HUMAN RESOURCE INFORMATION SYSTEM AND DECISION MAKING IN THE MINISTRY OF HEALTH

BY

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DECLARATION

This research is my original work and has not been submitted to any university or institution for examination.

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I thank my family for moral support and standing by me through thick and thin in the entire period of study. Special gratitude to the entire university fraternity for providing me with this opportunity, my classmates for supporting me through team spirit and all those who gave me the possibility to complete this project**.**

DEDICATION

I dedicate this project to my parents Mr & Mrs Maruru and my brothers Isaac, Nathan and John for their support through the years.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DEFINITION OF TERMS AND CONCEPTS

AFDB: African Development Bank

Cadre: A broad category or subset of health workers characterized by the specific training, degree or other qualifications required to practice or be licensed in that field (i.e., nurse).

CHAK: Christian Health Association of Kenya

FBO: Faith Based Organizations

HIS: Health information System

HIV/AIDS: A disease of the immune system transmitted through blood products especially by sexual contact or contaminated needles

HMIS: Health Management Information System

HRH: Human Resources for Health

HRIS: Human Resources Information System

HRM: Human Resources Management.

KEC: Kenya Episcopal Conference

MIS: Management Information Systems

MoH: Ministry of Health

Position: An instance of a job that can be filled by one employee in one facility and represents one box on an organizational chart.

SUPKEM: Supreme Council for Kenya Muslims

TB: Tuberculosis

USAID: United States Agency for International Development

WHO: World Health Organization

ABSTRACT

Kenya and many African countries are faced with acute shortage of Health workers due to increased demand for medical professionals in response to global health issues. Lack of adequately trained health workers and inadequate distribution of Human Resources for Health has been a major challenge. In order to efficiently manage the Human Resources for Health and ensure there is an ongoing supply of Health workers in the country, a Human Resource Information System (HRIS) database is vital as it enables the health management to manage the health workforce and provide necessary information for health policy and planning. The research is therefore focused on Human Resource Information System and decision making in the Ministry of Health. The study set to establish the extent to which Human Resource Information System is being used in the Ministry of Health and identified the major challenges faced in using the system. The study also aimed to evaluate the quality of data being used in the HRIS and establish the influence of the system in decision making in health sector policy and planning. The research adopted a descriptive survey design and data was collected through use of questionnaire from the key Human Resource department sections at the Ministry of Health. The study revealed that majority of Ministry of Health staff use the system for recruitment purposes and with regards to data quality, majority of the users believed the data in the system is not complete; therefore there is a need by the ministry and other partners to enrich the system with complete information. The research however revealed that the data in the system is relevant and that quality of data affects the use of the system in decision making. The study noted that lack of proper IT equipment and skilled personnel to implement and support the system was a major challenge and therefore a need for clear interventions to address these challenges and subsequently expand the system usage and access.

CHAPTER ONE: INTRODUCTION

1.1 Background of Research

Management Information System is an information system that is used to help management of an organization improve on decision making. MIS is a computer based information system that provides information to help the operations of an organization and different levels of management. According to Bee and Bee(1999), MIS is a system that converts data from internal and external sources into information and communicate that information in an appropriate form, to managers at all levels in all functions to enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. In the health sector, information systems are used to help the policy makers to make informed decisions about the status of health in the country. Management Information Systems help to provide information such as diseases surveillance, tracking health workers in the country, health facilities management, commodities and drugs supplies management.

1.1.1 Human Resource Information System

Human Resources Information System (HRIS) is a Management Information System that supports any aspect of the Human Resource management function in an Organization. According to Hendrickson (2003), HRIS is defined as an integrated system used to gather, store and analyze information regarding an organization's human resources comprising of databases, computer applications, hardware and software necessary to collect, record, store, manage, deliver, manipulate and share HR information to all stakeholders. An effective Human Resource Information System allows organizations to address human resource issues adequately. This helps the

workforce deliver high quality services, despite internal and external challenges to the organization. This helps organizations prioritize their organizational and business strategies while effectively managing the changes inherent in their daily operations. (Management Sciences for Health, 2001).

Human Resource Information System helps in reducing costs and data errors and helps the human resources professional to create a hierarchy of positions for an organization based on standard titles, job classifications and job descriptions, even spread over diverse geographic locations, offices and facilities. A number of challenges continue to face the Human Resource Information System in various organizations. Specifically, the implementation and use of Human Resource Information system is being hindered by three main challenges: maintaining organizational attention, addressing the complexities associated with people management, and managing user acceptance of the change associated with the system (Wiblen, 2006).

1.1.2 Human Resource Information System and Decision making

Human Resource Information System supplies information for strategic, tactical and operational decision making at all subsystems within an organization, this information provides an essential part of the feedback control mechanism in these areas and is necessary for the realization of subsystem objectives (Curtis & Cobhan, 2002). Eisenfuhr (2011) described decision making as a process of making a choice from a number of alternatives to achieve a desired result. Human Resource Information System therefore helps to improve the quality of decisions by ensuring the decisions being made are data driven. HRIS helps an organization to create comprehensive

strategies and supports an organization to manage its workforce more effectively and efficiently. In the health sector, HRIS provides information to the health management which helps to make key HR decisions such as, the gender distribution of staff, promotion rates and succession planning, distribution of health workers by cadre and where deployed, how many health workers are nearing retirement age, how many and which staff are currently eligible for a pay increase, promotion or transfer, how many positions are currently vacant, how many health workers are working in various departments, what is the rate of staff attrition (IntraHealth, 2009).

Human Resource Information System transforms data into information used for decision making and therefore the data being fed into HRIS should be of high quality. According to Juran (1964), data are of high quality if they are fit for their intended use in operations, decision making and planning. Data quality describes the state of data, the set of processes to achieve such a state and data accuracy. For data to be fit for use, they should be free of duplications, misspellings, omissions and unnecessary variations, and should conform to a defined structure (Chapman, 2005; Carson, 2000; Brown, Stouffer and Hardee, 2007).

1.1.3 Ministry of Health in Kenya

Ministry of Health is a state body responsible for providing medical services and public health and sanitation to the citizens of Kenya. It is responsible for policy making, resource mobilization, budgeting, strategic planning, regulation, setting standards and quality assurance, capacity development and technical support, provision of nationally coordinated services such as epidemic control and monitoring and evaluation of the overall health sector performance. Ministry of Health consists of

various division and departments which share various health functions ensure effective health services delivery to all citizens (GoK, 2013). Ministry of Health Human Resource department is responsible for Human Resource Management and Development for all the health workers. The HRM department therefore requires information about the number and distribution of health workers in terms of gender, cadre and region for planning and budgeting purposes. The HRM management also requires up to date information about the rates of staff turnover, skills and training. This helps the management in making decision on succession planning, identifying the skills gap and retention of the skills in the health sector. The ministry through the support of development partners such as USAID has acquired a Human Resource Information System Database to help track and efficiently manage its health workforce in the country. More than fifty thousand health workers records have been uploaded in the system and information on more than eight thousands health facilities can be accessed in the system. The system is web based thus allowing access from both national and county level health management (Ministry of Health, 2009).

1.2 Statement of the Problem

Lack of quality data and access to information systems to help the key decision makers in the health sector address Human Resources for Health challenges has been a major problem. According to Redman (2001), it has been estimated that up to 5% of data found in organizations are of poor quality and that the average perceived cost of poor data quality is as high as 10% of an organization's revenues. Health managers lack access to quality data for health policy and planning and more often than not end up using estimates and data from past research. Therefore it becomes increasing difficult to answer some of the key issues in health such as: the number of health

facilities in the country, number of health workers of each cadre who work in those health facilities, workload in each of the health facilities, whether the resources are being deployed where they are needed, what are the causes and rates of health workforce attrition, reasons for staff departure from positions and the major causes of mortality. In many health facilities, HR data exists in paper form and therefore it becomes very difficult to compile information needed for management, planning and deployment. Meeting these challenges requires good quality data and access to information systems in order to ensure that there is ongoing supplies of health professionals, deploying resources where they are needed, retain the skills and experience in the health sector. Ministry of Health has adopted use of Human Resource Information System. The system is weak and as a result, it is difficult to get the accurate HR data needed for decision making ((Ministry of Health, 2009, p.18).

A number of researches both local and international have been done on the Human Resources information System. Shikutwa(2013), looked at perception of effectiveness of Human Resources Information System by branch managers in Kenya Commercial Bank ltd and Udani(2009) focused on the role of Human Resource Information systems in human resource planning in private sector organizations. While the past researches focus only on the Human Information System, they fail to bring out Human Resources for Health (HRH) component and how use of information system systems can help in improving HRH policy and planning. This study seeks to address this problem by establishing the influence of Human Resource Information System in decision making at the Ministry of Health. Therefore a research question can be posed: what is the effect of Human Resources Information System in decision making at the Ministry of Health.

