EXPLORING THE PRACTICES AND CHALLENGES OF EDUCATIONAL MANAGEMENT INFORMATION SYSTEM IN GOVERNMENTAL SECONDARY SCHOOLS OF HARARI PEOPLES NATIONAL REGIONAL STATE, ETHIOPIA

MA THESIS

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February 2025

Haramaya University, Haramaya

Exploring the practices and challenges of educational management information system in governmental secondary schools of Harari peoples national regional state, Ethiopia

A Thesis Submitted to the Department of Educational Planning and Management

College of Education and Behavioral Sciences
Postgraduate Program Directorate

HARAMAYA UNIVERSITY

In Partial Fulfillment of Requirements for the Degree of

MASTER OF ARTS IN EDUCATIONAL LEADERSHIP

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February 2025

Haramaya University, Haramaya

HARAMAYA UNIVERSITY

Postgraduate Program Directorate

As thesis research advisors, we hereby certify that we have read and evaluated this thesis prepared, under our guidance, by Kokobe Mulat entitled "Exploring the practices and challenges of educational management information system in governmental secondary schools of Harari peoples national regional state, Ethiopia. We recommend that it be submitted as fulfilling the thesis requirement.

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Final approval and acceptance of the Thesis is contingent upon the submission of its final copy to the postgraduate program directorate (PGPD) through the candidate's department or school graduate committee (PGPD or SGC).

DEDICATION

I dedicate this thesis to my father Mulat Aman and my mother Kidist Taye as well as to my colleague Nuredin Sadik Ali for encouraging and supporting me with affection and for their dedicated partnership in the success of my life.

STATEMENT OF THE AUTHOR

First, I declare that this thesis is the result of my own work and that all sources of materials used for this thesis have been duly acknowledged. This is submitted in partial fulfillment of the requirements for the degree of Master of Arts in School Leadership, Haramaya University and to be made available at the University's library under the rule of the library. I assertively declare that this thesis has not been submitted to any other institution anywhere for award of any academic degree, diploma, or certificate.

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Date of submission: June 2024

Department: Educational Planning and Management

ACKNOWLEDGMENTS

First of all, I extend my deepest gratitude and appreciation to my thesis advisors, Dr. Feyera Dinsa and Dr. Yonas Amdemeskel for their unreserved professional advice and guidance by giving constructive comments and useful suggestions. Indeed, without their great dedication, the development and completion of this study would have been impossible.

Moreover, I wish to express my thanks to all my friends, in Harari region Sample Secondary School principals, supervisors, teachers, Woreda and education office experts for their cooperation in giving necessary information, by filling questionnaire, giving interview and providing me documents as well as the lecturers at Haramaya University who were cooperative in responding to my request in the process of writing this thesis.

ABBREVIATIONS AND ACRONYMS

EMIS	Educational Management Information System
GTP	Growth and Transformational Plan
MoE	Ministry of Education
MoFED	Ministry of Finance and Economic Development
MoSHE	Ministry of Science and Higher Education
NGO	Non-Governmental Organization
UNESCO	United Nation Education and Science Organization

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Kokobe Mulat Aman

ABSTRACT

The purpose of this study was to assess the current practices and challenges of Educational Management Information System in Governmental Secondary Schools of Harari Peoples National Regional State and to find the barriers that cause these practices and problems of Educational Management Information System as well as to determine the possible solutions for these challenges. To carry out this study a concurrent mixed research design (QUAN – QUAL Model) was used. Participants were teachers (167) and education leaders (principals, EMIS Experts, and educational officers) by simple random sampling technique (lottery method) and purposive sampling methods respectively. The data were collected by using a questionnaire. The quantitative data analysis method were employed in order to reach to the results. Data obtained through questionnaire were analyzed and summarized using statistical tools. The statistics were entered into SPSS Version 20 software analysis. Statistical measures were performed on quantitative data assembled from the respondents; frequency count, Percentage, mean and standard deviation, were conducted. The study deals with examining the current practices and challenges of Educational Management Information System in Governmental Secondary Schools. The findings of the study revealed that respondents were in greater demands of EMIS professionals in their respective organizations though there is no skilled human power in the field. Finally it was recommended that Harari Education Bureau must have legal framework with a clear legal mandate to collect information from all education and training institutions and bodies, produce specific work guidelines for EMIS staff. Further, the Bureau should give great attention to accountability & responsibilities issues regarding collection of quality data and production of reliable information.

