data management.

For future researchers, this study will provide a foundation for the body of knowledge regarding the effectiveness of HMIS in improving healthcare service delivery in Tanzania and other resource-constrained settings. Additionally, it will contribute to the existing body of knowledge on HMIS and healthcare delivery, particularly in low and middle-income countries. The study's methodology and conclusions can serve as a reference point for future research aimed at evaluating the performance of HMIS in other regions of Tanzania.

1.6 Organization of the Study

The dissertation is divided into five chapters. Chapter One presents the background of the study and the statement of the problem. Additionally, it includes the research objectives, research questions, significance of the study, and organization of the study. Chapter Two provides the literature review, including definitions of key terms, theories supporting the study's nature, related empirical reviews, the conceptual framework, and research gap. Chapter Three outlines the research methodology,

including the study area, design, focus of evaluation, and dimensions. It also covers population and sampling of respondents, data collection, data collection methods, and data analysis details to justify how the collected data helps answer the research questions. Ethical considerations and an evaluation dissemination plan are also included. Chapter Four presents the findings, organizing the gathered data according to the study objectives, followed by a discussion of findings, where implications are discussed in relation to the objectives. Chapter Five comprises the summary and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter presents a review of the literature for the study. It includes definitions of key concepts and encompasses both a theoretical and empirical review of the literature. The theoretical literature review presents the theories guiding the study. Additionally, this chapter includes an empirical literature review summarizing previous studies similar to the current one. It also presents the conceptual framework for the study and highlights the research gap.

2.2. Definition of Key Terms

2.2.1 Data Management

Data refers to the information, facts, or statistics collected together and translated into a form (alphabets, numbers, or symbols) that is efficient for reference, analysis, and processing. Data can be categorized into qualitative data (expressed not in terms of numbers but in description) and quantitative data (expressed in terms of numbers). Normally, data is stored on a hard disk and backed up on a floppy disk (Beynon & Davies, 2020).

Data management is defined as an administrative process that includes acquiring, validating, storing, protecting, and processing required data to ensure the accessibility, reliability, and timeliness of the data for its users. Currently, organizations and enterprises are making use of big data more than ever before to inform business decisions and gain deep insights into customer behavior, trends, and experiences.

According to Pitt (2023), data management is a term that describes the organization, storage, preservation, and sharing of data collected and used in a research project. It involves the everyday management of data during the lifetime of a research project, such as using consistent file naming conventions. According to Olajide (2019), data management is the development, execution, and supervision of plans, policies, programs, and practices that control, protect, deliver, and value data and information assets. For this study, data management is the practice of collecting, organizing, and accessing data to support productivity, efficiency, and decision-making.

2.2.2 Data Management in Health Care System

According to Avert Health (2021), data management in the healthcare system is the management of the collection, storage, and analysis of patient data. The data includes demographic information (name, age, address, and gender), medical history and treatments, and administrative information (billing, scheduling, insurance, and medical care coding). According to Cloudian (2022), data management for healthcare systems is the systematic organization of health data in digital form. This can include anything from Electrical Medical Records (EMR) generated from doctor visits to Electronic Health Records (EHR) to handwritten medical notes scanned into a digital repository. For this study, data management in the health care system is the process of storing, protecting, and analyzing data pulled from diverse resources, which allows the health systems to create holistic views of patients, personalize treatments, improve communication, and enhance health outcomes.

2.2.3 Data Quality

Simplelearn (2014) defined data quality as the process involving the measurement of the condition of data, relying on factors such as its usefulness for a specific purpose, completeness, accuracy, timeliness, consistency, validity, and uniqueness. Data quality indicates how good data is and how useful it is for the task at hand. According to Steadman and Vaughan (2022), data quality is a measure of the condition of data based on factors such as accuracy, completeness, consistency, reliability, and whether it is up to date. For this study, data quality is defined as the process that indicates how reliable a given data set is.

2.2.4 Health Management Information System (HMIS)

According to Kibera et al. (2013), a Health Management Information System (HMIS) is a data collection, processing, storage, and dissemination system designed to support planning, management, and decision-making in health facilities and organizations. Rahman et al. (2017) defined HMIS as an information system that captures, processes, manages, and disseminates information collected from various sources in the healthcare delivery system to support policymakers, health providers, managers, and communities in making informed decisions for improving healthcare delivery, patient safety and outcomes. Generally, HMIS can be defined as an information system that collects, processes, manages, and disseminates healthcare data from various sources to support decision-making, planning, management, and policy-making in healthcare delivery, aiming to improve patient safety, health outcomes, and healthcare delivery overall.

2.3 Theoretical Literature Review

2.3.1 Diffusion of Innovation Theory

The Diffusion of Innovation Theory refers to the process by which an innovation, new idea, product, or technology is spread and adopted among individuals or groups within society. The theory was first put forward by Everett Rogers in 1962 and has been widely applied in various aspects, including healthcare (Gregg et al., 2012). According to the theory, the process of diffusion of innovation occurs through a series of stages that are influenced by multiple variables, including the characteristics of innovation, the communication channels used to disseminate the information about the innovation, the social system in which the innovation is adopted and the characteristics of the adopters (Rogers, 1995).

- **Awareness:** The first stage involves an individual becoming aware of the innovation and its potential advantages.
- **Interest:** The second stage involves the process of an individual seeking more information about the innovation.
- **Evaluation:** The third stage is when an individual evaluates the innovation to decide whether to adopt it or not.
- **Trial:** It is the fourth stage which involves an individual trying the innovation by adopting the innovation in a small size or scale.
- **Adoption:** This is the final stage where the individual adopts the innovation completely and integrates it into his or her daily life.

In the context of HMIS in Kigoma Municipal Council, the Diffusion of Innovation Theory could be used to examine the factors that influence health professionals' adoption and use of the system. For example, the study could explore the perceived

relative advantage of the HMIS in terms of its ability to provide accurate and timely health data, improve decision-making, and enhance patient outcomes. Additionally, the study could examine the system's compatibility with existing workflows, as well as its perceived complexity and ease of use.

By utilizing the Diffusion of Innovation Theory, the study could also explore the role of trialbility and observability in promoting the adoption and use of HMIS. For instance, the study could examine the extent to which health professionals have had the opportunity to try out the system before committing to its use, as well as the extent to which they can observe others using the system and its impact on their work.

Overall, the Diffusion of Innovation Theory could provide a practical theoretical framework for understanding the factors influencing the adoption and use of the HMIS in the Kigoma Municipal Council. By identifying the key factors that influence the diffusion of the innovation, the study could inform strategies to promote the adoption and use of the HMIS and ultimately improve the quality of health services and patient outcomes in the region.

2.3.2 Social-Ecological Perspective

One weakness of the Diffusion of Innovation Theory is that it primarily focuses on individual-level factors influencing the adoption of innovation while overlooking broader social, cultural, and structural factors that may affect the diffusion process (Dearing et al., 2018). For instance, the theory does not account for the role of power dynamics, political interests, or economic factors in shaping the adoption and use of innovation in a particular context.

To overcome this shortcoming, a social-ecological perspective could be adopted to complement the former theory, which considers the interaction of individual, organizational, community, and policy-level factors in shaping the diffusion of an innovation. This perspective recognizes that the adoption and use of innovation are influenced by individual attitudes and behaviors and broader social norms, cultural beliefs, and economic and political systems (Sallis et al., 2008). The social-ecological perspective understands that adopting innovation is not only motivated by individual factors but also can include social norms, cultural beliefs, and economic and political systems. According to Lobb and Colditz (2013), the theory emphasizes the importance of understanding the contextual factors that may affect the adoption and the use of innovation, including cultural variables, resource availability, and the general environment. The theory proposes that a more comprehensive approach is needed to understand the more delicate factors that influence the diffusion of an innovation.

In the context of HMIS in the Kigoma Municipal Council, a social-ecological perspective would entail examining not only the individual-level factors influencing the adoption and use of the system but also the organizational and policy-level factors that may affect its diffusion. For instance, the study could explore the extent to which organizational factors such as leadership, management support, and resource availability facilitate or hinder the adoption and use of the HMIS. Similarly, the study could examine policy-level factors such as government policies, funding mechanisms, and regulatory frameworks that may impact the diffusion of innovation.

By adopting a social-ecological perspective, the study could provide a more nuanced understanding of the factors that influence the adoption and use of the HMIS in the

Kigoma Municipal Council and inform strategies to promote the sustainable and effective utilization of the system.

2.4 Empirical Literature Review

2.4.1 Challenges Facing the Implementation of the Health Management Information System

Kasambara et al. (2016) report that Malawi established a Health Management Information System (HMIS) in 1999, but still, there was a deficiency of accurate, reliable and timely health data to inform effective planning and resource management. The results showed that 1 out of 10 HMIS officers qualified for the post about the minimum qualifications established by the ministry. The data officers stated that the data collectors at the district hospital level were nurses, midwives, clerks, and medical assistants, challenged by inadequate resources, knowledge gaps, and lack of training. Furthermore, the results showed that using numerous data tools by data collectors led to inaccurate recording of data. The study concluded that there is a need to review and harmonize data collection tools to reduce data inconsistencies. Although the study identified the proles association with the implementation of HMIS, the study did not identify the underlying factors that cause such challenges. Although the study identified harmonizing data collection tools to reduce inconsistencies, the study did not produce special interventions or strategies to achieve those goals.

According to Umezuruike et al. (2017), Uganda has shown a level of success in the use of Health Management Information Systems (HMIS) in the areas of disease surveillance reporting and monitoring. However, the level of success is still relative,

as some significant challenges are still visible within the implementation of the system. The results show that challenges plaguing the implementation of HMIS in Uganda include complex health system structure, poor funding, inadequate information and communication technology facilities, knowledge gap, lack of trained professionals, incompatibility problems, system interoperability, resistance to change, and user engagement. However, despite the study providing a comprehensive list of challenges that affect the implementation of HMIS in Uganda, it does not provide specific recommendations or strategies to address these challenges. For example, the study identifies poor funding or inadequate information and communication technology facilities as challenging but does not provide specific solutions.

