ADDIS ABABA UNIVERSITY
COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES
SCHOOL OF INFORMATION SCIENCE

Factors that affect the Usage of HRIS in Public Health Institutions of Ethiopia

By

Hamelmal Kiros

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Addis Ababa, Ethiopia

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Name and signature of Members of the Examining Board

Name	Title	Signature	Date
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_____	Examiner	_____	_____

DEDICATION

*This work is dedicated to my mother **Nigisty Tamyalow**, Missed you so much my mom!!! But your sprit is always with me! And to my father **Kiros Tewolde** for his continuous inspiration, support and encouragements throughout my life (Thank you Dad!!!).*

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May God bless you all!!!

ABSTRACT

In the current Information Age, the success of any organization is centered on the extent to which it is able to adopt new changes in Information Technology.

Human Resources Information System (HRIS) is one of the automation which is a key element in health organizations to manage properly the scare resources. Managing information is essential to the modern HR function in any organization.

This study is aimed at identifying the factors affecting the usage of HRIS in the public health institutions of Ethiopia. The specific objectives were to assess the extent of utilization of HRIS as well as to explore the existing challenges in using the system. This study used a total population of 265 staff members, a simple random sampling & purposive sampling were used to select 104 respondents. Data were collected through questionnaires, interview and focus group discussion.

As a finding, employees in the sample organizations need the assistance of technology, however different constraints make them neglect and sometimes resist the use and adaptation of technology in their day to day operations. The application of HRIS is challenged by poor infrastructure or weak network connection, inadequate training or capacity building of employees , absence of continuous professional support and other related factors which as a result the HRIS technology cannot meet the expectation of the employees.

Based on the findings of the study , the researcher recommended the government needs to be involved in solving the infrastructure related issues and make a policy to give training on Information system(IS) on different sectors of the country which as a result will help the attitude of the users regarding in usage of IS . The top management needs to be committed & dedicated for addressing the status of the utilization level of HRIS and give support or solve the critical factors identified.

Key words: HRIS, DeLone& McLean IS Success Model, System Quality, Information Quality, Service Quality, Use, User Satisfaction, Net Benefits

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LIST OF ACRONYMS

CDC- Centers for Disease Control and Prevention

CEO- Chief Executive Officer

E-HRM - Electronic Health Resource Management

FMOH - Federal Ministry of Health

HR - Human Resource

HRH- Human Resource for Health

HRIS- Human Resource Information System

HRM- Human Resource Management

ICT- Information Communication Technology

IS- Information System

IT- Information Technology

NCPB - National Cereals and Produce Board

MSH- Management Science for Health

PEPFAR- President's Emergency Plan for AIDS Relief

SMEs- Small and Medium Enterprises

SPSS- Statistical Package for Social Science

TAM - Technology Acceptance Model

TOE - Technology Organization Environment

WSW- West South West

WWW – World Wide Web

Chapter one

Introduction

1.1 Background

Technological advances are revolutionizing the way organizations manage HR information and technological changes may even be helping redefine the role of HR in the organization. Now, due to opportunities presented by technology, some are calling for a transformation of HR from a strategic partner to an agent of change (Wright et al., 1998).

In recent times, many countries have developed interest in the use of technological advancements to promote effectiveness and efficiency in facilitating service delivery achievement in respect to human resource management (HRM).The increasing pressure to support strategic objectives and the greater focus on shareholder value have led to changes in both job content and expectations of HR professionals (Ball,2000). Due to the increasing use of Information System (IS) in the industrial operations, HR professionals became accustomed to use IS for HR activities from the early 1980's (Voermans and van Veldhoven, 2007).

HRM recently turned its concentricity on sharing of knowledge and strategic analysis of the workforce and has been increasingly evolving into a considerable contributor on the organizational strategic management (Rodriguez and Ventura, 2003; Troshani et al., 2011).

Human Resource Information System (HRIS) is a concept concerning the utilization of Information Technology (IT) development and characteristics for effective management of the Human Resource Management (HRM) functions and applications. HRIS is considered as a systematic procedure for collecting, storing, maintaining, and recovering data required by the organizations about their human resources, personnel activities and organizational characteristics (Kovach et al., 2002). According to Hedrickson, 2003, "HRIS can be briefly defined as integrated systems used to gather, store and analyze information regarding an organization's human resources." The application and implementation of IT in HRM is called electronic human resource

management (EHRM) or human resource information systems (HRIS). These two terms are interchangeably used in many IS studies related to HRM.

Bondarouk et al.(2009) have recently claimed that e-HRM has been interchangeably coined with Human Resource Information System (HRIS), virtual HRM, web-based HRM and Intranet-based HRM. In order to increase the effectiveness of HRM, organizations are becoming more dependent on HRIS (Ball, 2001; Lippert&Swiercz, 2005).

Health care is one of the crucial components of basic social services that have a direct linkage to the growth and development of a country as well as to the welfare of society (Tewodros,2011). Human resources for health (HRH) are essential in the delivery of healthcare but can also represent a barrier in low-resource settings where human resources are in short supply and/or poorly managed information shortages can compound resource shortages. To address the need for timely and comprehensive HRH information, governments and organizations have been investing in electronic health information interventions (Riley et al.,2012).

HRIS is a system for collecting, processing, managing and disseminating data and information on Human Resource. A comprehensive well designed and implemented, HRIS empower decision makers to anticipate a variety of HRH issues (De Vries DH et al., 2009 ; Wakibi S,2008).

In Ethiopia, FMOH in collaboration with Tulane University has developed and implemented an electronic web based HRIS in order to meet the growing need of high quality data/information on human resources in the health systems to inform decision making at national, regional and lower levels. HRIS has been implemented in public health sectors of Ethiopia since 2009 G.C with the main objective of providing decision makers with appropriate knowledge, information and tools to assist them in the planning of the supply and demand, regulation and management of the health sector workforce towards ensuring an effective service delivery at national, regional and lower levels (FMOH, 2014).

A country needs accurate statistical information on human resource for health (HRH) to ensure that the right personnel are in the right place with the right skills. But, there is lack of accessibility of HRH specific information in developing countries (WHO Report, 2006) due to the minimal practice of HRIS in the Health sector. This study will explore the factors that affect the implementation and usage of HRIS in public Health sectors of Ethiopia.

1.2 Problem Statement

As an organization introduces HRIS, each employee who works with the system evaluates the new technology, for example, in terms of its usefulness and ease of use (Davis et al., 1989). The skills required to operate the new system represent a crucial success factor for HRIS employees (Panayotopoulou et al., 2007), as large numbers of HR employees do not have skills and knowledge to use the system (Lukaszewski et al., 2008). This restricts HR employees from exploiting the full potential of HRIS. When employees are not even aware of all the possibilities of HRIS, they may evaluate the system rather negatively. Conversely, HR employees who know how the system performs and thus how it facilitates their work and provides them more time for strategic task, perceive the HRIS as more useful.

In a related study , (Hagood and Friedman,2002) observed that HRIS implementation success has emerged as a significant challenge for organizations attempting to justify planned investments or recover expenses associated with investments already incurred. Krishnan and Singh (2006) found in their study that there was a lack of knowledge from the HR department about the HRIS, and there was a lack of importance in HR department in implementing HRIS.

Few studies have been conducted to address the issues associated with the utilization of HRIS. Hooi (2006) tried to understand the extent of e-HRM practiced in Malaysian SMEs in the manufacturing sector and he come up with the findings that more companies use conventional HRM than e-HRM. More on this, he identified lack of financial resources, expertise or suitable infrastructures are among the factors that affects the implementation of e-HRM. Nevertheless this research was done in manufacturing sector which as a result the other industries were out of the scope of the study.

Majority of the studies about HRIS have been conducted in developed countries (Nagai and Wat,2004; Panayotopoulou et al., 2007) . In addition to this, a number of studies were conducted on exploring the challenges associated with implementation & adoption of HRIS which shows that there has been little exploration of issues associated with HRIS Usage(Lin, 1997 ; Teo, 2007).

Currently there are limited researches of HRIS which are conducted in the context of Ethiopia. In connection to this, Markos (2013) has also studied the challenges and practices of HRIS in public organizations of Ethiopia and he pointed out challenges like lack of funding to acquire, update, and maintain critical HRIS, lack of expertise in IT to

operate the HRIS and weakness of the organizations to train, educate and develop the HRIS staff and insufficient financial support which results in poor HRIS implementation process. However, the researcher explored the challenges that contribute to poor HRIS implementation and barriers or challenges for effective utilization of the system were out of the scope of the study. Overall, the local research attempts did not address the usage related issues of HRIS in Ethiopia context.

Even though HRIS has already been implemented in various public health institutions of Ethiopia; the health institutions are not fully utilizing the system and even in some parts of the country the system has not yet been implemented which as a result the health institutions is fully engaged in the manual system which caused error, delay and lack of consistency in decision making which also affects the performance, efficiency and productivity of the organizations health workforce.

Therefore ,this research is the first to explore the potential factors that affects the usage of HRIS in public health institutions of Ethiopia .In addition to this, since no research about HRIS has used the mixed method approach, this study has been used it in order to make new findings.

Based on the identification of the gaps in the prior studies, this research explores and answers the following research questions:

1. To what extent is HRIS being utilized by its' users?
2. What are the challenges for using HRIS effectively?

1.3 Objectives

1.3.1 General Objective

The main objective of this research is to explore the potential factors that affect the effective utilization of HRIS in public Health Institutions of Ethiopia and providing recommendation for successful usage of such system.

1.3.2 Specific Objectives

To achieve the general objective of the study, the following specific objectives are identified:

- To assess the extent of utilization of HRIS

- To identify factors that influence the utilization of HRIS
- To prioritize identified factors to determine the critical factors

1.4 Significance of the study

The theoretical contribution of this research is to fill the existing literature gap regarding HRIS usage in Ethiopia in particular focused on the health information system. The practical contribution of this study is to explore the potential factors that affect the usage of HRIS in public health institutions of Ethiopia and provide recommendation for successful usage of the system.

The benefits of this research are:-

- To help organizations to figure out their level of utilization of HRIS.
- To identify the key issues in association with utilization of HRIS and provide recommendations to address the issues identified.
- To give some insights for the practitioners to acquire a better understanding of the current status, benefits, and issues towards the usage of HRIS.

Based on these it is expected that organizations can benefit from this research findings and recommendations to improve their level of HRIS usage and this study could also be used as an input for further studies in this area.

1.5 Scope and limitation of the study

Although attainment of the health-related Millennium Development Goals relies on countries having adequate numbers of human resources for health (HRH) and their appropriate distribution, global understanding of the systems used to generate information for monitoring HRH stock and flows which is known as human resources information systems (HRIS), is minimal(Riley et al.,2012).

Even though, HRIS are vital for the effective operation of health organizations (Kabene et al.2006), they are underrepresented within the health and information systems literature, due to this, the focus of this study is on Health Institutions.

This study considered the health institutions located in Addis Ababa which could miss the key issues of HRIS usage of the other regions and industries. Due to time limitation, this study has only considered eleven organizations.

Individuals who will be using the HRIS can be split into two general groups: employees and nonemployees. The employee category includes managers who rely on the HRIS

and the data analyzed by the analyst/power user to make decisions; analyst/power users who use the HRIS to evaluate potential decision choices and opportunities; technical staff who are responsible for providing a system that is usable and up-to-date for each user and clerical employees who largely engage in data entry (Michael at al.,2010). Due to this reason, this study has only considered the HR & IT Departments including the management staffs of these two departments of the selected organizations.

1.6 Organization of the study

This study consists of five chapters. Chapter one presents the introduction background, statement of the problem with research questions, the general and specific objective of the study, significance of the research, scope and limitation. The second chapter is about literature review on theoretical and empirical researches related to HRIS, factors that affects the usage of HRIS. In Chapter three the research approach, research sampling, data collection procedures, data analysis technique and data validation are discussed. The quantitative and qualitative results of the study are presented in chapter four. The findings were presented based on the specific objective and research question of the study. Finally, chapter five presented general conclusions and recommendations made based on observations and results from the study.

Chapter Two

Literature Review and Related Works

2.1 Overview

Different research articles are reviewed from different sources in order to have an in depth understanding of the factors that affect the usage of HRIS. This chapter covers both theoretical and empirical literature review of general and related topics to support this study.

2.2 Definition of HRIS

Recent research has revealed quite a number of definitions of HRIS, stemming from the seminal definition promulgated by DeSanctic (1986): "a systematic procedure for collecting, storing maintaining, retrieving, and validating data needed by an organization about its human resources, personnel activities, and organization unit characteristics. It is generally a collection of data bases that integrate together to form a vast record of all employee issues that exist within a company. Its development has been evolutionary".

Recent developments in technology have made it possible to create a real-time information based, self-service, and interactive work environment (Boateng, 2007). Personnel information systems have evolved from the automated employee record keeping from the 1960s into more complex reporting and decision systems of late (Boateng, 2007). Hence, HRIS is the integration of software, hardware, support functions and system policies and procedures into an automated process formulated to harness the strategic and operational activities of the human resources department and managers in the organization (Chauhan, Sharma and Tyagi, 2011).

A Human Resource Information System (HRIS) uses a systemic procedure for maintaining, collecting, storing, retrieving, and validating and needed by an organization regarding their human resources, personnel activities and organizational characteristics. It can be said that HRIS is the link between Human Resource management (HRM) activities and information technology (Kovach and Cathcart, 1999).

There are different definitions of human resource information systems (HRIS) as follow, Kovach&Cathcart, (1999) defines "HRIS as a systematic procedure for collecting, storing, maintaining, retrieving, and validating and needed by organization about its human

resources, personnel activities, and organization unit characteristics (Kovach &Cathcart, 1999)." Tannenbaum, (1990) defines "A human resources information system is a technology-based system used to acquire, store, manipulate, analyze, and retrieve, and distribute pertinent information regarding an organization's human resources." On the other hand, according to Hendrickson (2003), human resource information system includes the people, policies, procedures and data that required to manage human resources functions other than the applications that comprise the technical part of the system as hardware and software applications, he puts emphasis on the notion of HRIS which, in his view, is seen as crucial to any organizational information system having many facets. In such view, HRIS is not only represented by computer based tasks or HR-related programs; rather it comprehensively involves people, structures, strategies, processes and information.

Kavanagh, Gueutal and Tannenbaum (1990) defined it similarly as a system used to acquire, store, manipulate, analyses, retrieve and distribute information regarding an organization's human resource. Bohlander and Snell (2011) define "human resources information systems as system that develops current and accurate information for decision-making and monitoring. As they report, according to a recent survey, most of applied information technology has been to maintenance staff's information, monitoring salary operations, keeping information about absences and doing administrative affairs and employment and training programs. Computerized system is just for collecting, storing, maintaining, retrieving organization's required data about its employees. In addition to the above usages they are developed to help planning, administrative functions, decision making and controlling human resource management activities.

2.3 The Concept of HRIS

In recent times, many countries have developed interest in the use of technological advancements to promote effectiveness and efficiency in facilitating service delivery achievement in respect to human resource management (HRM). Today HRM is robustly becoming dependent on Human resources Information System (HRIS) (Lippert and Swiercz, 2005; Troshani, et al., 2011). As a result, the HRM area has had unprecedented technological advancement in technology (Ngai et al., 2008) that also gave rise to implementation of the HRIS in order to support HRM processes.