1.3 Objectives of the Study

The purpose of this research was to investigate on the Human Resource Information System (HRIS) in the Ministry of Health and specifically to:

a.) Establish the extent to which HRIS is being used in the Ministry of Health.

b.) Determine the challenges of using HRIS.

c.) Determine the quality of data being used in the HRIS.

d.) Establish the influence of the system in decision making in health sector policy and planning.

1.4 Value of this Research Study

The findings of this study will be resourceful to the Ministry of Health in helping to strengthen and expand the usage of Human Resource Information System thereby improving the efficiency and quality of key Human Resource decisions. This study will help the policy makers and management of the Ministry of Health to use Human Resources Information System in tracking the health workers, identifying the skills gap and deploying the resources and the skills where they are needed. This will ensure ongoing supply of trained health professionals and retention of skills and experience in the health sector. Information on the number of health workers by cadres and gender distribution will help the ministry in planning, budgeting and advocating for more positions. This study will ensure the policy makers in the health sector will be able to make data driven decision about the status health sector and use the data to forecast on future HRH needs and workload analysis. This research will also seek to establish challenges that face HRIS in the Ministry of Health and recommend the best way forward to address these challenges. This will act as a benchmark for any

institution in health sector seeking to implement and adopt Human Resource Information System.

The study will not only be useful to Human Resources for Health(HRH) management but also it will influence other institutions to use the HRIS in improving efficiency of recruitment, ensuring quicker and high quality hiring decision thereby saving cost at the long run which may accrue as a result of low productivity and staff attrition. Finally the study will increase the body of knowledge in the HR academic field by focusing on specific issue facing Human Resources for Health.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on Human Resource Information Systems and its use in strengthening decision making process and clearly outlines the benefits and challenges of the Human Resource Information system. The Chapter also focuses on various parameters that are necessary in setting up strong Human Resource Information systems such as data quality and data collection mechanisms. Furthermore, the chapter looks at Health Information Systems and how HRIS fits into the integrated Health Information Systems.

2.2 Health Information Systems

Health Information System is an information system that integrates all aspect of health care management into one system and informs the policy and health planners about the health status. According to Wilson et al.(2001) Health Information System (HIS) is a set of tools and procedures that a health programme uses to collect, process, transmit, and use data for monitoring, evaluation and control in a health system. Information about the functioning of the health information system can be obtained from the different sectors and agencies that have responsibilities for the generation, synthesis, analysis and use of data at country, regional and global levels. At country level, Ministries of Health record the timeliness and quality of data reported through health services and disease surveillance systems.

According to WHO (2006) a health information system usually describes one of these several separate subsystems containing data for disease surveillance and outbreak notification, data generated through household surveys, registration of vital events and censuses (births, deaths and causes of death), data collection based on patient and

service records and reporting from community health workers, health workers and health facilities, programme-specific monitoring and evaluation (for example for TB, HIV/AIDS, and EPI), administration and resource management (including budget, personnel, and supplies). The function of a health information system is to bring together data from all these different subsystems, to share and disseminate them to the many different audiences for health information, and to ensure that health information is used rationally, effectively and efficiently to improve health action. HRIS feeds the Human Resources for Health data component to an integrated Health Management Information System. A strong HRIS system is therefore requirement for strategic decision making, providing the basis upon which improved health outcomes depend on.

2.3 Human Resource Information System.

An effective human resource management system allows organizations to address human resource issues adequately. This helps the workforce deliver high quality services, despite internal and external challenges to the organization. A robust human resource management system helps organizations prioritize their organizational and business strategies while effectively managing the changes inherent in their daily operations. Human resource management helps attract and retain competent employees, assists employees and managers in adapting to organizational change, and facilitates the use of technology to determine how and where work is done (Management Sciences for Health, 2001).

Human Resource Information System is defined as an integrated system used to gather, store and analyze information regarding an organization's human resources comprising of databases, computer applications, hardware and software necessary to

collect, record, store, manage, deliver, manipulate and share HR information to all stakeholders (Hendrickson, 2003). HR manager derives benefit from HRIS, to disseminate and execute the strategy within the organization. These systems enable employees to manage much of their own HR administrative work. They can take care of many routine transactions whenever they wish, because automated systems don't keep office hours. In addition to their former operational role, HR professionals can also act as a competency manager by arranging the right people to the right positions in the right time with their new strategic architecture role (Ulrich, 2009). Effective use of Human Resource Information System can be measured with reduced costs of automating information and reducing the need for large numbers of human resource employees, by enabling employees to be able to control their own personal information and allowing managers to access relevant information, conduct analysis and make decisions without consulting human resource professionals, (Awazu & Desouza, 2003; Ball, 2001).

Human Resources Information System has several modules designed to store and report position, employee and job applicant information. User management module helps to create and manage password-protected user accounts to control access to the system. User accounts are role-based so that non-authorized user actions and data sets are hidden from the user. System configuration module helps the system administrator to turn on and off modules and set options for each module to customize the system and its features. Database Management module helps one to design a standard data structure by creating lists of items to be tracked in the database such as geographical locations, offices and facilities. Position Management module allows the users to create positions with standardized descriptions, codes and qualifications within the organizational structure and manage the hiring, transfer and promotion process.

Applicant Management module enables users to record information about a job applicant, including interview notes, and log hiring decisions. Employee management module helps the users to match an employee to a position, record important information about an employee and maintain a record of the employee's complete work history with the organization. In-service Training Management module tracks in-service trainings that employees have completed and assess competencies and continuing education credits earned from training (turned off by default). Custom Reporting module create reports to aggregate and analyze data in a variety of ways to answer key management and policy questions as well as generate staff lists and directories. Finally Search module allows the users to search for employee and applicant records in the system (IntraHealth, 2009).

2.3.1 Challenges of Human Resource Information Systems.

A number of challenges continue to face the HRIS in the health sector and various organizations. Specifically, the implementation and use of human resource management information system is being hindered by three main challenges: maintaining organizational attention, addressing the complexities associated with people management, and managing user acceptance of the change associated with the system (Wiblen, 2006). Poor ICT infrastructures in most of the government ministries and departments have hampered use and adoption of the Health Information Systems. Ministries lack capacity and infrastructure necessary to support the information systems and therefore rolling out an information system can be costly. Setting up a Health Information System can be expensive in terms of money and manpower requirements at implementation stage and also its effective application needs large-scale computer literacy among the employees responsible for maintaining the

Information system. Proper resource mobilization initiatives are therefore needed to support these interventions. I most cases development partners such as USAID, WHO, UN, CDC have supported the health sector in rolling out the Human Resource Information System. However a lot needs to be done to ensure there is country ownership and sustainability of these interventions, (Ministry of Health, 2009).

Accessing the data for use in HRIS from key stakeholders and players in the health sector is a challenge especially where the data is kept in silos and in some cases some data may be classified thus hampering data sharing initiatives. Mobilizing the key stakeholders and getting buy in from top leadership requires some level of investment and engagement which can be costly and time consuming. Therefore when implementing a Human Resources Information system, engagement of all stakeholders and key players in the health sector is paramount and ensuring that proper requirement gathering is conducted. One of the key issue which has been identified to ensure there is ownership and user acceptance of the system is formation of stakeholder leadership groups. A HRH stakeholder leadership group includes individuals involved in planning, producing, managing, and supporting a country's health workforce. Members work collaboratively to address locally relevant HRH challenges (see Gormley and McCaffery 2011). This group should also have the authority and mandate to establish national systems and standards for HRIS.

Poor Data quality remains a major challenge in setting up a Human Resource Information System. Poor data collection and storage method in the past have contributed to this challenge and therefore it becomes very difficult to compile data for decision making. The cost to input a correction in the database can be substantial but is only a function of the cost of checking and correcting the data at a later date. It

is better to prevent the errors rather than to cure them later and it is by far a cheaper option (Redman 2001). The cost of data errors increases along the chain and errors continue to be amplified if they are not noticed and corrected at the early stage. Infrequent updating of HRIS has led the information to be stale which is considered as good as no information. Lack of trained and dedicated personnel to update the information systems in the real-time has been a challenge and therefore the data in most cases is not up to date. Finally Lack of integration and interoperability from various independent systems impedes the ability to leverage data from multiple sources to increase the efficiency of operations or the sophistication of analysis and decision making. National government has responsibility to step in to develop common standards that would allow these systems to interoperate but it's not always the case. Various independent systems that are seldom integrated, impedes the ability to leverage data from multiple sources to increase the efficiency of operations or the sophistication of analysis and decision making.