Samal and Kumar (2016) assessed the quality perspectives and challenges among HMIS officials in implementing HMIS at their district levels. A pilot study was conducted in two districts where the study's respondents were interviewed in-depth using semi-structured interviews. The findings showed that despite HMIS being useful in the monitoring and evaluation process, data collection, planning, maternal death tracking, and institutional deliveries, still challenges such as poor funding, poor ICT infrastructure, and low level of knowledge plague the implementation of HMIS to reach its intended goals. Although the study successfully addressed several challenges that impact the implementation of HMIS, the study did not provide unique recommendations or strategies to address these challenges.

Kimama (2011) found that the challenges that face the implementation of HMIS in health facilities in Nairobi include poor support from employees, limited financial resources, poor internal communication, poor training of users, changeover methods,

and lengthy procurement processes. The study recommended that to improve the implementation of HMIS, there should be improvements in the planning and coordination of HMISs, projects, capacity building through user training, knowledge and skill transfer, and transparency in procurement and information. While the study provides a comprehensive list of challenges that affect the implementation of HMIS in Nairobi, the author did not provide special interventions or strategies to address these challenges. For example, the study identifies poor support from employees as a challenge but did not provide any intervention to address such a problem.

According to Husain et al. (2012), the launching of portal-based HMIS by the government of India is a big innovative step. However, several challenges hindering the effective implementation of HMIS were visible. These include poor monitoring and evaluation, lack of training and motivation at the grassroots level facilities. However, in this study, the authors failed to provide a comprehensive analysis of the specific factors contributing to poor monitoring and evaluation, lack of training, and motivation at the grassroots level facilities in implementing HMIS.

2.4.2 Ways to Overcome the Challenges Facing the Implementation of the Health Management Information System

Mndeme (2011) explored the process of integration of vertical program information systems with the national HMIS within district health information systems. The study's findings showed a lack of clarity of HMIS, unequipped personnel, and lack of database interoperable standards for data sharing as the main challenges that face the implementation of HMIS. The study recommended introducing health information policy guidelines, synergizing available resources from independent programs,

building a strong local technical team to support the processes, and integrating health information systems training for students in health colleges as ways that can be used to overcome the challenges that hinder the optimal implementation of HMIS. Despite the study primarily focusing on technical challenges and solutions and the integration of information systems, the author failed to consider the perspectives and experiences of those directly affected by the implementation of HMIS.

Travers (2022), in discussing how healthcare data management can overcome challenges for hospitals, stated that to address the challenges that act as stumbling blocks for the development and implementation of HMIS, there should be a data governance strategy established to capture only the necessary information for the organization. Additionally, the author recommended the creation of a centralized data repository that aims to capture data and information from multiple disparate systems, integrating, sorting, and analyzing the health data required for the organization. Lastly, the author recommended good data quality management to ensure accurate data for effective analysis.

Khanna (2018), in addressing healthcare data challenges and how to overcome them, stated that to mitigate these challenges for healthcare data management, new regulations should be established, focusing on being customer-centric to build a reliable foundation for effective data and information management. Additionally, the author recommended the development of reliable data strategies capable of blending and collecting all required patient and employee information. These strategies should provide a data storage hub that is easily accessible when information is needed and can store data for an extended duration. However, the author primarily focused on technical solutions to data management and failed to consider the ethical and legal

implications of collecting and using health data. Additionally, the researcher did not address the potential challenges and opportunities for patient engagement in the data management process.

2.4.3 Determinants of Performance of Health Information Management System

According to Shittu et al. (2019), the technical infrastructure is a crucial determinant of the performance of an HMIS. The technical infrastructure includes the hardware, software, and communication networks used to collect, manage, and analyze healthcare data. The availability of reliable and efficient technical infrastructure is critical to the success of an HMIS. The author did not primarily focus on technological solutions to improve HMIS performance. The author failed to consider the social and cultural contexts in which the systems are implemented. Additionally, the researcher did not examine the potential role of user-centered design and human factors in the development of HMIS.

Human resources are another important determinant of the performance of an HMIS. As noted by Raghavendra et al. (2020), the success of an HMIS is highly dependent on the availability and quality of skilled personnel who can operate, maintain, and troubleshoot the system. The training and capacity building of healthcare staff is essential for successfully implementing and using an HMIS.

The organizational structure and culture of healthcare facilities also play a significant role in the performance of an HMIS. As noted by Olaleye et al. (2020), the management and leadership of healthcare organizations should create an enabling environment that supports the adoption and use of an HMIS. The organizational culture should promote data-driven decision-making, accountability, and

transparency. However, the researcher did not investigate the potential challenges and opportunities for patient engagement in the implementation of HMIS.

User acceptance and satisfaction are crucial determinants of the performance of an HMIS. According to Akpan et al. (2019), the successful implementation of an HMIS requires the acceptance and satisfaction of end-users. The system should be user-friendly, efficient, and responsive to the needs of healthcare workers. However, the author did not sufficiently explore the potential impacts of the socio-economic and educational backgrounds of the end-user towards the adoption of HMIS. Additionally, the study failed to consider the social and cultural contexts in which the system is implemented.

Data quality is another critical determinant of the performance of an HMIS. As noted by Melkamu et al. (2020), data accuracy, completeness, and timeliness are essential for the effective use of an HMIS. The system should be designed to ensure data quality and integrity through validation checks, data cleaning, and error correction. The author was successful in focusing on the technical and operational aspects of HMIS; however, he was not successful in exploring the potential impact of data privacy and security concerns regarding the accuracy and timeliness of data.

2.5 Research Gap

The reviewed literature of Rumisha et al. (2020) showed that the factor was successful in showing the data entry routine in primary and district-level hospitals in Tanzania. Additionally, the reviewed literature of Husein et al. (2012) successfully outlined the challenges that hinder the implementation of HMIS in developing countries, including poor monitoring and evaluation and lack of training and

motivation at the grassroots level facilities. Furthermore, the reviewed literature of Mndeme (2011) was successful in showing the strategies that can be used to overcome the challenges for the implementation of HMIS in developing countries like Tanzania, which include introducing health information policy guidelines, synergizing available resources from independent programs, building a strong local technical team to support the processes and integrating health information systems training for students in health colleges. However, from the reviewed literature, no information showed the current state of implementation of HMIS in Tanzania hospitals concerning how performance is assured and monitored in these facilities. Hence, there was a need to conduct a research study.

2.6 Conceptual Framework

Daluweshi (2016) explained the terminology as diverse aspects collected from various fields of inquiry related to the study's topic, used to structure data gathering and its presentation. The model illustrates the relationship between the dependent and independent factors.

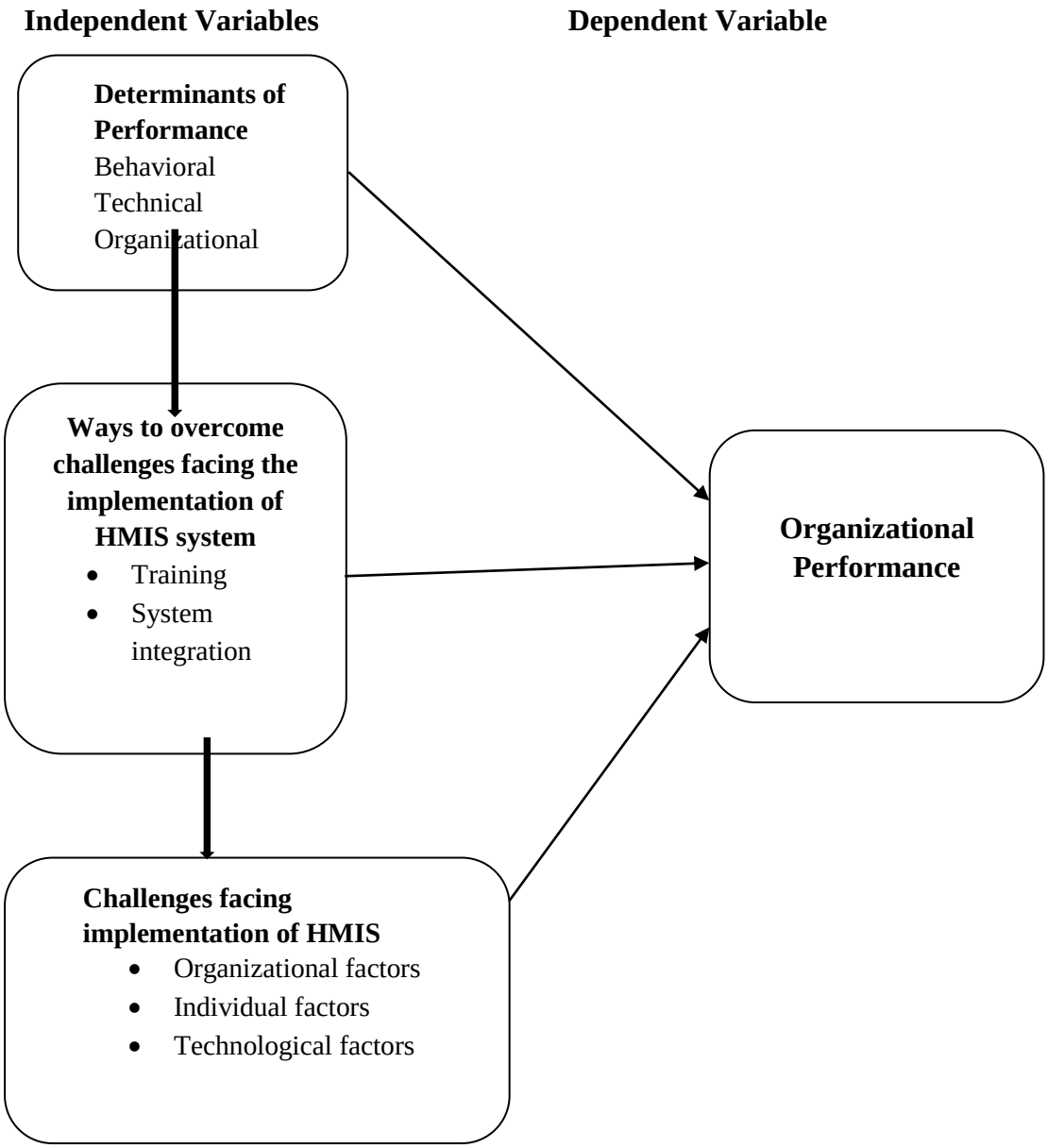

Figure 2.1: Conceptual Framework

n this study, the researcher discussed the volume of data as an independent variable, whereby the researcher discussed how the determinants of performance, such as behavioral, organizational, and technical determinants, affected the data management process, which was the intervening variable in healthcare systems' performance, a dependent variable for the study. Secondly, the researcher discussed the challenges

of data implementation in healthcare facilities, including issues like organizational factors, individual factors, and technological factors, and how they affected the data management quality. This was the intervening variable that, in turn, affected organizational performance, which served as the dependent variable for the study. Lastly, the third independent variable drawn in the conceptual framework was ways to overcome the challenges of data implementation in healthcare management. The researcher discussed how training and system integration were used to improve data management and how much improvement affected the organization's performance.