HIRS is defined as a system which is used to acquire, store, manipulate, retrieve and distribute pertinent information about an organization's human resources (Kavanagh, Thite, & Johnson, 2012) supported by the Internet. On the other hand, Ruel et al. (2011) defines HRIS as an IT-based information system and applications for the purpose of HRM in facilitating HR practices, processes and strategies. Consequently, and boosted by the ubiquitous and pervasive nature of the Internet, the HRIS has emerged as a significant interdisciplinary instrument to realize governments human resource (HR) objectives. To successfully achieve the HRM function, governments have capitalized on the rollout of HRIS to perform the human resource function.

Hendrickson (2003) mentioned in his study "Human Re- sources Information Systems", Backbone Technology of Contemporary Human Resources, the concept of HRIS. He stated that HRIS is the case with any multifaceted organizational information system, HRIS is not limited to the computer hardware and software applications that encompass that technical part of the system, it also has the people, policies, producers and data required to manage the HR function. While Kovach et al (2002) study "Administrative and Strategic Advantages of HRIS", they believe that HRIS is a systematic process for collecting, storing, maintaining, retrieving and validating data needed by organization about its human resources, personal activities, and organization between human resource management and information technology. In today's knowledge economy, organizational success depends almost disproportionally on the performance of human resources (HR) (Lippert and Swiercz, 2005). HR management (HRM) has recently shifted its focus on knowledge sharing and strategic workforce analysis and has been increasingly evolving into a significant contributor in the strategic management of organizations (Rodri'guez and Ventura, 2003). This shift is partially attributed to HR technologies, such as HR information systems (HRIS) which consist of systematic procedures and functions for acquiring, storing, manipulating, retrieving, analysing, and disseminating pertinent information concerning organizational HR (Lippert and Swiercz, 2005).

Recently, traditional HRM has been lifted its attention on strategic management of organizations through a significant contribution in strategic workforce analysis and knowledge sharing to achieve organizational goal (Lawler &Mohrman, 2003). This shift is moderately attributed to human resource (HR) technologies such as E-HRM, HRIS - human resource information systems, and etc.

A changing social and organizational environment and rapidly evolving information technologies. Social and organizational changes exert pressure on HR professional to provide expanded services, of a higher quality, faster, and seamlessly linked with other corporate functions (Pfeffer, 1995). Information technologies (IT), which provide enabling technologies to assist HR professionals in the delivery of services, have also simultaneously increased the expectations that employees, managers, customers, suppliers, and regulators have for the HR function.

2.4 Evolution of HRIS

Prior to World War II HR professionals (which were referred to "personnel" staff) performed basic employee record keeping as a service function with limited interaction with core business missions. Initial efforts to manage information about personnel were frequently limited to employee names and addresses, and perhaps some employment history, often scribbled on 3x5 note cards (Kavanaugh et al., 1990). Between 1945 and 1960, organizations became more aware of human capital issues and began to develop formal processes for employee selection and development.

Recent developments in technology have made it possible to create a real-time information based, self-service, and interactive work environment (Boateng,2007). Personnel information systems have evolved from the automated employee record keeping from the 1960s into more complex reporting and decision systems of late (Boateng, 2007).

One of the computerized information systems first used by American organizations was that within the personnel department. In the 1950s, select organizations began to install automated payroll systems (Blair, 1988).

Because large corporations were the typical users of early HRIS, the initial development of software was directed towards the mainframe computer market. Due to the fact that large employers were the only customers for HRISs, software vendors and HRIS professionals were guided by their needs. At this time, most systems were batched which produced systems that were centralized.

At the same time, organizations began to recognize the importance of employee morale on the firm's overall effectiveness. While this period of change in the profession did not result in significant changes in HRIS (although employee files did become somewhat more complex), it set the stage for an explosion of changes that began in the 1960s (Kavanaugh et al., 1990).

During the next twenty years (1960 to 1980) HR was integrated into the core business mission, and governmental and regulatory reporting requirements for employees also increased significantly. In the 1980s, office automation was initiated in many large corporations. This led to the increased development of HRISs. (Roberts, 1997).

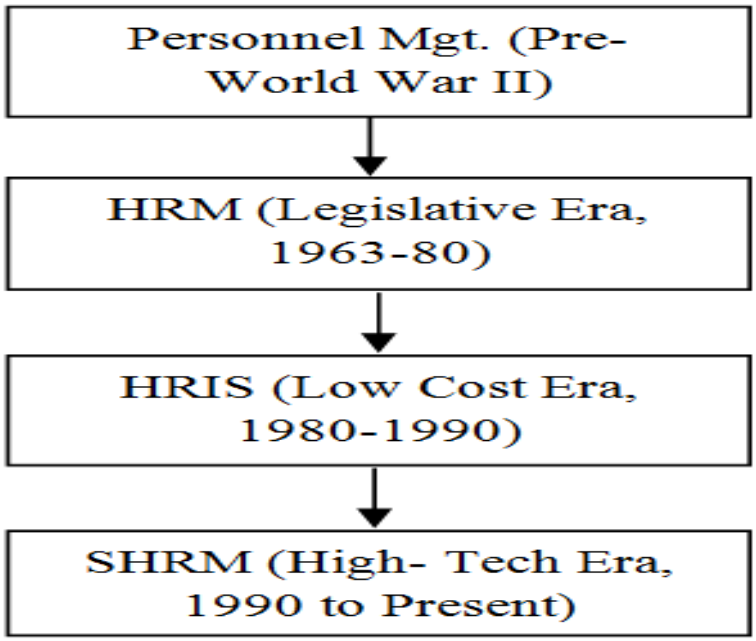

Figure 1: Evolution of HRIS

The advent and widespread use of mainframe computers in corporate America corresponded with this regulatory increase and provided a technological solution to the increased analytical and record-keeping requirements imposed by growing regulation of employment and a host of new reporting requirements (e.g. Affirmative action, EEO, OSHA, etc.). The Human Resources department became one of the most important users of the exceptionally costly computing systems of the day, often edging out other functional areas for computer access. Although HRIS systems were computerized and grew extensively in size and scope during this period, they remained (for the most part) simple record-keeping systems (Kavanaugh et al., 1990).Over the last two decades; firms have increasingly relied on the HR function to provide management solutions that increase the effectiveness of human capital. Additionally, the regulatory requirements and competitive pressures to effectively manage human assets are no longer limited to large firms with mainframe computing systems.

Fortunately, as smaller and mid-size firms have come to rely on more complex HR practices, personal computers have made modern HRIS systems affordable and available (Kavanaugh et al., 1990). Regardless of firm size, HRIS systems have evolved into complex tools designed not only to manage a rich variety of information about the firm's human capital, but to also provide analytical tools to assist in decision making about the management of those assets.

2.5 Benefits of HRIS

Human Resource Information System (HRIS) is used to gather and maintain the data that describe human resources, transforming data into information and then reporting the information to users (Ngai et al, 2008). The use of a HRIS would reduce HR costs by automating information and reducing the need for large numbers of HR employees; by helping employees to control their personal information; and by allowing managers to access relevant information and data, conduct analysis, decide, and communicate with others without consulting an HR professional (Ball, 2001). The rationale of any HRIS is to provide its users with information. Most HR processes can be done by using HRIS on a daily basis which can benefit the organization in several ways (Ruel et al., 2004).

Despite having several obvious benefits of this technology, organizations, especially from developing & under developed countries, are not in the position to enjoy the full benefits of HRIS due to some obstacles and challenges interrupting the proper implementation.

The use of an HRIS offers incremental leaps in the efficiency and the response time of many human resource jobs that are traditionally labor intensive. The HRIS helps to eliminate duplication of efforts and to better organize the efforts of the HR staff. Guinn (1998) has shown that organizations that implement one system usually implement another. One key benefit of an HRIS is the ability to consistently develop and manage employees based on the value of an individual's contribution. An HRIS also provides better knowledge management, which can improve an organization's competitive advantage (Lin, 2005). In addition, the system can produce many HR reports that can better inform management about the staff. New HR systems will provide the infrastructure needed not only to hire, manage, and motivate and evaluate people, but it will also assist in longer-range business planning, staff forecasting, facilities planning, and budgeting (Horney&Ruddle, 1998). The use of an HRIS provides additional benefits to an organization.

It can improve the efficiency of the HR operation, which will improve profitability. An HRIS can generate a new level and number of reports. It can allow the employees to enter data directly (Bsat & Beckers, 2002). The HRIS can allow the HR staff to shift from data maintenance to the strategic use of human resources. The decreased demand for time-consuming data processing will provide the opportunity to focus upon more global activities. In addition, one of the new trends in HRISs is the use of kiosks that allow employees to update and verify personal information, which reduces the need for HR personnel to perform this function. Many organizations leverage their investment in an HRIS by integrating it with other internal systems. This is commonly witnessed by the combination of the HR and payroll functions.

Such an HRIS is extremely valuable in selecting people for global assignments and managing them while they are abroad. An integrated global HRIS can assist HR personnel in integrating global issues with local concerns and consequently giving employees who are going abroad information they need to assess the value of the move (Stroh, Grasshoff Rude, & Carter, 1998). Hence, HRISs can help companies select candidates for global assignments. An HRIS can also be used to great benefit in the area of job placement and promotion planning.

According to Tensaki, et al. (1998) organizational execution failures are often the result of poor human capital management. This highlights the need for the human resource function to be included in the organization's strategic planning.

In addition, Kovach et al. (2002) listed several administrative and strategic advantages to using HRIS. Similarly, Beckers and Bsat (2002) pointed out at least five reasons why companies should use HRIS. These were that HRIS can:

- Increase competitiveness by improving HR operations;
- Produce a greater number and variety of HR-related reports;
- Shift the focus of HR from the processing of transactions to strategic HRM;
- Make employees part of HRIS; and
- Reengineer the entire HR function of companies

Broderick and Boudreau (1992) examined how HRIS can contribute to cost reductions, quality/customer satisfaction, and innovation. Sadri and Chatterjee (2003) stated that when the HRIS function was computerized, faster decision making can be carried out on the development, planning, and administration of HR because data can be much easier

to store, update, classify, and analyze. In addition, they noted that HRIS can strengthen an organization's character.

2.6 HRIS in Healthcare

Human resources are the backbone of any national health care system. To ensure that the right personnel are in the right place with the right skills, we need up to date and accurate data on human resource for health (HRH). A strong human resource information system (HRIS) helps policy makers, administrators, and managers quickly answer key questions affecting health care service delivery. It has been argued that in developing countries there are deficiencies in the availability of HRH-specific information, and even more so in with regard to its consolidation, standardization, analysis, and use in the planning and managerial processes (WHO Report, 2006).

Ideally, HRIS development would begin with a systematic review and appraisal of existing data sources, mechanisms, indicators, tools, and systems in both public and private sectors. Once HRIS assessment has been carried out, the plan would proceed in a systematic manner to make decisions concerning HR issues.

Many developing countries face daunting obstacles in meeting the health care needs of their people. One important reason is the lack of reliable and accurate data on HRH which impedes proper planning, decision making and even the resource allocation. A strong HRIS informs and enables the decision makers to address many of the key policy and management questions, which of course affect the health care delivery system. The HRIS is an important tool which is globally used by the decision makers to use data for leading and managing their HR in the health sector (WHO Report, 2006).

The World Health Organization (WHO), through its Department of Human Resources for Health, works with the member states to strengthen their capacity for managing their health workforce, so that health services can become more and more responsive. WHO and other development agencies greatly emphasize on HR development within each country's health sector policies. Ideally, HRIS involves forging a global consensus on HRH, by means of pursuing in-depth work in countries and building networks.

The HRIS provides specific information support to the decision makers at various levels of the health system and assist in evidence-based decision making for an effective management of the human resources for health, appropriate use of information technology in health care depends a lot on the interest and support of the leadership in

health care system. The organization needs strong leadership with sufficient means and abilities to manage the change in the organizational output.

A human resources information system (HRIS) is a system of collection, storage, analysis, and reporting of data to produce meaningful information about the health workforce, including demographics, capacity, training needs, deployment, and migration patterns. Reliable HRIS can provide information to facilitate evidence-based HRH decision making, and are critical for targeting limited HRH resources to the areas of greatest need, reducing inequalities in health workforce distribution, and improving health outcomes. There have been numerous global calls and initiatives to pro-mote investments in HRIS, especially in Africa; however, HRIS have faced a number of challenges to accomplishing the goal of effective HRH data management and use by key stakeholders]. HRIS across Africa also developed without global normative guidance or standards, and therefore lack consistency in data availability, quality, management and use across countries. To strengthen HRIS implementation globally, WHO, with funding and support from the US Centers for Disease Control and Prevention (CDC) under the President's Emergency Plan for AIDS Relief (PEP-FAR), developed a methodology to better understand the business processes of HRH planning and management in selected countries and to identify the essential data elements any HRIS should possess in order to ensure effective HRH data management and use. The methods used are known more formally as business process mapping and functional requirements analysis - two well-established informatics techniques.

In 2010 WHO (World Health Organization) technical meeting to strengthen health workforce information systems in low-income countries, it was reported that the Human Resource Information System (HRIS) of the low-income countries tend to be defective with poor relationship to other information sources. Poor management of HR for health data, low utilization of HRIS for health policy, and incompetency of employees in handling computerized information systems were the weaknesses reported from low-income countries (WHO Report, 2010).

2.7 Factors that affect HRIS Usage

Many researchers have identified factors like organizational size, HRIS time in use, organization culture and strategy, and IT skills which affects HRIS usage (Ball, 2001).

2.7.1 Management participation

Management participation refers to managers and leaders' characteristics and involvement in designing and developing HRIS with the help of IT professionals and ensuring that HRIS is accepted in an organization. It involves the management role in ensuring that HRIS is accepted despite the resistance to change that may arise.

Since HRIS brings changes to everyone's life, it is important for managers , leaders and MR professionals to be involved together when designing and developing HRIS with the help of IT professional (Lippert and Swierz , 2005). Compare HRIS (2012) in discussing HRIS strategy implementation argues that employees, would rather be lectured and inspired by line leaders than they would by HR. HR, meanwhile, has the power to generate opportunities to bring employees together with managers and executives, leading from behind the scenes. For successful implementation of HR1S, it is recommended there be a thorough understanding of the strategic objectives, willingness to make sacrifices in order to achieve strategy, common view regarding what parts of organization must change and commitment to a systematic plan of employee management, support, and interdepartmental relations that will cultivate efficient execution of the strategy. Another factor that may affect the usage of HRIS is the characteristics and involvement of human resource managers. Where management is finding difficulties in implementing HRIS it is the job of HR professionals to urge the management group to address these issues and suggest means of bringing HRIS (Compare HRIS, 2012). Vries et al., (2009), in evaluating capacity project's HRIS in the health sectors of three African countries i.e. Rwanda, Swaziland and Uganda, asserts that there is need to focus on concurrent professionalism of HRIS functions. To sum it up an ICT investment needs senior management commitment to provide necessary budget and support, hardware, operational training, and maintenance.