2.4 Decision Making

Decision making is a process of making a choice from a number of alternatives to achieve a desired result (Eisenfuhr, 2011). According to Baker et al. (2002), decision making should start with the identification of the decision maker(s) and stakeholder(s) in the decision, reducing the possible disagreement about problem definition, requirements, goals and criteria. Then, a general decision making process can be divided into the following steps: Firstly it involves definition of the problem. This process must, as a minimum, identify root causes, limiting assumptions, system and organizational boundaries and interfaces, and any stakeholder issues. The goal is to express the issue in a clear, one-sentence problem statement that describes both the

initial conditions and the desired conditions. The next step involves determining the requirements. Requirements are conditions that any acceptable solution to the problem must meet. Requirements spell out what the solution to the problem must do. Thirdly involves establishing the goals. Goals are broad statements of intent and desirable programmatic values. Goals go beyond the minimum essential must have. (i.e. requirements) to wants and desires. Next step involves identifying the alternatives. Alternatives offer different approaches for changing the initial condition into the desired condition. Be it an existing one or only constructed in mind, any alternative must meet the requirements. After identifying the alternatives the next action item is to define criteria. Decision criteria, which will discriminate among alternatives, must be based on the goals. It is necessary to define discriminating criteria as objective measures of the goals to measure how well each alternative achieves the goals.

The next step involves selecting a decision making tool. There are several tools for solving a decision problem. The selection of an appropriate tool is not an easy task and depends on the concrete decision problem, as well as on the objectives of the decision makers. The next action is to evaluate alternatives against criteria. Every correct method for decision making needs, as input data, the evaluation of the alternatives against the criteria. Depending on the criterion, the assessment may be objective (factual), with respect to some commonly shared and understood scale of measurement (e.g. money) or can be subjective (judgmental), reflecting the subjective assessment of the evaluator. Finally the last step involves validating solutions against problem statement: The alternatives selected by the applied decision making tools have always to be validated against the requirements and goals of the decision

problem. It may happen that the decision making too was misapplied. In complex problems the selected alternatives may also call the attention of the decision makers and stakeholders that further goals or requirements should be added to the decision model (Tower, 2010).

According to the rational model, the decision making process can be broken down into six steps as per the figure below.

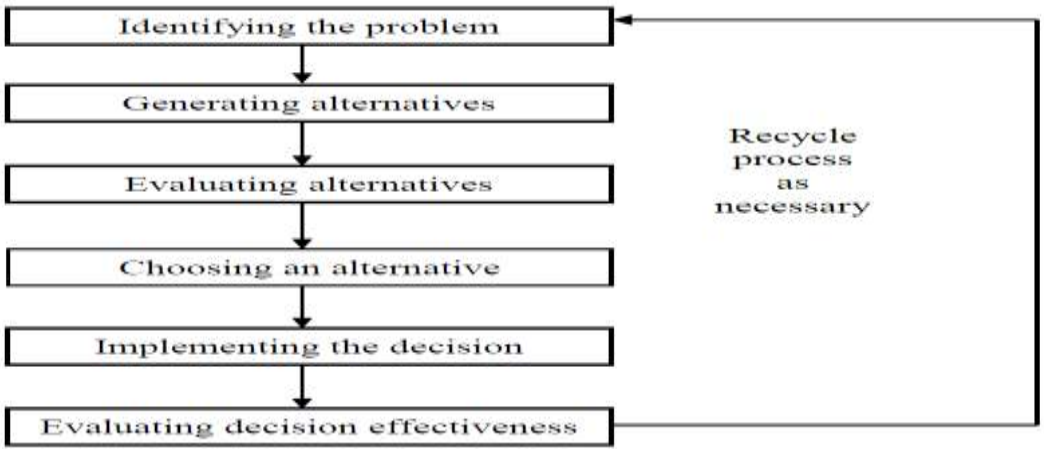
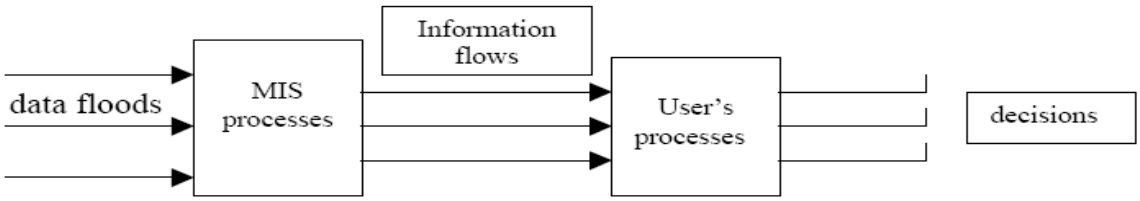


Figure 2-0-1, Rational Model, Schoenfeld (2011)

Decision making can be divided or distinguished from one another into three types: strategic, tactical and operational levels. Information is required at three different levels of management decision making and information systems has to support each level of decision making. According to Adebayo (2007), MIS provides information that is needed for better decision making on the issues affecting the organization regarding human and material resources. MIS provides a means of data transformation into information which a can be used for decision making.



Lucey**(**1997)

MIS supports the organizations in planning, organizing, directing, control and thereby ensuring operational functions are carried out effectively thereby increasing competitiveness of the firm by reducing cost and improving processing speed. Well-constructed and well-organized MIS can provide management with the knowledge it needs to reduce operating costs and increase profits. MIS can help management increase efficiency by quickly providing critical information about procedures and operations. According to Obi (2003) MIS is useful in the area of decision making as it can monitor by itself disturbances in a system, determine a course of action and take action to get the system in control. It is also relevant in non-programmed decisions as it provides support by supplying information for the search, the analysis, the evaluation and the choice and implementation process of decision making. Combs (1995) pointed out that accurate, rapid and relevant information are considered to be vital to improving performance and competitive advantages of business and organizations.

2.4.1 Human Resource Information System and Decision making

HRIS is a human resources management tool that enables an organization to design and manage a comprehensive human resources strategy. HRIS helps an organization manage its workforce more effectively and efficiently, while reducing costs and data errors. Using the system, the HR professional can create a hierarchy of positions for

an organization based on standard titles, job classifications and job descriptions, even spread over diverse geographic locations, offices and facilities. HR staff can solicit job applications for open positions, assign employees to fill positions and maintain a searchable database of all employees, their identifying information and their qualifications. Managers can track each employee's history with the organization, including their position and salary histories, and record the reason for departure when the employee leaves the organization. Decision maker within the organization can analyze this data to answer key human resource management and policy questions such as are employees deployed in positions that match their qualifications and education, are employees optimally deployed in locations to meet needs, how many workers need to be recruited to fulfill anticipated vacancies, are pay rates equitable across similar jobs, are employees being promoted in alignment with competencies and finally what are the rates and reasons for employee attrition, IntraHealth (2009).

A well-designed, workable and effective HR information system provides a company with a significant competitive advantage (Broderick & Boudreau 1992). Developed and sophisticated HRIS do not only reduce overall HR costs but also help to simplify the way the customers, managers and employees access and use HRIS both locally and globally. HRIS is used as a key tool in training and development. Training and development function is essential for changing behavior and culture and reinforcing the new behavior and culture. Training is the tool for enhancing the knowledge of employees on the new employee role and expectations and the services and products offered through induction courses. Training is also a tool for improving the skills in need (sales skills, communication skills, service skills, etc.), the productivity and effectiveness of employees, Glaveli and Kufidu, (2005). Tao et al. (2006) advocated

that though companies may adopt various training models or processes, they all need to establish a training information system as a reference for determining an effective training plan. HRIS consists of one of the automated training needs assessment tools.

HRIS is used to support management in making decision on Succession planning, recruitment and selection. Succession planning can be defined as the attempt to plan for the right number and quality of managers and key-skilled employees to cover retirements, death, serious illness or promotion, and any new positions which may be created in future organization plans (Sambrook, 2005). HRIS helps to identify HR gaps which are created due to staff turnover therefore enabling the management to plan for the succession. Recruitment represents one of the core staffing activities that need to be efficiently and effectively planned and conducted for organizations to attain success (Darrag et al., 2010). Darrag et al. (2010) identified recruitment as the process of discovering potential candidates for actual or anticipated organizational vacancies or, from another perspective; it is a link activity bringing together those with jobs to fill and those seeking jobs. According to Selden et al. (2000) a fair number of studies focus on the performance effects of specific human resource management practices, such as training, and selection. HRIS is designed to support the planning, administration, decision-making, and control activities of human resources management. Applications such as employee selection and placement, payroll, pension and benefits management, intake and training projections, developing career path, equity monitoring, and productivity evaluation are supported by this information system (DeSanctis, 1986).

HR executives can use HRISs to support their strategy and talent management programs by considering some specific functionality, such as human resource planning, staff development and regulatory compliance, benefits administration, and

performance appraisal. Performance appraisal is an important factor in employee retention. In performance appraisal, it is really important that employees 'individual expectations are managed well, but the same holds for the expectations of departments and divisions. The degree to which objectivity regarding individual's performances is properly assessed is very important and employee's sense of being appraised objectively is increased by setting clear objectives before the assignment, and by assessing their performance together with them afterwards. These insights should be used to set the HRIS parameters and to implement its functionalities. When such aspects are implemented, HRIS may indeed contribute significantly to the optimization of retention management (Beulen, 2009).

