ASSESSMENT OF HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) PERFOMANCE IN HEALTH FACILITIES IN MBARALI, KYELA AND BUSOKELO DISTRICT COUNCILS

ASSESSMENT OF HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) PERFOMANCE IN HEALTH FACILITIES IN MBARALI, KYELA AND BUSOKELO DISTRICT COUNCILS

By

Luhuvilo Jactany Sanga

Evaluation report Submitted in Partial Fulfillment of the Requirements for Degree of Master of Science in Health Monitoring and Evaluation (M.Sc. HME) of Mzumbe University

2015

CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University, evaluation report entitled **"Assessment of Health Management Information System (HMIS) Performance in health facilities in Mbarali, Kyela and Busokelo District Councils",** in partial fulfillment of the requirements for award of the degree of Master of Science in Health Monitoring and Evaluation of Mzumbe University.

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Major Supervisor

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Internal Examiner

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External Examiner

Accepted for the Board of Faculty of Public Administration and Management

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DEAN, SOPAM

DECLARATION AND COPYRIGHT

I, **Luhuvilo Jactany Sanga,** declare that this evaluation report is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

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With heartfelt thanks to everyone, and in no particular order, I would like to mention these few on behalf of the rest: Firstly, Dr. Iddi Makombe, my major supervisor, for his regular guiding comments throughout the entire period of the study. Secondly, Mr William Nyasa, District Executive Director, Busokelo District Council; Ndamo. M.P, District Executive Director Kyela District Council; Mjuni Kajala District Executive Director Mbarali District Council; Dr Festo Dugange, District Medical Officer, Kyela; Dr Gilbert Tarimo, District Medical Officer, Busokelo and Dr Boniface Kasululu, District Medical Officer, Mbarali, for accepting my request for field attachment at their organizations. Special thanks are also due to all participants, who devoted their valuable time to participate in this evaluation.

DEDICATION

This work is dedicated to my beloved wife Wambi Sijabaje and our beloved sons Jactany Luhuvilo and John Luhuvilo. Without their support it would not have been possible to complete this dissertation.

ABBREVIATIONS AND ACRONYMS

CMO	Chief Medical Officer
DEAT	Data Entry and Analysis Tool
EDP	Essential Drugs Programme
HMIS	Health Management Information System
RMIS	Routine Health Information System
HSSP	Health Sector Strategic Plan
IHRDC	Ifakara Health Research and Development Centre
LGA	Local Government Authority
MOHSW	Ministry of Health and Social Welfare
MTUHA	Mfumo wa Taarifa za Uendeshaji Huduma za Afya
NACP	National AIDS Control Program
NGOs	Non-governmental organizations
OBAT	Organization and Behaviour Assessment Tool
PRISM	Performance of Routine Information System Management
PRISM	Performance of Routine Information System Management
SWAP	Sector Wide Approach
UDSM	University of Dar es Salaam
UiO	University of Oslo

ABSTRACT

The purpose of this study was to assess the Health Management Information System (HMIS) Performance in health facilities in Mbarali, Kyela and Busokelo District Councils. The study adopted a mixed method design which enabled the study to triangulate the data and information. In this study, four methods of data collection were used, namely questionnaires, semi-structured interviews, focus group discussions and documentary review. The sample size was 49 respondents. PRISM DEAT was used in data analysis. The data analysis included the use of simple description of percentages, tables and graphs this was done using excel spreadsheet. The level of the HMIS performance was measured in terms of data quality and information use. The data accuracy at the facility level was observed using OPD Attendance, ANC and PMTCT-MAT and observed to be higher than 95%. The use of information accounted to 65% of the health facilities stored meeting records and 100% of the reports requested were available at the facility and the district level, while 95.5% had a discussion at facility level on the HMIS, of these 83.3% made a decision after discussion, while 95.83% of health facilities referred their issue to higher levels for further assistance. The evaluation report recommend to improve HMIS skills specifically on data interpretation, use of information and problem solving, and the use of the performance improvement tools such as cause and effect analysis, flow chart, priority matrix, control chart, this may be achieved by developing a simplified HMIS training curriculum, conduct training of staff per facility and all health area management team members. The evaluation also recommends the promotion of a culture of information use, motivating health care providers and providing training on moral and ethical issues to improve information use for decision making.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter covers the key aspects of the evaluation of Health Management Information System (HMIS) performance. It starts with background information of the study on assessment of HMIS performance in Health Facilities. After the background information, the chapter proceeds to highlighting the rationale of the evaluation, evaluation questions and objectives, the significance and the scope of the evaluation, and the programme logic model.

1.2 Background

The Tanzania third Health Sector Strategic Plan (HSSP III) 2009-2015 was developed in order to incorporate the findings and proposed recommendations of the evaluation of the second strategic plan 2003- 2008 (URT, 2008). The strategy was developed by incorporating the National strategy for Growth and Poverty Reduction (NSGRP), the Health Policy 2007, Millennium Development Goals (MDGs) and Vision 2025 (URT, 2008). The Government of Tanzania emphasizes evidence based decision making intended for performance improvement and results oriented management in all sectors. Of the eleven strategies of the HSSP III, strategy no 11 emphasizes on the monitoring and evaluations which will provide data used for effective decision making in the health sector, and insists on revising the Health Management Information System (URT, 2008). The new HMIS programme uses five identified critical strategic areas which were used to improve the new HMIS. These are information use, data quality, data burden, human resource, information communication technology (ICT) and financial resource (Kimaro, 2006).

1.3 Rationale of the evaluation

The new HMIS collects information in 6,559 health facilities (URT, 2012). The findings from midterm review of HSSP III(2009-2015) indicated that there is still a problem of

parallel reporting in the system (MOHSW, 2013).The districts has become the most appropriate level for top-down and bottom-up planning and coordinating stakeholder effort through improved health information system (WHO, 2007).

Evaluation was undertaken 4 years since the implementation of the new HMIS programme and already demonstrates results that should be documented. It was especially important at the time when the government was increasingly emphasizing on big results was through the use of data for decision making. There was a need to document and assess the results of the new HMIS programme along with evidence of the programme outcomes.

Regardless of various recommendations from individual authors, scientific gatherings and international and multilateral organizations, there still exists a marked constraint in the Health Management Information System performance. Although 4 years have passed since the introduction of the new HMIS in practice, as yet there has been only one study which was done to review the HSSP III (2009-2015) in 2013. No comprehensive independent study has been conducted to date to assess the Health Management Information System performance alone (MOHSW, 2013).

The assessment would provide necessary information about how the programme was going on and gaps in implementation of the program to stakeholders, which used them to improve the quality of the service according to national standards and guidelines, to increase the utilization of the service, improve the referral linkage to care, treatment and support services and to know gaps in the implementation of the different programme in the health sector in order to improve the program performance.

1.4 Evaluation Questions and Objectives

1.4.1 General evaluation questions

This evaluation aimed to answer the following question: To what extent has the new HMIS programme been successful?

1.4.2 The specific evaluation questions

1. Was HMIS being implemented as planned?
2. How was the behavioural, technical and organizational determinant affecting HMIS performance?

1.4.3 Evaluation Objectives

1.4.3.1 General Objective

The overall objective of this study was to assess the performance of Health Management Information System (HMIS) in health facilities in Kyela, Busokelo and Mbarali Districts.

1.4.3.2 Specific Objectives

1. To assess the performance of HMIS at selected health facilities measured in terms of data quality and use of information;
2. To assess the effects of behavioural, technical and organizational determinants on the performance of the HMIS.

1.5 Significance of Evaluation

This evaluation would serve as starting point for the assessment of the new HMIS performance based on the situation in health facilities to identify the strength and weakness of the system, as well as the behavioural, technical and organizational determinants affecting HMIS performance. The findings and recommendations of the study would contribute towards the ongoing efforts of developing a better health management information system. Specifically, the findings of the study would benefit facilities and institutions by helping them to identify their weaknesses in implementing the new HMIS and propose better ways that help them improve their information system. The MOHSW and other stakeholders would also be beneficiaries as it would help them to get quality information from the facilities and the partial fulfillment of the requirements for award of the degree of Master of Science in Health Monitoring and Evaluation of Mzumbe University.

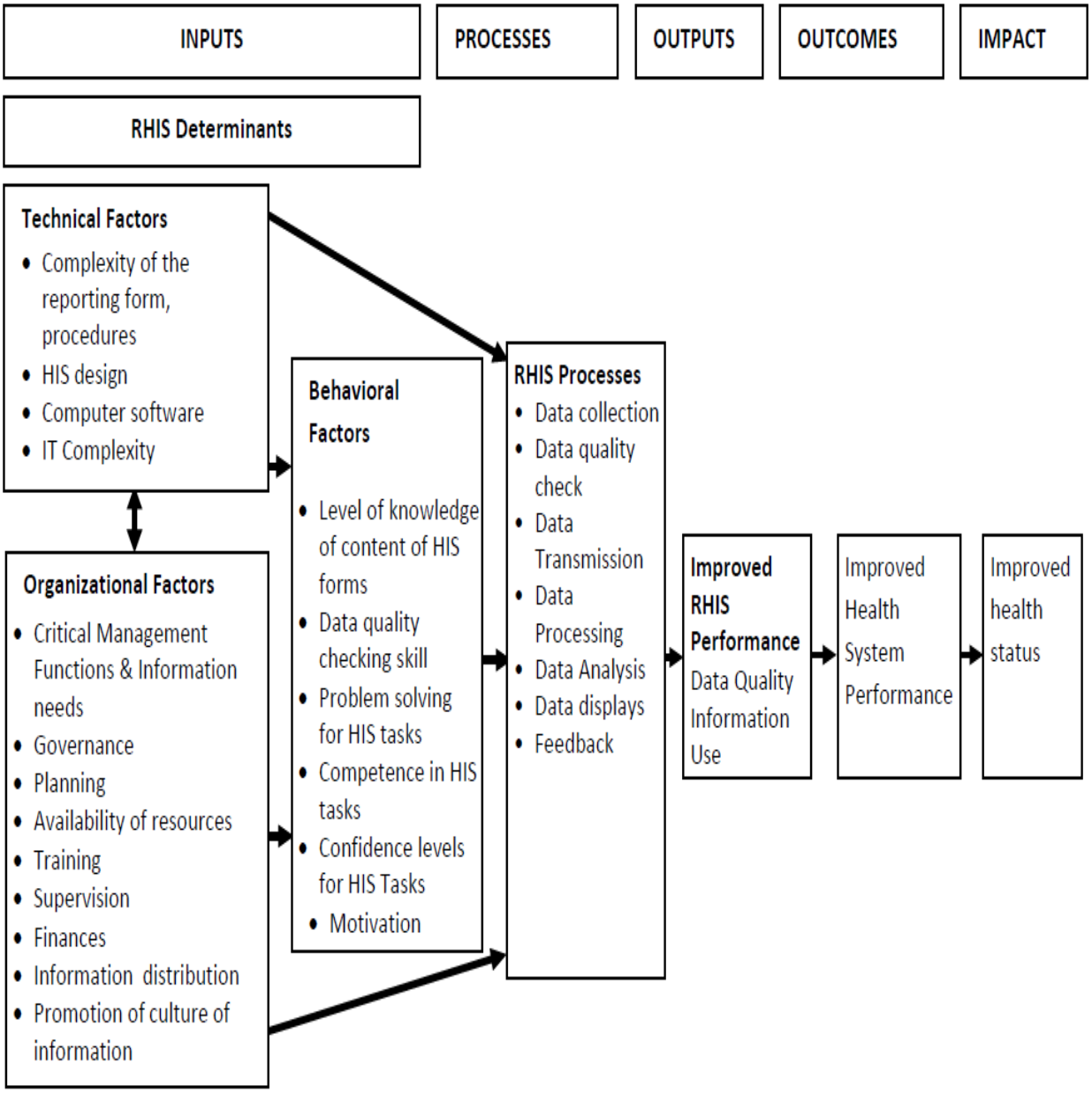
1.6 Scope of the Evaluation

The scope of the assessment of the HMIS performance was as follows. Implementation wise, the assessment focused on evaluating the HMIS performance in line with the PRISM framework targeting the behavioural, technical and organizational factors. The assessment of HMIS was geographically restricted to health facilities at Kyela, Busokelo and Mbarali districts in Mbeya region.

1.7 Programme logic model

The assessment of health management information system (HMIS) adopted the use of Performance of Routine Information System Management (PRISM) Framework (Fig. 1.1). PRISM Framework defines a variety of components of the HMIS and their linkages to generate better quality data and the continuous use of information for decision making leading to better health system performance in Tanzania and consequently, better health outcomes. The PRISM framework advocates that HMIS performance is a function of better RHIS processes and their behavioural technical, and organizational determinants and was founded on a 'systems approach' and continuous performance improvement principles.

Figure 1.1: Programme Logic Model



CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews related literature of interest to the assessment of the HMIS performance in different countries, including Tanzania. It addresses theoretical concepts of Health Management Information System, assessment of HMIS in developing countries and evaluation of new HMIS in Tanzania. The chapter also presents the frameworks for HMIS evaluation.

2.2 Theoretical concepts of Health Management Information System

Health management information system (HMIS) is a designed system that allows collection, storage, compilation, transmission, analysis and usage of health data for the decision making purpose (Rabbani, 2005). Health information system (HIS) is used to refer to the predominate concept of a formal and structured health information system set up to support and facilitate health management decision-making at different level of any health system (WHO, 2004). It was designed to carry both epidemiological information (health prevalence, incidence, mortality, and morbidity statistics) and administrative information (resource in put services utilization). HIS comprises both Routine System and Non-Routine Systems. In Routine Health information Systems it involves ongoing data collection of health status, health interventions, and health resources examples; facility-based service statistics, vital events registration, community-based information systems sources. Data collected need to be processed to provide information which is crucial for decision making at all level of health service.

There are various efforts invested to improve the health care services globally (WHO, FMO, CSA, & HMN. (2007). Improving quality of health service for instance, is a major component of the Millennium Development Goals (MDGs) (UN, 2010; WHO, 2010). This has been reflected in how three of the United Nations Millennium Development Goals directly address health issues: the reduction of child mortality, improvement of maternal health and the combat of HIV/AIDS, malaria and other diseases (UN, 2010)

Since the introduction of the HMIS in Tanzania in 1983 a lot has been done to make the system functional, with the up and down of the system until the system collapsed in 2004 (URT, 2007) due to paralle reporting to defferent donors, lack of fund to sustain the system,amd there was little commitment from the government. The Health Sector Strategic Plan (HSSP III) (2009-2015) in 2008 led to the formulation of the new HMIS under the Monitoring and Evalution Strengthening Initiative work programme ,where the new HMIS started to opearate in July 2012.