1. INTRODUCTION

In this chapter, background of the study, statement of the problem, basic research questions, objectives, significance of the study, delimitation, definition of key terms, and organization of the study were presented.

1.1. Background of Study

Educational Management Information System (EMIS) is a system for organizing information base in a systemic way for management of educational development besides responsible for collecting, processing, analysing, publishing and distributing data &information services for education information users (Al Koofi, 2007).

Also, EMIS is not only a means to gather statistics from the schools but also provides comprehensive, integrated, relevant, reliable, unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities used to achieve the pre stated education goals efficiently(Carrizo et al., 2003 and Ahmad and Adnan, 2010).

In provision of quality education for all, the EMIS emphasis on providing cost effective and accurate data within a needed time is increasingly important for evaluating education policy, determining educational planning and monitoring the progress towards attainment of development goals. Hence, to assure and measure quality education, Education Management Information System (EMIS) is depository for data collection, processing, analysis and reporting of educational information including schools, students, teachers and staff (UNESCO, 2014).

Likewise, EMIS is a management information system that equips decision makers and relevant stakeholders with necessary information often used to undertake information based productive education planning, organizing educational resources, executing educational activities, as well as conducting monitoring, controlling and evaluation on educational development activities contributing towards improving education quality (Al Koofi, 2007).

Therefore, policy makers, managers and expertise in education sectors should understand the importance of EMIS to have adequate and reliable information needs to make

information based decision which leads to bring sustainable development in education sectors (Oliver, 2017).

In Ethiopia deprivation of educational managers and technical experts in materializing educational management information system at various level of educational administration (central, regional, zone, district) and educational systems (colleges and universities) are the most common challenges which have been confronting education system of the country. Moreover, the challenges are coming to be serious as universities yet not ready to trainee graduates in EMIS, despite the need for growing graduate from the Ministry of education in particular and the government in general. Therefore, Ethiopian education system needs a better qualified educational managers and technical experts at all levels of the educational systems contributing towards providing quality education (MoE, 2015).

Similarly, in Harari regional state, the challenge of materializing educational management information system is a common challenge of education system of the region and the challenges is wide and sever in most government owned secondary schools where no similar study concerning to educational management information system is yet not conducted (Harari Peoples National Regional State, GTP, 2015).

Therefore, this study intends to examine the existing practices and challenges of educational management information system (EMIS) in some selected government owned secondary schools in Harari regional state.

1.2. Statement of the Problems

Education Management Information System (EMIS) is part of education system which is significantly important to gather information by using emerging information technology to provide comprehensive, integrated, relevant, reliable, unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities accurately and efficiently (Ahmad and Adnan, 2010).

Education Management Information system (EMIS) is in practice across the world by Ministry of Education (MOE) or Ministry of Science and Higher Education (MoSHE), NGOs, researchers, donors and other education stakeholders to conduct research, policy development and planning, monitoring and evaluation of development activities and making information based productive decision in all development works including in education development

system although, its implantation in development work is young and creeping to make it nationwide, fast and effective(Ahmad and Adnan, 2010).

In the world, the current practice of EMIS is not satisfactory and particularly true in Ethiopian education system since, EMIS design and development has been limited to information technology enhancements or data storage and maintenance and limited to both information technology enhancements and data storage and maintenance (Hua and Herstein, 2003). Therefore, to this end, the world's countries including Ethiopia have invested significant resources for collecting, processing and managing more and better data through Education Management Information System (Hua and Nerstein, 2003).