2.5 Data Quality

Human Resource Information System transforms data into information for use in HR decision making, therefore the data being fed into an HRIS is required to be of high quality. According to Juran (1964), data are of high quality if they are fit for their intended use in operations, decision making and planning. Data quality describes the state of data, the set of processes to achieve such a state and data accuracy. For data to be fit for use, they should be free of duplications, misspellings, omissions and unnecessary variations, and should conform to a defined structure (Chapman, 2005; Carson, 2000; Brown, Stouffer and Hardee, 2007).

Data management team should be part of any industry that seeks to improve the accuracy of its day to day decisions that affect business operations. A number of key dimensions that data quality seeks to address include: Completeness, data completeness looks at whether the requisite information is available including

identifying missing and unusable data values. The next issue is with regards to data consistency which seeks to address whether distinct data instances provide conflicting information about the same underlying data object, whether values are consistent across data sets, and whether the interdependent attributes always appropriately reflect their expected consistency. Inconsistency between data values plagues organizations attempting to reconcile between different systems and applications (March, 2010). The other dimension of data is accuracy which refers to closeness of measured values, observations or estimates of the real or true value, without political or personal bias and manipulation. The other issue is duplication in data which address the issues of multiple, unnecessary representations of the same data objects within a specific data set. The inability to maintain a single representation for each entity across any systems poses numerous vulnerabilities and risks (Nielson, 2011). Finally data relevance is important in data quality considerations. This refers to availability of required details or data. It helps to answer questions relating to the design of the database or the data collection form. The default rule is that if the application of the information is unknown, the highest level of detail should be provided. This gives some additional reliability to the data, as it is easier to discard redundant or unnecessary parts than to search for missing bits and pieces.

2.5.1 Data Collection

Data errors can cause the business heavy losses due to misinterpretation and therefore it is important for any person dealing with data management to be keen on all the data management phases. For example, if wrong dates of birth are collected from a health workers survey may depict that there are workers who are past the retirement age but are still on the payroll. This may attract attention of many stakeholders and eventually

this will drill down to the data management team. It is therefore important to ensure the data used for decision making are of high quality. The cost to input a correction in the database can be substantial but is only a function of the cost of checking and correcting the data at a later date. It is better to prevent the errors rather than to cure them later and it is by far a cheaper option (Redman 2001). The cost of data errors increases along the chain and errors continue to be amplified if they are not noticed and corrected at the early stage.

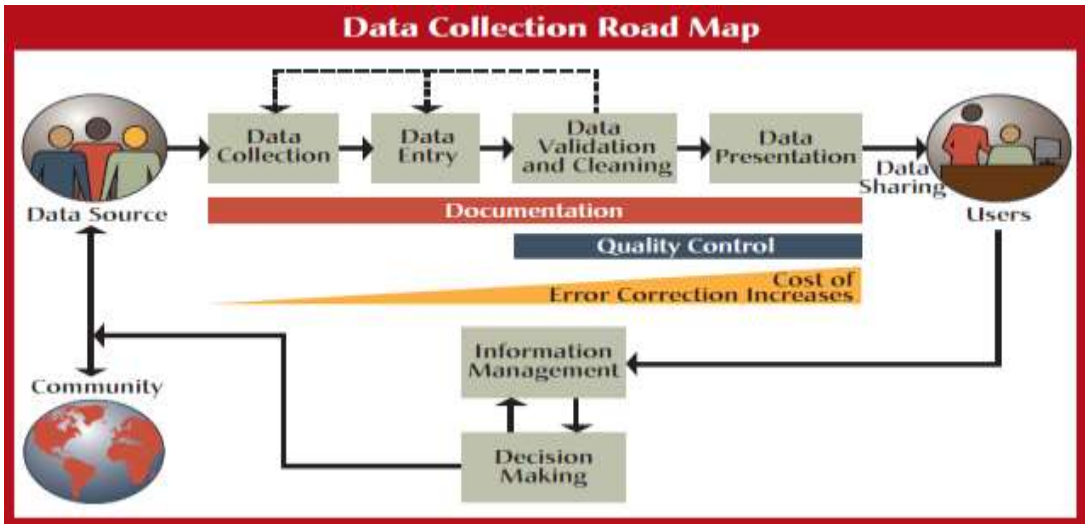


Figure 2-0-2, Data Collection Road Map, (Chapman, 2005)

The following is the key processes and concepts involved in data collection. Data source refers to origin of the data. This can either be primary or secondary source of the data. Data collection can be looked at as a Systematic gathering of data for a particular purpose from various sources, including questionnaires, interviews, observation, existing records, and electronic devices. The process is usually preliminary to statistical analysis of the data. Data entry is the process of capturing the data in order to minimize data entry errors, it is recommended to use original documents as the primary sources for creating records in the database. Typing is minimized by the use of pull-down menus, which also speed up data entry and

improve consistency. Whenever possible, data entry should be undertaken closer to the point of data generation. The next step in this process is data validation. According to (Redman, 2001) data validation is a process used to determine if data are inaccurate, incomplete, or unreasonable. The process may include format checks, completeness checks, reasonableness checks, limit checks, review of the data to identify outliers (geographic, statistical, temporal or environmental) or other errors, and assessment of data by subject area experts. Taulbee (1996) indicated that data cleaning (cleansing) is the process of detecting and correcting (or removing) corrupt or inaccurate records from a record set, table, or database. Used mainly in databases, the term refers to identifying incomplete, incorrect, inaccurate, irrelevant, etc. parts of the data and then replacing, modifying, or deleting this dirty data.

Next step involves data presentation. This is usually more than just showing tables of data, it's showing the data in a form that helps explain any of the time histories and indicated trends, why the data are the values they have, effects on other systems, objects, people; and probably you can think of other questions people might have about data. Accompanying explanatory talk may be part of a presentation. Graphical presentation is often a big help in getting these ideas across (Stribling, Moulton and Lester, 2003). Final step involves data Sharing this is disclosure of data from one or more organizations to a third party organization or organizations, or the sharing of data between different parts of an organization. Data sharing is a critical issue which should be approached with a lot of sensitivity. This is because many organizations and players in sectors such as health avoid sharing of information especially the classified data. This therefore greatly hinders the process of having a central data warehouse

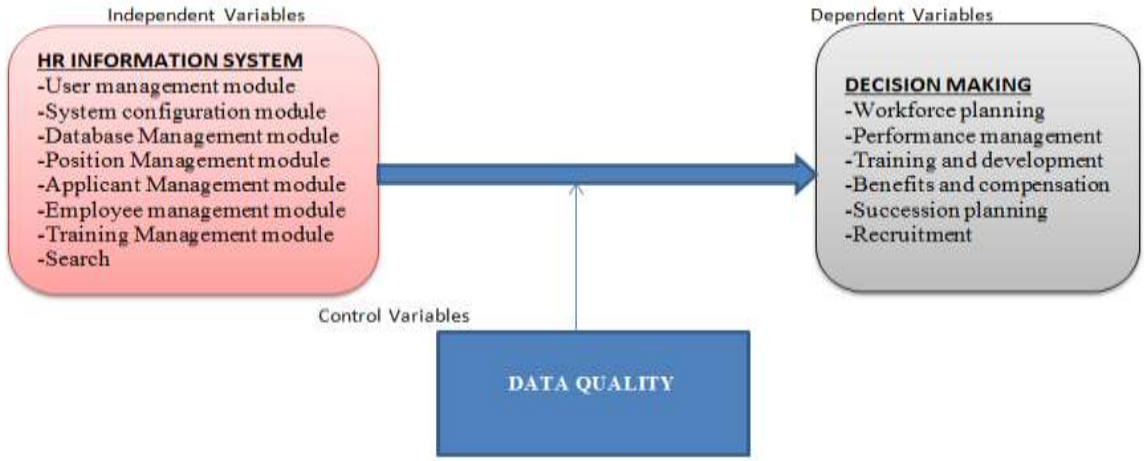
which can have all the data for decision making and ease of access (Strong, Lee and Wang 1997).

2.6 Literature Summary

Incorporating the aspects of data quality and use of Human Resources Information System in the health sector policy and planning can improve the decision making process. Health managers will be able to make informed decisions about the health status in the country, thus enabling them to solicit for more resources and deploy them when and where they are needed. Having quality data will not only enable the policy makers to plan, but also it will highly assist in health sector forecasting thus enabling the health manager to anticipate the future resources and needs in the health sector. Kovach and Cathcart (1999), HRIS information could be used for administrative purposes, which reduced cost and time, and to support more analytical decisions as well. According to a survey conducted in 1998, Ball (2001) showed that 60 percent of Fortune 500 companies used the HRIS to support daily human resource management (HRM) operations. He classified HRIS according to administrative and analytical aspects and predicted out though HRIS was used for administrative purposes, the trend would be to use it for analytical purposes.