CHAPTER THREE

METHODOLOGY

3.1 Study Area

The study was conducted in the Kigoma Municipal Council. The researcher selected the area because, within the first five districts of the coast zone, the Kigoma Municipal Council was one of the councils included in the implementation of data management through the Health Management Information System. This decision was made to address errors identified during the pilot study. Kigoma Municipal Council is one of the eight administrative districts in the Kigoma Region of Tanzania, covering an area of 92.7 km² (35.8 square miles). It is bordered to the west by Uvinza District, to the southeast by Kigoma District, and the western shore of Lake Tanganyika surrounds the district to the west. According to the 2022 census, the district had a total population of 2,323,888.

3.2 Study Design

The evaluation study design for this research utilized a descriptive cross-sectional study. This design was selected as it allowed for collecting multiple types of data from a subset group at a single point in time, which is important in supporting the research evaluation question. This methodological approach is effective in assessing the current state of a particular phenomenon or situation, which is critical in evaluating the implementation of a new health information system (Shona, 2020).

Furthermore, the evaluation approach that was utilized in this study was process evaluation. Process evaluation is a type of evaluation that examines whether the health information system has been implemented as intended and has resulted in

certain outputs. This approach is particularly useful for assessing the implementation of complex interventions such as health information systems, as it enables researchers to identify the mechanisms that contribute to success or failure (Barratt et al., 2021).

To ensure a comprehensive evaluation, the study used a mixed approach of qualitative and quantitative research methods. The combination of both approaches allowed for a more comprehensive understanding of the implementation of the health information system, including both the quantitative outputs and the qualitative experiences of the individuals involved. The quantitative approach provided numerical data that can be analyzed statistically to identify trends and patterns, while the qualitative approach provided a more in-depth understanding of the experiences and perceptions of the health professionals involved in the implementation process (Creswell & Creswell, 2018).

In summary, the evaluation study design for this research employed a descriptive cross-sectional study with a process evaluation approach, utilizing a mixed-method approach that included both qualitative and quantitative research methods. This methodology enabled a comprehensive assessment of the implementation of the health information system in the Kigoma Municipal Council and provided insights into areas of success and challenges.

3.3 The Focus of the Evaluation and Dimension

The primary purpose of this study was to assess the role of Health Management Information Systems (HMIS) in enhancing the performance of employees at the

Kigoma Municipal Council. Consequently, the evaluation aimed to provide evidence regarding the effectiveness of the Health Management Information System.

3.4 Indicator/Variables

The study involved two types of variables; dependent and independent variables.

3.4.1 Dependent variable

For this study, the dependent variable was the organizational performance determined from the implementation of the Health Management Information System.

3.4.2 Independent variables

The independent variables of this study were; challenges facing the implementation of data management in Health Management Information Systems, ways to overcome the challenges facing the implementation of data management in the Health Management Information System, and the determinants of performance of Health Management Information Systems.

3.5 Population and Sampling

3.5.1 Targeted Population

The study population consisted of health data officers from the facilities, data clerks working at the health facilities, and municipal council data officers. These individuals are among the key implementers of the Health Management Information System for data management.

3.5.2 Source of Population

The study population was drawn from health data officers at facilities within the Kigoma Ujiji Municipal Council, data clerks working at health facilities within the Kigoma Ujiji Municipal Council, and data officers employed by the Kigoma Ujiji Municipal Council.

3.5.3 Study Population

The study population consisted of health data officers from facilities within the Kigoma Ujiji Municipal Council, data clerks working at health facilities within the Kigoma Ujiji Municipal Council, and Kigoma Ujiji Municipal Council data officers responsible for data management through the Health Management Information Systems.

3.6 Study Unit and Sampling Unit

The study population of the study was health data officers of the facilities from the Kigoma Ujiji Municipal Council, data clerks of the health facilities from the Kigoma Ujiji Municipal Council, and Kigoma Ujiji Municipal Council data officers dealing with data management through the Health Management Information System.

3.6.1 Sample Size

The study did not have a predetermined sample size due to its qualitative nature. Data collection continued until no additional information could be obtained from the respondents, which is often referred to as reaching the saturation point. The groups used for information collection included health data officers from health facilities

within the Kigoma Ujiji Municipal Council, data clerks working at health facilities within the Kigoma Ujiji Municipal Council, and Kigoma Ujiji Municipal Council data officers responsible for data management through the Health Management Information System. The sample size was determined after reaching saturation. Justification for the sample size was based on the principle that, regardless of the population size, a sample of 30 respondents is considered a minimum requirement for such studies (Oswald, 2019).

3.6.2 Sampling Procedure and Techniques

The sampling technique used was probability sampling, specifically the stratified sampling technique. The researcher employed stratified sampling to divide the facilities and other responsible units within the district into distinct and homogeneous subgroups, allowing for precise and comprehensive data collection. Additionally, purposive and convenience sampling techniques were used to select individuals (health data officers, data clerks, and municipal data officers) who could provide essential information to address the research questions.

3.6.3 Inclusion and Exclusion Criteria

Inclusion Criteria

All health data officers from the facilities within the Kigoma Ujiji Municipal Council, data clerks working at the health facilities within the Kigoma Ujiji Municipal Council, and Kigoma Ujiji Municipal Council data officers responsible for data management through the Health Management Information System participated in the study.

Exclusion Criteria

All health data officers from the facilities within the Kigoma Ujiji Municipal Council, data clerks working at the health facilities within the Kigoma Ujiji Municipal Council, and Kigoma Ujiji Municipal Council data officers who are not involved in data management through the Health Management Information System were excluded from the study.

3.7 Data Collection

The study used both primary and secondary data. Primary data were collected directly from the field by the researcher, while secondary data were gathered from published and unpublished sources.

3.7.1 Data Collection

3.7.1.1 Interview

A semi-structured interview was used. The interview guide was used to obtain information from the Kigoma municipal data officers. The interview tool helped to disclose respondents' views/opinions regarding the matter. In this study, interview was used to collect information on how the Health Management Information Systems (HMIS) ensure the performance of employees in the Kigoma Municipal Council.

The interview guide questions were prepared according to the objectives of the study. The interview guide was translated into the Swahili language to avoid language barriers and to get detailed information from the participants. An audio recorder was used to record the interview to ensure the information provided by the participants was well captured. Consent to record was asked of the participants before starting the

interview. The interview was prepared to collect information concerning the objective on ways to overcome the challenges facing the implementation of HMIS.

3.7.1.2 Observation

This systematic data collection approach involves the researcher using all of their senses to examine people in a natural setting or during naturally occurring situations. Therefore, the researcher employed the observation method to observe the implementation of the HMIS within health facilities, including the use of both software and hardware systems of the HMIS. Additionally, observation was utilized to capture non-verbal cues and behaviors that might not be apparent through other data collection methods. For example, observing the behaviors and attitudes of staff members during the implementation of the HMIS can provide insights into potential barriers to its facilitation and usefulness, contributing valuable information to address the specific objectives related to the determinants of performance and challenges facing the implementation of data in the Health Management Information System.

3.7.1.3 Questionnaire

Bhattacherjee (2012) defines a questionnaire as a series of written questions that a researcher provides to respondents, soliciting their responses. The questionnaires were personally delivered by the researcher to the clinical officers and data officers at the selected facilities in Kigoma. The researcher compiled a list of questions and presented it to the clinical officers and data officers for them to complete, later collecting the questionnaires. This approach allowed for more communication among the participants and the researcher, ultimately yielding better results for the study.

The questionnaire aimed to gather information and insights into aspects such as data quality, challenges encountered when using the system, and suggestions for improving the system. It was designed to collect information related to the objectives of determining performance determinants and addressing challenges in the implementation of the HMIS.

3.7.2 Data Collection

The principal researcher provided orientation to data collection assistants on the key procedures for data collection, including the assessment of the quality of tools used in the research, to enhance the consistency and accuracy of the required data.

3.8 Data Management Analysis

3.8.1 Data Entry

The data from interviews were recorded on tape and subsequently transcribed. The transcribed data were then effectively coded. Open coding was employed to identify significant sources and create categories of information.

3.8.2 Data Cleaning

In the data cleaning process, pivotal coding was employed to search for connections within and between the primary code categories and construct a secondary code classification. This necessitated a close examination by the analyst of the data in relation to the existing literature and research questions. Any data that did not relate to the evaluation question were removed.

3.8.3 Data Analysis

The qualitative data collected from the Kigoma Municipal Council data officers were analyzed using qualitative methods. The first step in the analysis involved transcription, where the researcher converted the audio data into written text. The second stage was familiarization, during which the researcher read and re-read the transcripts to gain a deeper understanding of the content. In the third stage, coding was performed, with the researcher sorting the data to associate them with specific topics or themes. The fourth stage involved categorization, where the researcher grouped the coded data into broader categories or themes by identifying commonalities and patterns. Subsequently, theme development was conducted to capture the essence of the data. The final stage was interpretation, during which the researcher reviewed the themes and drew conclusions, considering their implications for the research objectives of the study. Qualitative data were collected to provide insights into ways to overcome the challenges facing the implementation of HMIS.