2.3 Assessment of HMIS in Developing Countries

Health Management Information System is one of the major priority areas needed in order to strengthening the health care delivery system in different countries. The provision of the health care delivery and ways used in handling patient record in most of developing country is not handled properly. Different countries have invested on HMIS in order to improve the health of population developing countries. Strengthening HMIS is considered as improving the health care delivery of a country. HMIS incorporates all the data needed by policy makers, clinicians, and health service users as a whole, thus, every developing country in the world is keen in strengthening HMIS. Few countries in the world today have invested a lot on modern HMIS which is effective and comprehensive systems to produce required data. There is a need for the improvement of the health care services delivery system, in order to overcome the shortcomings of HMIS in the developing countries. Most developing countries have highest burden of ill health and the needs for good data, also have the weakest HMIS (Bodavala, 2000).The following subsection explains different assessments of HMIS which have been conducted in developing countries. It starts with Rwanda National Health System, Thailand, Malawi, and Nigeria. Experiences gained during this processes are also presented.

The reform of Rwanda's HMIS began in November 2005, whereby all data collection; processing, analysis and dissemination were done with knowledgeable health workers (RTI, 2006). All heads of departments were responsible for compiling the collected information (Prybyiski, 2004). Due to the presence of different systems of data collection at different levels, every district has authority on its own system, the decision

level actor may affect the decision at National level and other health outcome (Rwanda, 2004).

A report from Thailand noted that there are a number of constraints common in many developing countries in terms of data collection and transmission, data presentation and analysis and use. These are believed to be mainly due to inadequate training of staff in data presentation, analysis, and use, and lack of feedback mechanisms (Whitten, 1998).

Another study from Malawi stated that the reasons for inadequate use of information are lack of accountability and leadership, resource constraints, lack of holistic vision or approach, lack of management skills and personality, punitive environment, lack of incentives, inadequate dissemination of information, organizational and behavior and absence of change strategies. Most interventions depend on donors, which focus on a specific issue of their interest (Chaulagai, 2005).

Nigeria has made progress on data collection, processing, analyzing and using information for decision making. Data are available whenever needed, but they are facing the challenges of rolling out of the system to the whole country. (PATHS, 2003).

2.4 Evaluation of the new HMIS in Tanzania

The midterm review of the HSSP III (2009-2015) conducted in 2013 indicated that the Health Management Information System (HMIS) was developing well, with new HMIS being successfully rolled out across the entire country and health workers have been trained at all levels. In addition, computerization is complete and includes all of the regions (URT, 2013). However, in spite of those substantial gains, the use of data generated through the system is insufficient to allow managers and policy makers to make informed decisions either at the district or national level. This is due in part to incompleteness of reporting, data inaccuracy, and lack of timeliness combined with insufficient analysis. To date, considerable investment in HMIS in Tanzania has taken place. Urgent action is now required to ensure that the cumulative resource investment is not further jeopardized (Kimaro H, 2004).

2.5 Frameworks of HMIS Evaluation

This section presents a framework for HMIS assessment used in different countries. The framework emphasizes on selection of subsystems and domains for assessment. It provides a comprehensive review of the HMIS from different perspective. In general, using a specific framework for HIS assessment helps the evaluation to provide useful finding and it is also essential for recording the issues to be addressed during the assessment. The next part discusses some of the frameworks used to assess HMIS.

Various frameworks has been used in assessing the HIS, these include the Health Metrics Network (HMN) and the Performance of Routine Information System Management (PRISM) framework .The HMN is the framework which is being used both in developing and developed countries to assess, strengthening the performance of HIS, by the use of the common framework and guideline (WHO, 2008) .The overall goal of HMN is to improve health by increasing the availability, quality, value and use of timely and accurate health information by catalyzing the joint funding and development of country health information systems (WHO, 2006). This framework provides feedback to the existing HIS, the information generated is being used for learning and the use of data for decision making purpose (WHO, 2004).

The PRISM is another framework that helps to measure the performance of health information system. It is a conceptual framework developed by MEASURE Evaluation and John Snow, Inc (WHO, 2004). In addressing the weakness of HMIS from many countries MEASURE Evaluation has developed a conceptual framework, called the Performance of Routine Information System Management (PRISM) framework, with its tools to measure RHIS performance. The rationale for using the PRISM framework is that the framework does not only define and measure information system performance but also explains the determinants of performance. Thus, it creates opportunities and strengths for improvements by exploring the strengths and weaknesses of the information systems and the determinants of their performance. The framework explains the information system performance as improved data quality and continuous use of information for decision-making at all level.

The PRISM framework further explains that improved performance leads to better health system performance which as a result affects the health status of the population (Fig 1.1). The PRISM framework explores how much the HMIS processes (data collection, transmission, processing, analysis, display and feedback) influence HMIS performance. It also identifies technical, behavioural and organizational as the determinants. It also explains that the issue of poor data quality and poor use of information for evidence-based decision making is not only contributed by technical issues but also as a result of organizational and behavioural barriers that delay the effective use of information (Aqil, Lippeveld & Hozumi, 2009).

2.6 Conceptual framework

2.6.1 Levels of HMIS Performance: Data quality and information use

The performance of HMIS is measured by Data quality and information use. The data quality involves data accuracy, data completeness, timelines, and data quality check

2.6.1.1 Data Quality

The concept of data quality has been an issue of many projects and researchers for a long period. Since quality is the conformance to the requirement and has many dimensions, debates on the definition of data quality issues have been approached from different perspectives. There are different techniques which are used in assessing quality of information as discussed by different scholars (Donabedian 1980; Turunen, 2001). Various approaches have emphasized on the conceptual aspects focusing on the design and operation of information systems (Wand and Wang 1996). Other scholars have attempted to define and manage data quality in terms of definition, content and presentation (English, 1999). From the empirical survey, accuracy and correctness has been revealed as the most important quality dimensions for end users (Wang and Strong 1996).

The dimension of quality of data comprises its accuracy, completeness, timeliness, relevance, and integrity in the context of its ‘fitness for use’.

i. Data Accuracy at Health Facility

The study conducted by Peabody JW, Luck J, Jain S, Bertenthal D, Glassman P (2004) to assess the accuracy of administrative data in health information systems in three general internal medicine outpatient clinics, established that there are significant inaccuracies in administrative data as correct primary diagnosis was recorded for 57% of visits. Several contributing factors caused these errors including incorrectly entered data (22%) physician diagnosis error 13% and missing encounter forms (8%)(Peabody et al 2004). These inaccuracies are not only costly to health systems but also affect the quality of health care provision. Although inaccuracies in administrative data are common they can easily be rectified.

Sullivan and Wilson (1997) conducted a study to determine the completeness and accuracy of the process of patient record transfer between practices using paper record and a parallel electronic record system. The study assessed the accuracy of information transferred and analysis of discrepancy. It found that only 46% of the practices transfer the complete record compared to the 85% expected practices (Sullivan and Wilson, 1997).

The study released large discrepancies between the computer and manual format in recording the diagnoses, prescribing data and the results of the investigations (Sullivan and Wilson, 1997).

ii. Data Completeness

In a study that assessed the completeness and accuracy of computer medical records in four high-recording general practices, found that data in computer records were of sufficient completeness and accuracy to allow meaningful data aggregation for some diagnoses, prescriptions and referrals (Pringle, et al 1995).

iii. Timeliness

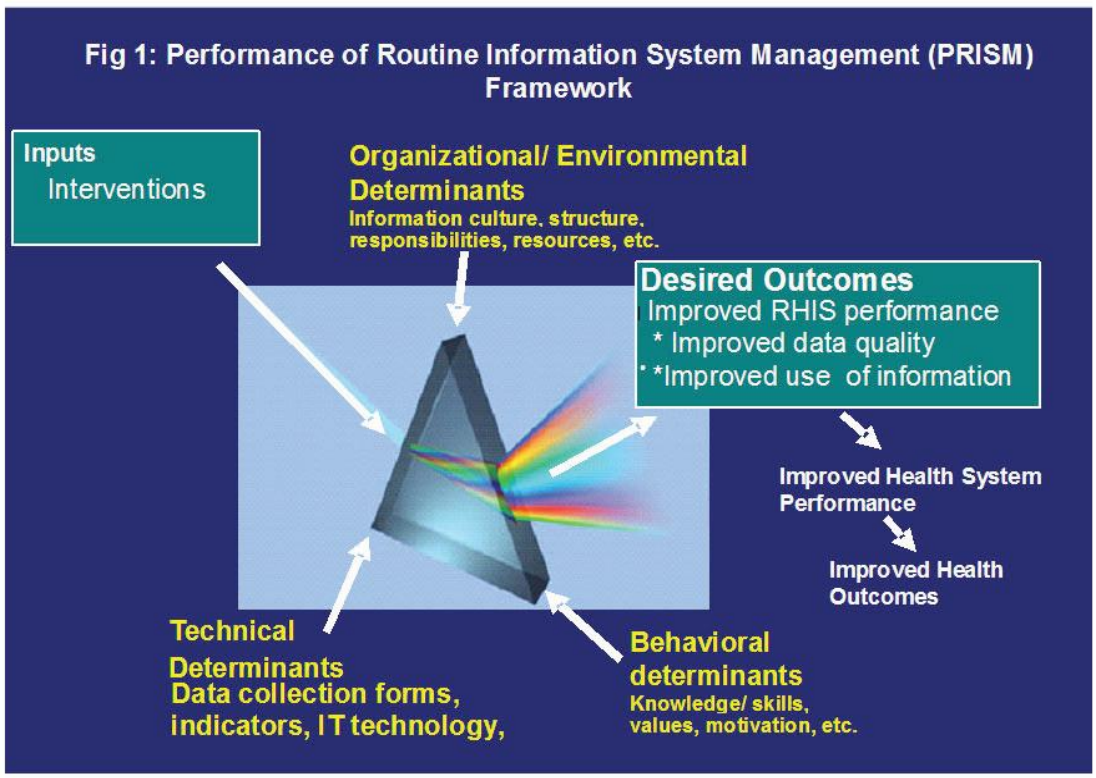
With the emergence of evidence-based medicine maintaining quality of data by health care organizations is becoming a critical factor in the delivery of medical care. This has necessitated the need for consistent data collection and maintenance methods. (Lorence, 2003) conducted a national survey of health information managers to assess among others

the prevalence of a standard data quality practice and the adoption of policies related to timeliness of data capture. The study showed that, on a national level, only a slight majority of respondents indicated adoption of timeliness policies. About 61% of respondents indicated that they have policies and procedures addressing data timeliness, although persistent patterns of non-adoption were found (Lorence, 2003). Timeliness of data collection should therefore be part of an overall data collection strategy that managers can employ to improve the quality of their information.

2.6.1.2 Use of HMIS Information

The use of information involves data display, data analysis, and the use of information at health facility level .These was assessed by observing feedback provided on facility performance and through records of performance review meetings to collect documentary evidences of whether or not HMIS findings were discussed and decisions were eventually made based on those discussions.

Figure 2.1: PRISM Framework



Source: Adapted from WHO (2008)

2.7 HMIS determinants

The section presents the determinant which affects the HMIS performance; it starts by describing the Behavioral, Organizational and technical determinants, and its related components.

2.7.1 Behavioral determinants

The data collector and users' of the HMIS need to have confidence, motivation and competence to perform HMIS tasks in order to improve the RHIS process. The chance of the task being performed is affected by the individual perceptions on the outcome of what is being performed and the complexity of the task being performed (Lippevel, 2009). Lack of enough knowledge on the use of data has been found to be a major drawback on the data quality and information use. Motivating HMIS users remains a challenge. Despite training on data collection and data analysis, people are still having negative attitude on the data, and hence a lot needs to be done to change people's behaviour, in order to increase the performance of the RHIS process (RHINO, 2003).

2.7.2 Organizational determinants

Health workers and data collectors work in organizations' environments which have value, norms, culture and practice. The most important organizational factor which affects the RHIS process is related to structure, resource, procedure, support services and the culture which is used to develop and improve the RHIS process. (Lippeveld T, 2000). However there are other factors which affect the RHIS process which includes lack of funds, human resource, and management support.

Having a system in place which support data collection, analysis and transform it to useful information will help in promoting evidence based decision making. Thus all components within the system are ideal in making the RHIS perform better. The effectiveness of the organizational culture is to improve RHIS performance, promoting a culture of information use, which involves the ability and control to promote values and beliefs among members of an organization by collecting, analyzing and using information to accomplish the organization's goals and mission.

2.7.3 Technical determinants

Technical factors involve the overall design used in the collection of the information. It comprises the complexity of the reporting forms, the procedure set forward in the collection of data, the overall design of the HIS, the computer software used in the collection of information.

CHAPTER THREE

EVALUATION METHODOLOGY

3.1 Introduction

After reviewing different literature in the previous chapter, this chapter addresses the key methodological issues of the study. It presents the evaluation approach, evaluation design, evaluation period, study area, study population, units of analysis, variables and their measurements, sample size and sampling techniques, types and sources of data and data collection methods.

3.2 Evaluation approach

The assessment of HMIS performance employed a participatory approach in the entire project evaluation in order to allow people to identify the kind of problems they have been facing while implementing the HMIS and gives them an opportunity to design ways of addressing them differently. Secondly the approach gave them the sense of ownership of the project and this enhances sustainability.

3.3 Evaluation design

The evaluation employed a mixed method design because single method studies on the evaluation of HMIS may not provide a comprehensive understanding of the problem. Consequently, findings may minimize or distort the experiences of the actors in the health sector. The use of multiple methods combination helped to overcome the weakness and strengths of one method to the other and provide complete data. Quantitative evaluations capitulate in providing numerical data of the magnitude and extend of the problem, while qualitative provide human context, which is behind the number, with a failure to assess the extent of the problems. (Patton, 1990). The results of qualitative evaluation cannot be generalized to a population; certainly not with a similar degree of certainty that results of analyses of quantitative data can (Fowler, 2002; Skinner, 2000; Walton, 2008).

3.4 Study area

The evaluation was carried out in, Kyela, Busokelo and Mbarali District Councils .These districts were purposively chosen based on their HMIS performance in reporting period Jan to June 2014(URT, 2014) which represents high, average and low performing districts respectively.

3.4.1 Mbarali District

Brief historical background

Mbarali District is one of the ten Districts that form the Mbeya region. The district was established on seventh July 2000 by the Local government Act No. 8 of 1982 and amended by Act No. 6 of 1999 and received certificate of registration on fifth June 2003.

Location and Climate

The District lies between latitude 70 and 90 South of the equator and between longitude 3380 and 350 East of Greenwich. The District is at an altitude ranging from 1000 to 1800 meters above sea level. Average temperatures range between 250C and 300C. The mean annual rainfall is about 450 to 650 mm. The District is bordered by Iringa District on the North -East, on the west is bordered by Mbeya District while on the East the District is bordered by Njombe and Mufindi Districts. To the North is a border with Ruaha National Park while to the South it borders Makete District and Mpanga Kipengere Game Reserve.

Population

According to the 2012 National Census (URT, 2013), Mbarali District had a total population of 300,517 with a growth rate of 2.8%. The current population projection is about 300,023 where by 145,867are males and 154,650 are females. Administratively, the District is divided into two divisions, namely Ilongo and Rujewa, with a total of 20 Wards, 99 registered Villages while the number of hamlets is 701 and 69,888 households.