2.7 Conceptual Framework

Figure 2-0-3, Schematic diagram for the conceptual framework



Source: Survey Data, 2014

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This Chapter focuses on the form of research methodology that was used in design, data collection, analysis and presentation. Use of proper methodology is imperative in coming up with a good research and for this purpose therefore; this section will seek to explain the data collection techniques used for this research.

3.2 Research Design

The research design refers to the overall strategy that a researcher chooses to integrate the different components of the study in a clear and logical manner, by ensuring that research problem is effectively addressed. A design is used to structure the research, to show how all of the major parts of the research project - the samples or groups, measures, treatments or programs, and methods of assignment - work together to try to address the central research questions (Walliman, 2011). This is the most significant element of the research process where the whole research is designed, options considered, decisions made and details of the research laid down for execution. The study used descriptive survey research design to bring out issues around the use of Human Resource Information Systems in decision making. The scope of this research was the Ministry of Health and use of HRIS for decision making. The duration of study and data collection was one month and mainly targeted the Human Resources for Health management at the national level.

3.3 Population

The population of this research study was 6(six) key sections of Human Resource department at the Ministry of Health headquarters to achieve the objectives of the study.

3.4 Sampling

The research used a sample size of 50 respondents from Human Resource Department of the Ministry of Health. This sample size included respondents from key HR sections in the Ministry of Health Human Resource Department. Judgmental sampling was used for this study in order to get precise and accurate information about the research. Judgmental sampling is used in cases where the specialty of an authority can select a more representative sample that can bring more accurate results than by using other probability sampling techniques. The process involves nothing but purposely handpicking individuals from the population based on the authority's or the researcher's knowledge and judgment (Explorable.com,Sep 13, 2009). Below is the list of sections on the Human Resource Department and number of respondents that were proposed to be interviewed.

Table 3-0-1, Sample size of respondents per section

#	**Section**	**Number of Respondents**
1.	Training and development	10
2.	Performance management	10
3.	Workforce planning	12
4.	Recruitment and Promotions	8
5.	Benefits and compensations	8
6.	HRIS section	2

Source: Survey Data, 2014

3.5 Data Collection

This stud focused on collecting data from primary sources to gather the requisite information needed for this research. Data was collected through use of questionnaires which were administered to respondents on the use of HRIS on how they use HRH data generated from the system for decision making. This study targeted key Human Resource sections that are responsible for providing information to the health leadership about the status of the human resources for health.

3.6 Data Analysis

Data collected was analyzed through use of SPSS software which offers robust but simple to use features in statistical analysis. Primary data collected from the research questionnaires was converted into electronic format by ensuring proper validation is done in order to ensure quality is not compromised. The process of data cleaning involved conducting format checks, completeness checks, reasonableness checks, limit checks to ensure that the data is of high quality and analyzable. The analyses of data always depend on the research questions and objectives (Saunders, Lewis, & Thornhill, 2009). The objectives of this research were analyzed using the following regression model.

$Y=a_0+x_1a_1+x_2a_2+x_3a_3+e$

Where by:

Y = Decision Making

a_0 =Constant

x_1 =HRIS

x_2 =Data quality

x_3 =Challenges

e =Error term

a_1, a_2, a_3= Parameters will be estimated

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This Chapter focuses on analysis of data collected during the data collection exercise, results and discussions. Data for this research was collected through use of questionnaires and analysis done through use of SPSS software and Microsoft Excel Worksheet.

4.2 Response Rate

This study targeted 50 senior managers, managers and specialists in all the HR sections at the Ministry of Health. Table 4-0-1 shows the distribution of the respondents.

Table 4-0-1, distribution of the Respondents

	Frequency	Percent (%)	Valid Percent	Cumulative Percent
Managers	15	35.7	35.7	35.7
Assistant Manager	20	47.6	47.6	83.3
Specialists	7	16.7	16.7	100.0
Total	42	100.0	100.0	

Source: Survey Data, 2014

The data collection exercise achieved 43 out of targeted 50 respondents who filled the administered questionnaires. This is a response rate of 84% which the study considered adequate to do the analysis.

4.3 Demographic Characteristics

This section focuses on the demographics breakdown of the respondents. The demographic characteristics which were the focus of this study included gender, age, length of service and highest education level for the respondents.

4.3.1 Gender distribution

The study sought to reveal the distribution of the respondents by gender. This is especially important in order to bring out the gender dimension and preferences in use of Human Resource Information System. The results of the gender distribution are organized in Table 4-0-2.

Table 4-0-2, Respondents gender distribution

	Frequency	Percent (%)	Valid Percent	Cumulative Percent
Male	23	54.8	54.8	54.8
Female	19	45.2	45.2	100.0
Total	42	100.0	100.0	

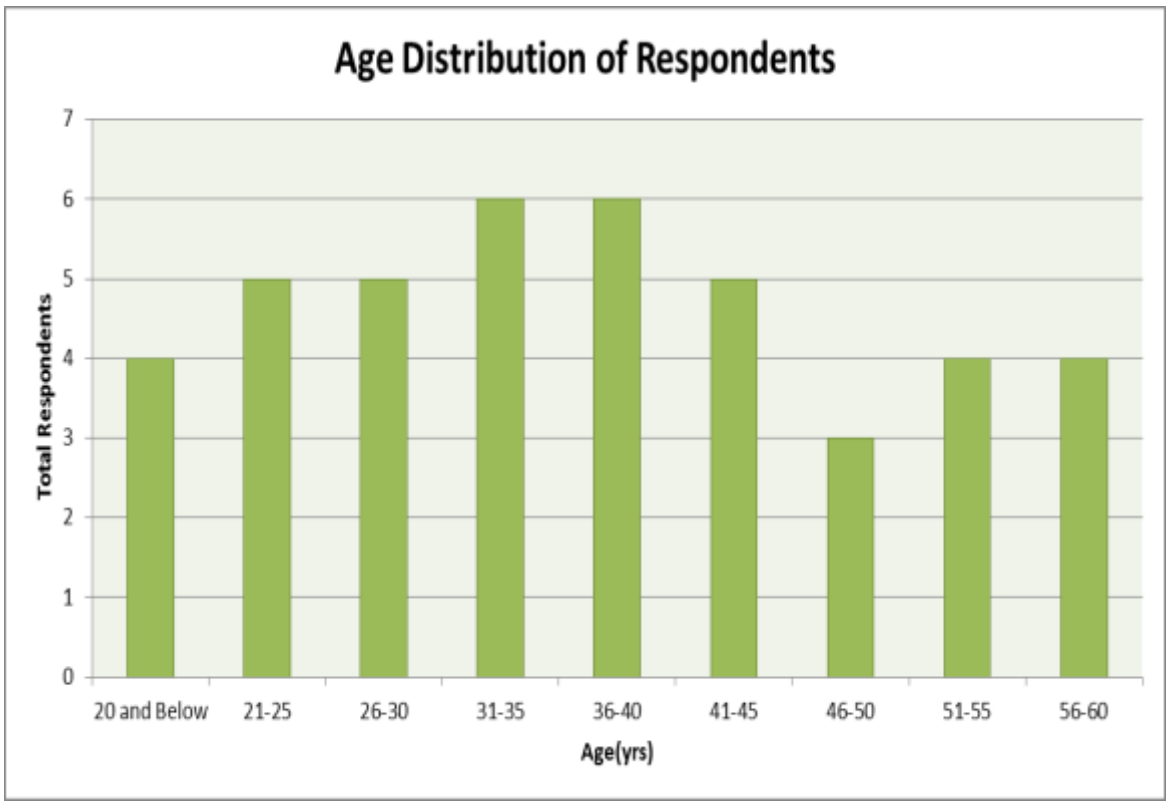
Source: Survey Data, 2014

The study revealed that out of the 42 respondents, 19 of them were female which represents a 45% of the total respondents and 23 of them were male representing 55% of the total respondents.

4.3.2 Age of Respondents.

The study sought to reveal the age distribution of the respondents and the results are presented on Figure 4-0-3.