Dery et al., (2006) asserts that from technologies-in- practice perspective user interactions with the facilities, norms, and interpretive schemes associated with HRIS are affected not only by its technical complexity, but also by problems concerning the management of, and commitment to, its implementation. Research has also explored several chief executive officer (CEO) characteristics that influence the IT usage. Innovation adoption is related to the innovation decision process when the knowledge of the innovation is gathered, an attitude will be formed towards the innovation as to whether to adopt or reject an innovation (Rogers, 1995). It is the top managers who

make the final decision to adopt IT based on the internal needs of the organization or environmental changes (Damanpour & Schneider, 2006). The CEO also takes the responsibility of managing and use of technological innovations in organizations (Pinheiro, 2010). An organizations strategic decision to adopt and enhance usage of ICT or reject it often reflects the personal characteristics of its top managers. The CEO's attitude and perception of new innovation plays an important role in the adoption of IT. A CEO's innovativeness and favorable attitude of new technology affects in a positive way the adoption of IT.

The creation of an attitude towards an innovation happens before a decision to adopt has been made top managers' favorable attitude assists in all stages of adoption.

2.7.2 Infrastructure

Immediate implementation of a mature software-based HRIS is sometimes not feasible or appropriate. The required infrastructure to support the system may not be in place, or there might not be people on staff with required expertise to support it (ihris,2011) (https://www.ihris.org/). Even successfully installed HRIS has difficulty of using the system due to complex or ineffective user interfaces which leads to other alternatives, one alternative could be reverting to manual system (Ryder,2005)

Another bottleneck is that the hardware infrastructure may not be as strong as originally believed. Dery et al, (2006) noted that there was the challenge for HRM on how to manage the tension between the need to adapt practice to meet the needs of HRIS versus customizing the technology to fit existing practices and the unpredictability involved in the management of people.

According to Vries et al., (2009),ICT investment needs senior management commitment to provide necessary budget and support, hardware, operational training, and maintenance , he observed that a number of respondents identified the scarcity or unavailability of equipment and financial resources for maintaining HRIS which is one of the barrier for sustainability of the system.

2.7.3 Internal Structure of the Organization

Organization structure is considered to be the "anatomy of the organization, providing a foundation within which the organization functions (Ivancevichet al, 2006).

Internal characteristics of organizational structure include observations whereby: "centralization is the degree to which power and control in a system are concentrated in

the hands of a relatively few individuals"; "complexity is the degree to which an organization's members possess a relatively high level of knowledge and expertise"; "formalization is the degree to which an organization emphasizes its members' following rules and procedures"; "interconnectedness is the degree to which the units in a social system are linked by interpersonal networks"; "organizational slack is the degree to which uncommitted resources are available to an organization". Organizational structure may also include the assignment of tasks, supervision structure, hierarchy and other concerns affecting the way an organization is run. It may be based on the nature of goals of the organization and may also differ based on the preferences and ideas of those in charge. An organizations structure system can be based on strict hierarchical control structure while another may involve less supervision. The goal of the first would be stability and efficiency while the second likely places emphasis on creativity and flexibility (Rogers,1995).

The internal organization structure of most organizations is based primarily in arrangement and grouping of personnel to accomplish tasks. A strongly hierarchical structure is characterized by ranks in which superior's direct actions of their subordinates toward the goals of the company. Individuals of higher ranks supervise and assign tasks to their subordinates. This structure supports the primary manner in which tasks that ultimately contribute to the goals of the organization are accomplished.

2.7.4 External Environment

Miles and Snow (2003) state that every organization is embedded in a network of external influence and relationships which can be labeled as its environment. Some of the environment elements are critical to the organizations operations while others are supplementary.

An organization adopts IT either to necessitate a demand from the environment in which it operates or a recognition from management that innovation is a requirement for their organizational functions. Among the factors considered external pressure or the demands from trading partners and potential customers were found to be most influential in the adoption process Chwelos et al. (2001)

Quaddus and Hofmeyer (2007) considered competitive pressure, government support, trading partners support and vendor support as different environmental aspects in investigating the factors influencing adoption of business to business.

Government involvement plays an important role in promoting technological innovations in organizations (Lin, 2008). Government through regulations can encourage the adoption of innovation in organizations (Tomatzky and Fleischer, 1990). By implementing guidelines and providing financial assistance, policy makers can facilitate the adoption of IT in organizations.

Environmental factors describes the area where organizations conduct their business, and includes business characteristics, government regulation, and supporting infrastructure (Troshani et al., 2011).According to Rogers (2003) in order to adopt innovation, information about them must be available to prospective adopters. Besides infrastructure and technical support, government also can play a vital role for encouraging technology adoption by raising awareness, training, and support, and funding (Troshani et al., 2011).

Organizations adopt innovation in reaction to an external demand or to achieve an advantage of an environmental opportunity (Damanpour and Schneeider, 2006). The external environment plays a significant role in the adoption of new technologies and has been widely considered in IT innovation adoption in organizations.

2.8 Related works

Lin (1997) has studied HRIS Implementation in Taiwan. This study was driven by (a) the critical role HRIS should play in strategic human resource management, (b) the desire to promote human resource information systems to a decision support level, and (c) the intention to simplify the application of this strategic tool. The researcher has used the method Post survey and questionnaire as a data collection instrument to assess the current HRIS Practices of Taiwan. He comes up with the findings that higher HRIS level of usage i.e usage by top managers & HR staff and as well as the experience on HRIS contribute to greater organizational support and HRIS effectiveness .He also identified factors like training, support of the information systems department, involvement of human resource leaders, and computer literacy of HR staff are the main contributors to the effectiveness of HRIS. Moreover the researcher suggested that, more emphases on support for decision making, timeliness, comprehensiveness, and accuracy can also enhance systems effectiveness.

Teo(2007) researched Adoption and Impact of Human Resource Information Systems in Singapore. The first objective of the study was to gain a better insight into the state of

use of HRIS in organizations of Singapore and the second objective was to examine the impact of HRIS adoption on organizations.

The researcher used the mail survey methods and the questionnaire type of data collection tool. Randomly 500 companies were selected and the respondents were Managing Directors and HR managers which as a result of which 110 usable responses (22.2%) were received .Accordingly the findings have shown that most surveyed organizations adopted more administrative HRIS applications like payroll and employee record keeping, rather than strategic applications like succession planning.

The results of the study indicate a tremendous amount of unrealized HRIS potential as few respondents are using the HRIS strategically to directly improve their competitiveness. The other finding in relation with the second objective of the study was that wide majority of the organizations perceived that the HRIS provided better HR information and improved the effectiveness of the HR department by automating administrative tasks. However, other widely acclaimed benefits of quicker hiring increase in profit and better utilization of employee skills were not perceived by the organizations.

Hisham AI-Mobaideen et al.(2013) conducted a research on Factors Influencing the Successful Adoption of Human Resource Information System: The Content of Aqaba Special Economic Zone Authority in Jordan. The aim of the study was to examine the key factors that have impact on the successful adoption of Human Resource Information Sys-tem (HRIS) within the Aqaba Special Economic Zone Authority (ASEZA)/Jordan. The researchers examined the TAM Model (Perceived Ease of Use and Perceived Usefulness), Information Technology Infrastructure; Top Management Support and Individual Experience with Computer. As a research methodology, both the primary and secondary data sources were applied on the study. The Primary data was gathered through the questionnaires data collection tool.

As a result, the Study confirmed that IT infrastructures have a positive and significant effect on the successful adoption of HRIS. But there is no significant of Perceived Usefulness, Perceived Ease of Use, Top Management Support, and Individual Experience with Computer on the successful adoption of HRIS.

Mohamed (2006) presented the perceived factors influencing implementation of Human Resource Information System at the Kenya Revenue Authority (KRA). The study was therefore aimed at identifying the perceived factors affecting the implementation of

Human Resource Information System at Kenya Revenue Authority. The researcher adopted a descriptive survey design with the population consisting of KRA employees based in Nairobi. A stratified random method of sampling was used. The study collected primary data through a questionnaire and the respondents were draw from KRA staff based in Nairobi. The data was analyzed using descriptive statistics including frequencies tables, percentages, mean scores, standard deviation, ranking orders and pie charts. The respondents agreed to the fact that top management support, effective communication, training, support of ICT department, support of HR department and user involvement influences the implementation of HRIS at KRA. The study recommends allocation of adequate resources by management for the implementation and maintenance of the HRIS. Communication between managers and employees needs to be encouraged. HR managers should play a proactive role to support HRIS implementation in their organizations. Academically, the present study has important implications for studies aimed to understanding HRM, HRIS implementation in developing countries. By highlighting the significance of several contextual factors, this study also hopes to expand the focus of HRIS. To the public institutions, the study provides some insights into the implementation of HIRS which should help HR practitioner acquire a better understanding of the current HRIS implementation status, applications, benefits and barriers.

Juma and Gladies (2017) conducted a research on Employee Adoption and Use of Human Resource Information Systems from Ugandan Local Government Perspective. The aim of the research was to discover the determinants of employee adoption and use of HRIS in the Ugandan local governments' services. The researchers adopted the Technology-Organization-Environment (TOE) framework and categorized the possible adoption factors. As a research method, they adopted a quantitative approach, a descriptive and cross- sectional research designs. As a result, the study confirmed that IT infrastructure; organizational compatibility; top management support and IT knowledge were found to have a significant positive relationship in the adoption and usage of HRIS. However, as hypothesized, complexity as an environmental context factor within the TOE framework was not supported as having a significant negative relationship and predictor of HRIS adoption and usage. The researchers proposed that the central governments in developing countries should earnestly consider the technological and organizational factors in the adoption of HRIS in the context of local

governments. While the regulatory agencies concentrate on developing legal frameworks that would foster competition in the adoption and usage of HR technological innovations.

In this regard, the researchers recommended for further research in the area of organizational culture and the adoption of HRIS.

Atika (2011) researched on factors influencing the effectiveness of human Resource Information System at the National Cereals and Produce Board (NCPB) of Kenya. The main objective of the study was to determine the factors affecting effectiveness of HRIS by conducting a case study in NCPB organization. As a research methodology, the study used face to face interviews to collect the primary data. The respondents were the management staffs which included the top and middle level management staffs in the National Cereals and Produce Board. As a result, the study confirmed user satisfaction criterion considers attitudes, beliefs, cultural, and behavioral issues as key areas that influence successful implementation of information systems. Moreover, the researcher has come with the finding that the mutual relationships between the Information Technology (IT), Information System(IS) and organizational culture and the employees is which results in slowing the intended effectiveness of the HRIS. As a recommendation, the researcher proposed that organization should adopt changes in human resources jobs, business plan and vision, careful selection of a third-party vendor, change management, clear communication, detailed requirements analysis, end-user involvement leadership and project championship, project management, skill set of the implementation team members and support for users.

Markos(2013) researched the practices and challenges of HRIS using case study on selected public sector organizations of Addis Ababa. The objective of the study was to explore t0 explore the practices and contributions of HRIS to HR division through HRIS recruitment, training and development, performance management, compensation and employee administration subsystems and pinpoint the Challenges associated with its implementation as perceived by senior HR executives in selected public sector organizations in Addis Ababa. As a research methodology, the researcher used Cross-sectional study and both quantitative and qualitative approaches were applies .Accordingly the findings revealed that the HRIS systems had improved the various functionalities of HR division in the organizations, helped in storing voluminous data about their employees, eased the access and dissemination of information, and the information generated intern increased the coordination between the HR department and administration and facilitated the decision making processes.

The study identified several challenges which contribute for the poor implementation of HRIS . These factors are lack of funding to acquire, update, and maintain critical HRIS, lack of expertise in IT to operate the HRIS and insufficient financial support .

The researcher proposed that organizations should have to revise their current HR and HRIS policies and procedures to promote effective HRIS practices and to achieve excellent organizational performance. In addition, HRIS needs to offer more intelligent capabilities & features in order to increase the effectiveness of HR divisions, and HR executives should be enriched with more training and development to increase their awareness and usage of various HRIS subsystems. Finally the findings of the research would give valuable insights about the practices of HRIS in the organizations.

Besides the researcher recommended that further research needs to be done on exploring the roles of HRIS in transforming the functions of HR and in facilitating decision making process among more public & private sector.

SB(2016) conducted a research on quality of Human Resource Information System using a case study at Commercial Bank of Ethiopia Dessie strict. The main objective of the study was on assessing human resource information systems (HRIS) perception and effectiveness on the selected organization. The researcher defined Information systems are the back bones of every organization in the modern era of business management. It is inevitable for these organizations to use information system so as to face the global

competition and survive in the market. In the research methodology section, the researcher used both quantitative and qualitative approached. This study used structured questionnaire to collect the primary data. In order to support the primary data source, the secondary data source from different sources was used by the researcher. Accordingly, the findings of this research showed that employees are satisfied with salary, job position, promotion scheme, and working environment but worried about their difficulty to store, retrieve, share and maintain information. Most of the employees are less satisfied with HRIS practice, Time spent on it and performance measurement.HR department in commercial bank of Ethiopia at District level are almost manual which has its own impact and create ineffectiveness. As a recommendation, the researcher believed that the commercial bank of Ethiopia need to invest more money on IT technology to improve its human resource practice and which results in a well-organized HRIS.

Table 1: Summary of Related Works

Author, Title & Year	**Objective/ Purpose**	**Approaches/ Methodologies**	**Key Findings**	**Remark**
Lin, C. Y. Human Resource Information Systems: Implementation in Taiwan, Research and Practice in Human Resource Management, (1997)	To examine the content and context of HRIS	A Postal survey used. Questionnaire as the main source of data collection used.	Identified critical contributors /factors to effectiveness of HRIS	The study addressed the critical factors for effectiveness or usage of HRIS but the extent of utilization of HRIS was out of the scope of the study.
Teo . Adoption and Impact of Human Resource Information Systems in Singapore (2007)	To gain a better insight about the use and adoption of HRIS	A mail survey used. Questionnaire as the main source of data collection used.	Identified that most organizations adopted the administrative HRIS applications rather than succession planning which results in not realizing the full potential of HRIS.	The discussion mainly focused on type of HRIS application rather than the utilization of the system.

Author, Title & Year	Objective/ Purpose	Approaches/ Methodologies	Key Findings	Remark
Hisham AI-Mobaideen et al. Factors Influencing the Successful Adoption of Human Resource Information System: The Content of Aqaba Special Economic Zone Authority in Jordan. (2013)	To find out the key factors that have impact on the successful adoption of Human Resource Information System	Questionnaire as a primary and ACM (DL) digital library, Wiley online library, re-viewing relevant book as a secondary data sources used.	Identified IT Infrastructure as a critical factor which has a positive and significant effect on the successful adoption of HRIS whereas the other factors ,Perceived Usefulness, Perceived Ease of Use, Top Management Support, and Individual Experience with Computer do not have significant effect on the successful adoption of HRIS.	. The study addressed the critical success factors for HRIS adoption . Hence identifying the CSF for HRIS usage was out of the scope of the study
Mohamed. Perceived Factors Influencing the Implementation of Human Resource Information System at Kenya Revenue Authority (2006)	To identify the perceived factors affecting the implementation of Human Resource Information System	A descriptive survey design was applied and as a primary source of data questionnaire used.	Identified the factors top management support, effective communication, training, support of ICT department, support of HR department and user involvement as factors which influences the implementation of HRIS.	The study focused on identifying factors that influences the implementation of HRIS which as a result the issues which are related with the usage of the software related issues have not been covered in the study.