The quantitative data were collected using a 5-point Likert scale through questionnaires. The researcher opted for a 5-point Likert scale measurement system because it is user-friendly, easy to understand and complete for the respondents, offering a clear set of response options. Moreover, the 5-point Likert scale is versatile and suitable for gathering data on a wide range of topics. Additionally, employing a 5-point Likert scale ranking system is beneficial as it facilitates comparison using statistical techniques such as Mean, Mode, and Median.

The quantitative data obtained were analyzed using the Statistical Package for Social Scientists (SPSS) Version 25, a computer software package. The researcher first created an Excel dataset sheet and imported it into the SPSS program. The

subsequent step involved data cleaning, where missing values, outliers, and anomalies were identified and, if necessary, removed. With the SPSS program, the researcher conducted descriptive statistical analysis to calculate measures of central tendency, including mean, median, and standard deviation. The results of the quantitative data were presented in frequency distribution tables, displaying the frequency of observations and corresponding respondent percentages. Quantitative data collection focused on addressing the specific objectives related to the challenges faced during the implementation of the HMIS and the determinants of its performance.

3.9 Data Reliability and Validity

3.9.1 Data Reliability

According to Kothari (2010), reliability refers to the degree to which a data collection technique produces consistent findings. It measures the consistency of an instrument's measurements under similar conditions each time it is used. To assess the reliability of the data collected from health workers, the researcher conducted a pilot test. This test involved dividing the questionnaire questions into two groups of respondents and asking each group the same questions related to the same concept. Subsequently, the researcher determined whether both groups provided consistent answers under similar conditions.

3.9.2 Data Validity

This is the most critical criterion because it indicates how closely an instrument measures what it is supposed to measure (Kothari, 2010). To ensure the accuracy of

the research findings, the researcher selected a sample that was a true representation of the population and meticulously reviewed and edited the collected data for accuracy and completeness before using it for analysis.

3.10 Ethical Consideration

An introductory letter for data collection was obtained from the Open University of Tanzania. Other relevant organizations involved in this research were also informed of the necessary procedures for data collection in health facilities. Kigoma Ujiji Municipal Council was of particular concern; therefore, the researcher consulted with government officials from the Office of the Regional Commissioner to obtain the data collection permit. All respondents participated in the research voluntarily and were informed of their right to end participation at any point if they deemed it fit. The information obtained from the respondents was carefully stored, ensuring confidentiality.

CHAPTER FOUR

DATA FINDINGS PRESENTATION AND DISCUSSION

4.1 Overview

In this chapter, the researcher presents the data collected from the study's respondents to fulfill the study's objectives. The data obtained from the research data collection tool (questionnaire) is presented to illustrate the respondents' perspectives on the study topics. Furthermore, demographic information is included to provide insights into how it may impact the collected data. The data presented addresses the following objectives: to identify challenges in the health information management systems affecting employee performance at the Kigoma Municipal Council, to explore strategies to overcome these challenges in implementing data management within the health management information system at the Kigoma Municipal Council, and to determine the factors influencing the performance of Health Management Information Systems in enhancing employee performance at the Kigoma Municipal Council.

4.2 Data Findings Presentation

4.2.1 Demographics Information

The study involved the evaluation of the Health Management Information Systems (HMIS) in ensuring the performance of employees: A case study of the Kigoma Municipal Council. To obtain more representative and diverse data, the researcher decided to engage healthcare professionals at Kigoma Municipal Council's health facilities. The researcher selected respondents, including municipal health data

officers, facility data officers, and facility data clerks. The selection of respondents by the researcher was based on the purpose of the study, and thus, the researcher chose respondents based on her observation that the selected individuals would be able to provide the data needed to fulfill the study's objectives.

Table 4.1: Characteristics of Respondents (Source: Field Data)

Description	**Description**	**Frequency(N)**	**Percentage (%)**
Age	Below25 Years	2	6.6
	25–35	13	43.3
	36–45	9	30
	Above 45	6	20
	Total	**30**	**100**
Gender	Male	11	36.6
	Female	19	63.3
	Total	**30**	**100**
Education	Certificate	-	-
	Diploma	20	66.6
	Bachelor's Degree	6	20
	Master's Degree	4	13.3
	Total	**30**	**100**
Working Experience	Below 1	1	3.3
	1 – 5 Years	15	50
	6 – 10 Years	9	30
	10+ Years	5	16.6
	Total	**30**	**100**

Age Distribution

From the findings, it can be seen that the majority of the respondents fall under the age group of 26 to 35 (13 respondents – 43.3%), which can imply that the organization has employees who are considered to be in the age group of social maturity, experience and energetic to be able to conduct day to day work as required

by the organization. Having a high demographic between the age of 26 to 35 could have substantial impact on performance, as employees in this age range are often considered to possess social maturity, experience and energy which can positively influence their ability to carry out their tasks effectively within the organization.

Gender Distribution

In terms of gender, 19 respondents out of 30 are female, while the remaining respondents (11) are male. This showed that, despite the organization having male employees, there is an issue of gender disparity as it has been seen that the number of female employees is higher than that of male employees. Gender can influence workplace dynamics, roles, and perceptions, which can impact performance and the implementation of HMIS. It may be essential to explore how gender-related factors affect performance and the challenges faced in implementing HMIS.

Education Level Distribution

From the findings, it can be seen that the majority of respondents have a diploma (20 respondents – 66.6%), which is considered to be a standard requirement for employment, which can imply that the majority of respondents will be able to provide in-depth and detailed information that might be vital for the fulfillment of the study. This can be crucial for providing in-depth and detailed information needed for the study and may contribute to a better understanding of performance-related factors and challenges in HMIS implementation.

Work Experience Distribution

The findings show that the majority of respondents (15) have more than 1 to 5 years of experience, making them aware of the organization's rules, procedures, and

culture, making them ideal respondents to provide information necessary for the study. Their experience can provide insights into the performance factors and challenges they have encountered during HMIS implementation. Experienced employees may also offer valuable suggestions for overcoming these challenges based on their familiarity with the organization's dynamics.

4.2.2 Opinions of Data Clerks on Determinants of Performance of Health Management Information System

The first objective of the study aimed to identify the determinants of the performance of Health Management Information Systems (HMIS) in ensuring employees' performance at the Kigoma Municipal Council. To collect data for this objective, the researcher used a questionnaire and distributed it to 30 respondents (data clerks) as part of the study. The summary of the findings from the questionnaire is as follows:

Table 4.2: Determinants of Performance of HMIS (N=30)

Determinants of Performance of HMIS	**Strongly agree**		**Agree**		**Neutral**		**Disagree**		**Strongly Disagree**		**Mean Score**
	F	%	F	%	F	%	F	%	F	%	
The organization motivates employees to use the health management information system	11	36.7	19	63.3	-	-	-	-	-	-	1.7
The organization emphasizes the sharing of knowledge concerning the	11	36.7	17	56.6	2	6.7	-	-	-	-	1.93

HMIS											
The roles and responsibilities of each employee are clearly defined concerning the use of HMIS	7	23.3	5	16.6	2	6.7	11	36.6	5	16.6	3.1
The provided infrastructure for the implementation of HMIS enables smooth implementation of HMIS	2	6.7	5	16.6	3	10	15	50	5	16.6	2.63
Employees are provided with an awareness of the significance of HMIS to the growth of organizational performance	11	36.6	14	46.6	-	-	4	13.3	1	3.3	2.53

Organization Motivation to use HMIS

The first question aimed to examine whether the organization motivates employees to use the Health Management Information System. 11 respondents (36.7%) strongly agreed that the organization motivates employees to use the HMIS. The remaining 19 respondents (63.3%) agreed that the organization motivates their employees to use HMIS. From the findings, all the respondents showed that they agree that their organization motivates their employees to use HMIS, which implies that the organization understands the significance of HMIS in enhancing the good performance of the organization. The results indicate that, when employees are motivated to use the HMIS, they are more likely to actively engage with the system, input accurate and timely data, and utilize its functionalities to their full potential.

This, in turn, leads to improved data quality, better decision-making, and enhanced overall performance of the HMIS. The findings are similar to the findings drawn from a study by Bernardo (2014) which discusses the role of Employee Assistance Programs (EAPs) in providing support to employees, and are associated with the highlighted findings regarding the importance of ongoing support and technical assistance. The study underscores the significance of EAPs and how they offer various forms of support, including technical assistance, to employees. Similarly, the highlighted findings emphasize that having a dedicated support system, such as a helpdesk or IT team, is crucial for employees encountering challenges or questions related to the HMIS. Both highlight the positive impact of such support structures on employee motivation and performance, emphasizing the importance of providing ongoing assistance to address employee needs.

The results complemented the findings of Mulusew (2017) who suggested that increasing the efficacy and efficiency of healthcare professionals around the world requires the use of evidence-based practice.

In conclusion, the findings of the study indicate that the organization has successfully motivated employees to use the HMIS, with more than half of the respondents agreeing. The organization's emphasis on recognition, effective communication, training, employee involvement, and ongoing support likely contributes to this positive outcome. By maintaining a motivated workforce, the organization can continue to leverage the full potential of the HMIS, leading to improved data management, enhanced decision-making, and, ultimately better healthcare outcomes.