Figure 4-0-1, Age distribution of the respondents



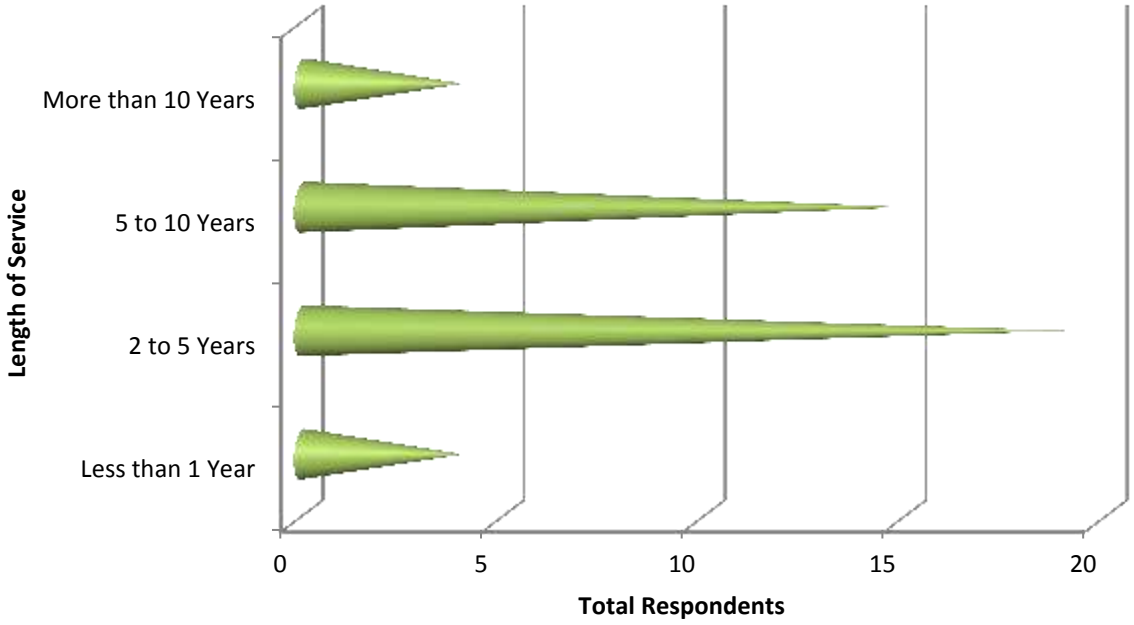
Source: Survey Data, 2014

The study found that the majority of the respondents were between age 30-40yrs. This is a population which has enough working experience and has worked for a longer duration at the Ministry of Health therefore likely to provide more reliable information.

4.3.3 Length of Service

The study sought to reveal the length of service of the respondents in the Ministry of Health. The results are presented in Figure 4.4.

Figure 4-2, Length of service of the respondents



Source: Survey Data, 2014

The study found that the majority of the respondents have served the Ministry of Health between 2 to 10 years. This is a commendable group of respondents as they have served the ministry for a longer duration and therefore are likely to give more accurate information. These groups of respondents also have a good background of various Human Resources initiatives which have been implemented by the Ministry including human Resources Information System and therefore their input was deemed to be valuable.

4.3.4 Highest Education Level

The level of education is a very good pointer for anyone to use the Human Resource Information System. The study found that most of the respondents had undergraduate level of education amounting to 59% of the total respondents. The number of respondents who had postgraduate qualifications was 21% and the ones who had

diploma were 19%. This distribution is commendable as the respondents are likely to give more precise and reliable results about use of HRIS at the Ministry of Health.

4.4 Level of Usage of Human Resource Information System

The study sought to determine the level of usage of Human Resource Information system in the Ministry of Health. On a five point Likert scale (Very Large Extent, Large Extent, Moderate Extent, Small Extent, No Extent), respondents were asked about the extent to which they use the Human Resources Information System for their day to day work. The choices 'Small Extent' and 'No Extent' represent a variable which shows little or no use of the system equivalent to the scale of 0<=2.4. The choices 'Moderate Extent' represents a variable which is agreed upon moderately and is equivalent to the scale of 2.5<=3.4. The choices of 'Very Large Extent' and 'Large Extent' represent a variable which was highly agreed upon equivalent to the scale of 3.5<=5.4. Table 4-4-1 shows the level of usage of the Human Resources Information system among the respondents.

Table 4-4-1, Level of Usage of HRIS

	N	Mean	Standard. Deviation
-Level of Usage Training and Development	42	3.02	1.297
-Level of Usage Perfomance Management	42	3.00	1.397
-Level of Usage Workforce Planning	42	2.83	1.342
-Level of Usage Recruitment	42	3.33	1.373
-Level of Usage Benefits and Compensation	42	3.10	1.428
-Level of Usage Promotion	42	2.36	1.206

Source: Survey Data, 2014

From these research statistics findings, the study revealed that most of the staff of the Ministry of Health use the system for recruitment purposes. This represent mean of 3.33 showing a moderate extent usage of the system. The research also portrayed a great extent of usage in benefits and compensation having a mean of 3.1 followed by training and development which has a mean of 3.02. The research study also revealed that there is little usage of the system in both promotion having a mean of 2.36 and workforce planning having a mean of 2.83.

4.5 Quality of Data in Human Resource Information System

The study also sought to determine the quality of data being used in Human Resource Information System. This was done by identifying the key data quality premises which includes accuracy, completeness, relevance, duplication and consistency of the data. Research questions were administered to the respondents where they were required to give a yes or no response on each question. The results are organized in the Table 4.5.1.

Table 4-5-1, Data quality in HRIS

	Data Quality	**Response**		
		N	No (%)	Yes (%)
1	Data in HRIS is accurate	42	38.1	61.9
2	Data in HRIS is complete	42	52.4	47.6
3	Data in the HRIS is Relevant	42	26.2	73.8
4	Data in HRIS is consistent	42	33.3	66.7
5	Data in the HRIS has no duplication	42	33.3	66.7

Source: Survey Data, 2014

The study revealed that most of the respondents and Ministry of Health staff at large believe that the data being used in Human Resource Information System is not complete with only 47.6 percent of the total respondents answering yes to this question. The other concern about data quality on Human Resource Information System is accuracy with 61.9% of the respondent indicating that the data in Human Resource Information System is accurate. The study also shows that the Ministry of Health employees believe that the data in Human Resource Information System is relevant with 73.8% of the respondents agreeing to this question followed by 66.7% of the respondents who believe that the data in Human Resource Information System has no duplication.

4.6 Modules Usage in Human Resource Information System

The study explored on the various modules which are there in HRIS and the level of usage of each of the module. The study revealed that the most used module in Human Resource Information System is Search and Reporting module with 75% of the respondents indicating that they use the module. The study also showed that all the managers indicated that they use search and reporting module of the Human Resource Information System and this can be attributed to the fact that this module provides processed data for policy and planning. The results of usage of HRIS modules are organized in Table 4-6-1 and Table 4-6-2.

Table 4-6-1**, HRIS modules usage**

HRIS Modules	Responses		Percent of Cases (Usage %)
	N	Percent	
-User management and system configuration module	1	1.1%	2.7%
-Database Management module	6	6.7%	16.2%
-Position Management module	14	15.7%	37.8%
-Applicant Management module	14	15.7%	37.8%
-Employee management module	14	15.7%	37.8%
-Training Management module	12	13.5%	32.4%
-Search and reporting	28	31.5%	75.7%
Total	89	100.0%	240.5%

Source: Survey Data, 2014

Table 4-6-2, Total number of HRIS module users by Designation

	Designation			Total
	Managers	Assistant Manager	Specialists	
-User management and system configuration module	0	1	0	1
-Database Management module	3	1	2	6
-Position Management module	4	8	2	14
-Applicant Management module	4	8	2	14
-Employee management module	4	8	2	14
-Training Management module	9	2	1	12
-Search and reporting	15	11	2	28
	15	18	4	37

Source: Survey Data, 2014

The study revealed that most of the modules in HRIS are underutilized with majority having less than 50% of the respondents indicating they use the modules. The least

used module in HRIS is User Management and System configuration module with only 2.7% of the respondents indicating they use the module. This can be attributed to the fact that this module is mainly used by system administrators or ICT personnel to create users and configure parts of the system. Similarly the database management module has low of 16.2% usage which can also be attributed to the fact that the module is used to create base information which is not frequently used unless there is a required change.

4.7 Challenges of Human Resource Information System

The study sought to identify the key challenges faced by Human Resource Information System in the Ministry of Health. The question was administered through yes or no response to determine the challenges the users face while using Human Resource Information System. The results are presented in Table 4-7-1.

Table 4-7-1, Challenges of Human Resource Information System

	Do you agree with the following to be a challenge of the system?	**Total Respondents**	
#	**Challenge**	**No**	**Yes**
1	Lack of proper IT equipment is a challenge in using the system	12	30
2	Lack of skilled personnel to implement the system	14	28
3	I do not have the right skills to use the system	18	24
4	Lack of financial resources and capacity to implement the system	20	22
5	The system is not easily accessible	22	20
6	The system has poor data quality	23	19
7	Poor user acceptance and ownership of the system	24	18
8	The system is not integrated with other systems which makes it difficult to use	30	12

Source: Survey Data, 2014

The study revealed that majority of the Ministry of Health staff are of the opinion that lack of proper IT equipment is the main challenge facing implementation and use of Human Resources Information System at the Ministry with 71% of the respondents citing it as a challenge. Lack of skilled personnel to implement and support the system was also cited as a major challenge with 67% of the respondents agreeing with it as a major challenge affecting the system. Lack of enough skills among the Ministry of Health employee's was also noted to be a challenge in use and implementation of the system with 57% of the respondents citing it as a challenge.