Author, Title & Year	Objective/ Purpose	Approaches/ Methodologies	Key Findings	Remark
Juma and Gladies. Employee Adoption and Use of Human Resource Information Systems (HRIS) : Evidence from Ugandan Local Government Perspective. (2017)	To ascertain the determinants of employee adoption and use of HRIS in the Ugandan local governments' services	A quantitative, descriptive and cross-sectional research designs used. Questionnaire used as primary source of data.	As a result, the study confirmed that IT infrastructure; organizational compatibility; top management support and IT knowledge were found to have a significant positive relationship in the adoption and usage of HRIS.	The discussion mainly focused on exploring the internal factors that affects the employee adoption and use of HRIS which did not consider the external factors.
Atika. Factors influencing the effectiveness of HRIS at the National Cereals and Produce Board, Kenya. (2011)	To determine the factors influencing effectiveness of human resource information system	A case study with interview as the main source of data collection used.	The study identified the factors that influence the successful implementation of HRIS and determining mutual relationship between IT , IS and organizational culture.	The data source of the research is from the management staff only which the right respondents or the direct users of the system is not included under the study.
Markos. The practices and challenges of Human Resource Information System the case study of selected public sector organizations in Addis Ababa (2013)	To assess the challenges and practices of HRIS in public organizations of Ethiopia.	A Cross-sectional study, quantitative and qualitative techniques used as research methods and questionnaire as a primary source of data used.	The study explored the practices and contributions of HRIS to HR division through HRIS recruitment, training and development, performance management, compensation and employee administration subsystems and	The researcher explored the challenges that contribute to poor HRIS implementation which as a result assessing the barriers or challenges for effective utilization of the system was out of the scope of the study.

Author, Title & Year	Objective/ Purpose	Approaches/ Methodologies	Key Findings	Remark
			pinpoint the Challenges associated with its implementation .	
SB. Quality of Human Resource Information System using a case study at Commercial Bank of Ethiopia Dessie strict (2016)	To assess human resource information systems (HRIS) perception and effectiveness	A Descriptive study, quantitative and qualitative techniques used. Questionnaire used as primary source of data.	The research comes up with the findings that employees are less satisfied with HRIS practice. The HR department in commercial bank of Ethiopia at District level are almost manual which has its own impact and create ineffectiveness. As a result the researcher recommended that the need to invest more money on IT technology to improve its human resource practice and have a well-organized HRIS.	The study assessed the practice of HRIS. Exploring the factors that contributes for not being satisfied on the system is not incorporated in the study.

2.8.1 Research gaps of the related works

This review of the literature and the related works on factors affecting the usage of HRIS identifies some gaps:-

The first gap is that the majority of the studies have been conducted in developed countries (Nagai and Wat, 2004; Panayotopoulou et al., 2007).Lin (1997) has studied HRIS Implementation in Taiwan. The researcher assesses the current HRIS Practices of Taiwan and Teo(2007) researched Adoption and Impact of Human Resource Information Systems in Singapore. Even though studies were conducted, they are generally concentrated on a few countries of the developing countries. The second gap

is that a number of studies were conducting on exploring the challenges associated with implementation and adoption of HRIS which shows that there has been little exploration of issues associated with HRIS Usage.

Hisham Al-Mobaideen et al.(2013) conducted a research with the aim of examining the key factors that have impact on the successful adoption of Human Resource Information System. Mohamed (2006) explored factors influencing implementation of Human Resource Information System at the Kenya Revenue Authority (KRA) and from the local research ,Markos(2013) researched the practices and challenges of HRIS using case study on selected public sector organizations of Addis Ababa. The objective of the study was to explore *to* explore the practices and contributions of HRIS to HR division through HRIS recruitment, training and development, performance management, compensation and employee administration subsystems and pinpoint the Challenges associated with its implementation as perceived by senior HR executives in selected public sector organizations in Addis Ababa.

The third gap observed on the related works is that the studies which were conducted on exploring either the adoption or usage of HRIS did not consider the external factors.Juma and Gladies (2017) conducted a research with the aim of discovering the determinants of employee adoption and use of HRIS in the Ugandan local governments' services. As a result, the study confirmed that IT infrastructure; organizational compatibility; top management support and IT knowledge were found to have a significant positive relationship in the adoption and usage of HRIS. However, as hypothesized, complexity as an environmental context factor within the TOE framework was not supported as having a significant negative relationship and predictor of HRIS adoption and usage.

Therefore, by attempting to address the identified gaps in the related works, this study set out to assess the factors affecting the usage of HRIS in Public Health Institutions of Ethiopia.

2.9 Summary

The purpose of this chapter was to explore existing literatures and related works in relation with the current research at hand. The literature review section was categorized into four parts; the first part discussed the definition, concept, evolution and benefits of Human Resource Information System. The second part was a discussion

about the application, importance of Human Resource Information System in the Health Care industry. The third part of the section discussed/explored the factors in relation with HRIS usage. Lastly, related works and their gaps have been discussed under the Related Works section of the chapter.

Chapter Three

Research Methodology

3.1 Overview

This chapter covers the research methodology. It deals specifically on the description of the research design, research approach, population and sampling techniques, data collection instrument and Procedures and lastly methods of measuring the quality of the research is presented.

3.2 Research Design

A research design is a function of the research objectives, is defined as "a set of advance decisions that make up the master plan specifying the methods and procedures for collecting and analyzing the needed information" (Burns & Bush, 2002). An appropriate research design is essential as it determines the type of data, data collection technique, the sampling methodology and the budget (Hair et. al., 1998,). This study uses a descriptive type of research design. Descriptive research design was used, because the major purpose of descriptive research is description of the state of affairs as it exists at present (Kothari, 2004).

3.3 Research Approach

In order to achieve the main research objectives both quantitative and qualitative approaches were adopted. The purpose of using such a mixed methods approach was to gather data that could not be obtained by adopting a single method. The idea of mixed approach methods is supported by different scholars by mentioning it's advantageous over using a single method.

Quantitative approach is related to quantities and its measurements. It is selected because it provides a statistical measurement that enables comparing distinct perspectives regarding the implementation and usage of HRIS in the health sector. It is all about expressing in quantity and will be conducted by using the survey method.

Qualitative approach is all about quality and difficult to quantify. Qualitative approach is used to gain an understanding of basic reasons, causes, opinions and drivers. It can be used to understand phenomenon. It is conducted through case study method. The major

reason for selecting qualitative approach is that there is no study which conducts about the usage of HRIS in the health institutions of Ethiopia.

3.4 Research Model

Many models have been developed to measure and evaluate the success of Information systems, Technology Acceptance Model (TAM), Gable et al. (IS impact) Model ,DeLone and McLean (D&M success model) are among the many of the IS models.

Technology Acceptance Model (TAM) is developed by Davis (1989) and used to measure the acceptance, adoption and use of information technology. Two constructs are used in TAM i.e. perceived ease of use and perceived usefulness. Perceived usefulness is the degree to which an individual believes that using a particular information system or information technology would enhance his or her job. Perceived ease of use is the degree to which a person believes that using a particular information technology would be free of effort.

TAM are model applicable to a variety of technologies, yet they have been criticized for not providing adequate information on individuals' opinions of information systems (Moon and Kim, 2001; Monsuwe et al., 2004).

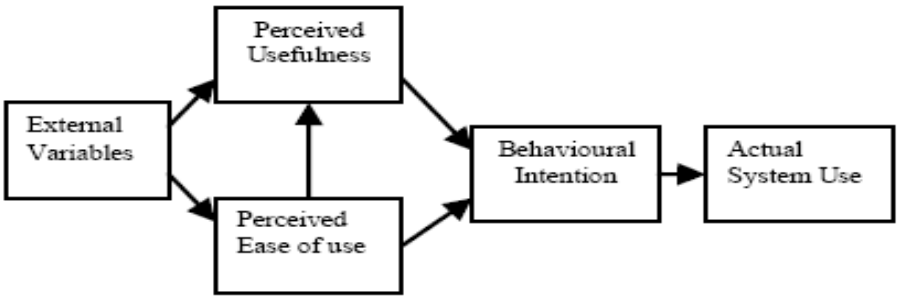

Figure 2. Technology Acceptance Model (Davis, 1989)

Gable et al. (2008) develop a model to measure IS success or impact. According to Gable et al. (2008), the IS-impact of an Information System (IS) is "a measure at a point in time, of the stream of net benefits from the IS, to date and anticipated, as perceived by all key-user groups".

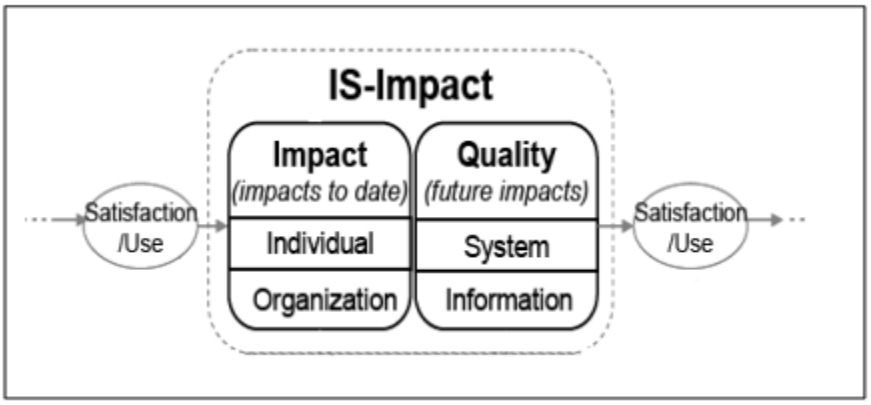

Figure 3: IS-Impact model (adapted from Gable et al . (2008))

Gable et al.(2008) model differs from other models in various ways. First, it is a measurement model and not a casual/process model. Second, it does not have „Use" construct. Third, overall the success measure is satisfaction.

DeLone and McLean model is the most popular model of IS success measurement. Since it is a process/casual and well accepted model, it is selected or adapted for this study to identify the factors that affect the usage of HRIS.

The original IS Success Model is comprised of six dimensions i.e System Quality, Information Quality, Use, User Satisfaction, Individual Impact and Organizational Impact (DeLone& McLean, 1992).

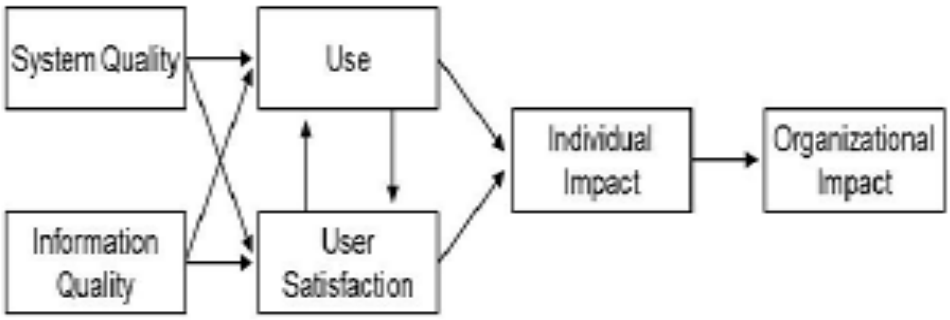

Figure 4:DeLone & McLean IS Success Model, 1992

Since IS support is becoming more important in IS discipline, the dimension Service Quality had been added to the updated IS Success Model which as a result could have an impact on the user satisfaction and use of Information system. Furthermore, due to the reason of some benefits which could not be placed in individual or organizational impacts , new dimension Net Benefits has been added which is a replacement of the individual and organizational impacts dimensions.

System Quality, Information Quality and Service Quality are typical characteristics of an information system and the levels of these dimensions have an influence on the Intention to Use and the User Satisfaction. Therefore, these quality-dimensions have to be measured or controlled. Then, the Intention to Use, and User Satisfaction are dimensions which are mostly influenced by the quality-dimensions.. The Use and User Satisfaction both influence the Net Benefits of the system and therefore the success.
The relationships between the dimensions of the updated IS Success Model have been tested by several researchers. Petter& McLean (2009) found evidence for example strong relationships between the dimensions User Satisfaction and Intention to Use (DeLone& McLean, 2003).

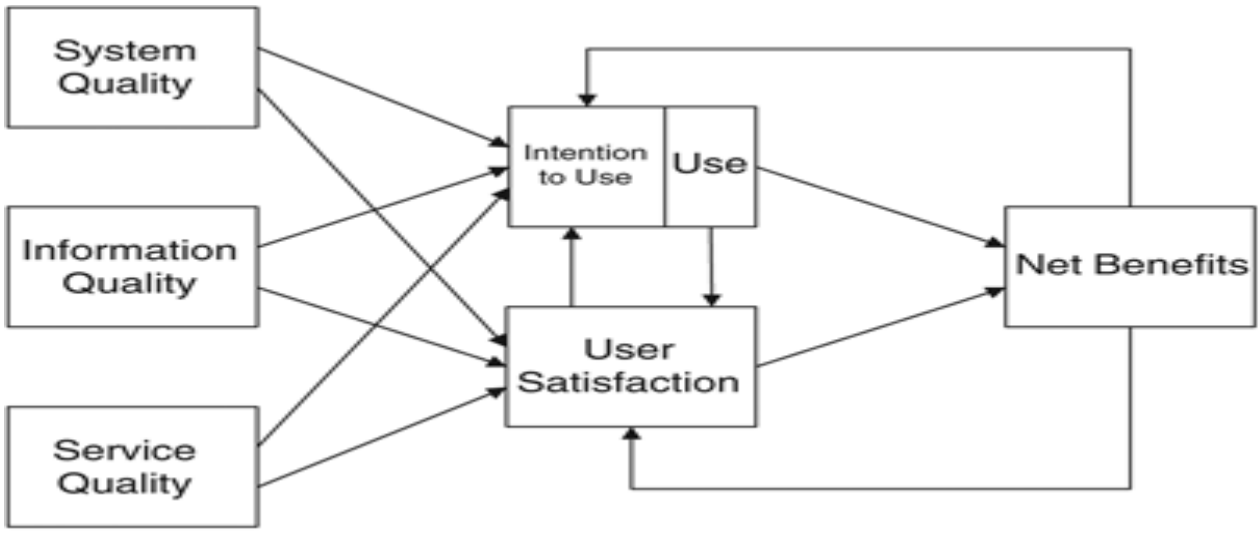

Figure 5: DeLone& McLean IS Success Model, 2003

System Quality

In DeLone and McLean (1992)‘s view system quality is the desired characteristics of the information system and main objective of the system is information production to be used by its users and decision makers. Whereas Seddon (1997) argues that system quality is concerned with issues such as system bugs, user interface, ease of use and sometimes even quality and maintenance of program codes. According to Petter et al., (2009), system quality is the performance of IS in terms of reliability, convenience, ease of use, functionality, and other system metrics.

However DeLone& McLean (2003) suggest that system quality, in internet environment assesses desired characteristics of an electronic system. Measures of the system quality have been used in the literature are flexibility, stability, usefulness, user-friendly interface,ease of use and response time(Doll &Torkzadeh, 1998; Rai et al., 2002). In addition to this, DeLone and McLean (1992, 2003) identified usability, availability, reliability, adaptability and response time as an important attributes of an Information Technology System.