Mbarali DC has 42 dispensaries on which 37 are owned by the government, three (3) owned by Faith Based Organizations (FBOs), one (1) owned by Parastatal and one (1) owned by private. There are six (6) health centers, four (4) being owned by the

government, one (1) being owned by faith based organization (FBOs), and one (1) being owned by private. While there are two hospitals one (1) being owned by the government and one (1) being privately owned.

Ethnic Groups

The major ethnic groups found in Mbarali district are: Sangu, Hehe and Bena. In addition, there are other small ethnic groups including Sukuma, Wanji, Barbeig, Masai, Kinga, Nyakyusa and Gogo.

Land use pattern

Before the expansion of the Ruaha National Park Mbarali District had a total area of 15,560 km^2, which half of it was covered by forest and savannah woodlands (Miombo). The rest of the District was made up of flood plain, which were used for paddy production, and wetlands, which were for grazing. However, after the expansion of Ruaha National Park the remaining area is only about 5,000 km^2.

3.3.2 Kyela District

Kyela is one of 10 districts in Mbeya Region. It is bordered to the North by Rungwe District, to the Northeast by Iringa Region, to the Southeast by Lake Nyasa, to the South by Malawi and to the West by Ileje District.

According to the 2012 Tanzania National Census(URT, 2013), the population of Kyela District was 221,490 .Kyela DC has 33 dispensaries out of which 25 are owned by government, four (4) owned by Faith Based Organizations (FBOs), one (1) owned by a parastatal and three (3) are by privately owned. There are two health centers, one being owned by the government and another one is privately owned. There are two hospitals, one (1) being owned by government and another one is privately owned.

3.4.3 Busokelo District

Busokelo is one of 10 districts in Mbeya Region, it lies between 08^0–09^0 South of Equator, and 37.3" and 77.15" Longitudes East of Greenwich, the District shares borders with Kyela District to the South, Makete District (Njombe Region) to the East, Ileje

District to the West, and Mbeya District to the North. Busokelo District headquarters are situated at Busokelo along Mbeya –Malawi Highway, 115 Km from Mbeya City. The district covers a total area of 955 km^2 with an estimated population of 101,621. Busokelo DC has 19 dispensaries out of which 15 are owned by the government, three (4) are owned by Faith Based Organizations (FBOs). There is one (1) health centre being owned by a faith based organization (FBO). There is one hospital owned by Faith Based Organizations (FBOs).

3.5 Independent and dependent Variables

The assessment of the HMIS performance comprised both independent and dependent variables. Independent variables comprised technical factors which implies the complexity of the reporting forms, HIS design, computer software and IT complexity, organizational factors this implies critical management functions and information needs, governance, planning, availability of resources, training, supervision, finances, information distribution, and promotion of culture of information and the Behavioural factors emphasized on level of knowledge of content of HMIS forms, data quality checking skill, problem solving for HMIS tasks, competence in HMIS tasks, confidence levels for HMIS tasks and motivation. Dependent variables comprised the of data quality and information use.

3.6 Study population, Units of analysis, Sample size, and Sampling procedure

The study population was all health workers implementing information system in their duties, particularly the HMIS focal person, District or Regional Medical Officer (DMO, RMO), Health secretary, and data clerk in the health facilities. For the purpose of this assessment, the units of analysis involved all the health facilities chosen in the study area.

Data collection took place in 38 health facilities in the three districts; the sample size of the evaluation was a total of 49.The sampling procedures started with a health facility mapping exercise to determine all facilities which have been implementing the new HMIS project with a view to identifying the direct participants to the project from July 2012. A purposive sampling technique was employed to select the districts for the

evaluation to be carried out basing on the highest, average and the lowest performing district will be involved to fulfill the requirement for this evaluation.

According to the HMIS- DHIS 2 regional and council reporting level January to June 2014 Kyela District was among highest reporting districts with 100%, Busokelo District Council was an average district with performance of 80% fulfilling the minimal requirement according to the Global Fund requirement, while Mbarali was the least performing district council with 53.8% reporting level (URT, 2014).

Simple random sampling was used to select health facilities. All government and non – government health facilities was assigned numbers, which was used to randomly select the health facilities. Health Centre and dispensaries was selected differently with equal representation between urban and rural.

Purposive sampling was used to select the District Medical Officer (DMO), HMIS focal persons, and head of the district that are expected to use data for decision making and reporting was included in the study. All health professionals who were available and directly involved in health care service delivery from health facilities where new HMIS is being implemented were included in the study. The inclusion criterion comprised the health care provider trained on the new HMIS and been involved in providing services at the health facilities selected, while the exclusion criteria comprised all health care providers who did not attend the new HMIS training and they are not engaged in one way or another providing service directly related to HMIS.

3.7 Types and sources of data and Data collection methods

Both primary and secondary data were collected. Primary data were obtained from questionnaire through interviewing. Secondary data were obtained from publicly available databases as well as from reports .Data was collected using PRISM Tools which combined the questionnaire, observation checklist and key informant guide.

3.8 Validity issues

According to the Guba and Lincoln (1998) validity means the quality that the tools used is accurate, correct, true, meaningful and right. Silverman argues that one must show his or her audience that the procedures used in a particular evaluation were valid before thinking about concluding his or her research dissertation (Silverman, 2000).

To increase the validity of the tools used for data collection, the assessment employed a mixture of strategies. At first, triangulation of methods and respondent was employed, the method helped to increase the depth of exploring as well as accuracy of the data collected. On the other hand, triangulation of respondent was done to ensure that data on a particular issue were obtained from different people. This was done in order to minimize biasness. Second, the evaluator adopted the tool which had been checked for validity in different countries.

3.9 Data management and analysis

Data entry

Using the data entry template developed, the assessor entered the collected questionnaires in order to minimize the errors, completeness and accuracy of data entry. All primary data entered in PRISM DEAT tool appropriate after coding of open- ended questions. The assessor used a 10% double data entry and check for level of concordance. Observance of security and confidentiality of the data was at maximum.

Data cleaning

The collected data was inspected to identify any inaccurate, incomplete, incorrect or irrelevant information on a daily basis. For qualitative data, after the data being transcribed from the voice recordings, the coding of categories was done and then analyzed using codes and put in matrix which was later be summarized by using themes.

Data analysis

Both the Quantitative and Qualitative data sets were analyzed using PRISM DEAT software. The Data Entry and Analysis Tool (DEAT) allow the user to modify the data

elements in the data entry template, it allows you to create and add codes. Those codes are created for identifying respondents at region, district and facility level, coding new items, coding open ended questions and creating performance limit.

3.10 Ethical Issues

This evaluation was undertaken by assessor who ensured that adequate information about the study was available at the national, regional and district authorities. Meetings of stakeholder from each of the proposed districts in the study were done to explain the nature of the study. Individual written informed consent was obtained from the health team. It was drawn up in Kiswahili, explaining the reasons of study, carried out by whom, and the estimated time to be taken to complete the questionnaire. Only those participants who gave their consent were interviewed.

3.11 Limitations of study

The evaluation adopted the PRISM tools which were then modified to suit the Tanzania Environment; some of the questions were dropped. The DEAT Tool was used for data entry and analysis. Correspondingly respondent did not respond well on the self-administered OBAT questionnaire, this make some questions remain without being answered. I had expected to interview at least five (5) health providers including those in charge of the facility, but this was not the case, in most of the health facilities there was only clinical officer and medical attendant, which make difficulties to interview the mentioned staffs who were available in health centre, and hospital. In order to overcome this situation the number of respondents in some of the health facilities was increased. Ms excel was used in analysis in order to fill the gap where the DEAT could not analyze the collected data.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF THE FINDINGS

4.1 Overview

The chapter presents the results and discussion relevant to the assessment of HMIS performance in health facilities in Busokelo, Kyela and Mbarali District Councils in accordance with the evaluation objectives. More specifically, the findings of the study are presented in relation to the research questions. The main purpose of this chapter is to provide detailed information on performance of Health Management Information System (HMIS) in health facilities.

4.2 Demographic Characteristics

This section presents information relating to respondents' socio-demographic parameters, which are gender, marital status, department, occupation, age, education qualification and work experience.

4.2.1 Respondents by gender

The respondents were asked to indicate their respective gender and the findings were categorized as indicated in Table 4.1:

Table 4.1: Respondents by gender

Respondent	Frequency	Percent	Valid Percent	Cumulative Percent
Male	20	40.8	40.8	40.8
Female	29	59.2	59.2	100.00

Source: Field Data (2015)

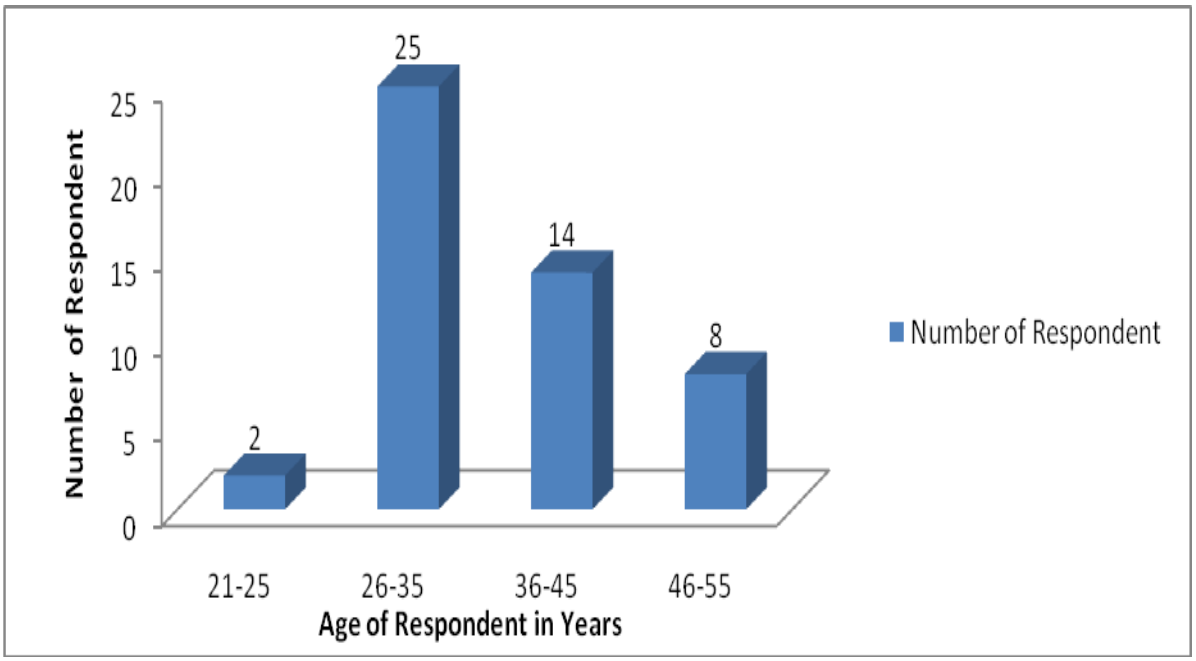
The results from Table 4.1 show that 29 (59.2%) of the respondents were females while 20 (40.8%) were males. This can be explained by the large number of female employees who are nurses in the health facilities visited. Gender of the respondents makes the strongest unique contribution to explaining evaluation objectives.

Females were noted to be more reactive than males. The difference observed might be related to a greater willingness on the part of female to be more participatory than male.

4.2.1 Respondents by age

The respondents were asked to indicate their respective age. The age of the respondents ranged from 21 to 55 with an average of 38. The age distribution of the respondents is presented in four major groups. Figure 4.1 shows that the minimum age was 21 years and the maximum age was 55 years. The mean age observed was 26 years. Results indicate that 4.1% of the respondents were in the age category between 21 to 25 years. The age category of 26 to 35 years accounted for 51% of the respondents, while 28.6% of the respondents were in the age category of 36 to 45 years, the age category of 46 to 55 years contained only 16.3 % and there were no respondents who were above 56 years. The age of the respondents is an important feature during interpretation of results. These results suggest that the health facilities employees were young and few of them were older. This implies that employment costs are low for the time being because employees who are about to retire are few.

Figure 4.1: Respondents by age



Source: Field Data (2015)

4.2.2 Respondents by Education

Respondents were asked to indicate their qualification. Results indicate that the majority of the respondents were certificate and diploma holders (49.2%) and (40%) respectively and only 10.8% had attained a degree it is important to include actual numbers as well. This may be due to the fact that, as health workers and professionals they need to take science subjects which most students find them to be difficult.

Previously most health workers preferred to pursue certificate courses because it took few years to complete. Even the entry qualification was low, but things have changed now. In order for a health worker to undertake a certificate course one needs to have passed "O" level science subjects. These days it is difficult for those who attained certificate in the past to go for further studies because they have to repeat "O" level science subjects and pass. This situation is behind the existence of few respondents with a bachelor's degree.

4.2.3 Work Experience Analysis

The results presented in table 4.2 are the work experiences of respondents in the health facilities. The data have been categorized into three groups

Table 4.2: Respondents by working experience

Working experience of respondents in health care

Years	Frequency	Percent	Valid Percent	Cumulative Percent
More than 10	24	49	49	49
5-10	20	41	41	90
Less than 5	5	10	10	100
Total	49	100	100	

Source: Field data (2015)

Table 4.2 shows that, the majority of the respondents had a work experience of more than 10 years (49%) in health care; (41%) among them had a working experience of 5-10 years and 10% had an experience of less than 5 years. These results indicate that health

facilities had qualified and experienced staff to deliver quality service to patients and the facilities deserved to serve the community.

4.3 Levels of HMIS Performance

The level of the HMIS was measured in term of data quality and information use. Lippeveld, (2009) suggested that there is no standard or level of standard to measure the data quality and information use, they all depend on the situation.

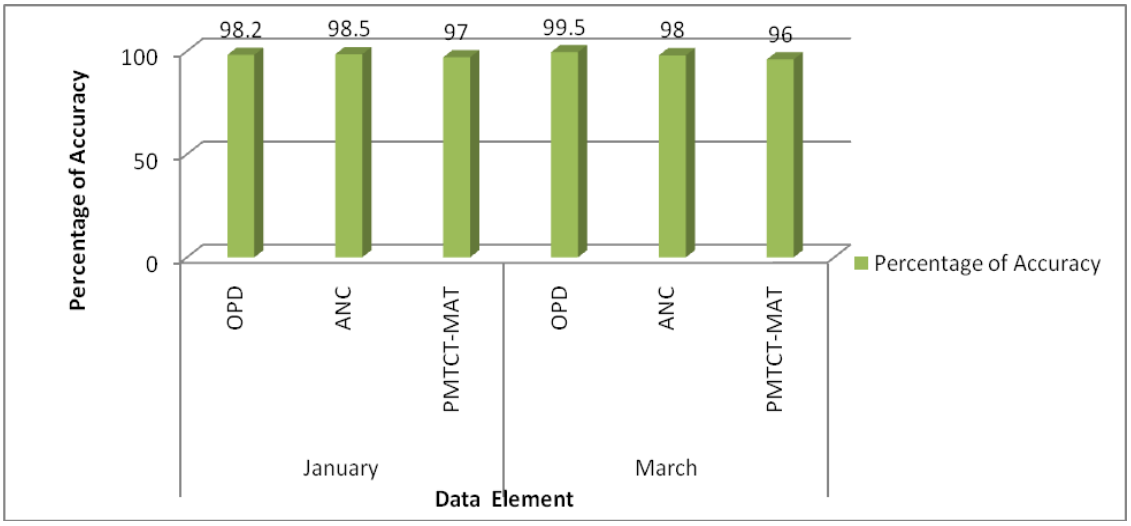
4.3.1 Data Quality

The data quality was measured using data accuracy and completeness at the level of facility, while in the district it was measured using timeliness, data accuracy and completeness.