Emphasis on Knowledge Sharing

The second question related to the objective focused on the organization's emphasis on knowledge sharing among employees regarding the HMIS. Eleven respondents (36.7%) strongly agreed that the organization promotes knowledge sharing among employees concerning the HMIS, while 17 respondents (56.6%) agreed with this statement. The remaining 2 respondents (6.7%) provided neutral answers. The findings indicate that the majority of respondents agreed that organizations and health facilities emphasize knowledge sharing among employees regarding the HMIS. This suggests that knowledge is a crucial determinant that can contribute to the improved performance of employees at the Kigoma Municipal Council. The emphasis on knowledge sharing within an organization plays a pivotal role in maximizing the benefits of the HMIS. When employees actively share knowledge and insights regarding the HMIS, it creates a collaborative environment where information is freely exchanged. This sharing of knowledge can take various forms, such as informal discussions, formal training, workshops, or the establishment of knowledge-sharing platforms or communities of practice. The study was complemented by the study of Haradhan (2019), whereby he emphasizes that every organization is thought to establish a sustained, long-term competitive advantage based on knowledge. Every organization in the twenty-first century adopts a knowledge-based approach to sustainable development. Sharing knowledge is essential for transforming individual knowledge into collective organizational knowledge. It is one of the vital knowledge processes for the growth of organizations in a dynamic and competitive period. Knowledge sharing plays a significant part in

the growth and innovation of numerous organizational functions. This essay explains the methods, obstacles, and advantages of information sharing in organizations.

Clear Definition of Roles and Responsibilities

The third question related to the objective aimed to identify whether the roles and responsibilities of each employee were clearly defined concerning the use of HMIS. Seven respondents (23.3%) strongly agreed that HMIS helped to identify the roles and responsibilities of each employee, while 5 respondents (16.6%) agreed that HMIS is useful in this regard. Two respondents (6.7%) provided neutral answers, and 11 respondents (36.6%) disagreed that employees had defined roles and responsibilities, while the remaining 5 respondents (16.6%) strongly disagreed that HMIS provided clear roles and responsibilities for each employee. The findings indicate that the majority of respondents disagreed with the idea that HMIS has provided clear roles and responsibilities for each employee. Organizations need to address the lack of clarity identified in this study. Effective communication, job description, and regular discussions with employees can establish clear role definitions. Ensuring that each employee understands their specific tasks and responsibilities related to the HMIS is essential. Additionally, providing training and resources to support employees in fulfilling their roles can further enhance their effectiveness and confidence in using the HMIS. The results aligned with findings by Benson (2018) where the author suggested that, many nations have implemented Health Management Information Systems (HMIS) using platforms they have adopted or created themselves. It is implemented by integrating all healthcare services and

granting service providers access to and freedom to utilize health information. The system can offer data on every business element, including billing and patient care.

Infrastructure for Implementation of HMIS

The fourth question related to the objective aimed to examine whether the provided infrastructure for the implementation of HMIS enables a smooth implementation of HMIS. Two respondents (6.7%) strongly agreed that the provided ICT infrastructure for HMIS enables a smooth implementation, while 5 respondents (16.6%) agreed with this statement. Three respondents (10%) provided neutral answers, and 15 respondents (50%) disagreed with the notion that the provided ICT infrastructure facilitated smooth HMIS implementation. The remaining 5 respondents (16.6%) strongly disagreed that the organization's provided ICT infrastructure enables a smooth HMIS implementation. The findings suggest that the majority of respondents disagree with the statement implying that their facilities provide adequate ICT infrastructure to support the smooth implementation of HMIS. These findings indicate a lack of proper ICT infrastructure that is necessary for effective HMIS implementation at some of the health facilities located in the Kigoma Municipal Council. The findings are supported by the findings made by Simba (2004), that the ICT revolution has presented both opportunities and challenges for developing countries to strengthen their HMIS as to keep with the global pace of globalization, these countries have worked to modernize their HMIS using ICT primarily at the national and provincial levels. Additionally, in the study conducted by Vahini and Pulickal (2015), incorporation of ICT in HMIS plays a crucial role in making informed decisions regarding monitoring and evaluation of health programmes and

its implementation. The authors added that HMIS is still in its infancy stage due to digital divide and hence the investment and the implementation of HMIS is vital to ensure successful HMIS implementation.

Awareness on the Significance of HMIS

The fifth question related to the objective aimed to determine whether employees were provided with awareness of the significance of HMIS for the growth of organizational performance. Eleven respondents (36.6%) strongly agreed that employees are provided with awareness of the significance of HMIS for the growth of organizational performance, while 14 respondents (46.6%) agreed with the statement in the question that suggested employees are provided with awareness regarding the significance of HMIS for organizational performance. Four respondents (13.3%) disagreed, indicating that employees were not provided with the necessary information to make them aware of the significance of using HMIS at the organizational level. The remaining 1 respondent (3.3%) strongly disagreed with the statement suggesting that employees are provided with information to make them aware of the significance of HMIS utilization at the organizational level. The findings suggest that the majority of respondents understand the significance of using HMIS at the organizational level, indicating that employee awareness of the importance of effective HMIS implementation at facilities in the Kigoma Municipal Council is not a challenge for its successful implementation. These findings served as a complementary source of information, adding depth and credibility to the arguments and assertions put forth in the paper by Samal and Kumar (2016) on a study that aimed to evaluate the quality perspectives and challenges among HMIS

officials in implementing HMIS at their district levels. A pilot study was conducted in two districts where the study respondents were interviewed in-depth using semi-structured interviews. The findings showed that despite HMIS being useful in the monitoring and evaluation process, data collection, planning, maternal death tracking, and institutional deliveries, still challenges such as poor funding, poor ICT infrastructure, and low level of knowledge plague the implementation of HMIS to reach its intended goals. Although the study was successful in addressing several challenges that impact the implementation of HMIS, the study did not provide special recommendations or strategies to address these challenges.

4.2.3 Opinion of Data Clerks on Challenges Facing the Implementation of HMIS

The second objective of the study aimed to identify the challenges facing the implementation of the Health Management Information System at the Kigoma Municipal Council. For this objective, the researcher used a questionnaire as the primary data collection tool, which was provided to 30 respondents participating in the study. The summary of the findings from the questionnaire is as follows:

Table 4.3: Challenges Facing the Implementation of the Health Management Information System

Challenges facing the implementation	Strongly agree		Agree		Neutral		Disagree		Strongly Disagree		Mean Score
	F	%	F	%	F	%	F	%	F	%	
The organization possesses ICT infrastructure to support HMIS	2	6.7	10	33.3	3	10	10	33.3	5	16.6	1
The employees are knowledgeable on how to use the HMIS systems	3	10	5	16.6	4	13.3	12	40	6	20	2.53
The organization provides technical support for employees to be able to use the HMIS as required	3	10	2	6.7	-	-	18	60	7	23.3	2.47
Employees are made aware of the significance of the usage of HMIS at the organizational level	11	36.6	14	46.6	-	-	4	13.3	1	3.3	2.67
The process of data entry in the HMIS is done after evaluating the validity of the information	3	10	5	16.6	5	16.6	14	46.6	3	10	2.87

ICT Infrastructure in an organization

The first question aimed to identify if the organization possesses ICT infrastructure to support the implementation of HMIS as required. Two respondents (6.7%) strongly agreed that the organization possesses the necessary ICT infrastructure for HMIS implementation, while 10 respondents (33.3%) agreed that the ICT

infrastructure required for effective HMIS implementation is present. Three respondents (10%) provided neutral answers, 10 respondents (33.3%) disagreed with the question, suggesting that the organization lacks the necessary ICT infrastructure to support HMIS implementation as required. The remaining 5 respondents (16.6%) strongly disagreed that the organization possesses the required ICT infrastructure for the effective implementation of HMIS. The findings indicate that the majority of respondents appear to disagree with the statement, suggesting that their facilities have sufficient ICT infrastructure to support HMIS implementation as required. This suggests a lack of proper ICT infrastructure that is essential for the effective implementation of HMIS at some of the health facilities located in the Kigoma Municipal Council. The findings above complemented the findings from the study of Kasambara et al., (2016) which suggested that there was a deficiency of accurate, reliable, and timely health data to inform effective planning and resource management. The results showed that 1 out of 10 HMIS officers qualified for the post concerning the minimum qualifications that were established by the ministry. The responses to this question provide a comprehensive picture of the perceptions held by respondents regarding the availability of ICT infrastructure necessary for HMIS implementation within their organizations. The disagreement from half of the respondents suggests a prevailing sentiment of low support, indicating a need for enhanced investment in ICT resources. The agreement from a quarter of the respondents acknowledges some level of support but also implies room for further improvement. Finally, the strong disagreement expressed by the remaining quarter highlights the urgent need for significant enhancements in ICT infrastructure to enable effective HMIS implementation. Additionally, the results also observed from

a study by Abigail (2018), through a case study of Meru Teaching and Referral Hospital that sought to determine the elements that affect the adoption of the Health Management Information System (HMIS) in Kenya's public hospitals. 245 participants made up the study's target population, and 152 of them were interviewed. One poorly completed questionnaire and 26 incomplete questionnaires out of a total of 125 were returned. The goals were to ascertain the impact of technological, managerial, operational, and organizational factors on the implementation of HMIS at MTRH.

Employees' knowledge towards HMIS

The second question of the objective aimed to identify if the employees know how to use the HMIS systems as required. 3 respondents (10%) strongly agreed with the statement that suggested that employees know how to use the HMIS as required. In comparison, 5 respondents (16.6%) agreed that the employees are knowledgeable on how to use the HMIS system as required. 4 respondents (13.3%) provided neutral answers, 12 respondents (40%) disagreed with the statement that showed that employees are knowledgeable on how to use the HMIS systems as required while the remaining 6 respondents (20%) strongly disagreed with the statement that the employees are knowledgeable on how to use the HMIS as required. The findings showed that the majority of respondents disagreed by suggesting that most employees are not knowledgeable enough to be able to use the HMIS as required, which indicated that the provision of knowledge to the targeted employees regarding the usage and functionality of HMIS is still a challenge that hinders effective implementation of HMIS at facilities located at the Kigoma Municipal Council. The

results aligned with the study of Ekwueme (2008) as the purpose of the research was to assess the knowledge of primary healthcare professionals regarding the core National Minimum Data Sets (cNMDS) that must be collected at all healthcare levels. Furthermore, it aimed to gauge these healthcare professionals' attitudes toward using the Health Management Information System (HMIS) forms for data collection. The study employed a descriptive cross-sectional design and a multistage sampling technique to select 107 PHC employees from 18 health clinics across the 17 local government areas of Enugu State. It found that only 5 out of the 13 core NMDS (38.5%) PHC staff members required to gather at their various health sites had knowledge levels above 50%. On average, only 25.2% of PHC employees were aware of the types and numerous applications of HMIS forms 000, 001, 002, and 003. The PHC employees had a generally unfavorable attitude toward using the HMIS forms; 60.7% of them said they had no interest in doing so, and 48.6% thought it was a time-consuming and pointless task. It concludes that it is imperative to set up a training course for these PHC staff members on the essential NMDS they are required to gather, the types of HMIS forms used to record these data, and the timely reporting of the same to appropriate health authorities.