Seemingly, Ethiopia has attempted to satisfy the pressing demand for high and medium level managerial, technical and scientific experts by educational management and made an encouraging improvement. However, available human power in educational management is insignificant due to high expansion of primary and secondary schools, colleges and universities owned by government and private organization (MoE, 2015).

Furthermore, lack of infrastructural challenges, unavailability of computers and devices at schools as well as low computer literacy amongst staff are the major constraining factors of EMIS in education system which leads to make expensive to maintain information system and providing extensive training required for enhancing capacity of staff in manipulating and using EMIS in education system (Oliver, 2017). Moreover, lack of qualification, experience and skills in EMIS observed on most educational managers might be taken and considered as major challenges confronted education system at various level of education system particularly at secondary level of education which has been suffered from implementing EMIS.

This challenge of practicing EMIS in secondary education system has similarly observed in most government secondary schools in Harari regional state. Where, similar study intended to examine practices and challenges of educational management information system (EMIS) in secondary schools yet not conducted (Haari regional national state GTP plan, 2015). Therefore, this study intended to examine the existing practices and challenges of educational management information system (EMIS) in some selected government secondary schools in Harari regional state.

1.3. Basic Research Questions

1. To what extent EMIS is practiced in government secondary schools of HPNRS?

2. What are the challenges that hinder the utilization of EMIS in government secondary schools?

3. What are the strategies used to limit challenges that hinder utilization in government secondary school of HPNRS?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective the study is to examine the existing practices and challenges of educational management information system (EMIS) in selected government secondary education.

1.4.2. Specific Objectives

The specific objectives of the study are to:-

1. To define the extent to which EMIS is practiced in government secondary schools of HPNRS

2. To identify the challenges that hinder the utilization of EMIS in government secondary schools

3. To assess the strategies used to limit challenges that hinder utilization of EMIS in government secondary schools

1.5. Significance of the Study

An Education Management Information System (EMIS) is an essential tool for improving the overall quality of education. The system can be used to improve data management, make better decisions, increase transparency and accountability, improve student outcomes, and improve communication. An education management information system provides proper and easy management of academic and non-academic activities of the students.

Therefore, this study may help education leadership, education experts and school managers to have greater understanding about current practice and challenges of EMIS in secondary schools. Also, it may help Education policy makers /decision makers to have accurate, valid and reliable data and information which lead to make productive decision contributing towards providing quality education in the region. At the end, the study may provide baseline data for the next coming researchers who need to conduct further investigation on area may not covered by this study.

1.6. Delimitation of the Study

This study was delimited geographically, conceptually, and methodologically. Geographically, in order to make the study more manageable and feasible the study was delimited to Harari Regional State because of time and cost implication as well as it was delimited to the respondents such as teachers, school principals and supervisors. Conceptually, it was delimited to Exploring the practices and challenges of educational management information system in some governmental secondary schools of Harari peoples national regional state, Ethiopia. Methodologically; it was delimited to questionnaire and interview due to lack of time and budget, and the data analysis tools are delimited to frequencies, percentage, and mean and significance test.

1.7. Limitation of the Study

This study had encountered certain limitations and challenges. The limitations and challenges that the researcher came across in the study were stated as follows: - Unwillingness of respondents in filling the questionnaires and return on time and lack of contemporary and relevant literature on the topic, especially on Ethiopian context were some of the problems. Some of them who have enough time were also unwilling to fill in and return the questionnaire as per the required time. Consequently it was difficult to collect all the questionnaires as planned. There is shortage of books or lack of updated literature in the area. So to manage such like asking reputing and giving time. In spite of these short comings, however, it was attempted to make the study as complete as possible

1.8. Operational Definitions of Key Terms

Management: is how businesses organize and direct workflow, operations, and employees to meet company goals.

Information is data that has been processed in such a way as to be meaningful to the person who receives it

System: is a group of interacting or interrelated elements that act according to a set of rules to form a unified whole.