4.3.2 Data Accuracy at Health Facility

The data accuracy at the facility level was observed using OPD Attendance, ANC and PMTCT-MAT as data element for the month of January and March 2015. The observed data for the months of January was 98.2%, 98.5% and 97% using OPD Attendance, ANC and PMTCT-MAT as data element respectively. While the observed data for the month of March was 99.5%, 98% and 96% for OPD Attendance, ANC and PMTCT-MAT respectively. Data element were carefully recounted and matched with the figure in the analogous monthly reports of the health facilities. Figure 4.2 indicates the percentage level obtained of data accuracy by data element. In general, data accuracy was more than 95% for all selected data elements at health facilities. These results are comparable with those of other studies conducted in China (Lippeveld, 2009).

Fig 4.2: Data Quality at Facility Level



Source: Field data (2015)

4.3.3 Data Completeness

4.3.3.1 Monthly Report Completeness

The data completeness of the health facility report was measured by how many data elements there was with respect to the data element the health facilities were supposed to fill. Over 90% of the data elements filled against the total number of data elements that the facility was supposed to fill.

The completeness at the district level was measured by counting the number of health facilities which were supposed to report at district level did actually report and the reports were available at the districts. The results indicated that in January all reports 100% from health facilities, while in March only 96% of the reports were available to the district level. Both January and March met the 90% acceptable completeness standard,

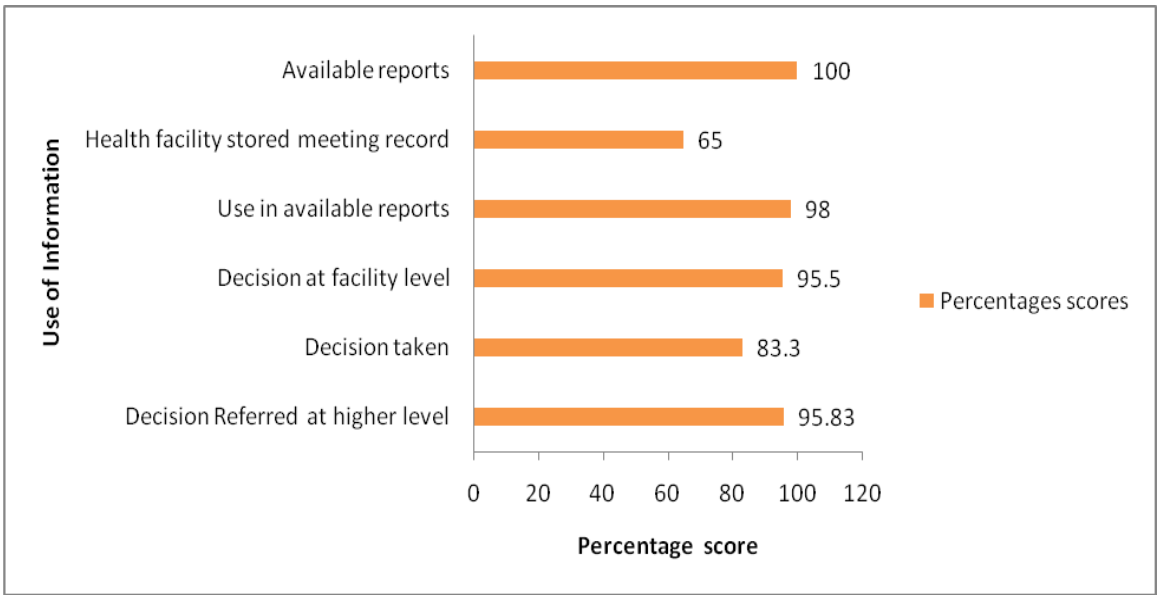
4.3.3.2 Timeliness

Timeliness being one dimension of data quality was measured by health facility report being submitted by the predetermined deadline. All health facilities submitted the reports within the set deadline. At the district level they have records to measure timeliness, within the deadline set by January to March 2015 when the report was reviewed

4.4 Use of Information

The use of information was assessed by reviewing the (feedback, monthly, quarterly, and others available reports) which were available at the health facilities. Figure 4.3 indicates that 65% of the health facilities stored meeting records and 100% of the reports requested were available at the facility and the district level, while 95.5% had a discussion at facility level on the HMIS, of these 83.3% made a decision after discussion, while 95.83% of health facilities referred their issue to the higher level for further assistance.

Figure 4.3: Use of information at the facility level and in available report

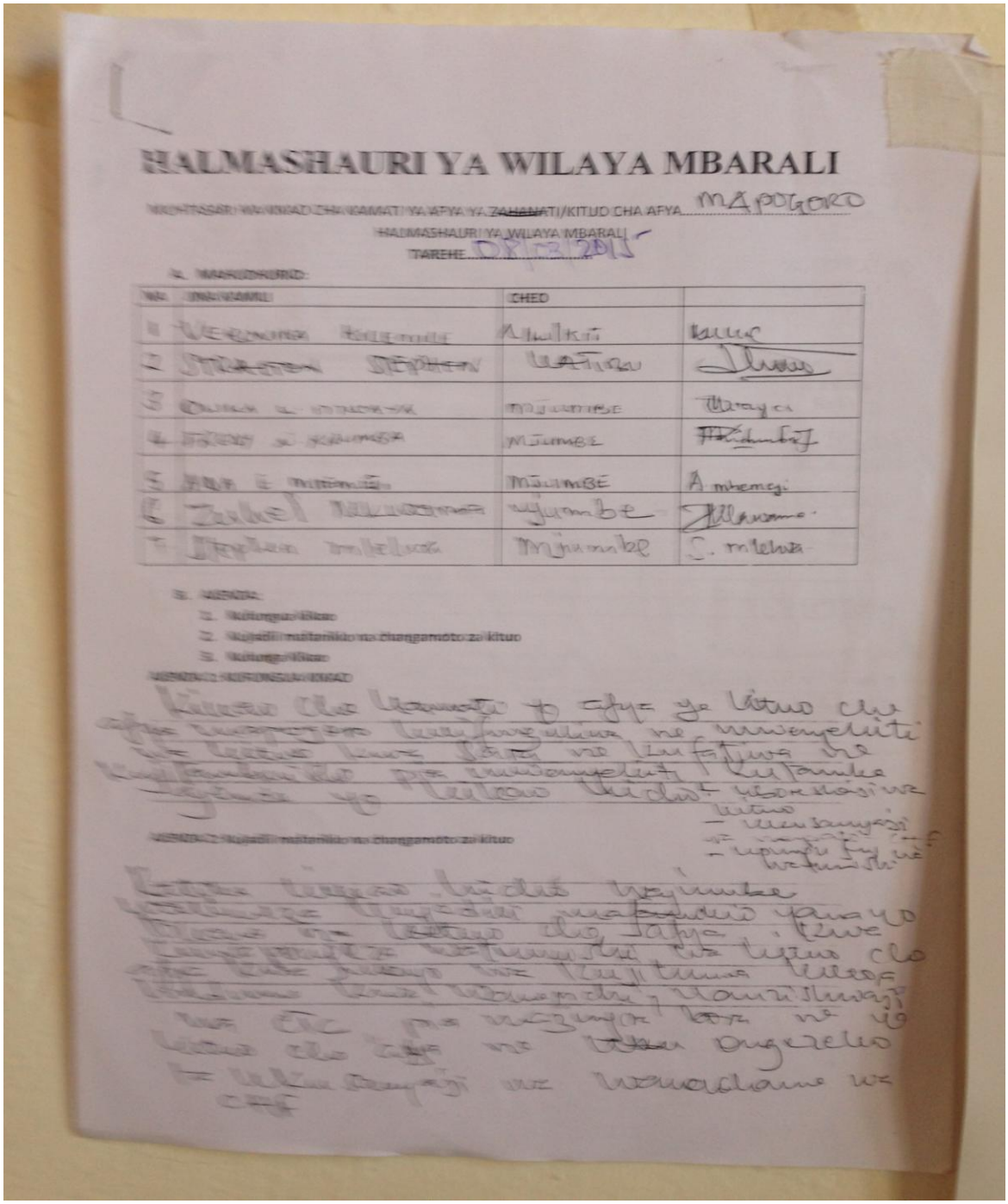


Source: Field data (2015)

The use of information was found to be higher at facility level, and decision was referred at higher level and 65% of the health facilities stored the meeting records._However, 95.5% had a discussion at facility level on the HMIS, of these 83.3% made a decision after discussion, while 95.83% of health facilities referred their issue to the higher level for further assistances. Referral of decisions to the higher level indicates either the decisions are of a kind that needs approval from a higher level or the facilities did not have much decision power thus, referring more decisions to a higher level. The same challenges was posed and discussed on the Framework and standards for country health information systems (WHO, 2008).

The report on second international RHINO workshop on enhancing the quality and use of routine health information at district level also addressed the same challenges (MEASURE Evaluation; 2003).

Figure 4.4. Meeting agenda for Mapogoro health facility



HALMASHAURI YA WILAYA MBARALI

MAPOGORO

TAREHE

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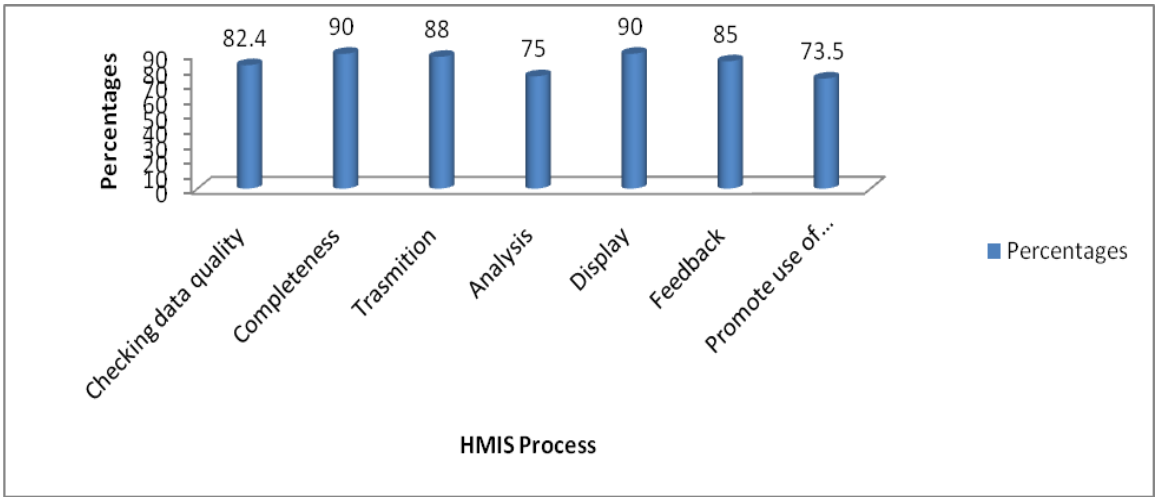
Source: Field data (2015)

4.5 HMIS Process

HMIS processes are vital for an information system to run smoothly in order to produce quality data and facilitate the use of information for decision making. The HMIS processes consist of data collection, data quality check, data transmission, data processing, data analysis, data display, feedback and promotion of use of information.

Figure 4.5 indicates that 82.4% of the health facilities reported having a reminder mechanism for checking data quality. As a result there is no need for the reminder on the data quality. Ninety percent of the health facilities fill the form completely; 88% of the health facilities fulfilled the requirement of data transmission process and meeting the deadline for submitting monthly reports; 75% showed that they analyze data; the data analysis process is measured by items such as calculating an indicator, comparisons with district/national targets, comparison among types of services and over time. Figure 4.5 also shows that 90% of the health facilities display data; 85% of health facilities indicated that they receive feedback from their supervisors and 73.5% promote use of information.

Fig 4.5: HMIS process at facility level



Source: Field data (2015)

HMIS process is very important for the information system to run smoothly in order to produce quality data and the use of information at different level. Naeme and Boelen (1993) argued that data display is a very important process for showing progress and trend over time through which feedback is given to those who collect and use

information in decision making. In this assessment of HMIS the majority of the health facility received feedback on their reports

Figure 4.6: Data display at Igawa Dispensary, Mbarali District Council

Source: Field data (2015)

4.6 Determinants

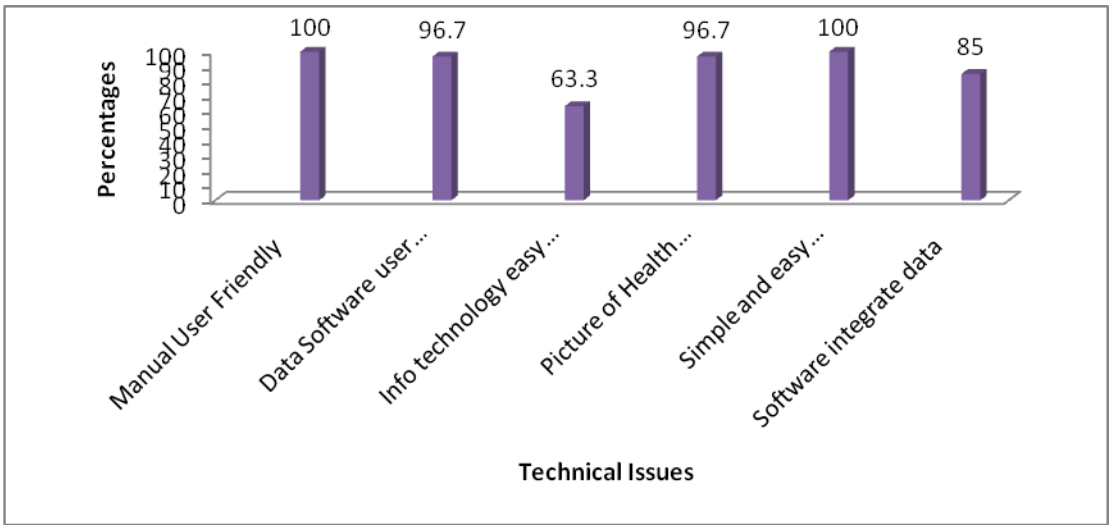
4.6.1 Technical Determinants

There are many technical determinants which affect the performance of the HMIS, according to the PRISM tools for assessment of HMIS technical determinants highlighted at district level include: a comprehensive picture of health system performance, software integrating information from other information system, data collection forms, the user-friendliness of the procedure manual, and use of information technology to create access to information to senior managers.