Information Quality

According to Seddon (1997), it refers to the quality of the information which the system produces for decision making and is considered an important factor in information systems evaluation. In addition, Rai et al*.,* (2002) say that information quality is related to the content, accuracy and format.

Many researchers in different studies have measured information quality and the most common measures were timeliness, completeness, consistency, accuracy and relevance (DeLone&McLean, 2003). Measures of this instrument showed sufficient reliability and validity when it was tested. Seddon and Kiew (1996)'s instrument used for measuring information quality included relevance, accuracy, format and timeliness. For measuring e-system success, DeLone& McLean (2003) propose attributes of relevance, completeness, ease of understanding, personalization and security as a measure of this dimension.

Service Quality

This construct was new in the updated D & M model and many researchers are including it as a measure of IS success. DeLone& McLean (2003) define service quality as the overall support delivered by service provider regardless of whether this support is provided by an internal IS department, a new organizational unit or outsourced to an internet service provider (ISP). Many other researchers define that; service quality is the degree to which a service meets the expectations of customers (Parasuraman et al., 1988).

SERVQUAL is a popular instrument for measuring IS service quality and is basically designed for marketing research (Pitt et al., 1995). Attributes in SERVEQUAL instrument includes quick responsiveness, assurance, empathy, follow up service and technical support (Parasuraman et al., 1988).

Use

Seddon (1997) defines system use as using the system for everyday work, tasks and purposes. In Petter et al., (2008)'s point of view it is the degree and manner in which staff and customers utilize the capabilities of an information system. In many cases, according to DeLone& McLean (2002), it is a suitable construct to measure success.

In electronic system context, use measures everything from visiting a website to navigation within the site, to information retrieval, to execution of transaction (DeLone& McLean, 2003). They also mentioned that system use has been measured in terms of frequency of use, time of use, number of access, dependency and usage pattern. Seddon (1997) also suggest the items to measure use include the time spent in using the system, frequency of use, number of users. The literature suggests that frequency of use is the most used item to measure the construct of use.

User Satisfaction

User satisfaction is the most widespread measure of success and researchers have developed and validated different instruments to measure user satisfaction (DeLone& McLean, 1992, 2004; Seddon and Kiew, 1996; Seddon, 1997; Rai et al., 2002; Doll & Torkzadeh, 1988). According to Seddon & Kiew (1996) *user satisfaction* is considered as the most common measure of IS success. DeLone& McLean (1992, 2003) refer it to the overall level of user satisfaction and also consider it as an important means of measuring users'opinions. However in Seddon (1997)'s point of view it can be defined as a subjective assessment of the various consequences, evaluated on a pleasant and unpleasant continuum.

Bailey & Pearson (1983) identified accuracy, reliability, timeliness, relevancy, and confidence as the measures of user satisfaction. In addition to this, Doll &Torkzadeh (1988) measure user satisfaction by attributes of content, accuracy, format, ease of use and timeliness

Net benefits

Net benefits construct is concerned with the degree to which IS is contributing to the success of individuals, groups, organizations, industries, and nations (Petter et al., 2008). DeLone& McLean (2003) say that net benefits is the most important construct since it captures the balance of positive and negative impacts of e-system on users, organizations, industries. There are abundance of methods to measure net benefits at

both the individual and organizational level of analysis. Perceived usefulness or job impact is the most common measure at the individual level (Petter et al., 2008).

3.4.1 Research Variables

DeLone& McLean's IS success model variables applied to the study context are:-

- Information Quality measures the output produced by HRIS
- System Quality measures the quality of the HRIS
- Service Quality measures the critical aspect of the HRIS service
- User Satisfaction measures the user's response to the use of the output of HRIS
- Intention to use measures users' attitude
- Net benefits integrated individual and organizational impacts that HRIS Provides

3.4.1.1 Independent Variables

The independent variables in this study are the system quality, information quality and the service quality. System quality assesses whether the characteristics possessed by the system has been in accordance with the users. This variable is measured using the items of navigation, design, usability, functionality, responsiveness, and availability. Information quality measures that need to be taken into account are understandable, accuracy, usability, attractiveness, reliability, completeness and timeliness. The variable measurements of Service quality are responsiveness, perceptive, empathy, assurance and training.

3.4.2.2 Intervening Variables

Intervening variables are ones that arise when the independent variables affect the dependent variable. Intervening variables in the IS Success model (DeLone and McLean ,2003) are Use and User satisfaction. In this study, the objective of Use is the attainment use of HRIS capabilities for the public health sector staffs that use it. The measurements of this variable are the daily use and the level of use of the features of the system. The other variable is the User satisfaction.

According to DeLone and McLean (2003), user satisfaction is the users' response to the use of information system output. User satisfaction plays an important role to determine the responses of users of information systems toward applied information system. It's measurements are adequacy, efficiency, effectiveness, and satisfaction.

3.4.2.3 Dependent Variables

The dependent variable in the study is the Net benefit. Net benefit is a measure of the contribution of information systems towards users of the system. Measurements of this variable are performance, achievement, productivity, effectiveness, simplicity, usefulness or benefits.

3.4.2 Hypothesis development

Orodho (2003) defines a hypothesis as a proposition, condition or principle which is assumed, perhaps without belief, in order to draw out its logical consequences and by this method to test its accord with facts which are known or may be determined.

Based on the theoretical and empirical work reported by DeLone and McLean (2003), the following hypotheses are proposed:

H1. Information quality will positively impact user satisfaction.

H2. System quality will positively impact user satisfaction.

H3. Service quality will positively impact user satisfaction.

H4. Use will positively impact user satisfaction.

H5. Information quality will positively impact use.

H6. System quality will positively impact use.

H7. Service quality will positively impact use.

H8.User satisfaction will positively impact perceived net benefit.

H9.Use will positively impact perceived net benefit.

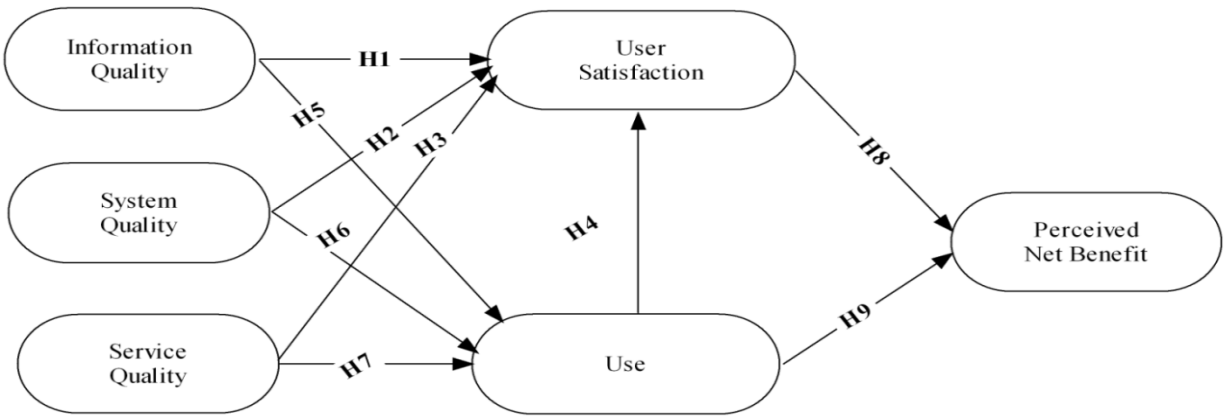

Figure 6: Adopted from DeLone & McLean IS Success Model (2003)

3.5 Study population & Sampling

3.5.1 Study Area

This study is conducted in the city of Addis Ababa. Addis Ababa is the capital of Ethiopia and located 518 km WSW of Baki,Somalia; 608.1 Km N of Moyale; 624.4 Km SW of Assab, Eritrea and 780.6 Km E of Malakal, South Sudan. The coordinates of the latitude and longitude are 9.005401 & 38.763611 respectively.

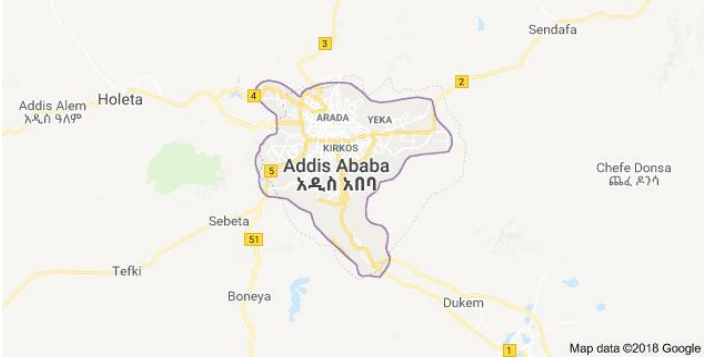

Figure 7: Google Map of the city of Addis Ababa

3.5.2 Study population

The collection of all possible observations of a specified characteristic of interest is called a population. The total target populations in the study is 265 which are comprised from HR and IT departments of the 11 organizations.

Table 2:HRIS users' categorization

Name of the organization	HR Department	IT Department	Total
ALERT	18	5	23
Amanuael	18	3	21
FMOH	68	19	87
Gandi	9	2	11
Menilik	16	3	19
Rasdesta	11	2	13
St Paul	21	3	24
St Peter	7	3	10
TiruneshBejing	18	3	21
Yekatit 12	17	4	21
Zewditu	13	2	15
Total	**216**	**49**	**265**

Source: own survey 2018

3.5.3 Sampling method and techniques

Sampling involves any procedure that uses a small number of items or a portion of a population to make a conclusion regarding the whole population. In other words a sample is a subset from a larger population (Kizmund, 2003).Sampling helps to select the respondent according to the purpose of the study. To conduct this research a combination of probability and non-probability sampling methods are used. The non-probability sampling technique is used to select the specific organizations for the study. One of the major reason for using the purposive sampling technique is that it enables the researcher to neglect the non-significant representatives of the population under study.

Purposive sampling is a sampling technique where the respondents are chosen based on the researcher's judgment that they have desirable characteristics and variables to be studied .Through purposive sampling, the researcher purposively select a particular units of the universe for constituting a sample on the basis that the small mass selected out of a huge one that will be a typical representative of the whole (Kothari, 2004).

The probability sampling method specifically the simple random is used to identify the sample for the study.

3.5.4 Sample size

This refers to the number of items to be collected from the universe to constitute a sample (Kothari ,2008).Sampling is a technique where the entire population that meet the criteria (e.g. specific skill set, experience, etc.) are included in the research being conducted (Ilker al et., 2016).Thus, the samples were selected from the Human resource & IT departments as the key informants.

According to (Kothari, 2004), statistical methods can be used to determine sample size using the simplified formula displayed below.

$$n = \frac{\mathrm{z}^2.\,\mathrm{p}.\,\mathrm{q}.\,N}{e^2(N-1) + \mathrm{z}^2\mathrm{p}.\,\mathrm{q}}$$

Where

n= is the sample size for the research

z= confidence level for normally distributed population, usually at 95 %(z=1,96)

p= proportion or ratio of factor/variable, statistically it is indicated that p=0.5 is used when to get optimal sample size or even if the value is unknown.

q= 1-p= 1- 0.50 = 0.50

e= margin of error, considering at 7.5%

N= total population or sampling frame= 265, the study target or sampling frame from 10 Hospitals and FMOH.

Thus, the sample size for this study is;

p- Probability of the variable or incidence under study or subject of interest, q=1-p, to obtain maximize sample size it is advisable to use p=0.5

N= total sampling frame population under study(in this case the total number of human resources expected to answer questions for this study; i.e. 265[1]

$$n = \frac{(1.96)^2.(0.5).(0.5).265}{(0.075)^2(265-1)+(1.96)^2.(0.5).(0.5)} = \frac{0.9604(265)}{(0.00563)(264)+0.9604}$$

$$n = \frac{254.51}{1.485+0.9604} = \frac{254.51}{2.45} = 103.88$$

Rounding up the above number and got 104 as the maximum sample size for the study.

Therefore, for this study statistically determined sample size is 104 which are selected from the Federal ministry of health and the selected 10 hospitals. A total of 100 questionnaires were distributed to the respondents of the selected organizations and 4 interviews conducted with the officials of FMOH,ALERT & St Paul Hospitals who were involved starting from the beginning of the deployment/implementation of the system .

3.6 Source of Data

This study used both primary and secondary data sources. Primary data is collected by using self-administered questionnaire, interview and focus group discussion. The use of primary sources supports the researcher to produce accurate data, and gather first-hand information which could lead the researcher to make valid analysis.

Secondary source of data has been collected from procedures, annual reports and manuals of the sector.

3.7 Data Collection method

For collecting the data, the study used the methods of questionnaire, interview and focus group discussion.

3.7.1 Interview

According to Creswell (2009) interview is one of the instruments to collect qualitative data by making face-to-face communication with participants, by telephone and on the internet intended to elicit views and opinions from the participants. Based on the research aims and objectives, the interview guide of the study was developed from different literatures and the research model used. Then a suitable time arranged to take the required information from the interviewees. . The time arranged for each interviews falls between 30 to 40 minutes. Proper documentation of the interview is used for the input of the qualitative data analysis (See Appendix B).

3.7.2 Questionnaire

Questionnaire with close-ended items are used to get the required data from the respondents of the selected organization. The questionnaire is adapted from DeLone & McLean IS Success Model (2003) and the reviewed literatures with some modifications in order to meet the objective of the study.

A 5-point Liker scale questionnaire is used to obtain data from HR Head, HR Officer, IT Head and IT Officer. Accordingly, the scales were ranging from 1= strongly disagree to 5=strongly agree. The questionnaire has seven parts. The first part deals with demographic information and the last six parts contained the constructs of the model which are used to measure the quantitative data of the study (See Appendix A).

3.7.3 Focus Group discussion

Focus group discussion is used to gain an in-depth understanding of social issues. The method aims to obtain data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population.

To strengthen the qualitative data collection, two groups of focus group discussion successfully conducted where one group contained 4 participants and the other had involved 5 participants (See Appendix C).

3.8 Data collection procedure

The questionnaires were delivered to the 100 selected respondents of the eleven organizations. These were ALERT, Amanuael, FMOH, Gandi, Menilik, Rasdesta, St Paul , St Peter, TiruneshBejing, Yekatit 12 and Zewditu. Subsequently, continuous follow-ups was conducted through phone and a visit was made to encourage the respondents to finalize the questionnaires timely with their genuine feedbacks. After the data was collected, the next step was securing the collected data by checking the completeness, cleanness and accuracy of the data to be free of error and logged and tracked on excel sheet. Eventually, Statistical Package for Social Science (SPSS) were used to code all the required variables and prepared the data for analysis.

Table3: Distribution of Questionnaire across the selected organizations

Name of the organization	**Number of participants**
Alert	11
Amanuel	9
FMOH	12
Gandi	7
Menilik	8
RasDesta	9
St.Paul	10
St.Peter	8
TiruneshBejing	9
Yekatit	10
Zewditu	7
Total	**100**

3.9 Data Analysis Technique

Data analysis is the computation of certain measures along with searching for patterns of relationship that exist among data group (Kothari, 2004).Since the study involves both the quantitative and qualitative data, it includes both methods of data analysis. It includes data analysis methods for both types of data.