Provision of Technical Support

The third question of the objective aimed to identify if the organization provides technical support for employees to use the HMIS as required. Three respondents (10%) strongly agreed that the organization provides technical support for employees to use the HMIS, while 2 respondents (6.7%) agreed that the organization does provide technical support for employees to use the HMIS. Eighteen respondents

(60%) disagreed with the statement that suggested employees were provided with technical support to use the HMIS as required, while the remaining 7 respondents (23.3%) strongly disagreed with the statement suggesting that employees are provided with the necessary technical support to use HMIS as required. The findings indicate that the majority of respondents disagreed with the question that suggested employees at the health facilities are provided with technical support to use HMIS as required. This implies that there is poor provision of technical support, which hinders the effective implementation of HMIS for the employees working at facilities in the Kigoma Municipal Council.

Significance of using HMIS

The fourth question of the first objective aimed to address whether employees are made aware of the significance of using HMIS at the organizational level. Eleven respondents (36.6%) strongly agreed that employees are provided with information aimed at making them aware of the significance of using HMIS at the organizational level, while 14 respondents (46.6%) agreed with the statement in the question suggesting that employees are provided with information to raise awareness about the significance of using HMIS at the organizational level. Four respondents (13.3%) disagreed, indicating that employees were not provided with the necessary information to make them aware of the significance of using HMIS at the organizational level. The remaining 1 respondent (3.3%) strongly disagreed with the statement suggesting that employees are provided with information to make them aware of the significance of HMIS utilization at the organizational level. The findings suggest that most respondents understand the significance of using HMIS at

the organizational level, implying that employee awareness of the importance of effective HMIS implementation at facilities located in the Kigoma Municipal Council is not a challenge for the effective implementation of HMIS. Together, the paper and the study findings formed a cohesive body of evidence, strengthening the overall validity and reliability of the research of Umezuruike et al. (2017) that stated that Uganda has shown a level of success in using Health Management Information Systems (HMIS) in disease surveillance, reporting, and monitoring. However, the level of success is still relative, as some significant challenges are still visible within the implementation of the system.

4.2.4 Ways to Overcome the Challenges Facing the Implementation of Data

The third objective of the study aimed to identify ways to overcome the challenges facing the implementation of data management in the HMIS. For this objective, the researcher used the interview as a data collection tool, where the interview questions were addressed to the Kigoma Municipal Council data officer.

The first question aimed to examine if the respondent has experienced any challenges when using the HMIS and how they addressed the challenges. The following is the summary of the answer:

> "*Yes, there have been some challenges as the HMIS systems that we use in Kigoma are used throughout the nation which sometimes may cause the servers to be down, and hence if the servers are down, we are unable to access the required information at the required time. Additionally, because HMIS also depends on the presence of paper-based tools such as monitoring and evaluation tools, sometimes we might have a deficit in the paper-based tools and other paper-based reporting tools. For the problem of servers being offline, we usually address this problem by communicating with the people from the Ministry of Health to notify them and to allow more technical solutions to take place. Additionally, for the problem of deficiency of paper-based tools, we can overcome this challenge by involving other stakeholders to help us print those missing paper-based reporting tools. Currently, the*

> *government has instructed that the process of printing the paper-based reporting tools should be done at the municipal levels to help reduce the burden of the deficit.*" (Municipal Council Data Officer, May 2023)

From the findings above, the respondent suggested that some common challenges occur during the implementation of HMIS. However, the users of the systems are also equipped to overcome such challenges to be able to use and administer HMIS as required. Despite that, the study demonstrates consistent results from the study of Mndeme (2011), which aimed to explore the process of integration of vertical programs information systems with the national HMIS within district health information systems. The findings of the study showed a lack of clarity of HMIS, unequipped personnel, and lack of database interoperable standards for data sharing as the main challenges that face the implementation of HMIS. The findings recommend the introduction of health information policy guidelines, the synergizing of available resources from independent programs, the establishment of a strong local technical team to support the processes, and the integration of health information systems training for students in health colleges as ways to overcome the challenges that hinder the optimal implementation of HMIS. Despite the study primarily focusing on technical challenges and solutions and the integration of information systems, the author failed to consider the perspectives and experiences of those who are directly affected by the implementation of HMIS. The study by Hayes et al., (2002), highlights the significance of providing employees with the necessary tools and resources to enhance their motivation and performance. In this context, the lack of ICT infrastructure, as identified can be seen as a critical barrier to providing employees with the essential technological resources they need for

effective HMIS implementation. Similarly, the study by De Bernardo (2014), discusses the importance of Employee Assistance Programs (EAPs) and various forms of support for employees. This source underscores how technical support, which is lacking as per finding 4, can significantly impact employee wellbeing and performance, aligning with the challenges identified in the study.

The second question of the objective aimed to examine how training can help address the challenges facing the implementation of data management in the healthcare system. The response was as follows:

> "*Training is important for healthcare workers because we understand that most workers are not experts in the implementation of HMIS systems. Hence, training is essential to help them understand how HMIS systems are implemented. Training provides a collective overview of how HMIS is supposed to be used, imparts technical knowledge about the HMIS systems, and equips healthcare workers with the skills to address challenges that may arise during the use of HMIS. Additionally, training is valuable for teaching healthcare workers how to input data into the HMIS.*" (Municipal Council Data Officer, May 2023)

Such information provided by the respondent showed the significance of providing regular training and development sessions to employees to provide them with knowledge and information concerning the implementation of HMIS and gives them an understanding of how to overcome some challenges that might occur while using HMIS. Similarly, Helfenstein, and Shiferaw (2017) conducted a systematic review assessing the impact of training on health workers' abilities to use information systems. The findings from this study align with the importance of training highlighted in the original passage. The systematic review emphasizes that training significantly enhances health workers' abilities to use information systems effectively. This corresponds with the idea that training is vital for maintaining data integrity and improving the overall effectiveness of healthcare information systems.

Additionally, Lavin, Harper, and Barr (2018) explored the effects of training on the perceived usability of electronic health records (EHRs) by nurse practitioners. The study's findings are in line with the original passage, as it suggests that training improves data input practices and enhances the usability of healthcare information systems. Nurse practitioners' perceived usability improvement reflects the positive impact of training on data input procedures.

The third question of the objective aimed to identify if there are any specific training programs or courses that would be helpful for healthcare workers to improve their data management skills. The response was as follows:

> "*Among the specific training programs that would help healthcare workers improve their data management skills is known as data management training. Although we have not been able to provide such training to our employees due to budgetary constraints, it is an important program that should be offered. Data management training is essential for several reasons. Firstly, it helps healthcare workers learn how to handle paper-based data and where to store such information. Additionally, this training is crucial for ensuring that data is managed in compliance with health management systems regulations.*" (Municipal Council Data Officer, May 2023)

The data provided by the respondents showed the significance of providing training aimed at improving data management skills. It is vital for healthcare workers to possess strong data management skills to effectively implement HMIS. This was observed also in the study of Reddy and Agarwal (2019) who emphasized the significance of training healthcare professionals in data analysis techniques, underlining how data analysis aids in identifying trends and patterns to enhance patient care and healthcare decision-making. This aligns with the notion that data management training can help healthcare professionals develop essential data analysis skills, enabling them to interpret data and extract valuable insights to

improve patient care and decision-making, as mentioned in the initial passage. Additionally, Solove (2013) explores data privacy in the information age, emphasizing the need for training to ensure compliance with legal and ethical guidelines. This corresponds with the idea presented in the initial passage that training can emphasize the importance of data security and privacy, ensuring compliance with legal and ethical guidelines to protect sensitive patient information. Implementing data management training programs for healthcare workers would have numerous benefits. First and foremost, it would enhance the overall quality of healthcare by ensuring that accurate and reliable data is collected, leading to more informed diagnoses and treatment plans. Improved data management skills would also contribute to enhanced patient safety, as healthcare professionals would better understand potential risks associated with data handling and take appropriate measures to mitigate them. The findings are backed up by the research conducted by Rukia (2019) with the study's objective to evaluate the factors that influence how health management information system data are used for decision-making at several Zanzibar medical facilities. For the evaluation of HMIS data, a cross-sectional descriptive study approach was employed, which utilized organizational, technical, and behavioral determinants. A sample of 71 respondents was selected using the purposive sampling method. Primary information was gathered through surveys, focus groups, and the collection of secondary data from journals, papers, and publications. Thematic analysis was used to evaluate qualitative data, while Statistical Package for the Social Sciences (SPSS) version 20 was used to analyze quantitative data. The study also covered almost all health counselors with the level of indifferent levels, ranging from certificate level (3.3%), diploma (65.6%), and

degree (23%) to master level (8.2%). The overall level of data use in decision-making was good at 73.8%. About 42% used HIMS data for monitoring and evaluation, followed by planning (35%), supply and drug management (23%), budgeting (18%), and outbreaks of disease (10%). More than half (62.3%) of health workers had a behavior of collecting data, as 21.3% collected diagnostic data, and 16.4% collected surveillance data. The study also found that 77% of respondents had collected and used data in decision-making, 50% for research purposes, and 44.3% for keeping disease track. Furthermore, 78.7% of respondents were competent, and 59% had a positive attitude towards data use, as 41% had been trained in data management, and 58.9% of the respondents analyzed data manually.