Figure 4.7 presents the respondents' feelings or assessment of the data software, the procedure manual, reporting forms, and software are user-friendly and provide a comprehensive picture of the health system performance. All respondents said that the reporting forms are easy to fill in and needs to be updated to fill the observed gap while 63.3% believed that the technology is easy to manage and 85% agreed that the software

integrates data from different systems. Lastly, 96.7% of the respondents indicated that the system provides picture of the health system performance. This is similar to findings by studies conducted in Ethiopia on the assessment of the HMIS Performance (Hiwot. B, Tariq, A, Hailemariam .K 2013)

Figure 4.7: Technical Determinants which affect HMIS Performance



Source: Field report (2015)

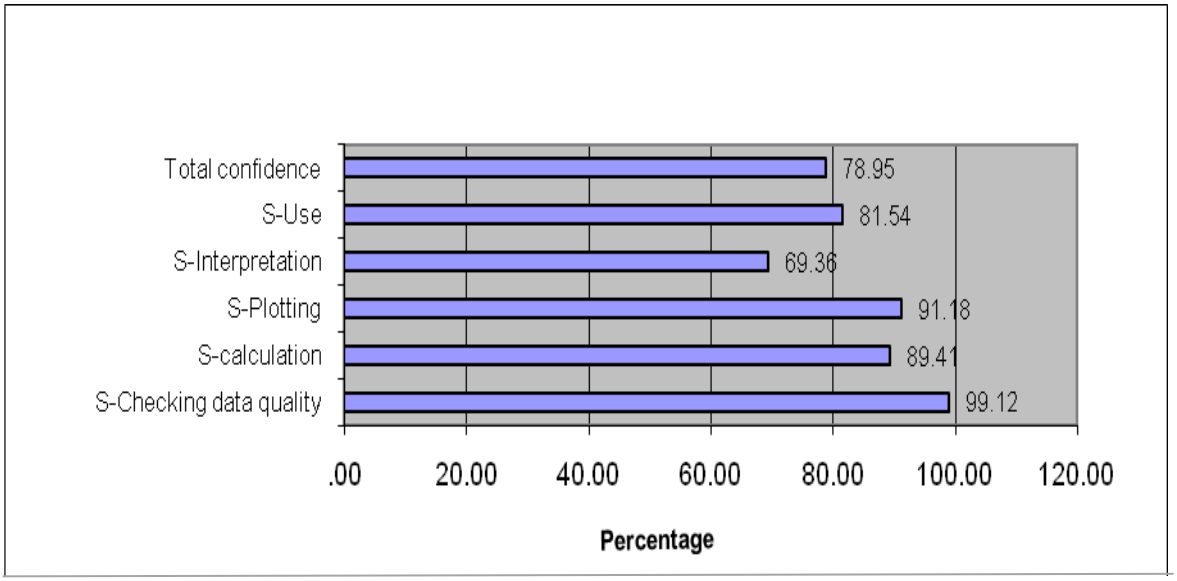
4.6.2. Behavioral Determinants

The PRISM framework put forward the behavioral factors being one of the important determinants of HMIS performance. The determinants include high self-efficacy or confidence levels to complete a task. The evaluation used the positive outcome to determine the level of motivation at the health facilities.

4.6.2.1 Self efficacy or Confidence Level

Self efficacy or Confidence Level was assessed using a scale of 0 to 100 from no confidence to full confidence in performing a particular different HMIS task. The results were indicated on the average confidence level for checking data quality was 99.12%, data plotting scored 91.18 (Figure 4.8), while data interpretation scored 69.36%., while data calculation scored 89.41% on the HMIS task being assigned to the respondent and 81.54% correspond of confidence in data use.

Figure 4.8: Mean Comparison among perceived Confidence Level for HMIS Task



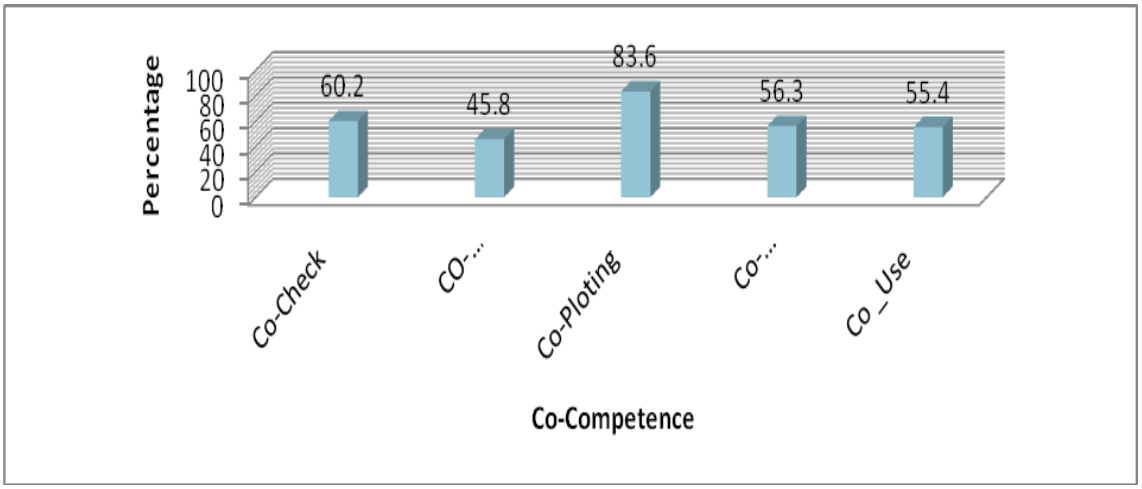
Source: Field report (2015)

Respondent indicated more confidence in checking data quality, and less confident in interpreting data and using information for decision making. This indicates that the majority of health staffs were capable for undertaking HMIS task effectively.

4.6.2.2 HMIS Task Competence

The task competence was measured by asking the respondent to solve a problem given using a pencil-paper test. Figure 4.9 indicates that 45.8% of the respondents were able to calculate at least two percentages rates at facility level; 83.6% of respondents were able to plot the given data; 56.3% of the respondents had lower scores in interpretation; while 55.4% scored on the use of information; 60.2% had knowledge of methods of checking data quality and 55.6% indicated that they were not proficiently enough in those tasks. It also shows that 60% of the respondents had low knowledge of the rationale for including diseases, immunization and population data in the information systems, while 59.5% indicated that they were collecting data without knowing why they are collecting the data and its uses.

Figure 4.9: Mean Comparison among observed HMIS Tasks Competence



Source: Field report (2015)

Respondents indicated low average confidence levels for interpretation and use of information. There were gaps found between perceived confidence and observed skills for interpretation and use of data. The reasons for this dispute could be how interpretation and use of information are defined in the Tanzanian context and how well the questions were understood by respondents. This can be explained by the fact that there is limited training on data interpretation and use of information at the facility level, which does not allow health facility officers to self-assess their perceived confidence level, and their actual data interpretation and use skills properly, thereby creating the gap. This is similar to findings by studies conducted in South Africa on developing district based health care information systems (Bra, 2000). A study conducted in Mozambique on understanding the introduction of computer-based health information systems in developing gave the same results (Mosse, 2004).

The observed low skill level in calculation, data interpretation and use of information depend with findings obtained that very few respondents could describe at least one reason for collecting data on diseases, immunization and target population. Similarly the problem-solving skills were also low for checking data quality. This indicates that more importance was on how to collect data with high quality without a focus on why we collect these data.

Generally, behavioural determinants have been hypothesized to be an important determinant of HMIS performances (LaFond and Fields, 2003). The confidence levels to perform and complete different HMIS task ensure that the task will be done, and done correctly. Odhiambo-Otieno and Odero (2005) argued that there is empirical evidence that people perform more to those behaviors which are meaningful and have value for them, than that behavior which does not have any value to them. Respondents indicated more confidence in checking data quality, and less confidence in interpreting data and using information for decision making. This indicates that the majority of health staffs are capable of undertaking HMIS task effectively.

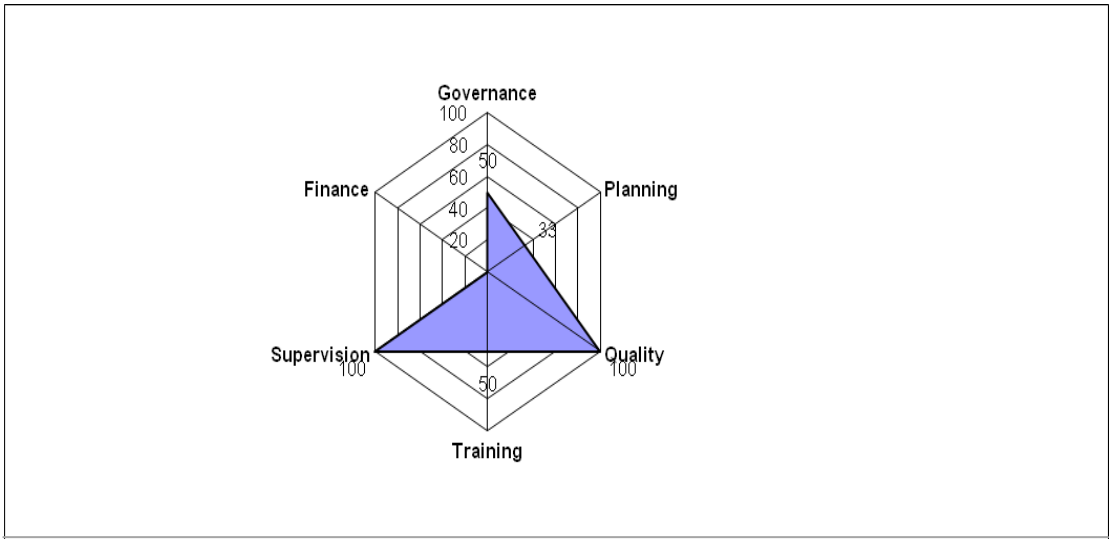
4.6.3 Organizational Determinants

Every organization has a culture and managerial style that determines the use of HMIS. In most cases managerial style and culture are determined by the availability and non-availability of adequate resources. This section describes the management styles, organizational cultures and resource levels that determine the use of HIS.

4.6.3.1 HMIS Management

Findings from the management assessment tool at facility level show that all management functions takes a mean value of less than 45%. This indicates that less than half assessment criteria were met, which implies that the management functions are not at optimum._The mean level of quality standards and supervision function was 100%. Similarly, training had a mean value of less than 50% and finance had no mean values, these values indicate that finance is not managed at facility level.

Figure 4.10: Mean Level of HMIS Functions



Source: Field report (2015)

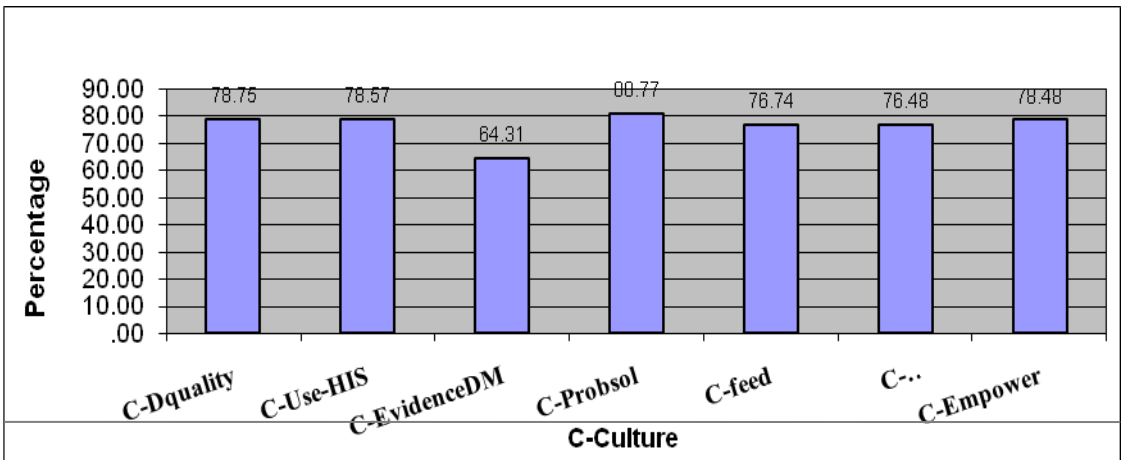
Figure 4.10 shows that training function observed to be very weak in the health facilities. The majority of the respondents stated that they had no training in HMIS activities during the past six months, indicating a need for more HMIS training activities for staff. Most respondents had secondary education with professional certificate or diploma, indicating a relatively moderate to low qualified human resource. Respondents indicated that most of the financial management criteria were not met at the health facilities, such as presence of a budget, expense register, financial report or a long term financial plan for HMIS sustainability at the facility level. This finding indicates that finances are managed at a higher level and facilities are given a limited role in financial management of the HMIS. Thus, the limited financial management at the facility is consistent with the existing financial management system as per Tanzania regulation.

4.6.3.2 Perceived Promotion of a Culture of Information

Promotion of a culture of information was assessed by seven dimensions which explore whether health department emphasize data quality, use HMIS information, foster evidence-based decision-making, promote problem-solving, feedback from community and staff, strengthen sense of responsibility and empower staff to carry out their tasks.

Figure 4.11 indicates that 78.75% emphasize data quality,78.57% use HMIS information, 64.31% foster evidence-based decision-making, 80.77% promote problem-solving,while 76.74% provide feedback from community and staff, 76.48% and 78.48% strengthen sense of responsibility and empower staff to carry out their tasks respectively.

Figure 4.11: Comparison among different dimensions of culture of information



Source: Field report (2015)

The HMIS used the PRISM framework to assess a culture of information by examining how strongly people believe the Ministry of Health and Social welfare (MoHSW) promotes values such as 1) Use of HIS information 2) Emphasis on data quality 3) Evidence based decision making, 4) Problem solving, 5) Feedback from staff and community, 6) Sense of responsibility, and 7) Empowerment and Accountability (Land and Kennedy 2002). These perceptions are compared to actual culture of information use of information and the gap observed being observed.

The findings suggest that the MoHSW used most of the content of culture of information such as emphasis on data quality, promotion of use of HIS information, problem solving, feedback, sense of responsibility and empowerment and evidence based decision making to the health facilities. But there was lack of feedback to the health facilities. It is believed that having a strong culture of information is associated with high HMIS competence levels (LaFond and Fields, 2003). There is observed gap between perceived promotions of data quality, use of information, problem solving, providing feedback and observed HMIS task competence .