3.9.1 Quantitative Data

The quantitative data collected through questionnaire was analyzed and summarized by using the descriptive (i.e. Percent and Frequency) & inferential statistics. Since the study examined at least two or more categorical independent variables, it applied the Chi-Square analysis tool of the inferential statistics.

The Chi square test is a statistical test which measures the association between two categorical variables. It is used to test hypotheses about the distribution of observations in different categories (Anthony & Bruce, 1995).

Correlation Coefficient of the inferential statistics has also been applied to test the correlation and significance of the relationship type whether or not two variables will be affected positively or negatively by another variable of interest. A correlation coefficient measures the strength and direction of a linear association between two variables. (A.G.Gonzalez, 2006).

3.9.2 Qualitative Data

The qualitative data is analyzed by using the Content Analysis method.

It is a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, their relationships, and the structures and discourses of communication (Pope et al., 2006; Gbrich,2007).

Thus the data analysis procedure for this study followed the three phases or approaches of the content analysis techniques (Preparation, Organizing and Reporting) which was proposed by (Elo and Kyngäs ,2008).

3.10. Quality of Research

3.10.1 Reliability and Validity

Reliability and Validity are used to measure quality of the quantitative data.

Reliability is used to measure the consistency of the survey, whereas validity is used to measure the degree to which a scale or set of measures accurately represents the construct (Hair et al., 1998).

By many researchers the reliability concept has been divided into two categories of internal and external reliability. According to Seale (1999) internal reliability refers to the extent that different researchers identify similar constructs as the original

researchers whereas external reliability is concerned with the overall replication when a research study is carried out in re-study exercises. Content validity is the extent to which an empirical measurement reflects a specific domain of content. (Thatcher, 2010). The questions for the study were designed from the themes of the constructs of the DeLone and McLean's model. The model has been used repeatedly and though the different authors used the constructs to test different relationships within the model, the results remained the same. The variables of the model are still considered relevant by different authors as they continue to be tested by many researchers.

3.10.2 Credibility and Dependency

Credibility and dependency are among the criteria which are used to measure the trustworthiness of the qualitative data**.**

Credibility is defined as the confidence that can be placed in the truth of the research findings (Macnee & McCabe, 2008). Credibility establishes whether or not the research findings represent plausible information drawn from the participants' original data and is a correct interpretation of the participants' original views (Graneheim & Lundman, 2004).

According to Bitsch (2005), dependability refers to the stability of findings over time". Dependability involves participants evaluating the findings and the interpretation and recommendations of the study to make sure that they are all supported by the data received from the informants of the study (Cohen et al., 2011).

3.11 Summary

This Chapter describes the research methods and techniques used for gathering and analyzing the research data. The researcher expects to answer all research questions and meet all research objectives from participants' inputs. Generally, the chapter discussed the research design, research approach and the research model used. Study population and sampling, methods and procedure of the data collection have been covered. Next, the technique of the data analysis applied on the collected data is discussed. Finally, measurements of the quantitative and qualitative methods are discussed.

Chapter Four

Results and Discussions

This part of the thesis deals with the result and discussion of the data collected from the sample respondents to search for the appropriate answers to basic questions raised at the beginning of the study.

4.1 General Information

This study applied both quantitative and qualitative data collection methods in order to enrich the study. As it is indicated in the previous chapter the quantitative sample size is determined to be 100 as statistically calculated. But on practical basis 95 questionnaires were collected from the concerned organizations. A response rate of about 95% is attained. On the focus group discussion, even though some of the participants were absent from both of the groups but the attended officers comprised from the HR and IT departments provided the detail information which was discussed in this chapter .Thus, the findings and statistical outputs can be inferred and generalized for the rest of the population.

Table 4: General response data

	Male	**Female**	**Total**
Alert	7	4	11
Amanuel	2	7	9
FMOH	5	7	12
Gandi	4	3	7
Menilik	5	3	8
RasDesta	5	2	7
St.Paul	3	7	10
St.Peter	5	3	8
TiruneshBejing	5	2	7
Yekatit	4	5	9
Zewditu	4	3	7
Total	**49**	**46**	**95**

4.2 Background characteristics of the Respondents

Table5: Background characteristics of the respondents

Background information		No	%
Sex	**Male**	49	51.6
	Female	46	48.4
	Total	95	100
Age	18-30	5	5.3
	31-40	59	62.1
	41-50	25	26.3
	51 and above	5	5.3
	Total	94	98.9
Qualification	Certificate/diploma	6	6.3
	BA/BSC degree	60	63.2
	MA/MSc	28	29.5
	Total	94	98.9
Position in the organization	HR head	11	11.6
	IT head	11	11.6
	HR officer	52	54.7
	IT officer	21	22.1
	Total	95	100.0
Years of experience	1-2yrs	5	5.3
	3-5 years	35	36.8
	6-8years	40	42.1
	More than 8yrs	15	15.8
	Total	95	100.0

As reflected in table 4 above, 49 (51.6%) and46 (58.8%) of respondents are male and female respectively. With regard to age range, 5 (5.3%) of respondents are 18-30 years

and , 59(62.1%) are 31-40 years old, 25(26.3%) are 41-50 years old ,5(5.3%) are above 51 years .

With regard to educational qualification, 6(6.3%) have certificate and diploma, 60(63.2%) have BA/BSC degree and the other 28(29.5%) have MA/MSC educational qualification. In relation to position they have in their organization, 11(11.6%) of respondents are HR head, 11(11.6%) of respondents are IT head, 52(54.7%) are HR officers and 21(22.1%) are IT officers. With relation to experience of respondents, 5 (5.3%) respondents have 1-2 years' experience, 35(36.8) have 3-5 years' experience, 40(42.1%) years' experience and 15(15.8%) respondents have more than 8 years' experience.

4.3 Results of data on System Quality

In this part, the study has attempted to examine the quality of the HRIS on the following manner.

Table 6: Data on System Quality

No	Items	Response categories											
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total	
		No	%	No	%	No	%	No	%	No	%	No	%
	HRIS is easy to use	32	33.7	50	52.6	2	2.1	7	7.4	4	4.2	90	100
	HRIS is user-friendly	22	23.2	59	62.1	9	9.5	5	5.3			95	100
	HRIS is easy to navigate	35	36.8	44	46.3	4	4.2	6	6.3			95	100
	HRIS is well-structured					1	1.1	49	51.6	47	47.4	95	100
	HRIS provides high-speed information access	27	28.4	62	65.3	4	4.2	1	1.1				
	HRIS allows me to easily find the information I am looking for	23	24.2	60	63.2	5	5.3	7	7.4			95	100

	HRIS speeds up my work operations	25	26.3	51	53.7	3	3.2	16	16.8			95	100
	HRIS is always available for my day to day operation	28	29.5	39	41.1	8	8.4	20	21.1			95	100

Regarding with item 1 of table 5 above, the respondents are asked to rate the quality of the HRIS. The respondents reaction on the statement, HRIS is easy to use, respondents rated as 32(33.7%) were responded strongly agree,50(52.6%) were responded agree, 7(7.4%) were disageree,4(4.2%) were responded strongly disagree. In relation to the item 2 of the same table, the respondents were required to rate their perception on the system friendly manner, for this category, 22(23.2%) were responded strongly agree, 59(62.1%) responded agree,9(9.5%) were responded neutral and 5(5.3%) were responded disagree.

For the statement HRIS is easy to navigate, the result stated that, 35(36.8%) and 44 (46.3%) of respondents revealed strongly agree and agree respectively. Whereas, 6(6.3%) of participants revealed that disagree.

In the same table of Item 4, the respondents required to respond their perception and experience on, HRIS is well structure, for this item 49(51.6%) and 47(47.4%) of respondents were responded disagree and strongly disagree respectively. Structural suitability of the system is almost denied by all respondents and it implies variety of infrastructural and organizational factors that hinders HRIS success. Item 5 in the same table, i.e HRIS provides high speed information access, for this item, almost89 (92%) of respondents were responded that the system provides high speed information. Item 6 of the same table i.e HRIS allows to easily find information, for this item,23(24.2%) and 60 (63.2%) participants were responded strongly agree and agree respectively. For item 7 in the same table, i.e HRIS speeds up my work operations, 25 (26.5%) and 51 (53.7%) were responded strongly agree and agree, and 16 (16.8%) were responded disagree.

The last item of table 5i.e HRIS is always available for my day to day operation, for this item, 28 (29.5%) and 39 (41.1%) of respondents were responded strongly agree and

agree respectively. On the other hand, 8 (8.4%) and 20 (21.1%) of the respondents were revealed neutral and disagree. In addition to the above data gathered from the respondents, the data gathered with interview and focus group discussion is as followed.

HRIS is good however due to poor infrastructure specifically the network connection related issues & the employees less adaptation of the system leads for not easily access the information they need which as a result has insignificant contribution to their efficiency& effectiveness in their day to day operations.

The participants in the focus group discussion also mention the same challenge in the application of HRIS in their day to day operation.

From the above data , the researcher observed the following main points as a findings:-

- The actual application of HRIS faces infrastructure issue and shortage of trained users for successful utilization of the system,
- Due to poor infrastructure, lack of skill on the software and other related constraints, HRIS is considered as time consuming for the users.
- HRIS may seem to lack the cooperation of different stakeholders like Ethio telecom, ICT expertise or responsible bodies.

4.4 Results of data on Information Quality

Table 7: data on Information Quality

No	Items	Response categories											
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total	
		No	%	No	%	No	%	No	%	No	%	No	%
	HRIS provides information which is exactly what i need	24	25.3	35	36.8	3	3.2	13	13.7	21	22.3	95	100
	HRIS provides information that I need at the right time	44	46.3	51	53.7							95	100
	HRIS provides information which is relevant to my job	37	38.9	42	44.2	3	3.2	12	12.6	1	1.1	95	100
	HRIS provides information which is easy to understand	33	34.7	24	25.3	25	26.3	12	12.6	1	1.1		100
	HRIS provides up-to-date Information	53	55.8	41	43.2			1	1.1			95	100
	The information provided by HRIS is reliable	26	27.4	35	36.8	1	1.1	16	16.8	17	17.9	95	100

	The information provided by HRIS is complete	59	62.1	33	34.7	1	1.1	1	1.1	1	1.1	95	100
	The information provided by HRIS is well-organized	34	35.8	46	48.4	15	15.8					95	100
	The information provided by HRIS is secure	20	22	54	60	10	12	6	6.7				

With regard to the above table which tried to investigate the respondents opinion about the timely, relevance, simplicity, updated, completeness and the security of the information provided by HRIS.

The respondents opinion on item 1 that HRIS provides the exact information needed to their job showed 25.3% and 36.8%, the former is for strongly agree and the latter one represents for the agreed one.

On the other hand 13.7% of the respondents responded disagree and 22.3% were responded strongly disagree the fact that showed, HRIS provides information as needed by concerned staff.

For item 2 in the same table, the function of HRIS in providing timely data , for this item 46.3% and 53.7% of respondents were responded strongly agree and agree respectively.

Item3 in the same table states that the data provided by HRIS is relevant and for this item,38.9% and 44.2% of respondents revealed strongly agree and agree. Whereas 13.7% of the respondents negate to this fact (disagree and strongly disagree).

The next item deal with HRIS provides information which is easy to understand. Accordingly 34.7% and 25.3% of the respondents revealed strongly agree and agree respectively. However, about 13.7% were against this group. Nearly all respondents confirmed that information obtained from HRIS is updated with 55.8% strong confirmation and 43.2% agreement with it. On the other hand 27.4% and 36.8% of the respondents were revealed strongly agree and agree with the reliability of information provided by HRIS.

On the contrary, more than one third were against this; 16.8% and 17.9%respondents revealed disagree and strongly disagree respectively on the reliability of information

provided by HRIS. On the completeness of information provided by HRIS, 62.1% and 34.7% respondents revealed strongly agree and agree respectively. Similarly, the respondents revealed for the item information provided by HRIS is well organized with 35.8% and 48.4% of strong agreement and agreement respectively. However, for 15.8% of the respondents revealed that it is not well organized.

The security of information is confirmed by 22% and 60% with strong conviction and moderate agreement respectively, while less than ten percent (6.7%) disagree it.
The data gathered from the interview is reflected below; As mentioned by most of the participants in the interview, due to disconnection of the system they cannot get the information they need at the right time due to this problem it create time dalliance. However, when the connection is back the data obtained through the system is easy to understand, well organized and can give up-to-date information. The participants in the focus group discussion also provide the same information like the interview data.

Therefore from the above data gathered through questionnaire, interview and focus group discussion, the researcher took the following main points as findings;

- HRIS currently practiced is faced with network connection problem and this may create bad image on the system from the employees' side.
- Employees believed that HRIS is as a problem solver but the system is not fully functional due to employees' skill gap & poor infrastructure.
- If the data managed by HRIS is more organized, reliable and understandable then it can be functional and adapted by the employees.

4.5 Results of data on Service Quality

In this part, the study has attempted to examine the quality of the HRIS on the following manner.

Table 8: Results of data on Service Quality

No	Items	Response categories											
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total	
		No	%	No	%	No	%	No	%	No	%	No	%
	The responsible body is willing to help whenever I need support with	58	61.1	35	36.8	2	2.1					95	100

	the HRIS												
	The responsible body provides support related to the HRIS at the promised time.	34	35.8	61	64.2							95	100
	The responsible body has sufficient knowledge to give support in respect of the HRIS	41	43.2	50	52.6	2	2.1	2	2.1			95	100
	HRIS provides a variety of functionality	61	64.2	33	34.7	1	1.1					95	100
	I feel safe in my transactions with HRIS	25	26.3	43	45.3	5	5.3	21	22.1	1	1.1	95	100

The data collected from the sampled respondents showed that respondents either strongly agree (61.1%) or agree (36.8%) confirm the willingness of the responsible person to help whenever help is needed or demanded. This implies that there is no problem that emanates from lack of support on HRIS.

In a similar manner all respondents believed that the responsible body provides support related to HRIS at the expected time; among which 35.8% and 64.2% of them revealed strongly agree and agree respectively. Regarding the knowledge and skill of responsible body the majority (95.8%) of respondents indicated that they have sufficient capacity related to HRIS, among which 43.2% and 52.6% strongly agree and agree respectively. Insignificant portion of the respondents (2.1%) were not convinced with the knowledge of the responsible person to provide support related to HRIS.

Great majority of the respondents (98.9%) were sure that HRIS provide variety of human resource management functionalities; among these respondents, nearly two third of them revealed (64.2%) strongly agree and one third (34.7%) agree with the functionalities of the system and there is no negation on the functionality of HRIS from these organizations respondents.

In using HRIS systems 26.3% and 45.3% of the respondents revealed strongly agree and agree respectively that they feel safe on the system. On the contrary less than a quarter

(23.2%) of respondents negates on security of HRIS transaction; they disagree or strongly disagree on the feeling of safety while using the system.

The data gathered through interview and focus group discussion were reflected as follows; the participants said that, sometimes there is expertise support during the use of HRIS in our daily activities but with the network related issue, the problem cannot be solved by the delegated responsible body which might need the involvement of the external bodies to resolve the problem.