4.8 Use of Human Resource Information System in decision making

The study probed to find the use of Human Resource Information System in decision making at the Ministry of Health. Table 4-8-1 represents the findings of the research.

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Decision Making	38	90.5%	4	9.5%	42	100.0%

Table 4-8-1, Usage of HRIS in decision making

	Responses		Percent of Cases (Usage %)
	N	Percent	
-Promotions decisions	16	12.0%	42.1%
-Gender distribution decisions	20	15.0%	52.6%
-Retirement planning decisions	16	12.0%	42.1%
-Recruitment and selection decisions	16	12.0%	42.1%
-Succession planning decisions	16	12.0%	42.1%
-Benefits and compensation decisions	8	6.0%	21.1%
-Training and development decisions	14	10.5%	36.8%
-Performance management decisions	14	10.5%	36.8%
-Workforce planning decisions	13	9.8%	34.2%
Total	133	100.0%	

Source: Survey Data, 2014

From the above results, it was noted that majority of Ministry of Health use Human Resource Information System in making decisions with regards to gender distribution of staff with 52% of the respondents indicating they use the system for this purpose. The study also noted that majority of female employees 79% indicated that they use Human Resource Information System in making decision on gender equality. This kind of information on gender distribution helps the policy makers to advocate for affirmative action and more positions for women in the workforce. In addition to that the analysis shows that the other form of decisions that employees make using HRIS is succession planning decisions which has 42.1% response rate, retirement planning with 42.1% of respondents affirming this and recruitment and selection decisions with 42.1% of respondents saying they use Human Resource Information System in making these decisions. The study also revealed that the least used Human Resource Information System decision making component is with regards to Benefits and

compensation with only 21.1 % of the total respondents noted to be using the system to make these decisions. This can be attributed to the fact that the Kenya government has an integrated payroll database and therefore most of the payments are paid through this database as opposed to Human Resource Information System. The other decisions which are least exploited from the system is workforce planning decisions with 34.2% of the total respondents citing that they use the system to make workforce planning decisions.

The study also sought to determine which sections use Human Resource Information system to make decisions about the workforce and the findings are presented in Table 4-8-2.

Table 4-8-2, Use of HRIS in decision making per section

	Percent(%) responses by Section					
	Training and development	Performance management	Workforce planning	Recruitment and Promotions	Benefits and compensations	HRIS section
Workforce planning decisions	0 0.0%	0 0.0%	10 76.9%	1 7.7%	2 15.4%	0 0.0%
Performance management decisions	0 0.0%	0 0.0%	9 64.3%	5 35.7%	0 0.0%	0 0.0%
Training and development decisions	7 50.0%	4 28.6%	2 14.3%	0 0.0%	1 7.1%	0 0.0%
Benefits and compensation decisions	2 25.0%	2 25.0%	2 25.0%	1 12.5%	1 12.5%	0 0.0%
Succession planning decisions	1 6.2%	2 12.5%	8 50.0%	5 31.2%	0 0.0%	0 0.0%
Recruitment and selection decisions	1 6.2%	1 6.2%	8 50.0%	5 31.2%	0 0.0%	1 6.2%
Retirement planning decisions	1 6.2%	2 12.5%	8 50.0%	5 31.2%	0 0.0%	0 0.0%
Gender distribution decisions	4 20.0%	4 20.0%	5 25.0%	2 10.0%	4 20.0%	1 5.0%
Promotions decisions	0 0.0%	2 12.5%	8 50.0%	5 31.2%	1 6.2%	0 0.0%

Source: Survey Data, 2014

From the results of this analysis, the study revealed that many users only use the system to make decisions which relate to their section, apart from a few cases.

4.9 Inferential Statistics

This section depicts the relationship, observation and conclusion of the data with regards to various dependent and independent variables. It also articulates the association strengths and weakness between dependent and independent variables. Pearson correlation and regression analysis was conducted to determine this relationship among various variables.

4.9.1 Pearson Correlation analysis

Pearson Correlation analysis was done to determine correlation between level of usage of Human Resource Information System in workforce planning and various aspects of data quality. The strongest relationship was obtained between level of usage of the system in workforce planning and data relevance aspect of data quality at (r=0.47) and the weaker relationship was between level of usage of the system in workforce planning and completeness of the data in the system (r=0.048). Table 4-9-1 represents the results of these findings.

Table 4-9-1a, Pearson Correlation analysis

		Level of Usage Workforce Planning	Data in the HRIS is Relevant
Level of Usage Workforce Planning	Pearson Correlation	1	.497**
	Sig. (2-tailed)		.001
	N	42	42
Data in the HRIS is Relevant	Pearson Correlation	.497**	1
	Sig. (2-tailed)	.001	
	N	42	42

Source: Survey Data, 2014

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

4.9.2 Regression Model

Analysis of the data collected was done using regression analysis between the independent and dependent variables. In this case, the dependent variable was usage of Human Resource Information System in workforce planning decisions and independent variables being lack of right skills to use the system, Employee management module and accuracy of data in HRIS. The results are organized in table 4-9-2a.

Model Summary

Table 4-9-2a, **Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.844[a]	.712	.689	.261

Source: Survey Data, 2014

Results in Table 4-9-2a indicate that the r-squared for the model was 0.712, which indicates that the independent variables can be used to explain about 71.2% of the level of usage of Human Resource Information System (HRIS) in workforce planning. This therefore shows that the regression model is able to explain the relationship between the dependent and independent variables as only a small percent i.e 31% of the variation in use of HRIS cannot be explained by the model.

Analysis of Variance

The analysis of variables was performed on the data and results obtained as per below tables.

ANOVA[a]

Table 4-9-2b, Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.392	3	2.131	31.329	.002[b]
	Residual	2.584	38	.068		
	Total	8.976	41			

a. Dependent Variable: Workforce planning decisions

b. Predictors: (Constant), I do not have the right skills to use the system, Employee management module, Data in HRIS is accurate

Source: Survey Data, 2014

The results of Analysis of Variance (ANOVAs) obtain a probability value of 0.02b therefore implying that the model is significant in predicting the relationship between independent and dependent variables. i.e the relationship between use of HRIS in

workforce planning and independent variables which are lack of right skills to use the system, employee management module and accuracy of data in HRIS.

Test for Coefficients

Regression analysis was performed to determine the relationship between independent and dependent variables. The results of the regression analysis are presented in the table 4-9-2c below.

Coefficients[a]

Table 4-9-2c, Test of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	.004	.077		.046	.963
	Data in HRIS is accurate	.097	.085	.102	1.138	.262
	Employee management module	.812	.086	.828	9.397	.000
	I do not have the right skills to use the system	.044	.083	-.047	-.523	. 404

a. Dependent Variable: Workforce planning decisions

Source: Survey Data, 2014

The regression analysis was used to test the significance on accuracy of data in HRIS, employee management module and lack of skills to use HRIS on making HR decisions in workforce planning. The following regression model was obtained by this analysis.

Workforce Planning Decisions= $0.04+0.097X_1+.0.0812X_2+0.044X_3+0.077$

From the results obtained from this analysis, by holding all other factors constant the use of Human Resource Information System in making Workforce planning decisions is influenced by accuracy of the data in the system and having the right skills to use the system. A unit change in accuracy of the data in Human Resource Information system all the other factors constant will lead to a unit change in use of system in workforce planning by 0.097. A unit change in use of Human Resource Information system employee management module will lead to a unit change in use of system in workforce planning by 0.812 where lack of enough skill will lead to a 0.44 unit change in workforce planning decisions. This therefore shows that use of employee management module has a highest impact on the use of the system in making workforce planning decisions. However other factors may also have an influence on use of HRIS in making workforce planning decisions. The analysis shows that all the independent variables are significant in determining the predictive values of the dependent variables with accuracy of the data having a significance of 0.262 whereas that of skills to use the system has a significance of 0.404.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter focuses on the summary, conclusions, and recommendations of the research findings and suggestions for further studies.

5.2 Summary of the Findings

The objective of this study was to determine the extent to which Human Resource Information System is being used in the Ministry of Health, challenges, quality of data and establish the influence of the system in decision making at the Ministry of Health. Both descriptive and inferential analyses were conducted on the research data collected. The descriptive analysis helped to describe various aspects of the objectives of the study through use of frequencies, percentages, mean and standard deviation. Both Regression and Pearson correlation analysis techniques were used to determine the relationship between dependent and independent variables.

The study sought to determine the level of usage of Human Resource Information system in the Ministry of Health. On a five point Likert scale (Very Large Extent, Large Extent, Moderate Extent, Small Extent, No Extent), respondents were asked about the extent to which they use the Human Resources Information System for their day to day work. The choices 'Small Extent' and 'No Extent' represent a variable which shows little or no use of the system equivalent to the scale of 0<=2.4. The choices 'Moderate Extent' represents a variable which is agreed upon moderately and is equivalent to the scale of 2.5<=3.4. The choices of 'Very Large Extent' and 'Large Extent' represent a variable which was highly agreed upon equivalent to the scale of

3.5<=5.4. The study revealed that most of the staff of the Ministry of Health use the system for recruitment purposes. The research also portrayed a great extent of usage in benefits and compensation having a mean of 3.1 followed by training and development which has a mean of 3.02. The research study also revealed that there is little usage of the system in both promotion having a mean of 2.36 and workforce planning having a mean of 2.83.