The fourth question of the objective aimed to examine the type of support that healthcare workers believe is necessary to effectively utilize HMIS. The provided response was as follows:

> "*The first form of support that would be helpful is the regular provision of training and development sessions to bring them together and educate them. Secondly, mentorship should be provided to healthcare workers while they perform their jobs to remind and instruct them on how HMIS systems work. Thirdly, there is a need to have IT officers at the municipal level who will be responsible for providing technical support at the facility level if the need arises.*" (Municipal Council Data Officer, May 2023)

The findings indicate that providing support as listed above will help ensure the proper implementation of HMIS, and healthcare workers will have the necessary knowledge and skills to use HMIS as mandated by the government.

The fifth question aimed to identify the current efforts in place to integrate the various health information systems used in Kigoma District. The response provided was as follows:

> "*Among the efforts that have been made to integrate different health information systems is ensuring that the systems are web-based, enabling centralized monitoring of information. The primary system used for this purpose is DHIS2, which allows all subsystems to send information to DHIS2. DHIS2 makes information viewable and accessible to all health facilities, facilitating proper monitoring, and allowing the DHIS2 technical team to assist in case of any issues.*" (Municipal Council Data Officer, May 2023)

The findings provided by the respondents showed that among the efforts that can ensure the effective integration of different health information systems is the centralization of the flow of information, which will allow proper monitoring of data from the health facilities to the central government and vice versa which will ensure transparency, accountability, and effectiveness provided from the healthcare workers who are using such Health Management Information Systems. The findings are reinforced by the findings reported in a study by Wilbroad (2013) that suggested that Population Health Implementation and Training (PHIT) Partnerships were founded in five sub-Saharan African nations: Ghana, Mozambique, Rwanda, Tanzania, and Zambia, to further build district health systems. Interventions were made specifically for the environment in which activities were envisioned. Although different, the five PHIT Partnerships have the same overarching objective of boosting HIS and connecting data with better decision-making. While collaborations in Zambia and Rwanda have brought new information and communication technology systems or tools, Mozambique, Ghana, and Tanzania all concentrate on enhancing the functionality and usability of the current Ministry of Health HIS. To improve decision-making through timely feedback on the health system's performance, all partnerships have adopted a flexible, iterative approach to designing and refining the development of new tools and approaches for HIS enhancement (such as routine data

quality audits and automated troubleshooting). The amount of emphasis on data gathering (patient versus health facility) and, accordingly, the level of decision-making enhancement (community, facility, district, or provincial leadership) is where the most glaring disparities between partnership methods may be found. Different approaches to design across PHIT Partnerships reflect various conceptions of change, notably regarding what data is required, who will use it to drive change, and how this change is anticipated to materialize. With difficulties arising from inadequate feedback loops, the iterative process of collecting data to monitor and evaluate the health system has significantly relied on communication. Implementation so far has emphasized the value of including managers and frontline personnel in enhancing data collection and its use for system improvement. The expertise of the PHIT teams hopes to add to the body of knowledge in the areas of HIS strengthening, connecting HIS with decision-making, and its impact on measures of health system outputs and impact through rigorous process and impact evaluation. In essence, efforts are underway to integrate different health information systems, and a prominent approach is the adoption of web-based systems such as DHIS2. This allows for collective monitoring of information, facilitates data sharing and access across various subsystems, and provides centralized assistance for technical issues. By integrating health information systems, healthcare organizations can enhance data management, improve decision-making, and promote a more coordinated and efficient healthcare delivery system.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Overview

In this chapter, the researcher provides a summary of the findings obtained from the study in relationship with the specific objectives discussed in the study. Additionally, the chapter will include a conclusion based on the findings and the recommendations according to the researcher's views.

5.2 Summary

The study aimed to evaluate how the Health Information Management Systems (HMIS) ensure the performance of employees in the Kigoma Municipal Council, with the results showing that proper utilization of Health Information Management Systems led to improved employee performance. Additionally, the study included other specific objectives that were discussed in the study.

5.2.1 Determinants of Performance of HMIS

The first objective of the study was to evaluate the determinants of performance in the implementation of Health Management Information Systems (HMIS) towards ensuring employees' performance at the Kigoma Municipal Council. For the first question, which aimed to assess the motivation for using HMIS, the findings revealed that the majority of respondents believed that their organizations motivate them to use HMIS. Such findings imply that the facilities understand the importance of HMIS in enhancing the overall performance of employees and actively encourage and support its utilization. The findings also indicated that a significant number of

employees believe that their organization emphasizes knowledge sharing concerning HMIS. These findings highlight the recognition of knowledge as a crucial determinant for ensuring the optimal performance of employees in the Kigoma Municipal Council.

For the question that aimed to evaluate the roles and responsibilities, most respondents disagreed that HMIS had outlined clear roles and responsibilities for each employee. Such findings showed a lack of clarity regarding their roles and responsibilities. As such, there is a need for improved communication regarding special duties and responsibilities concerning implementing HMIS. A large proportion of respondents suggested that the ICT infrastructure is not adequately provided for the implementation of HMIS, which suggested that there is a lack of ICT infrastructure to support the implementation of HMIS. Furthermore, concerning the awareness of HMIS significance, the findings revealed that most respondents had been provided with the awareness that made them understand the significance of HMIS concerning organizational performance. Such positive responses suggest that employees understand the significance of HMIS implementation.

5.2.2 Challenges Facing the HMIS in Ensuring the Performance of Employees at the Kigoma Municipal Council

The objective of the study aimed to evaluate the challenges facing the implementation of the Health Management Information System (HMIS) in ensuring employee performance at the Kigoma Municipal Council. For this objective, the researcher used a questionnaire to collect data from 30 respondents who participated in the study. Regarding the first question, which aimed to identify if the health

facilities possessed adequate ICT infrastructure, the majority of respondents disagreed with the statement suggesting that their facilities had enough ICT infrastructure to support HMIS implementation. The findings imply a lack of essential ICT technological resources such as computers and network systems required to meet the standards for HMIS implementation. The findings indicate that without sufficient ICT infrastructure, health facilities may encounter challenges in managing health information effectively.

Regarding the question that aimed to evaluate employee knowledge, most respondents suggested that most employees are not knowledgeable on how to use HMIS as required. The findings indicated a lack of training and practical education provided to the employees regarding the functionality and usability of HMIS. Such findings highlight a need for training programs to enhance the employees' proficiency in utilizing HMIS effectively. Regarding technical support, most respondents disagreed that the organization provided technical support for employees to use HMIS as required. The findings indicated the lack of technical assistance that health facilities offer their employees regarding the challenges they face when using HMIS. The absence of technical support might act as a barrier that hinders employees' ability to utilize HMIS effectively.

For the question aimed at evaluating employee awareness, most of the respondents agreed that employees are made aware of the significance of using HMIS at the organizational level. This signifies a good level of awareness among employees regarding the importance of HMIS. Lastly, concerning the data entry process, the majority of respondents disagreed that the process of data collection is done after the information provided is validated. The findings indicated that the health facilities

lacked an established process for verifying the accuracy and validity of data before it enters the system. This absence of data validation procedures raises concerns about the data quality and reliability of HMIS.

5.2.3 Ways to Overcome the Challenges Facing the Implementation of Data Management in the Health Management Information System in the Kigoma Municipal Council

The third objective of the study aimed to evaluate the ways that can be used to overcome the challenges that face the implementation of data management in the health information system in the Kigoma Municipal Council. For this objective, the researcher used a set of interview questions which was asked of the Kigoma District data officer. Regarding the first question, which aimed to identify the challenges facing the implementation of HMIS, the respondent suggested two common challenges: poor server services and a deficit of paper-based tools. To address such shortcomings, the respondent suggested that through having direct communication channels with the central government, they can report if the servers are down. Also, the government has ordered that every municipal should print their only paper-based tool to deal with the deficit of such papers. The overall conclusion showed that despite the challenges, the users are equipped to deal with such shortcomings to ensure smooth operations of the HMIS.

In regard to the importance of training, the respondents emphasized that training provides an overview of HMIS implementation, impacts knowledge, and equips healthcare workers with enough skills to input data into the HMIS. The findings indicated that there is still a need for regular training sessions to improve employees'

understanding of HMIS and their ability to overcome implementation challenges. The respondents also identified a data management training program as a specific initiative that would be very useful to enhance employees' skills regarding the use of HMIS. However, due to budget constraints, the facilities are unable to provide such training programs to employees.

Regarding the question aimed at evaluating support for the effective use of HMIS, the respondent mentioned frequent training and development sessions, mentorship, and the presence of IT officers at the municipal level to provide technical support. Lastly, the respondent identified efforts made to integrate different health information systems by utilizing web-based systems, specifically DHIS2. These systems allow for the centralization of information and facilitate good information flow, enabling collective monitoring and accessibility of information across health facilities.

5.3 Conclusion

The study aimed to evaluate specific objectives, including determining the challenges, ways to overcome those challenges, and the determinants of performance in the implementation of the HMIS to ensure employee performance at the Kigoma Municipal Council.

In terms of determinants of performance, respondents demonstrated a sense of having support from their organization to use HMIS, which reflects the organization's understanding of the importance of HMIS in enhancing employees' performance. The emphasis on knowledge sharing was also evident; however, there was a clear absence of clearly defined roles and responsibilities for employees

concerning HMIS. Lastly, on a positive note, employees showed good awareness regarding the significance of HMIS in enhancing their performance.

Regarding the challenges facing the implementation of HMIS, the findings revealed several areas of concern. Firstly, there was a lack of ICT infrastructure to support the necessary HMIS implementation, including insufficient technological resources such as computers and network systems, which hindered the proper implementation of HMIS. Secondly, the respondents reported a lack of knowledge and training on how to use HMIS, highlighting the need for comprehensive training programs. Additionally, the absence of technical support and established data validation procedures posed barriers to the effective utilization of HMIS.