1.9. Organization of the Study

The study was organized into five chapters. Chapter one provided back ground of the study, and the statement of the problem and related approach. Chapter two of the research dealt with review of related literature, Chapter three dealt with the research design and methodology. Chapter four of the research focused on presentation and interpretation of the data and analysis of the data in brief and chapter five contained conclusions and recommendations of the study.

2. REVIEW OF RELATED LITERATURE

This chapter presents concepts of Management Information System and definition, Key Measures of EMIS Success, Data Integration and Data Sharing among Departments, Practices and Challenges of EMIS in Public Education Institutions of Eastern Ethiopia etc…

2.1. Concept of Management Information Systems

One of the essential requirements for achieving educational goals and objectives lies within the flow of information to educational administrators and policy makers through sound information systems, known as Education Management Information Systems /EMIS/ (Ahmad, Saraogi & Mintz, 2017). MIS is used at various levels in an organization to provide support in the organization's long term strategic milestones (McLeod, *et al.,* 2008).

The term EMIS is a system that monitors the performance of education programs offered by and the institution and manages, distributes, and allocates their educational resources. In this perspective, the EMIS provides a critical function that will help adequately distribute the appropriate work load for each area of concern. The use of IT in educational management has increased because it is efficient and practical simultaneously (Shah, 2014).

Also, in the pursuit of quality education for all, a timely, cost effective, and accurate data is increasingly important for evaluating education policy, determining educational planning, and monitoring the progress towards attainment of development goals (UNESCO, 2014). Accordingly, to assure and measure quality education, EMIS is repository for data collection, processing, analysis and reporting of educational information including schools, students, teachers and staff.

Education Management Information System (EMIS) is also a set of formalized and integrated operational processes, procedures, and cooperative agreements by which data and information about schools and schooling, such as facilities, teachers, students, learning activities, and evaluative outputs, are regularly shared, integrated, analysed and disseminated for educational decision use at each level of the educational hierarchy (Cassidy, 2005).

Also, it is an institutional culture that perpetually advocates data and information use and seeks to ensure it through the creation of an environment which permits information systems to flourish (requiring institutional and organizational commitments), while creating and sustaining demand for information products(Cassidy, 2005).

To sum up, Education Management Information System(EMIS) is not only means to gather statistics from the schools by following people, models, methods, procedures, processes, rules and regulations but it actually also relates with the emerging computer technology to get all mentioned functions work together to provide comprehensive, integrated, relevant, reliable, un ambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities efficiently to achieve the set goals(Wako, 2003).

Also, computer technology provides technical support to the education management information systems by providing right people with right information at the right time to make best decisions, planning and monitoring in the best interest of organization (Wako, 2003).

2.2. Objective and Function of EMIS

The objectives of an EMIS are: to improve the capacity for data processing, storage, analysis and providing education planners with timely data; to facilitate the use of relevant information in decision making by planners at all levels; to eliminate duplication of information for decision making and to provide information for policy dialogue (Scott, 2015).

The main objective of an EMIS is to integrate information related to management of educational activities, and to make it available in comprehensive ways to varieties of users. Education Management Information System (EMIS) plays an important role in developing appropriate plans, strategies and policies for improving the education system. Data after processing is transformed into information and information is the base for decision making process. The most direct operational application of EMIS is to support ongoing management, planning and monitoring and evaluation activities of education system. Therefore, the aim of EMIS is to promote the development and operation of education and training management information systems for accountability, planning and monitoring to achieve quality and effective service delivery in the national education system (Scott and Olson, 2015).).

2.3. The Concept of Information

The concept of information in an organizational sense is more complex and difficult than the frequent use of this common word would suggest. Every society, no doubt, is an information society and every organization is an information organization. Information can be considered either as an abstract concept (ideas) or as a commodity, usually in the form of letters and reports. Essentially, therefore, information has become a critical resource, just like energy, both of which are vital to the wellbeing of individuals and organizations in the modern world.