With regards to the quality of data being used in the Human Resource Information System, the study revealed that most of the respondents believe that the data being used in Human Resource Information System is not complete with only 47.6 percent of the total respondents answering yes to this question. The other concern about data quality on Human Resource Information System is accuracy with 61.9% of the respondent indicating that the data in Human Resource Information System is accurate. The study also revealed that the Ministry of Health employees believe that the data in Human Resource Information System is relevant with 73.8% of the respondents agreeing to this question followed by 66.7% of the respondents who believe that the data in Human Resource Information System has no duplication.

The study explored on the various modules which are there in HRIS and the level of usage of each of the module. The study revealed that the most used module in Human Resource Information System is Search and Reporting module with 75% of the respondents indicating that they use the module and a good number of this being senior managers. The study also revealed that most of the modules in HRIS are underutilized with majority having less than 50% of the respondents indicating they use the modules. The study revealed that the least used module in HRIS is User

Management and System configuration module with only 2.7% of the respondents indicating they use the module.

The study probed to find the use of Human Resource Information System in decision making at the Ministry of Health and it revealed that majority of Ministry of Health use Human Resource Information System in making decisions with regards to gender distribution of staff with 52% of the respondents indicating they use the system for this purpose majority of the respondent who indicated this being female. In addition to that the analysis showed that the other form of decisions that employees make using HRIS is succession planning decisions which has 42.1% response rate, retirement planning with 42.1% of respondents affirming this and recruitment and selection decisions with 42.1% of respondents saying they use Human Resource Information System in making these decisions. The study also revealed that the least used Human Resource Information System decision making component is with regards to Benefits and compensation with only 21.1 % of the total respondents noted to be using the system to make these decisions. The other decisions which are least exploited from the system is workforce planning decisions with 34.2% of the total respondents citing that they use the system to make workforce planning decisions.

The study sought to identify the key challenges faced by Human Resource Information System in the Ministry of Health. The study revealed that majority of the Ministry of Health staff are of the opinion that lack of proper IT equipment is the main challenge facing implementation and use of Human Resources Information System at the Ministry with 71% of the respondents citing it as a challenge. Lack of skilled personnel to implement and support the system was also cited as a major challenge with 67% of the respondents agreeing with it as a major challenge affecting

the system. Lack of enough skills among the Ministry of Health employee's was also noted to be a challenge in use and implementation of the system with 57% of the respondents citing it as a challenge.

Inferential statistics were conducted to determine relationships between dependent and independent variables .Pearson Correlation analysis was done to determine correlation between level of usage of Human Resource Information System in workforce planning and various aspects of data quality. The study revealed that there is a strong relationship between level of usage of the system in workforce planning and the relevance of the data in the Human Resource Information System. Regression analysis revealed that use of Human Resource Information System in making workforce planning decisions is influenced by accuracy of the data in the system and having the right skills to use the system with employee management module having the highest impact on the use of the system in making workforce planning decisions.

5.3 Conclusion

The study revealed that data quality has a great impact on use of Human Resource Information System in workforce planning and therefore incorporating all the aspects of data quality will improve decision making in health policy and planning. Adoption and use of Human Resource Information System will enable the health managers to make informed decisions about the status of the health workforce in the country, thus enabling them to solicit for more resources and deploy them when and where they are needed. Efficient use of Human Resource Information System and ensuring the date is quality will not only enable the policy makers to plan, but also it will highly assist in

health sector forecasting thus enabling the health manager to anticipate the future resources and needs in the Ministry of Health and health sector at large.

5.3 Recommendations

From the analysis and the conclusion of this study, the study has suggested the following recommendations: There is a need for the Ministry of Health and other partners involved in the Health sector policy and planning, to strengthen the ICT infrastructure at the Ministry of Health. The study revealed that majority of the Ministry of Health staff lack of proper IT equipment to use the Human Resources Information. The Ministry of Health needs to invest adequately in building IT skills of the employees as lack of skilled personnel to implement and support the system was cited as a major challenge affecting the use and implementation of the system. The is also a need to ensure that data being populated in the Human Resource Information System is of high quality and relevant as this was noted to have a great impact in decision making especially with regards to making work force planning decisions.

Data quality needs to be considered from the time the data is being collected, cleaned and populated in the Human Resource Information System. The Ministry should ensure that the data being fed in the system conforms to all aspects of data quality which includes completeness, accuracy, consistency, relevance and no duplication.

In order to exploit the full potential of the Information System, the study recommends that the Human Resource Information Systems should be design in such a way that it is interoperable with other existing systems. This will enable the Ministry to have a robust and an integrated health information system which will contain all the health sector information in a single data warehouse and subsequently improving policy and

planning. The study also recommends that in order to expand the usage of the system, the ministry should rollout the system to subnational levels which includes counties and district level health management and other key players in the health sector which includes private and faith based organizations(FBOs) health facilities.

5.4 Limitation of the Study

The major limitation of the research study was resources availability and time constraint. This was mainly incurred during data collection where financial resources and time is key for successful data collection. Availability of the respondents also deterred the process of data collection and therefore it took a longer duration to complete the exercise than earlier anticipated. The other limitation was confidentiality of the information especially considering Ministry of Health is a government institution and therefore respondent were hesitant to disclosing all the information. However this was mitigated by researcher providing an introductory letter from University of Nairobi that shows the study is only for academic purpose.

5.5 Suggestions for further studies

The research study focused on the Human Resource Information System at the Ministry of Health. However further research can be done to include other key health sector players which include private and Faith Based Organizations such as CHAK, KEC and SUPKEM. This will ensure that the further study will reflect the status of Human Resource Information Systems in the health sector at large. Further research can also be done on other Health Information Systems and how Human Resource Information System interfaces with other system to improve health policy and planning in the country and globally.

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Appendix 1: Questionnaire

Please fill the following questionnaire by filling the blank space against the questions provided or ticking (√) the most appropriate answer.

Part A: General Information

Your Designation……

Your Section……...

Highest education Level

Diploma [ ] Undergraduate[ ] Postgraduate [ ]

Age (in years)

20 and below: [ ]

21-25: [ ]

26-30: [ ]

31-35: [ ]

36-40: [ ]

41-45: [ ]

46-50: [ ]

51-55: [ ]

56-60: [ ]

61 and above: [ ]

Gender

Male [ ] Female [ ]

How long have you worked at the Ministry of Health?

Less than 1year [ ]

2 to 5 years [ ]

5 to 10 years [ ]

More than 10 years [ ]

Part B: Level of use of Human Resource Information System (HRIS)

To what extent do you use the system for below HR functions?

1. Very Large Extent
2. Large Extent
3. Moderate Extent
4. Small Extent
5. No Extent

#	**Use of HRIS**	**1**	**2**	**3**	**4**	**5**
1	Training and development					
2	Performance management					
3	Workforce planning					
4	Recruitment					
5	Benefits and compensations					
6	Promotion					

Part C: Challenges of Human Resource Information System (HRIS)

Do you agree with the following to be a challenge of the system?

#	**Challenges of HRIS**	**Yes**	**No**
1	Lack of proper IT equipment is a challenge in using the system		
2	The system has poor data quality		
3	The system is not integrated with other systems which makes it difficult to use		
4	I do not have the right skills to use the system		
5	Poor user acceptance and ownership of the system		
6	Lack of financial resources and capacity to implement the system		
7	Lack of skilled personnel to implement the system		
8	The system is not easily accessible		

Part D: Quality of data in the Human Resource Information System.

To what extent is the data in HRIS quality?

#	**Quality of data in HRIS**	**Yes**	**No**
1	Data in HRIS is complete		
2	Data in HRIS is accurate		
3	Data in HRIS is consistent		
4	Data in the HRIS is Relevant		
5	Data in the HRIS has **no** duplication		

Part E: Modules in Human Resource Information Systems.

Do you use the following modules in HRIS?

#	**Modules in HRIS**	**Yes**	**No**
1	User management and system configuration module		
2	Database Management module		
3	Position Management module		
4	Applicant Management module		
5	Employee management module		
6	Training Management module		
7	Search and reporting		

Part F: Using HRIS for decision making.

Do you use HRIS in making decision regarding the following?

#	**Decisions made using HRIS**	**Yes**	**No**
1	Workforce planning		
2	Performance management		
3	Training and development		
4	Benefits and compensation		
5	Succession planning		
6	Recruitment and selection		
7	Retirement planning		
8	Gender distribution		
9	Promotions		