4.6 Results of data on Use of HRIS

The majority of the respondents (59%) said they did not use HRIS daily where (54% disagree and 5% strongly disagree). On the same item, about 39% confirm that they use the system. This implies the system is not well utilized by the majority of the users. The use of HRIS to execute work in process is confirmed by less than three fourth (74%) of respondents, where 19% and 55% of them strongly agree and agree respectively. On the other hand 24% of the respondents disagree the use of the system in order to execute the work in process.

Great majority of the respondents (93%) confirmed that they were able to complete tasks using HRIS even if there were no person around to support on the system. Similarly, 95% of the respondents confirmed that they have the knowledge necessary to use HRIS with 34% and 61% strongly confirmation and moderate confirmation respectively. It is only 3% of the respondents that negate or disagree that they need necessary knowledge to use HRIS.

The data gathered by interview guide and focus group discussion showed that, there is dissatisfaction among HRIS users due to the problem of the network connection and the system not easy to use. Therefore, the system needs further investment on the infrastructure and capacity building of the users of the system.

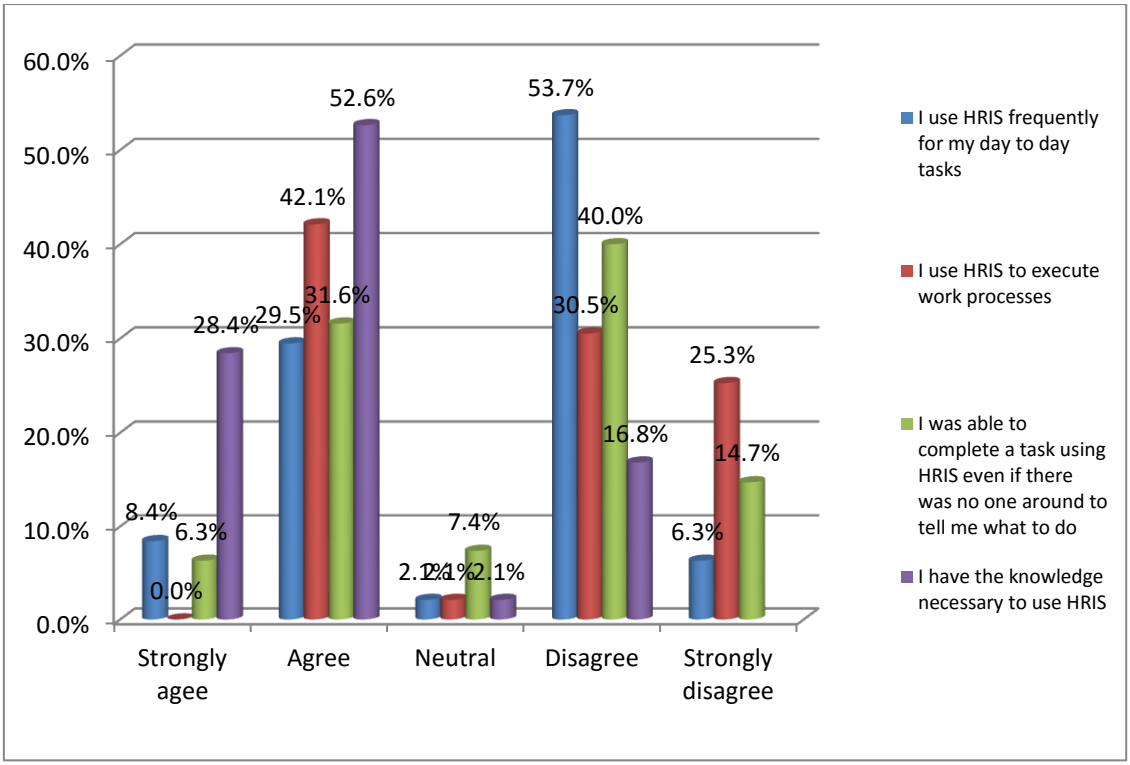

Figure 8: Use of HRIS

4.7 Results of data on User Satisfaction

Regarding the expectation of the HRIS users, 69% of the respondents confirmed that it doesn't met their expectation (50% disagree and 19% strongly disagree). On the other hand a bit less than one third (9% strongly agree) indicated that it does meet their expectation, where 22% agree that HRIS has met expectation. In relation to the use of HRIS in day to day operation participants in the interview guide and focus group discussion said that, using HRIS is advantageous if it is fully implemented however due to the network problem, skill gap of the employees & absence of continuous support on the system, the users of the selected organizations are not using the system on their day to day operations. It needs further developing the capacity of the employees and strengthen the infrastructure for the successful implementation of the system.

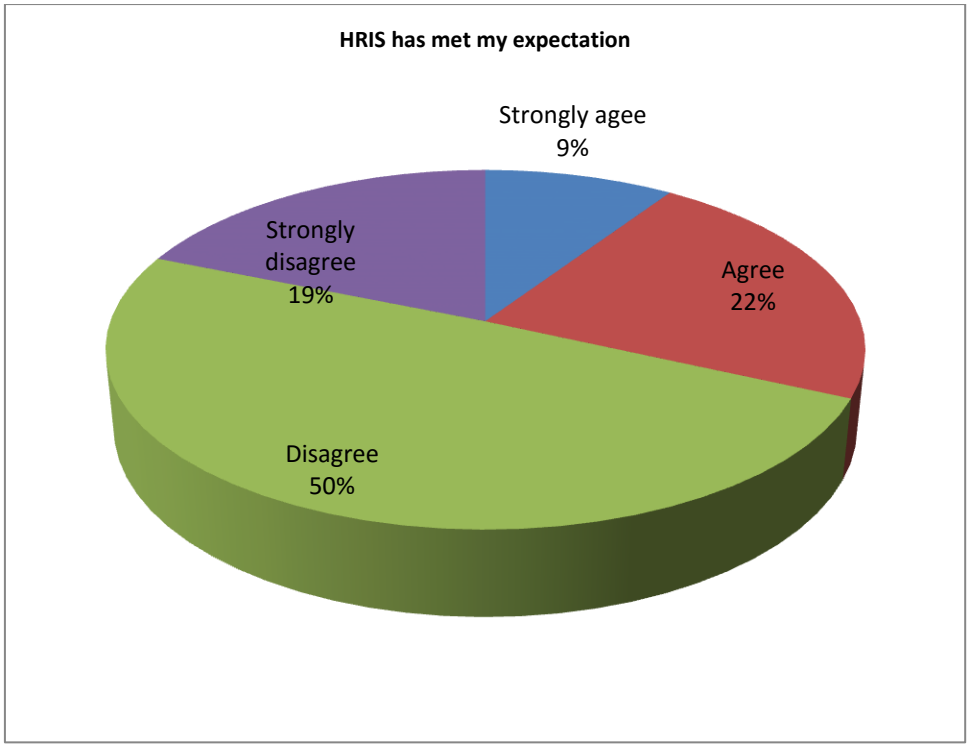

Figure 9: User Satisfaction on HRIS

Table 9: Results of data on User Satisfaction of HRIS

	I am satisfied with HRIS efficiency		**I am satisfied with HRIS effectiveness**		**Overall, I am satisfied with HRIS**	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Strongly agree	19	20%	17	18%	17	18%
Agree	38	40%	38	40%	40	42%
Neutral	2	2%		0%	3	3%
Disagree	18	19%	21	22%	19	20%
Strongly disagree	18	19%	19.0	20%	16	17%
Total	95	100%	95	100%	95	100%

The satisfaction level 57(60%) of respondents confirmed that they were satisfied with the efficiency of HRIS, among which 19(20%) and 38(40%) were highly satisfied and moderately satisfied respectively.

On the other hand, 36(38%) of respondents negated satisfaction with HRIS efficiency. Strongly disagreement was indicated by 19% of the respondents and 19%of

disagreement. The survey data also showed that 58% of respondents were satisfied with the effectiveness of HRIS i.e18% with strong confirmation and 40% with moderate confirmation. On the opposite significant ratio 40(42%) of the respondents either strongly disagree or disagree that HRIS was effective to them. Regarding the overall satisfaction 17(18%) and 40(42%) of the respondents strongly satisfied and satisfied with the overall HRIS system. On the contrary 35(37%) were not satisfied with the overall system of HRIS, with 17% strongly dissatisfied and 20% dissatisfied.

During the interview and focus group discussion the participants said that, because of the problems related with infrastructure & skill gap of the employees, the system is not fully functional. In this case the actual implementation of HRIS is not effective, efficient and cannot attain the satisfaction of employees and the objectives of the organizations.

Therefore from this raw data anyone can conclude that the current HRIS is not fully functional and does not contribute to efficiency and effectiveness of the users of the system in their day to day activities.

4.8 Results of data on Perceived Net benefits

Table 10: Results of data on Perceived Net benefits of HRIS

No	Items	Response categories											
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Total	
		No	%	No	%	No	%	No	%	No	%	No	%
	HRIS helps me to reduce errors in my work	2	4	8	24	6	4	1	8	17	40		
	HRIS helps me to improve my job performance	3	12	13	24	0	1	1	2	17	85.10		
	HRIS increases my productivity	9	10	8	24					17			
	HRIS improves my efficiency	6	12	11	26				17	40			
	HRIS helps the organization to achieve its goal	9	8	21	18	1	2	9	9	9	5		

In the above table, item 1 explains that, HRIS helps me to reduce errors in my work, most of the respondents (40%) were responded disagree and strongly disagree. Item 2 of the same table states that, HRIS helps me to improve my job performance, almost more than 85 % of respondents were responded strongly disagree. Item 3 in the same

table states that HRIS increases my productivity, for this, more than 80% of the respondents were responded disagree. More over when the respondents asked to rate on the item, HRIS helps the organization to achieve its goal, most of the respondents (75%) responded disagree and strongly disagree.

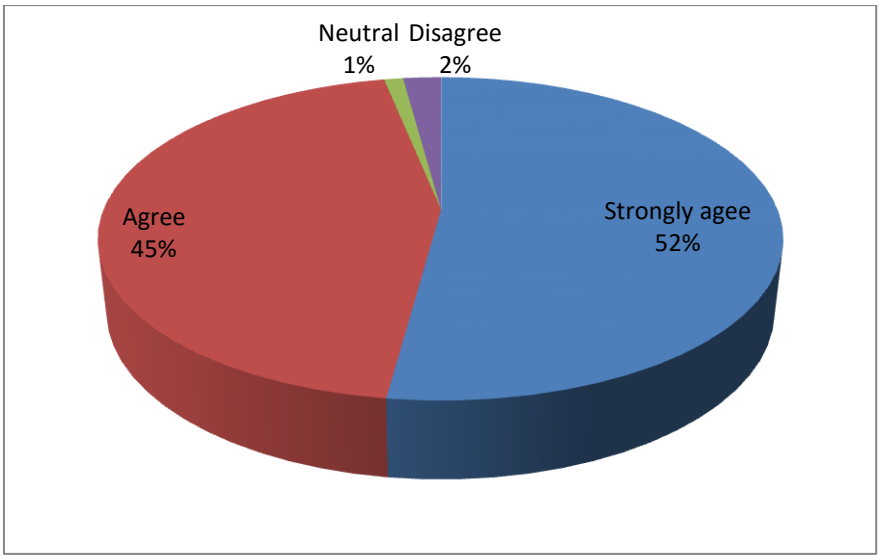

Figure 10: Perceived Net benefits of HRIS

4.9 Results of data on performance, productivity and effectiveness of HRIS

Table 11: Results of data on performance, productivity and effectiveness of HRIS

	HRIS helps me to improve my job performance		**HRIS increases my productivity**		**HRIS improves my efficiency**		**HRIS improves my effectiveness**	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Strongly agree	1	1%	30	32%	21	22%	17	18%
Agree	10	11%	45	47%	59	62%	38	40%
Neutral	3	3%	4	4%	2	2%		0%

Disagree	52	55%	16	17%	12	13%	21	22%
Strongly disagree	29	31%		0%	1	1%	19	20%
Total	95	100%	95	100%	95	100%	95	100%

With regard to the above table which tried to investigate the respondents' opinion on the performance and productivity in using the HRIS, performance and effectiveness in using HRIS. The respondents opinion on item 1 that, HRIS helps me to improve my job performance were revealed as 55% and 31% disagree and strongly disagree respectively. On the other hand, 11% of the respondents were responded agree. For item 2 in the same table, HRIS increases my productivity, for this item the respondents were responded 32% strongly agree & 47%agree.

However, 16 (17%) of the respondents were responded disagree. Item3 in the same table states that HRIS improves my efficiency and for this item, 22 % and 62% of the respondents revealed strongly agree and agree whereas 13% of the respondents were revealed disagree.

4.10 Discussions and Hypotheses Test Result

4.10.1 Tests of Association

Test of association using Chi square (x^2) is used in this study. The x^2 test is used as a preliminary test to check the existence of relationship between the selected variables. This test does not show any direction on the relationship indicated, but it only shows the existence of relationship or association. Chi square (x^2) is used to test hypotheses about the distribution of observations in different categories. The null hypothesis (Ho) is that the observed frequencies are the same as the expected frequencies (except for chance variation). If the observed and expected frequencies are the same, then $\chi^2 = 0$. If the frequencies you observe are different from expected frequencies, the value of χ^2 goes up. The larger the value of χ^2, the more likely it is that the distributions are significantly different. (Anthony & Bruce, 1995).

Table12: Tests of association between HRIS operation and satisfaction with HRIS effectiveness

	I am satisfied with HRIS effectiveness					
		Strongly agree	Agree	Disagree	Strongly disagree	Total
HRIS is currently operational in your organization	Disagree	4	13	6	6	29
	Strongly disagree	10	15	18	23	66
Total		14	28	24	29	95

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.683[a]	3	.177
Likelihood Ratio	.699	3	.174
Linear-by-Linear Association	.022	1	.283
N of Valid Cases	95		

HRIS is expected to improve the performance of staff on their day to day activity. But the result below indicates as the test of association failed between the two variables. This can be due to the fact that the system is not fully operational and pending at plan level only.

Table13: HRIS current operation vs. improvement on job performance

		HRIS helps me to improve my job performance					
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
HRIS is currently operational in your organization	Disagree	0	2	1	19	7	29
	Strongly disagree	1	8	2	33	22	66
Total		1	10	3	52	29	95

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.417[a]	4	.659
Likelihood Ratio	2.746	4	.601
Linear-by-Linear Association	.068	1	.795
N of Valid Cases	95		

The operation of HRIS is basically affected by the attitude of people using it. The following test of relationship shows the impact of individual satisfaction on the system has no significant impact (p=0.107). This indicates that individuals do not have negative encroaching attitude towards the implementation of the application, but the implementation is affected by other factors.

Table 14: Test of Association between HRIS operation and staff satisfaction

		Overall, I'm not satisfied with HRIS					
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
HRIS is currently operation in your organization	Disagree	5	14	1	3	6	29
	Strongly disagree	2	26	2	26	10	66
Total		7	40	3	29	16	95

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.711[a]	4	.107
Likelihood Ratio	2.943	4	.567
Linear-by-Linear Association	.099	1	.754
N of Valid Cases	95		

The operation of HRIS is basically affected by the attitude of people using it. The following test of relationship shows the impact of individual expectation on the system has no significant impact (p=0.158). This indicates that individuals do not have negative attitude towards the implementation.