Like energy and politics, technology is changing the ways in which information is captured, processed, stored, disseminated and used. Information, therefore, like any other resource in an organization, should be properly managed to ensure its cost-effective use. It is an ingredient that is vital to good management and if properly managed, should rank in importance with the organization's personnel, material and financial resources. In an organizational context, it is increasingly being recognized as a resource independent of the technology used in manipulating it. The implication of this realization is the further recognition that information is the cohesive element that holds an organization together (Moses, 2001).

Information is an unusual commodity, quite unlike most physical goods or consumer durables. Since it is intangible, it is often hard to enforce custody. For this simple reason, it is often crucial to highlight the significant differences between this resource and others when developing a management framework. Its content can be distinguished either by source (internal or external) or by form (Wako, 2003).

Non-numeric can either be structured or unstructured. Internal information is that generated within an organization and generally is of interest and value only to decision makers within that organization. External information can be regarded as that created by others, that is, outside the four walls of the organization, generally by publishers in the form of books or journals, or by Governments, external contacts and the like.

As a concept, information has always connoted different meanings to various information professionals, depending on what side of the information profession they belong. West, (2003) rightly observes that "the data processing manager might conceive it in terms of data, the records manager in terms of records and reports, the librarian or information scientist in terms of documents or other materials". There are three major information worlds which have traditionally been divided and separated. The first is the literature world of libraries and archives, where information has been put into recorded form. The second is the document world of information centers and record centers, where information has been collected and organized but perhaps not seriously evaluated in the same sense as in the literature world. The third information world is the data world of computers, telecommunications and automated information systems where the information is often numerical or structured (Wright, 2000).

2.4. The information management

Information management has been defined as the organization-wide capability of creating, immediately available the right information, in the right place, at the right time, in hands of the right people, at the lowest cost, in the best media, for use in decision making (Scott, 2006).

Information management is an economic, efficient and effective co-ordination of the production, control, storage and retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organization (Bodo, 2006).

The rapid evolution of computer technology is expanding man's desire to obtain computer assistance in solving more and more complex problems: problems which were considered solely in the domain of man's intuitive and judgmental processes, particularly in organizations, a few years ago. Information systems are becoming of ever greater interest in progressive and dynamic organizations (Bennet, 2016).

Management information and information systems, in particular those related to effective decision-making processes in an organization, that means MIS, are regarded as valuable organizational resources.

Simply put, an information system is a system for accepting data/information as a raw material and through one or more transmutation processes, generating information as a product. Academics interested in information works and information practitioners alike have defined information systems in various ways but with basic ideas of people, information technology and procedures which enable the facilitation of the generation, use and transfer of information. Although information systems are considered to belong to an applied discipline, there is need for an understanding of their underlying basic concepts by information practitioners. Information systems is considered to be adequate: a collection of people, procedures, a base of data and (sometimes) hardware and software that collects, processes, stores and communicates data for transaction processing at operational level and information to support Management decision making (Manas, 2007).

2.5. The School Management

According to Mekonnen Kajela (2010) management is defined as an effort made to coordinate the exertion of human and material input in order to achieve the set objectives. It is an art of coordinating the knowledge and skills of people involved in EMIS activities in order to accomplish planned objectives and visions. To do this, we consider all our activities, the

procedures involved, the professionals carrying them out, and the relationships within and with other stakeholders.

Makewa, Meremo and Role (2013) in their study found out that the management of schools is characterized by challenges in the area of finance, teacher absenteeism and lateness, maintenance of student records, communication with parents and students which has been worsened by the a steep rise in the number of students with no corresponding increase in teachers. The use of EMIS in management is therefore expected to enhance the management practices

Bruniges (2003) also asserted that the purpose using EMIS to improving and increase quality accessibility and coast efficiency of the delivery of education. The justification of using EMIS is further affirmed by J.HURREE (2005) who argues that apart from classroom instruction, teachers are also involved class administration duties such as student record keeping lesson, plane preparation, preparing hand out paper making and performing some analysis which can be efficiently done using EMIS module.