In regard to the strategies that can be used to address the highlighted challenges, the respondent suggested that establishing a direct communication channel with the central government and diversifying the task of printing paper-based tools will help to address the commonly occurring challenges facing the implementation of HMIS. Regular training sessions and data management training programs were identified as essential for enhancing employees' skills in effectively implementing HMIS. Additionally, there is a need for the implementation of supportive measures such as the provision of ICT officers and conducting special training programs that would enable the users of HMIS to familiarize themselves with the system.

5.4 Recommendations

Based on the findings, the researcher has made provisional recommendations that could add value to the implementation of HMIS and enhance employee performance in the Kigoma Municipal Council.

5.4.1 Recommendations for the Government

i. The government should allocate funds to improve ICT infrastructure in healthcare facilities to ensure the availability of computers, network systems, and technical services to support the implementation of HMIS.

ii. The government should establish a clear line of communication between the central government and healthcare facilities to facilitate the prompt reporting and resolution of issues.

iii. The government should also prioritize training programs aimed at enhancing employees' knowledge and skills in using HMIS.

5.4.2 Recommendations for the Health Facilities

i. Facilities should develop systematic and strategic training programs for healthcare personnel to enhance their understanding and proficiency in HMIS.

ii. Create a supportive environment that encourages knowledge and information sharing among employees, aiming to improve collaboration and continuous learning regarding HMIS.

iii. Facilities should continuously improve the ICT infrastructure by ensuring the availability of necessary hardware, software, and network resources to support the smooth implementation of HMIS.

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APPENDICES

QUESTIONNAIRE

(For Clinical and Facility Data officers)

I am Gloria Anderson, a master's student in Monitoring and Evaluation (MA. M&E) at Open University. I am conducting a study on 'Evaluation of The Health Management Information System (HMIS) in Ensuring of Performance of employees, in Kigoma Ujiji Municipal Council,' a requirement of completing a Master of Monitoring and Evaluation (MA. M&E) degree. The study is solely for academic purposes, and the information given will be treated with strict confidentiality. I, therefore, request you to spare some time and answer the following questions. Thank you very much.

Instructions

1. The questions are closed ended depending on the requirement.
2. You are supposed to answer questions according to its requirements.

Section A: Demographic Profile of Respondents: Put a tick mark ☑ in a correct answer of your status.

1. Gender:

a) Male (_)

b) Female (_)

2. Age of the respondent (years)

a) Below 25 (_)

b) 25-35 years (_)

c) 36- 45 years (_)

d) Above 45 years (_)

3. Educational Level

a) None (_)

b) Secondary Education (_)

c) Diploma Education (_)

d) Bachelor Degree (_)

e) Master's Degree (_)

4. Designation (Client/Healthcare Provider)

……

5. How long have you been working in the organization?

a) Below 1 Year

b) 1 - 5 Years

c) 6 - 10 Years

d) 10+ Years

SECTION B: QUESTIONS

PART 1: Questionnaire Questions

Please indicate the level of agreement with the statements. Kindly tick the appropriate box to indicate the level of agreement with the statement. 1=Strongly Agree, 2=Agree, 3=Not Sure, 4=Disagree, 5=Strongly Disagree

1. Challenges facing the implementation of HMIS in Healthcare Facilities

S/N	Statement					
	Challenges facing the implementationof HMIS in Healthcare Facilities	**1**	**2**	**3**	**4**	**5**
01	The organization possess ICT infrastructure to support as required the implementation of HMIS					
02	The employees are knowledgeable on how to use the HMIS systems as required					
03	The organization provides technical support for employees to be able to use the HMIS as required					
04.	Employees are made aware of the significance of the usage of HMIS at the organizational level					
05.	The process of data entry in the HMIS is done after assessing the validity of the information					

2. Determinants of Performance of Health Management Information System

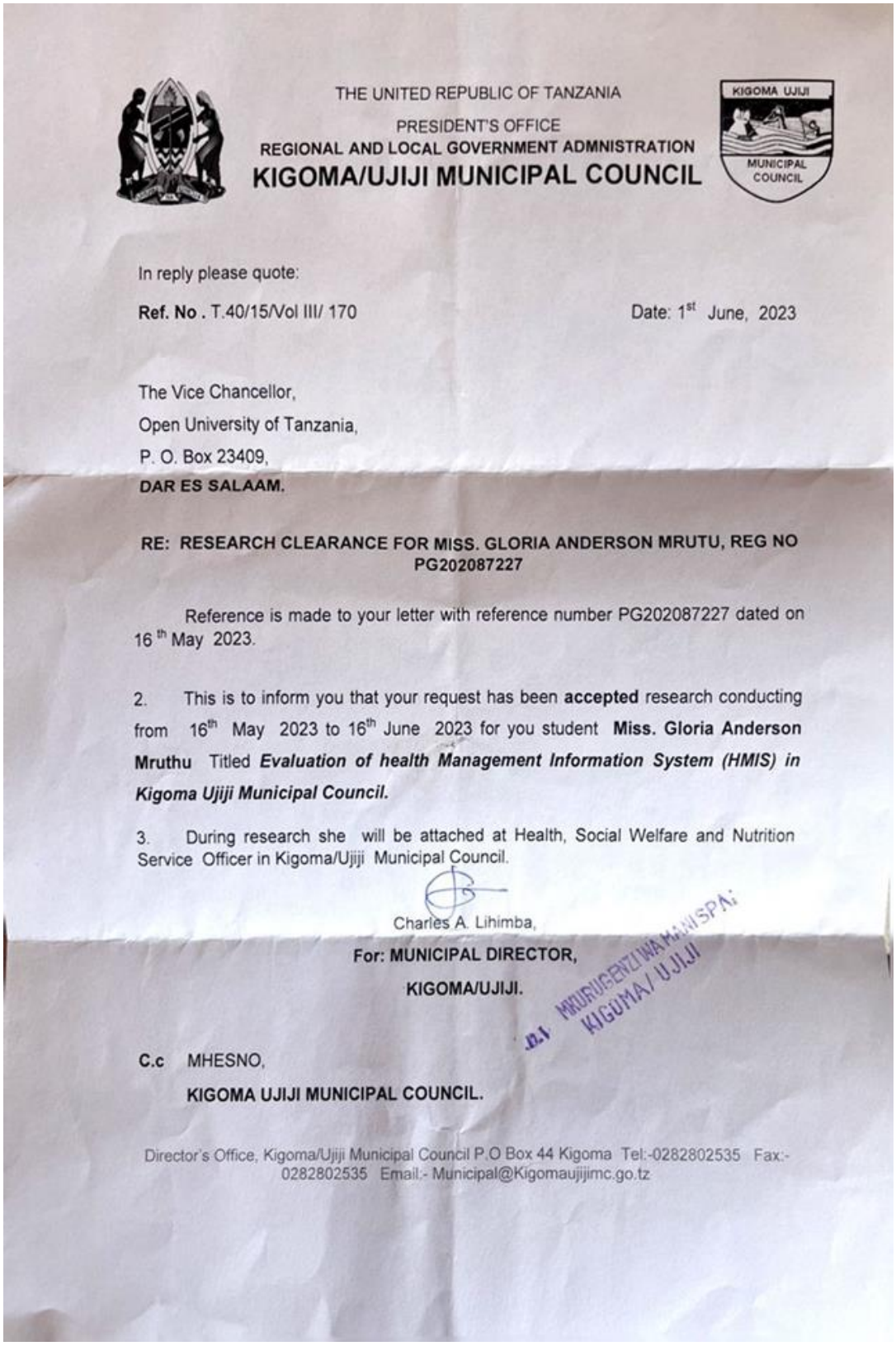
S/N	Statement					
	Determinants of Performance of HMIS	**1**	**2**	**3**	**4**	**5**
01	The organization motivates employees to use the Health management information system					
02	The organization emphasises on the sharing of knowledge among employees concerning the HMIS					
03	Roles and responsibilities of each employee are clearly defined concerning the use of HMIS					
04.	The provided infrastructure for the implementation of HMIS enables smooth implementation of HMIS					
05.	Employees are provided with awareness on the significance of HMIS to the growth of organizational performance					

INTERVIEW

PART B: Interview Questions(For Kigoma Municipal Council Data Officer)

1. Have you received any challenges when using HMIS? If so, were they and how were they addressed?
2. How can training help address the challenges facing the implementation of data management in the healthcare system?
3. Are there any specific training programs or courses that you think would be helpful for healthcare workers to improve their data management skills?
4. What kind of support do you think healthcare workers need to use the health information system effectively?
5. What are the current efforts in place to integrate the different health information systems used in your district?

Appendix 2: Researcher's Introduction Letters



THE UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE

REGIONAL AND LOCAL GOVERNMENT ADMNISTRATION

KIGOMA/UJIJI MUNICIPAL COUNCIL

KIGOMA UJIJI MUNICIPAL COUNCIL

In reply please quote:

Ref. No . T.40/15/Vol III/ 170 Date: 1st June, 2023

The Vice Chancellor,
Open University of Tanzania,
P. O. Box 23409,
DAR ES SALAAM.

RE: RESEARCH CLEARANCE FOR MISS. GLORIA ANDERSON MRUTU, REG NO PG202087227

Reference is made to your letter with reference number PG202087227 dated on 16 th May 2023.

2. This is to inform you that your request has been **accepted** research conducting from 16th May 2023 to 16th June 2023 for you student **Miss. Gloria Anderson Mruthu** Titled ***Evaluation of health Management Information System (HMIS) in Kigoma Ujiji Municipal Council.***

3. During research she will be attached at Health, Social Welfare and Nutrition Service Officer in Kigoma/Ujiji Municipal Council.

Charles A. Lihimba,
For: MUNICIPAL DIRECTOR,
KIGOMA/UJIJI.

MKURUGENZI WA MANISPAA KIGOMA/ UJIJI

C.c MHESNO,
KIGOMA UJIJI MUNICIPAL COUNCIL.

Director's Office, Kigoma/Ujiji Municipal Council P.O Box 44 Kigoma Tel:-0282802535 Fax:-0282802535 Email:- Municipal@Kigomaujijimc.go.tz