Table 15: Test of Association between HRIS operation and staff expectation

		HRIS is currently operational in your organization		Total
		Disagree	Strongly disagree	
HRIS not met my expectations	Strongly agree	1	7	8
	Agree	17	32	49
	Disagree	9	13	22
	Strongly disagree	2	14	16
Total		29	66	95

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.197[a]	3	.158
Likelihood Ratio	5.785	3	.123
Linear-by-Linear Association	.197	1	.658
N of Valid Cases	95		

The test of relationship between HRIS operation and system structure shows very high significance of relation. The p-value for the test is p=0.000, implies the relationship acceptable at any level. This is also confirmed by the discussion points raised with the concerned staff and it is the major role factor that hinders the success of the system.

Table 16: Test of Association between HRIS operation and Structure of HRIS

		HRIS is currently operation in your organization		Total
		Disagree	Strongly disagree	
HRIS is well-structured	Neutral	0	1	1
	Disagree	24	25	49
	Strongly disagree	5	40	45
Total		29	66	95

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.305[a]	2	.000
Likelihood Ratio	17.596	2	.000
Linear-by-Linear Association	12.946	1	.000
N of Valid Cases	95		

4.10.2 Tests of Correlation

According to the research design, tests of the relationship of the variables are carried out using bivariate correlation analysis. Correlation coefficient is a statistical tool used to measure the extent and direction of two or more variables. It is represented by r and ranges from -1 to 1 where r<=0(r is negative) then the variable (independent) is impacting the dependent is in a negative way (inverse relationship) while if r>0then the independent variable is affecting the dependent in a positive manner. When the value of the correlation coefficient r is close to zero then it shows no or minimal relationship between the selected variables (A.G.Gonzalez, 2006).

Table 17: Strength of correlation

Size of r	**Interpretation**
0.90 to 1.00	Very high correlation
0.70 to 1.89	High correlation
0.50 to 0.69	Moderate correlation
0.30 to 0.49	Low correlation
0.00 to 0.29	Little if any correlation

For all the nine hypotheses indicated in the study the result is depicted in a table and the detail of each discussed next to the table of the SPSS output. The usual level of confidence is 95% or 99% (i.e. where the researcher is sure that the assumed theory is confirmed by the study data), which means the expected result of p-value (margin of error) should be p<=0.05 or P<=0.01 respectively. This standard values are employed in accepting or rejecting the null hypothesis, but in case the variable is needed at 90% confidence level (p<=0.10) it is stated to indicate that the hypothesis is accepted but with higher expected error.

Thus, the following tests of the nine hypotheses and finding of the data indicated below:

Table18: Tests of Correlations among variables of interest

		System Quality	Information Quality	Service quality	USE	User Satisfaction	Net Benefit
System Quality	Pearson Correlation						
	Sig. (2-tailed)						
	N	95					
Information Quality	Pearson Correlation	.189					
	Sig. (2-tailed)	.067					
	N	95	95				
Service quality	Pearson Correlation	-.128	.317**				
	Sig. (2-tailed)	.216	.002				
	N	95	95	95			
System USE	Pearson Correlation	.644**	.095	-.113			
	Sig. (2-tailed)	.000	.360	.274			
	N	95	95	95	95		
User satisfaction	Pearson Correlation	.159	.231*	.231*	.203*		
	Sig. (2-tailed)	.123	.024	.024	.048		
	N	95	95	95	95	95	

Net Benefit	Pearson Correlation	.597**	.039	-.173	.850**	.236*	
	Sig. (2-tailed)	.000	.706	.094	.000	.021	
	N	95	95	95	95	95	95

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

*. Correlation is significant at the 0.05 level (2-tailed).

***. Correlation is significant at the 0.1 level (2-tailed).

H1. Information quality will positively impact user satisfaction.

The analysis result showed that there is a positive impact between the two variables with r=0.231, looking into the significance of the impact it significantly indicated (p=0.024). Therefore, the existence of positive impact of information quality on user satisfaction is significantly indicated in the study.

H2. System quality will positively impact user satisfaction.

The result indicates that the system quality is affected by user satisfaction or vice versa. For this test the r values is 0.159 while the significance level is p=0.123, which is too far for the positive impact. Since the value of the correlation coefficient is a small value (and high p-value) it can be concluded that there is no relationship between the two variables.

H3. Service quality will positively impact user satisfaction.

The test of correlation between service quality and user satisfaction is found with a correlation value of r=0.231 with a level of significance p=0.024, this showed that there is a positive impact of service quality on the user satisfaction which is significantly seen within the data. Therefore, the hypothesis is confirmed at 95% confidence.

H4. Use will positively impact user satisfaction.

The test of relationship and direction of impact between System use and user satisfaction is found with a correlation value of r=0.203 and with a level of significance

p=0.048. This showed that there is a positive impact of system use on users' satisfaction. Therefore, the hypothesis is confirmed at 95% confidence.

H5. Information quality will positively impact use.

The test of correlation of information quality on the system use is found with a correlation value of r=0.095 with a level of significance p=0.360. This showed that there is a positive relationship or impact of information quality on the system use. But, the hypothesis is not confirmed at significance level.

H6. System quality will positively impact use.

System quality positively affect system use with a correlation value of r= 0.644 which indicates the existence of a positive impact. The significance of the impact is indicated to be with a p value of 0.000. Hence, it can be concluded that system quality positively affects system use at 99% confidence level.

H7. Service quality will positively impact use.

The test of relationship and direction of impact between Service quality and system use is confirmed by the data used in the study. The correlation value calculated is r=-0.113 and the level of significance indicated is p=0.274. Therefore, the impact of service quality on system use is not significantly seen.

H8.User satisfaction will positively impact perceived net benefits.

User satisfaction is expected to affect net benefits according to some researchers. In this study ,the result showed that the coefficient of correlation is found r=0.236 with a significance test p=0.021. This showed that there is a positive impact of user satisfaction on the net benefits of the system, Therefore, the assumption that user satisfaction impact net benefits in a positive manner is accepted at 95% confidence.

H9.Use will positively impact perceived net benefits.

System use is expected to impact perceived net benefits in a positive manner, i.e. as the system use improves net benefits of the system will also be improved or increased. Based on the data of the study, the correlation coefficient is found to be r=0.850 which confirms the positive impact. When it comes to the level of significance, the p value is

0.000, implying the significance. Therefore, this study indicates that system use positively impacts the net benefits and in addition to this, it is statistically significant.

4.11 Summary of the major findings

From the above discussions of the data obtained from the questionnaire, interview guide and focus group discussions the following main findings were identified:

- The employees believed and want the system to speed up their day to day operations, reduce errors in their work in order to get up-to-date and clear information.
- The actual application of HRIS faced infrastructure issue and shortage of trained users for the successfully using the system.
- Currently the users of HRIS are not using the system in their day to day operation because of the poor infrastructure and connectivity issue.
- Due to poor infrastructure, lack of skill on the software and other related constraints, HRIS is considered as time consuming by the users.
- HRIS users' are not satisfied with the system due to the network or connectivity issues which results for the system not being accessible at any time and not being user friendly.
- HRIS may seem to lack the cooperation of different stakeholders like Ethio telecom, ICT expertise or responsible bodies.
- Due to the poor infrastructure and connectivity issues, they cannot get the information they need at the right time which as a result creates delay.
- Because of the problems related with slow network connections, skill gap of employees and poor infrastructure, HRIS is not fully operational. In this case, the actual practice of HRIS is not effective, efficient and cannot attain the satisfaction of employees and the objectives of the organizations.
- The model adopted in the study has been confirmed with few exceptions; system quality has no impact on user satisfaction, information quality and user satisfaction has a positive relationship and significant. The same result is found between system use and net benefits.

Chapter Five

Summary, Conclusion and Recommendations

This chapter deals with the major findings of the study & forwarded recommendations based on the findings and conclusions.

5.1. Summary of the findings

Technology is mandatory because of the needs of efficient and effective management control and utilization of material and non-material resources of organizations. In this case employees in any organization needs the assistance of technology however different constraints make them neglect and sometimes resists the use and adaptation of technology in their day to day operation. Technological advances are revolutionizing the way organizations manage resources and the same is true for these health organizations too. Since HRIS is very important to manage the scarce health service human resources, its usage is challenged by many factors like the poor infrastructure, network problem, inadequate training or capacity building of employees and other related factors.

Moreover, the connectivity issue and delays in giving support on the system creates low expectations of the system from the perspective of the employees in terms of speeding up their daily tasks. Due to these factors ,they are not using the system frequently in their day to day operations.

5.2. Conclusion

From this study the researcher concluded that the sample organizations included in the research have high interest and motivation to use the system however there is lack of continuous support of the top management. Top management support has significant influencing action on the utilization of HRIS and their interest towards Information System (IS) is important to promote IS usage. Since availability of IT consultants and experts are the key drivers towards the successful utilization of HRIS but there is constraint in building the capacity of employees. In addition to the capacity building limitation, the infrastructure used to deploy the system is the other factor that prevents the successful utilization of the system.

Moreover, lack of skills to use the system, lack of IT department support and lack of support from the top managements are the additional factors of HRIS to become challenged and resisted by the employees of the selected organizations.

5.3. Recommendations

The following recommendations are given based on the findings of the study:-

- Currently the actual practice of HRIS in the selected health institutions faces poor infrastructure problem; therefore the government or the concerned body should solve the infrastructure related problems. This can be one of the factors for the negative implication of the system quality on the user satisfaction level that goes against the hypothesis.
- The challenges like the poor infrastructure, lack of skill on the software and other related constraints makes HRIS usage weaken; therefore, management of these health organizations should give attention and solve these critical problems.
- HRIS is not fully operational because of the problems related with poor infrastructure, connectivity issue, skill gap of the employees and lack of support on the system from the concerned bodies. In this case, the actual practice of HRIS is not effective, efficient and cannot attain the satisfaction of employees. Therefore, these health institutions should review their utilization level of HRIS and find a way to solve the problem. The test of the hypothesis shows that the impact of system use on net benefits is not significantly witnessed; hence tangible operation is expected to assist this gap.
- Health care institutions should train their employees on information systems prior to their practice. System quality impact on use is significant at 99% confidence (p=0.000) and needs to work on this factor. This will ensure that the staff will easily understand the functionality of information systems and will also serve to reduce resistance to information systems.
- It is important for government to incorporate information system trainings in all courses which helps to facilitate the practice of information systems.

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APPENDICES

Appendix A: Questionnaire Survey

Addis Ababa University
School of Graduate Studies College of Natural Science
Department of Information Science

Dear Sir or Madam;

First, I would like to thank you for participating in this survey. This research is being conducted in partial fulfillment of the requirements for the Degree of Master of Science in Information Science at Addis Ababa University with a research title of "Factors that affect the Implementation and Usage of HRIS in Public Health Sector of Ethiopia."

The aim of the study is to explore the implementation and usage challenges of HRIS in the public health sector of Ethiopia with the ultimate goal of developing solutions towards efficient and effective implementation and utilization of the system.

Your response to each question is extremely valuable to the outcome of this research. The questionnaire survey will take approximately 25 minutes to complete, and the results of the survey will be used for the purpose of academic research only. Hence, all responses will be kept in strict confidentiality and would not affect anyone in any way.

Your dedication is most valued and appreciated, and I would like to take this opportunity to thank you in advance for your kind participation as well as genuine and on time response to the questionnaire.

Thank you for participating!

HamelmalKiros

Part I- Demographic Information

1. Gender				
a. Male			b. Female	
2. Age				
a. 18-30	b. 31-40	c. 41-50	d. Above 50	
3. Education level				
a. Certificate/level I-III Diploma (Level IV)	b. BA/BSc	**c.** MA/MSC and Above	d. other (please specify ————)	
4. What is your position in the organization?				
a. HR Head	b. IT Head	c. HR officer	d. IT Officer	e. other (please specify ————)
5. How long have you been working in your current position?				
a. 1-2 years	b. 3-5 years	c. 6-8 years	d. Greater than 8 years	

Part II- System Quality

No	**Items**	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	HRIS is easy to use					
2.	HRIS is user-friendly					
3.	HRIS is easy to navigate					
4.	HRIS is well-structured					
5.	HRIS provides high-speed information access					
6.	HRIS allows me to easily find the information I am looking for					
7.	HRIS speeds up my work operations					
8.	HRIS is always available for my day to day operation					

Part III Information Quality

No	**Items**	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	HRIS provides information which is exactly what i need					
2.	HRIS provides information that I need at the right time					
3.	HRIS provides information which is relevant to my job					
4.	HRIS provides information which is easy to understand					
5.	HRIS provides up-to-date Information					

6.	The information provided by HRIS is reliable					
7.	The information provided by HRIS is complete					
8.	The information provided by HRIS is well-organized					
9.	The information provided by HRIS is secured					

Part IV Service Quality

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	The responsible body is willing to help whenever I need support with the HRIS					
2.	The responsible body provides support related to the HRIS at the promised time.					
3.	The responsible body has sufficient knowledge to give support in respect of the HRIS					
4.	HRIS provides a variety of functionality					
5.	I feel safe in my transactions with HRIS					

Part V Use

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I use HRIS frequently for my day to day tasks					
2.	I use HRIS to execute work processes					
3.	I was able to complete a task using HRIS even if there was no one around to tell me what to do					
4.	I have the knowledge necessary to use HRIS					

Part VI User Satisfaction

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	HRIS has met my expectations					
2.	I am satisfied with HRIS efficiency					
3.	I am satisfied with HRIS effectiveness					
4.	Overall, I am satisfied with HRIS					

Part VII Perceived Net benefits

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	HRIS helps me to reduce errors in my work					
2.	HRIS helps me to improve my job performance					
3.	HRIS increases my productivity					
4.	HRIS improves my efficiency					
5.	HRIS improves my effectiveness					
6.	HRIS helps the organization to achieve its goal					

Thank you!

Appendix B: Interview Outline

1. What is your general feeling regarding the quality of HRIS?
2. What would you say about the challenges you face when using HRIS ?
3. How available are HRIS services for you?
4. What would be your comment regarding the quality of information generated by HRIS?
5. In what ways do you feel the quality of information fails to meet your expectation?
6. In what ways do you feel the support services fall short of your expectation?
7. How often do use the HRIS ?
8. What are the factors that discourage you from using the HRIS?
9. How does the use of HRIS improved the quality of your work life?
10. What would you say about the benefits of using HRIS?

Appendix C: Focus group Discussion Questions/Agendas

1. How do you evaluate the current practice of HRIS on your organization and in your day to day operation as an employee?
2. What are the current challenges that face the full implementation efficiency and effectiveness of HRIS in your organization?
3. Do you believe that the employees use HRIS continuously for their day to day operation in your organization?
4. How do you evaluate the support of IT expertise and other responsible bodies in order to fill the skill gap of employees?
5. What are the factors that discourage the employees to use HRIS in their day to day operations?

DECLARATION

I declare that the thesis is my original work and has not been presented for a degree in any other university.

_____ Date_____

This thesis has been submitted for examination with my approval as university advisor.

_____ Date_____