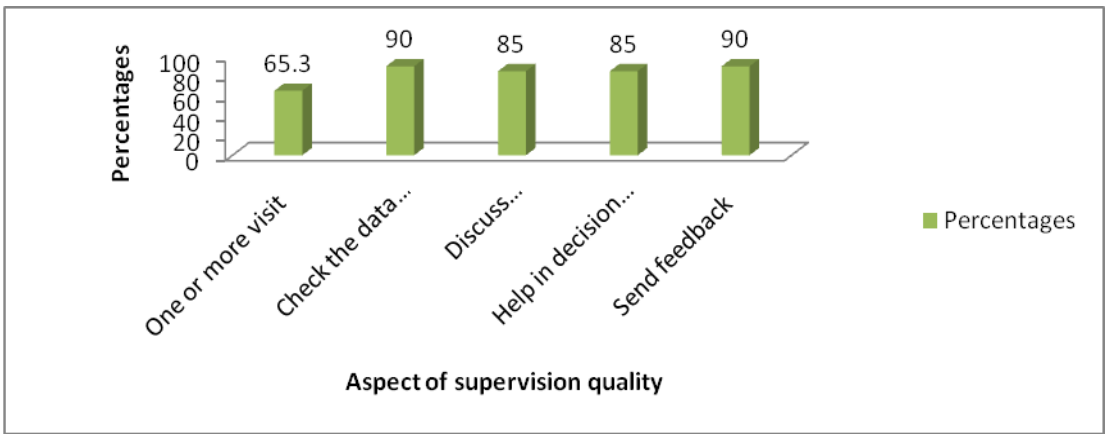
The reason behind this observed difference mighty be due to respondents' exaggerated perceptions of the promotion of an information culture by the MoHSW and respondents' lack of awareness of the existing situation.

Competence was measured objectively through a pencil-paper test thus reducing the possibility of over estimation. However, it is expected that the MoHSW will create some minimum level of HMIS task competence in alignment with the promotion of a culture of information, leading to less discordance between perceptions of a culture of information and the objective assessment of existing HMIS task competences. This assessment of HMIS performance shows that perception and reality are not aligned together. Strong effort is needed to improve this gap to improve HMIS performance further.

4.6.3.3 Supervision Quality

Supervision is very significant for providing support to staff and it is also a means for on job training. The findings show that 65.3% of the health facilities reported receiving one or more supervisory visit in the last three months. Figure 4.12 shows that 90% indicated that the supervisor checked the data quality, 90% gave feedback and 85% helped them making decision, and 85% discussed the facility performance using HMIS information obtained. These findings indicate different aspects of HMIS supervisory quality function well, but with a need to increase number of supervision.

Figure 4.12: Perception of different aspect of supervision quality



Source: Field report (2015)

4.6.3.4 Availability of Resources

The availability of resources to perform HMIS tasks is very important. Table 4.3. Shows that 35% of the health facilities assessed had computers, internet and calculators while only 20% had a regular telephone line (none in working condition) and none had internet Access to the electricity contributed to 96.88%, while access to water account to contributed by 76.67% .While only 6.67% health facilities had air condition, and none of the facilities reported to have back-up generators. However, all the facilities reported having electricity interruptions only occasionally. All the facilities showed that the selected registers, forms and monthly reports were available in the last 12 months, indicating that supplies for HMIS materials are quite good. This is similar to findings by studies conducted by Aqil,A.Orabato,N.Azim,T Hiroshi, A.Hozumi,D Lippeveld,T (2005) on determinants of performance of routine Health Information System from Uganda and Pakistan

Table 4.3: Utilities

Utilities	**Percent**		
a. Electricity	96.88	31	32
b. Electricity Interruptions			
Occasionally	90.00	28	80
once a month	1.00	2	5.7
Twice a month	2.00	0	0
weekly	3.00	0	0
daily	4.00	0	0
c. Air-conditioner	6.67	2	30
d. water	76.67	23	30
e. Have Internet, computer and calculator	35%		

Source: Field report (2015)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusion

This chapter presents summary, conclusions and recommendations. The purpose of this study was to assess the Health Management Information System (HMIS) Performance in health facilities in Mbarali, Kyela and Busokelo District Councils The objectives of the evaluation were to:

i. Assess the performance of HMIS at selected health facilities measured in terms of data quality and use of information;
ii. Assess the effects of behavioural, technical and organizational determinants on the performance of the HMIS.

The study adopted a mixed method design which enabled the study to triangulate the data and information. In this study, four methods of data collection were used, namely questionnaires, semi-structured interviews, focus group discussions and documentary review. The sample size was 49 respondents. PRISM DEAT was used in data analysis..

The level of the HMIS performance was measured in terms of data quality and information use. The evaluation revealed that, data quality was high in all health facilities visited and there was strong interplay of all determinants in determining health data use as established in the assessment of HMIS. In general, the use of information was high at all facilities and district visited. The high level use of information was not consistent to other studies conducted in different countries where the use was very low (Aqil et al, 2005).

In the light of the evaluation findings, the following conclusions were drawn: Criteria used to assess the HMIS performance were data quality and the use of information with regard to the first objective of the evaluation. The data quality was measured using data

accuracy and completeness at the level of facility, while in the district it was measured using timeliness, data accuracy and completeness on the selected data element.

The data accuracy at the facility level was observed using OPD Attendance, ANC and PMTCT-MAT as data element for the month of January and March 2015. Results indicated that data element were carefully recounted and matched with the figure in the analogous monthly reports of the health facilities.

The completeness at the district level was measured by counting the number of health facilities which were supposed to report at district did actually report and the reports were available at the districts. The results indicated that in January all reports of health facilities were available at the District level and met the 90% acceptable completeness standard.

Timeline being one dimension of data quality was measured by health facility report being submitted by predetermines deadline. All health facilities submitted the reports within the set deadline, a the district level they have records to measure timeliness, within the deadline set by January to March 2015 while the report was reviewed.

The use of information was assessed by reviewing the feedback, monthly, quarterly, and others available reports which were available at the health facilities. The use of information was found to be higher at facility level, and decision was referred at higher level. Referral of decisions to the higher level indicates either the decisions are of a kind that needs approval from a higher level or the facilities did not have much decision power thus, referring more decisions to a higher level.

Finally the assessment of the behavioural, technical and organizational determinants on the performance of the HMIS was done. The technical determinants highlighted at district level include: a comprehensive picture of health system performance, software integrating information from other information system, data collection forms, the user-friendliness of the procedure manual, and use of information technology to create access to information to senior managers.

In this assessment there was strong interplay of all determinants in determining health data use as established in the assessment of HMIS. In general, the use of information was high at all facilities and districts visited. The high level use of information was not consistent with other studies conducted in different countries where the use was very low. The use of information is affected by the information feedback to facilities, feedback occur on a routine basis about the HMIS performance and comparing the HMIS performance among the facilities in a district and at a region level. The displays of information provide different purposes at facility, district and national level, the purposes range from creating a visual image of the work, indicating progress made in comparisons against targets, strengthening transparency, and accountability at different level.

General supervision is being done at different times, but not specifically geared towards HMIS tasks. t supervisors use general checklist, with some of the HMIS tasks to be checked, particularly on checking data quality and the use of information. However the technical aspects of HMIS such as simplicity of data collection tools and user friendliness of software are well-established. There was availability of a HMIS procedure manual as seen during inspection of the health facilities. At the district level there was data warehouse to combine these data for producing a comprehensive picture of the health system performance at district or higher levels.

In general, the HMIS had good performance and was well-managed with adequate human and in-kind resources, though, there is always room for improving the system for best possible performance to improve health system performance Tanzania.

5.2 Recommendations

The recommendations below need to be implemented immediately and are low-cost with high impact, and can be implemented locally. They need to be included in the quarterly operation plans of the facilities and district health office.

- Improve HMIS skills specifically on data interpretation, use of information and problem solving, and the use of the performance improvement tools such as cause and effect analysis, flow chart, priority matrix, control chart, this may be achieved

by developing a simplified HMIS training curriculum, conduct training of staff per facility and all health area management team members

- Promotion of a culture of information use, the proposed activities may include selecting existing channels of communication for sharing success stories on the use of information. Examples include providing a feedback report, sending directives, producing newsletters, etc. Create mechanisms to publish at least one story every month or every second month in official publications or other means.

- Motivating health care providers and providing training on moral and ethical issues is recommended to improve information use for decision making.

Evaluation of the HMIS.A well timed evaluation need to be implemented all over the country in order to have a clear progress on how new HMIS is being implemented and improve efficacy of the system.

REFERENCES

Action, H. R. (2000). Review of Health of the Health Management Information System. Manchester: Univeristy of Manchester Press.

Ajzen, I. (2005). Laws of human behavior: Symmetry, compatibility, and attitude-behavior correspondence. London: Sage.

Aqil A, Lippeveld T, Hozumi D.(2009). PRISM framework - a paradigm shift for designing, strengthening and evaluating routine health information systems. Health Policy Plan, 24,217–228.

Aqil, A. Orabaton, N. Azim, T. Hiroshi, A. Hozumi, D. Lippeveld, T. (2005). Determinants of performance of routine health information system (RHIS): Evidence from Uganda and Pakistan. Boston: APHA Conference Press.

Berwick. (1996). A primer on leading the improvement of systems. British Medical Journal , 312, 619–22.

Bra J. (2000).Developing district based health care information systems: the South African experience. Proceedings of IRIS 23; Laboratorium for Interaction Technology, University of Trollhattan Uddevalla.

Campbell B. (1997). Health information management system in lower income countries: An analysis of system design implementation and utilizationof Ghana and Nepal. Amsterdam : Amsterdam Royal Tropical Institutes.

Chaulagai C. (2005). Design and implementation of health management information system in Malawi. London: Innovations and Results.

D., P. (2004). A study on the Development and use of Clinical HMIS for ant- retro viral Therapy (ART) Patient Management in Ghana, Kenya, and Ruanda. International conference on AIDS, Bangkok, Thailand.

Donabedian, A. (1988)., The Quality of care -How can it be assessed? JAMA 260, 1745-1748.

Englisho, L. (1999). Improving data warehouse and business information quality in Wiley. New York: Sage.

Gething PW, Noor AM, Gikandi PW, Ogara EAA, Hay SI, et al. (2006). Improving Imperfect Data from Health Management Information Systems in Africa Using Space–Time Geostatistics. PLoS Time Geostatistics Med Journal, 3(6), 271-300.

Guba, E.G. and Y.S.L. (1998). Competing paradigms in qualitative research. In Naomi, K.D. and Lincolin, Y.S. The Landscape of qualitative research: Theories and issues. Thousand Oaks, California: Sage.

Kamadjeu RM, T. E. (2005). Designing and implementing an electronic health record system in primary care practice in sub-Saharan Africa: A case study from Cameroon. Cameroon: Routledge.

Kimaro H, N. J. (2004). The challenge of sustainability of health information System in developing Countries: Comperative case studies of Mozambique and Tanzania,in proceding of the 12th European conference on information system. Turku, Finland: Sage.

Kimaro, H.(2006). Strategies for developing human resource capacity to support sustainability of ICT based health information systems: A case study from Tanzania. Journal for Information Systems in Developing Countries, 26(2), 1–23.

LaFond, A. (2003). Fields R. The prism: Introducing an analytical framework for understanding performance of routine health information systems in developing countries. Paper presented at the Second International RHINO Workshop on Enhancing the Quality and Use of Routine Health Information at District Level, Cape Town. Retrieved from: http://www.rhinonet.org/Docs/Resources/pdf.

Land, F. B. C. (1997). The Management of Change: Guideline for the Successful Implementation .In Land, F. F., Kennedy-McGreggor, M., Effective use of internal information; London: London School of Economics and Political

Science, Department of Information Systems. Working Paper Series, 20, (02), 119-120.

Lippeveld T, S. R. (2000). Design and implementation of health information systems. Geneva: Sage.

Ministry of Health and Social Welfare[MoHSW]. (1993). Health management system implementation plan for 1993-1996. Dar es Salaam: Author.

Mosse, E. L. (2004).Understanding the introduction of computer-based health information systems in developing countries: Counter networks, communication practices, and social identity: A case study from Mozambique. Unpublished Doctoral Thesis, Faculty of Mathematics and Natural Sciences, University of Oslo, Oslo.

Mutemwa, R. I. (2006). HMIS and decision-making in Zambia: Re-thinking information solutions for district health management in decentralized health systems. Health Policy Plan, 21(1), 40-52.

Naeme R, Boelen C. (1993). Information management for improving relevance and efficiency in the health sector: A framework for the development of health information systems. Geneva: World Health Organization. Retrieved from http://whqlibdoc.who.int/HQ/1995/WHO_HRH_95.4.pdf.

Naeme, R., Boelen, C.(1993). Information management for improving relevance and efficiency in the health sector: a framework for the development of health information systems. Geneva: World Health Organization. Retrieved from http://whqlibdoc.who.int/HQ/1995/WHO_HRH_95.4.pdf.

Nsubuga P, E. N. (2002). Structure and performance of infectious disease surveillance and response. Bulletin of the World Health Organization 80, 196–203.

PATHS, H. A. (2003). Nigerian partnership for transforming health (PATHS) (nd), developing an information-based culture. Nigeria: Routledge.

Pringle, M., Ward, P., Chilvers, C. (1995). Assessment of the completeness and accuracy of computer medical records in four practices committed to recording data on computer. Journal General Practices, 45(399):537-541.

Rabbani, F. (2005).Health management information system: A tool to gauge patient satisfaction and quality of care. Easter Mediterranean Health Journal, 4, 45-78.

RHINO. (2001). The RHINO workshop on issues and innovation in routine health information in developing countries. London: Sage.

RHINO. (2003). Enhancing quality and use of routine health information at district level. Second international workshop. South Africa: Sage.

Rwanda, G. O. (2004). Five-Year decentralization implementation program, 2004-2008. Kigali: Author.

Shein, E. (1991). What is culture. London: Sage.

Silverman, D. (2000). Doing qualitative research: A practical handbook. London: Sage.

Smith, J. (2000). Health management information system: A handbook for decision makers. Dar es Salaam: Open University press.

Sullivan, F., & Wilson, P. (1997). The completeness and accuracy of patient record transfer between practices. Journal of Health Bull, 55, 16-19.

Turunen, P. (2001). A model for evaluation of health care information systems. In the Proceeding of the 8th European Conference on Information Technology Evaluation, Remenyi D. Brown A. Eds., 17-18 Sept, Oxford, UK, p. 183-187

Univeristy, T. (2009). Tullen university supported HMIS Implementation program. Boston: Sage.

URT, (2013). The midterm review (MTR) of Tanzania's third health sector strategic plan (HSSP III) for the period July 2009–June 2015. Dar es Salaam: MoHSW.

Wand, Y., & Wang, R. Y. (1996). Anchoring Data quality dimensions in ontological foundation. Communications of the ACM, 39(11), 86-95.

Whitten Jeffrey L, B. L. (1998). System analysis and design methods(4th edition). Boston: McGraw-Hil.

WHO, FMO, CSA, & HMN. (2007). Assessment of the Ethiopian national health information system. Addis Ababa: Routledge.

WHO. (2003). Library cataloguing in publication data, improving data quality: A guide for developing countries. Dar es Salaam:Author.

WHO. (2004). Developing health management information system: Practical guide for developing countries. Geneva: Sage.

WHO. (2004). Information management systems: A practical guide for developing countries. Geneva: Sage.

WHO. (2007). Assessment of Ethiopia national health information system. Geneva: Sage.

WHO. (2008). Framework and standards for country information system. Geneva: Routledge.

World Health Organization[WHO]. (1993). Guidelines for the development of health management information systems. Dar es Salaam: Author.

APPENDICES

Appendix I: Tools for data collection

Introduction

What is the objective of this tool? These tools will be used to assess the nature and problems related to the new HMIS implementation program in Health facilities in Kyela, Busokelo and Mbalari District Council. It also tries to assess the implementation process in terms of weakness and strength in data capturing, writing, design, maintaining data (information) quality, and encouraging information utilization for action; assesses the contribution of technical support to strengthen HMIS units at facilities.

The tool has been adopted from MEASURE EVALUATION and being modified to suit the Assessment of Health Facilities in Tanzania Context.

Instructions to Interviewer: This tool is divided into five distinct parts:

- **Section A:** Use of Information - District Assessment Form
- **Section B:** Quality of Data Assessment -Health Facility Form
- **Section C:** Use of Information - Facility Assessment Form
- **Section D:** HMIS Management Assessment Tool -Observation at Health Facility Levels
- **Section E**: Organizational and Behavioral Assessment Tool

Section A: HMIS Performance Diagnostic Tool Use of Information :District Assessment Form					
Name of the District:			Date of Assessment:		
Name of the Assessor:			Name and Title of Person Respondent		
HMIS Report Production					
DU1	Does this district office compile HMIS Data submitted by facilities?		1.Yes	0.No	
DU2	Does the district issue any report containing HMIS information?		1.Yes	0.No	**If no , go to DU4**
DU3	If yes, please list reports that contain data/information generated through the HMIS. Please indicate the frequency of these reports and the number of times the reports actually were issued during the last 12 months. Please confirm the issuance of the report by counting them and putting the number in column 3.				
	Title of the report		2.No.of times this report is supposed to be issued per year	3. No. of times that report are actually issued for the last 12 months	
DU4	Did the district office send a feedback report using HMIS information to facilities during the last three months?		1. Yes	0. No	
Display of Information					
DU5	Does the district office display the following data? Please indicate the types of data displayed and whether the data are updated for the last reporting period				If no go to DU6
	1.Indicator	2.Type of display (Please tick)	3. Updated		
	Related to mother health	Table	1. Yes 0. No		
		Graph/Chart			
		Map			
	Related to child health	Table	1. Yes 0. No		
		Graph/Chart			
		Map			
	Facility Utilization	Table	1. Yes 0. No		
		Graph/Chart			
		Map			
	Disease surveillance	Table	1. Yes 0. No		
		Graph/Chart			

		Map			
DU6	Does the office have a map of the catchment area?		1.Yes	0.No	
DU 7	Does the office display a summary of demographic information such as population by target group(s)?		1.Yes	0.No	
DU 8	Is feedback quarterly, yearly or any other report on HMIS data available, which provides guidelines/recommendations for actions?				
DU 9	If yes to DU8, what kinds of decisions are made in reports of HMIS data/information for actions? Please check types of decision based on types of analysis present in reports.				
DU 9a	Appreciation and acknowledgement based on number/percentage of facilities showing performance within control limits over time (month to month comparisons)		1.Yes	0.No	
DU 9b	Mobilization/shifting of resources based on comparison by facilities.		1.Yes	0.No	
DU 9c	Advocacy for more resources by comparing performance by areas (sub-districts, cities, villages), human resources and logistics		1.Yes	0.No	
DU 9d	Development and revision of policies by comparing types of services		1.Yes	0.No	
Discussion and decisions about use of information					
DU 10	Does the district office have routine meetings for reviewing managerial or administrative matters?		1. Yes	0. No	
DU 11	How frequently is the meeting supposed to take place? Circle appropriate answer 4. Weekly 3. After every two weeks 2. Monthly 1. Quarterly 0. No schedule				
DU 12	How many times did the meeting take place during the last three months? Circle appropriate answer i). 12 times ii) Between 7 and 11 iii) 6 times iv) Either 4 or 5 v)3 times Vi) 2 times Vii) 1 time Viii) 0 none				
DU 13	Is an official record of management meetings maintained?		1.Yes	0.No	If no, go to DU15
DU 14	If yes, please check the meeting records for the last three months to see if the following topics were discussed:				
DU14a	Management of HMIS, such as data quality, reporting, or timeliness of reporting		1.Yes Observed	0.No	
DU 14b	Discussion about HMIS findings such as patient utilization, disease data, or service coverage, or medicine stock out		1.Yes Observed	0.No	
DU 14c	Have they made any decisions based on the above discussions?		1.Yes Observed	0.No	
DU 14d	Has any follow-up action taken place on the decisions made during the previous meetings?		1.Yes Observed	0.No	
DU14e	Are there any HMIS related issues/problems referred to regional/national level for actions?		1.Yes Observed	0.No	

Promotion and Use of HMIS information at district/higher level				
DU15	Did district annual action plan showed decisions based on HIS information?	1.Yes	0.No	
DU16	Did records of district office of last three months show that district/senior management issued directives on use of information	1.Yes	0.No	
DU17	Did district HMIS office publish newsletter/report in last three months showing examples of use of information	1.Yes	0.No	
DU18	Does documentation exist showing the use information for various types of advocacy?	1.Yes	0.No	
DU19	Does the district staff meeting records show attendance of persons in charge of the facilities for discussion on HMIS performance?	1.Yes	0.No	
DU20	Please describe examples of how the district office uses HMIS information for health system management			

Section B: HMIS Performance Diagnostic Tool

Quality of Data Assessment: Health Facility Form

Date of Assessment:		Name of the Assessor:		Name and Title of person Interviewed	
District:		Facility		Type:	

Data Recording				
FQ1	Does this facility keep copies of the HMIS monthly reports which are sent to the district office?	1.Yes	0.No	If no, go to Q5
FQ2	Count the number of HMIS monthly reports that have been kept at the facility for the last twelve months.			
FQ3	Does this facility keep an outpatient register?	1.Yes	0.No	If no, go to Q5

Data Accuracy Check

Find the following information in the outpatient register for the selected two months. Compare the figures with the computer-generated reports.

FQ4	Item	a. Month (specify)		b. Month (specify)	
		# from register	# from report	# from register	# from report
FQ4a					
FQ4b					
FQ4c					
FQ5	Did you receive a directive in the last three months from the senior Management or the district office to:				
	5A Check the accuracy of data at least once in three months?	1.Yes, Observed		0. No	
	5B Fill the monthly report form completely	1.Yes, Observed		0. No	
	5C Submit the report by the specified deadline	1.Yes, Observed		0. No	
FQ6	During the last three months, did you receive a directive from the senior management or the district office that there will be consequences for not adhering to the following directives:				
6A	If you do not check the accuracy of data	1.Yes, Received		0. No	
6B.	If you do not fill in the monthly reporting form completely	1.Yes, Received		0. No	
6C.	If you do not submit the monthly report by the specified deadline	1.Yes, Received		0. No	
Data Completeness					
FQ7	How many data items does the facility need to report on in the HMIS monthly report? This number does not include data items for services not provided by this health facility.				

FQ8	Count the number of data items that are supposed to be filled in by this facility but left blank without indicating "0" in the selected month's report.		

Data Transmission/Data Processing/Analysis				
FQ9	Do data processing procedures or a tally sheet exist?	1.Yes, observed	0. No	
FQ10	**Does the facility produce the following?**			
FQ10a	Calculate indicators facility catchment area	1.Yes, Observed	0. No	
FQ10b	Comparisons with district or national targets	1. Yes, Observed	0. No	
FQ10c	Comparisons among types of services coverage	1.Yes, Observed	0. No	
FQ10d	Comparisons of data over time (monitoring over time)	1.Yes, Observed	0. No	
FQ10e	Does a procedure manual for data collection (with definitions) exist?	1.Yes, Observed	0. No	

Section C: HMIS Performance Diagnostic Tool
Use of Information: Facility Assessment Form

Date of Assessment:		Name of the Assessor:		Name and Title of person Interviewed:	
District :		Facility		Type:	

HMIS Report Production				
FU1	Does this facility compile HMIS Data?	1.Yes	0.No	
FU2	Does the facility compile any report containing HMIS information?	1.Yes	0.No	If no, go to U14

FU3	If yes, please list reports that contain data/information generated through the HMIS. Please indicate the frequency of these reports and the number of times the reports actually were issued during the last 12 months. Please confirm the issuance of the report by counting them and putting the number in column 3.					
	1. Title of the report		2. No. of times this report is supposed to be issued per year		3. No. of times this report actually has been issued during the last 12 months	
FU3a						
FU3b						
FU3c						
FU3d						
FU3e						
FU4	During the last three month, did the facility receive any feedback report from district office on their performance?			1.Yes	0.No	
	Display of Information					
FU5	Does the facility display the following data? Please indicate types of data displayed and whether the data have been updated for the last reporting period.					If no go to UI6
	1. Indicator	2. Type of display (Please tick)		3. Updated		
FU5a	Related to maternal health	Table		1.Yes	0. No	
		Graph/Chart				
		Map/other				

FU5b	Related to child health	Table		1.Yes	0. No	
		Graph/Chart				
		Map/other				
FU5c	Facility utilization	Table		1.Yes	0. No	
		Graph/Chart				
		Map/other				
FU5d	Disease surveillance	Table		1.Yes	0. No	
		Graph/Chart				
		Map/other				
FU6	Does the facility have a map of the catchment area?			1.Yes	0. No	
FU7	Does the office display a summary of demographic information such as population by target group(s)?			1.Yes	0. No	
FU8	Is feedback, quarterly, yearly or any other report on HMIS data available, which provides guidelines/ recommendations for actions?			1.Yes	0. No	If no go to FU10
FU9	If you answered yes to question DU8, what kinds of action-oriented decisions have been made in the reports (based on HMIS data)? Please check the boxes accordingly					
Types of decisions based on types of analyses						
FU9a	Review strategy by examining service performance target and actual performance from month to month			1.Yes	0. No	
FU9b	Review facility personnel responsibilities by comparing service targets and actual performance from month to month			1.Yes	0. No	
FU9c	Mobilization/shifting of resources based on comparison by services			1.Yes	0. No	
FU9d	Advocacy for more resources by showing gaps in ability to meet targets			1.Yes	0. No	
	Discussion and Decision based on HMIS					

	information			
FU10	Does the facility have routine meetings for reviewing managerial or administrative matters?	1.Yes	0. No	If no, go to UI15
FU11	How frequently is the meeting supposed to take place? 4. Weekly 3. After every two weeks 2. Monthly 1. Quarterly 0. No schedule			
FU12	How many times did the meeting actually take place during the last three months? i). 12 times ii) Between 7 and 11 iii) 6 times iv) Either 4 or 5 v)3 times Vi) 2 times Vii) 1 time Viii) 0 none			
FU13	Is an official record of management meetings maintained?	1. Yes	0. No	If no, go to FUI5
FU14	If yes, please check the meeting records for the **last three months** to see if the following topics were discussed:			
FU14a	Management of HMIS, such as data quality, reporting, or timeliness of reporting	1.Yes, Observed	0. No	
FU14b	Discussion on HMIS findings such as patient utilization, disease data, or service coverage, medicine stock out	1.Yes, Observed	0. No	
FU14c	Have they made any decisions based on the above Discussions?	1.Yes, Observed	0. No	
FU14d	Has any follow-up action taken place regarding the decisions made during the previous meetings?	1.Yes, Observed	0. No	
FU14e	Are there any HMIS related issues or problems	1.Yes,	0. No	

	that were referred to the district or regional level for actions?	Observed		
Promotion and Use of HMIS information by the district/higher level				
FU15	Observed facility received annual/monthly planned targets based on HMIS information	1. Yes	0. No	
FU16	Do facility records for the last three months show that district/senior management issued directives concerning the use of information	1. Yes	0. No	
FU17	Did the facility receive a district or national HMIS office newsletter or report in last three months giving examples of use of information	1. Yes,	0. No	
FU18	Does documentation exist showing the use information for advocacy purposes?	1. Yes,	0. No	
FU19	Did the person in charge of the facility participate in meetings at district level to discuss HMIS performance for the last three months?	1. Yes,	0. No	
FU20: Please give examples of how the facility uses HMIS information for health system management 0. No examples 1. Yes (details follows)				
Supervision by the District Health Office				
FU21	How many times did the district supervisor visit your facility during the last three months? (check the answer)	0. 1. 2 3. 4. >3		If zero, go to FU26
FU22	Did you observe a supervisor having a checklist to assess the data quality?	1.Yes	0.No	
FU23	Did the supervisor check the data quality?	1.Yes	0.No	
FU24	Did the district supervisor discuss performance of health facilities based on HMIS information when he/she visited	1.Yes	0.No	

	your facility?			
FU25	Did the supervisor help you make a decision based on information from the HMIS?	1.Yes	0.No	
FU26	Did the supervisor send a report/feedback/note on the last two supervisory visits?	1.Yes	0.No	

Section D: HMIS Management Assessment Tool **Observation at Health Facility Levels**			
MAT1. Name of the Facility		MAT2. Name of the Assessor	
MAT3. Name of the District		MAT4: Date of Assessment	
MATG1	Presence of HMIS Mission displayed at prominent position(s)	0. No	1 .Yes
MATG2	Presence of an updated (last year) district health management organizational chart, showing functions related to HMIS/health information	0. No	1 .Yes
MATP1	Presence of HMIS situation analysis report less than 3 year old	0. No	1 .Yes
MATP2	Presence of HMIS targets at facility and higher level	0. No	1 .Yes
MATQ1	Presence of a copy of HMIS standards at facility	0. No	1 .Yes
MATQ2	Presence of performance improvement tools (flow chart, control chart etc.) at the facility	0. No	1 .Yes

MATT1	Does facility/district have a HMIS training manual?	0. No		1 .Yes
MATT3	Presence of schedule for planned Training	0. No	1.Yes, for one year	2. Yes, 2 years or more
MATS1	Presence of HMIS supervisory checklist	0. No		1 .Yes
MATS2	Presence of schedule for HMIS supervisory visit	0. No		1 .Yes
MATS3	Presence of supervisory reports	0. No		1 .Yes
MATF1	Presence of HMIS related expense register	0. No		1 .Yes
MATF2	Presence of HMIS monthly/quarterly financial report	0. No		1 .Yes
MATF3	Presence of long term financial plan for supporting HMIS Activities	0. No		1 .Yes

Section E: Organizational and Behavioral Assessment Tool

(To be filled by staff and management at all levels)

Introduction

This survey is part of the_____, to improve Management Information Systems in the health sector. The objective of this survey is to help develop interventions for improving information system and use of information. Please express your opinion honestly.

Your responses will remain confidential and will not be shared with anyone, except for presented table forms. We appreciate your assistance and co-operation in completing this study.

Thank you.

IDI. Name of facility ……

ID2. District……..

DD1. Title of the person filling the questionnaire (circle answer)

1. District HO

2. District HMIS focal person

3. Facility in charge

4. Other facility staff (specify) ----------

DD2. Age of the person ----------

DD3. Sex 1. Male

2. Female

DD4. Education

1. Secondary School 2. Diploma

3. Advance Diploma 4. Bachelor

5. Master---------- 6. Other (specify) ----------.

DD5. Years of employment ----------

DD6. Did you receive any training in HMIS related activities in last six months? 0. No 1.Yes

I would like to know your opinion about how strongly you agree with certain activities carried out by _____. There are no right or wrong answers, but only expression of your opinion on a scale. The scale is about assessing the intensity of your belief and ranges from strongly disagree (1) to strongly agree (7). You have to determine first whether you agree or disagree with the statement.

Second decide about the intensity of agreement or disagreement. If you disagree with statement then use left side of the scale and determine how much disagreement that is – strongly disagree (1), somewhat disagree (2), or disagree (3) and circle the appropriate answer. If you are not sure, of the intensity of belief or think that you neither disagree nor agree then circle 4. If you agree with the statement, then use right side of the scale and determine how much agreement that is – agree (5), somewhat agree (6), or strongly agree (7) and circle the appropriate answer.

Please note that you might agree or disagree with all the statements and similarly you might not have the same intensity of agreement or disagreement and thus variations are expected in expressing your agreement or disagreement. We encourage you to express those variations in your beliefs.

This information will remain confidential and would not be shared with anyone, except presented as an aggregated data report. Please be frank and choose your answer honestly.

Strongly disagree 1	**Disagree 2**	**Somewhat Disagree 3**	**Neither Disagree nor Agree**	**Somewhat Agree 5**	**Agree 6**	**Strongly Agree 7**

To what extent, do you agree with the following on a scale of 1-7?

In health department, decisions are based on

		Strongly disagree	**Somewhat disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Somewhat disagree**	**Strongly Agree**
D1	Personal liking	1	2	3	4	5	6	7
D2	Superiors' directives	1	2	3	4	5	6	7
D3	Evidence/facts	1	2	3	4	5	6	7
D4	Political interference	1	2	3	4	5	6	7
D5	Comparing data with strategic health objectives	1	2	3	4	5	6	7
D6	Health needs	1	2	3	4	5	6	7
D7	Considering costs	1	2	3	4	5	6	7

In health department, superiors

		Strongly disagree	Somewhat disagree	Disagree	Neither Disagree or Agree	Agree	Somewhat disagree	Strongly Agree
S1	Seek feedback from concerned persons	1	2	3	4	5	6	7
S2	Emphasize data quality in monthly reports	1	2	3	4	5	6	7
S3	Discuss conflicts openly to resolve them	1	2	3	4	5	6	7
S4	Seek feedback from concerned community	1	2	3	4	5	6	7
S5	Use HMIS data for setting targets and monitoring	1	2	3	4	5	6	7
S6	Check data quality at the facility and higher level regularly	1	2	3	4	5	6	7
S7	Provide regular feedback to their staff through regular report based	1	2	3	4	5	6	7

	on evidence							
S8	Report on data accuracy Regularly	1	2	3	4	5	6	7

In health department, staff

		Strongly disagree	**Somewhat disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Somewhat disagree**	**Strongly Agree**
P1	Are punctual	1	2	3	4	5	6	7
P2	Document their activities and keep records	1	2	3	4	5	6	7
P3	Feel committed in improving health status of the target population	1	2	3	4	5	6	7
P4	Set appropriate and doable target of their performance	1	2	3	4	5	6	7
P5	Feel guilty for not accomplishing the set target/performance	1	2	3	4	5	6	7

P6	Are rewarded for good work	1	2	3	4	5	6	7
P7	Use HMIS data for day to day management of the facility and district	1	2	3	4	5	6	7
P8	Display data for monitoring their set target	1	2	3	4	5	6	7
P9	Can gather data to find the root cause(s) of the problem	1	2	3	4	5	6	7
P10	Can develop appropriate criteria for selecting interventions for a given problem	1	2	3	4	5	6	7
P11	Can develop appropriate outcomes for a particular intervention	1	2	3	4	5	6	7
P12	Can evaluate whether the targets or outcomes have been achieved	1	2	3	4	5	6	7

P13	Are empowered to make decisions	1	2	3	4	5	6	7
P14	Able to say no to superiors and Colleagues for demands/decisions not supported by evidence	1	2	3	4	5	6	7
P15	Are made accountable for poor performance	1	2	3	4	5	6	7
P16	Use HMIS data for community education and mobilization.	1	2	3	4	5	6	7
P17	Admit mistakes for taking corrective actions	1	2	3	4	5	6	7

Personal

		Strongly disagree	**Somewhat disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Somewhat disagree**	**Strongly Agree**
BC 1	Collecting information which is not used for decision making discourages me	1	2	3	4	5	6	7
BC 2	Collecting information makes me feel bored	1	2	3	4	5	6	7
BC 3	Collecting information is meaningful for me	1	2	3	4	5	6	7
BC 4	Collecting information gives me the feeling that data is	1	2	3	4	5	6	7

	needed for monitoring facility performance							
BC 5	Collecting information gives me the feeling that it is forced on me	1	2	3	4	5	6	7
BC 6	Collecting information is appreciated by co-workers and superiors	1	2	3	4	5	6	7

U1.Describe at least three reasons for collecting data on monthly basis on the followings:

U1A. Diseases

1.

2.

3.

U1B. Immunization

1.

2.

3.

U1C. Why is population data of the target area needed?

1.

2.

3.

U2. Describe at least three ways of checking data quality

SELF-EFFICACY

This part of the questionnaire is about your perceived confidence in performing tasks related to health information systems. High confidence indicates that person could perform the task, while low confidence means room for improvement or training. We are interested in knowing how confident you feel in performing HMIS-related tasks. Please be frank and rate your confidence honestly.

Please rate your confidence in percentages that you can accomplish the HMIS activities. Rate your confidence for each situation with a percentage from the following scale

		0 10 20 30 40 50 60 70 80 90 100										
		0	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
SE1	I can check data accuracy	0	10	20	30	40	50	60	70	80	90	100
SE2	I can calculate percentages/rates correctly	0	10	20	30	40	50	60	70	80	90	100
SE3	I can plot data by months or years	0	10	20	30	40	50	60	70	80	90	100
SE4	I can compute trend from bar charts	0	10	20	30	40	50	60	70	80	90	100
SE5	I can explain findings & their implications	0	10	20	30	40	50	60	70	80	90	100
SE6	I can use data for identifying gaps and setting targets	0	10	20	30	40	50	60	70	80	90	100
SE7	I can use data for making various types of decisions and providing feedback	0	10	20	30	40	50	60	70	80	90	100

Appendix II: List of Participant

S/N	District	Health Facilities	Name	Mobile Number
1	Kyela	Tenende	Lydia J Mdolo	0765714547
2		Ngonga	Devota Mlonganile	0763622369
3		Ngonga	Rose Mponela	0763519284
4		Ngonga	Aneth Ipopo	
5		Ikolo	Mariam Ndunguru	0785900689
6		K/Songwe	Adelina Sulanje	0786302311
7		K/Songwe	Grace Mwakisisile	0762119803
8		K/Songwe	Abass Mohamed	0655443278
9		Kyela District Hospital	Joram Mwaipungu	0755235464
10		Kilasila	Daudi Mwandelage	0784031444
11		Lema	Mariam R. Ninde	0763270715
12		Njisi	Julieth Mchwampaka	0765501437
13		KCM	Isabela Mwisa	0763332042
14		Katumba Songwe	Simpho L.Mwakiluma	
15		Itope	Scolastica Simon	0754633536
16		Busale	Yusuph Y. Senti	0762272118
17		Ikolo	Godfrida L. Mwinuka	0718081139
18	Busokelo	Itete Hospital	Alex Komba	0755514106
19		Lukasi	Edward Malingumu	0652188425
20		Ikama	Emma A. Mtono	0787766720
21		Luflilyo	Lena Kyando	0753014451
22		Mpanda	Olgar Mtitu	0765929543
23		Buyonde	Godwin Yuda	0689363666
24		Manow	Veronica Twininge	0786022619
25		Kambasegera	Gloria Kibona	0763392563
26		Kibole	Rebeca Hepelwa	0766943276
27	Mbarali	Mbarali District	Alex Luogo	

		Hospital		
28		Mbarali District Hospital	Moses Lyimo	0754616885
29		Mbarali District Hospital	Godfrey E. Mwanjisi	0782247545
30		Isitu	Helena Sakawa	0758380684
31		Chimala Mission Hospital	Neema Mlaponi	0784945568
32		Igulusi Health Centre	Casmiri B. Pius	0766244594
33		Igulusi Health Centre	Zawadi C. Mayeye	0767342572
34		Igulusi Health Centre	Huruma R. Kilamile	0758466661
35		Igulusi Health Centre	Lina Z. Kamaghe	0762960058
36		Igulusi Health Centre	Neema J. Chilimbo	0764417784
37		Igulusi Health Centre	Frolah J . Zacharia	0758210208
38		Ihahi	Mussa C. Kihwelo	0762200264
39		Chosi “A”	Lustica Mtweve	
40		Chosi “A”	Rehema Kahemele	
41		Mapogoro Health Centre	Straiton Stephen	0754879000
42		Mabadaga	Costor S. Sichome	0755052565
43		Igawa	Diana K. kisimoja	0755671793
44		Ubaruku	Beatrice Wandamba	0753113797
45		Ubaruku	Mary Mlowe	0754488288
46		St. Batitha Health Centre	Tulinagawe Adam	
47		St. Batitha Health Centre	Angela Mlaponi	
48		Mbuyuni	Matilda B. Mgao	0756915761
49		Mbuyuni	Mary S. Baharia	0754945058

Appendix III: Approval Letter for data collection

MZUMBE UNIVERSITY
(CHUO KIKUU MZUMBE)
SCHOOL OF PUBLIC ADMINISTRATION AND MANAGEMENT

E-mail: sopam@mzumbe.ac.tz
Tel: +255 (0) 23 2604380/1/3/4
Fax: +255 (0) 23 2604382
Cell: +255 (0) 744 694029

P.O.BOX 2
MZUMBE
MOROGORO, TANZANIA

Ref. No. SOPAM/FPAM/DHSM/VOL.I/45

13th April, 2015

KYELA DISTRICT COUNCIL
P.O. BOX 4,
KYELA

RE: DATA COLLECTION FOR MR. LUHUVILO SANGA

The above named is a student of this University in the School of Public Administration and Management pursuing Master of Science in Health Monitoring and Evaluation (MSC HM&E) **Mr. Luhuvilo Sanga** has finished Semester III of his studies which ended in October, 2014.

As a partial fulfillment of the requirement for the award of Masters Degree every graduate student is required to undertake dissertation on a topic relevant to his area of specialization. The candidate has opted to conduct a study on the topic titled:

Assessment of the Health Management Information System (HMIS) Performance in Health Facilities in Mbalali, Kyela and Busokelo District Council

The study (research) is expected to take only six months and thereafter **Mr. Luhuvilo Sanga** will be required to submit the report to the School of Public Administration and Management as per University regulations.

We strongly request your good office to accord him with necessary assistance.

Thank you for Cooperation.

Mr. Paul Amani
For Dean SOPAM

KYELA DISTRICT COUNCIL

Tel. 025-2540035/7

Fax. 025-2540425

Ref. No. KDC/E.1/9/45

P.O. Box 320, Kyela
Mbeya - Tanzania

Date 15/04/2015

Mzumbe University,
School of Public Administration and Management,
P.O. Box 2,
Morogoro.

Re: REQUEST FOR CONDUCTING A RESEARCH TO YOUR STUDENT NAMED LUHUVILO SANGA

Please refer your letter Ref. No.SOPAM/FPAM/DHSM/VOL.I/45 dated 13th April, 2015 concerning the above heading.

Kindly be informed that our District Council has accepted your request by offering a position for your student ***Luhuvilo Sanga*** to conduct a research on ***"Assessment of the Health Management Information System (HMIS)"*** in Kyela District as a case study.

I assure to provide full cooperation to fit his learning performance. Please inform your student to obey District rules and regulation during his training.

With regards,

Ndamo, M.P. DISTRICT EXECUTIVE DIRECTOR KYELA
for: DISTRICT EXECUTIVE DIRECTOR
KYELA DISTRICT COUNCIL

c.c. District Medical Officer,
Kyela.

" Luhuvilo Sanga.
Morogoro.

All letters should be Addressed to District Executive Director of Kyela District Council Kyela

BUSOKELO DISTRICT COUNCIL

Tel: No. 0737 205318
Fax: No. +255 732 951 745
E-mail: busokelodc@gmail.com

District Director's Office,
P. O. BOX 2,
TUKUYU.

Ref. No. BDC/ J:2/02. Voll III/13 17 Aprili , 2015.

DISTRICT MEDICAL OFFICER
P.O. BOX 2
TUKUYU

RE: DATA COLLECTION FOR MR. LUHUVILO SANGA

The heading above refers.

The aforementioned student has requested to conduct a study concerning **Assessment of the Health Managemnt Information System (HMIS) Performance in Health Facilities in our Council.**

With this letter you are asked to accept and assist him accordingly for six months of his study. I expect that, the student will be given maximum cooperation for the whole period of his study.

With cooperative regards,

William Nyasa
For: **DISTRICT EXECUTIVE DIRECTOR**
BUSOKELO.

I/C. DISTRICT EXECUTIVE DIRECTOR BUSOKELO

MBARALI DISTRICT COUNCIL

MBEYA REGION
TEL: 025 – 2590089/2590041
FAX: 025 – 2590108/2590089

DISTRICT EXECUTIVE DIRECTOR'S OFFICE,
P. O. Box 237,
RUJEWA.

Ref. No. MDC/R.40/11/205 08th June, 2015.

District Medical Officer,
Mbarali District Council,
MBARALI.

RE: INTRODUCING MR LUHUVILO SANGA

Please refer to the above heading.

This is to inform you that, Mr Luhuvilo Sanga has been permitted to conduct a study on the topic ***tittled Assessment of the Health Management Information System (HMIS)*** in your office

With this copy of letter, you're required to provide any assistance that will be relevant to the student.

Thanks,

Mujuni Kajala

for. DISTRICT EXECUTIVE DIRECTOR,
MBARALI.

MAURUSINZ MTENDAJI
HALMASHAURI YA WILAYA
MBARALI

Copy to: District Executive Director

Health facility In-charges

Mpeni ushirikiano

Dmo

08/06/2015

MGANGA MKUU WILAYA
MBARALI