Given the complex of school management Telem and Avidov (2014) contended that an EMIS could be used to do the following ; assist school administration in the efficient management of official function enhancing the supervision of progress improving of school resource management promotion of communication between school unit parent and school administration and in so doing cultivating responsibility on the part of school management enhancing transparence in administrative action as well as the interlinking of school network.

Davis, (2015) and Ellison, (2004) affirm that EMIS can help school management to work more efficient by for example improving raking learning out corners behavior's, curriculum. and others pedagogical data in addition to providing on demanded updated data at different level, individual student class, subjects or the entire school and by strength communications among staff, student and parent.

Davis, (2015) further point out those schools can communicate with students and parents via e-mail and social networks platforms such as Facebook, Twitter and what's App. The internet can be used for faster and cheaper approach in operating administration and management of daily tasks such as information processing, transferring, storing and retrieval.

Enache, and Supanc,(2001) argues that for the 21st century school manager to be effective in the discharge of his duties he must possess technical, human and conceptual skills including the use of new technology to deal with emerging managerial challenges. Such a manager would therefore be able to use the skills so gained to easily integrate technology in the management process. According to Kenya educational management system, school managers are now being

encouraged to acquire ICT skills to enable them conduct duties such as registering students for national examinations online students among other managerial duties.

According to Crouch (2001) evidence at school level also point to the introduction management information system not only allows new practice to be more efficient, but also allow new practice to be established. The study by price water use Cooper (2004) which investigate the use if ICT to adders teachers load found that through ICT does help to adders work load for some teachers, in the other cause ICT increase their workload with some task take it was longer to complete. However established that could be result of confidence in the use technology.

Technology is often the most noticeable aspect of EMIS, but it is only a part of the education information solution. Increasingly, laptops are replacing desktop computers (more rugged, just as powerful using less power, consolidated into one piece, and often more reliable). Only some of these technologies have been available over the last six years hence their full application has not yet been tested. Cell phones have gotten much more powerful capable of transmitting data via SMS or GPRS in useable formats for "urgent" or high-demand information. Cell phones are already used to "log" school locations and to communicate key information such as "attendance or enrollment data" to district or national offices rapidly.

Bennetc (2016) suggest that for effective utilization of ICT by teachers, there is the need for a strong leadership to drive a well- designed technology plans in schools (Bodo,2006) Report on the effect of ICT on teaching in basic schools in United Kingdom also stressed on significance of good leadership.

In addition Bodo identified five factors that were essential to be present in schools if ICT was to be utilized properly. These factors were ICT resources, ICT teaching, ICT leadership, general teaching and general school leadership.

2.6. The Process of EMIS

There is a need for Government and the private sector to coordinate data collection activities to minimize duplication and overlap and to maximize the impact of the data collection results. A comprehensive EMIS will assist in this process.

Managing education through informed decision-making requires the availability of accurate and timely information which links together resource inputs to education teaching and learning conditions and processes and appropriate indicators of the knowledge acquired by students. In some countries, the widespread use of information-based decision-making has resulted in more

effective and efficient planning and the identification of new information needs (Al Koofi, 2007).

In others however failure to supply information that is timely and reliable has contributed to management inefficiencies and are laitance on the part of decision-makers to use information. Some Ministers of Education knows that data collection does not function properly and thus they do not trust it. This is also true of other senior decision-makers in education and other ministries (MoE, 2015)

Yes paradoxically, school principals and other education managers sometimes suffer from too much information this is not useable or timely. For example, valuable findings from an annual school census may not be fully exploited because of the large quantity of data collected. Also, the data may be collected tabulated and disseminated in a form difficult to interpret and use especially for people with limited understanding of statistics (Assela, 2012).

There is a need for well-organized data presentation and data interpretation standards to provide managers with useful and relevant information. Ideally the design and establishment of an EMIS should be preceded by appropriate policy development legislation and relevant administrative decisions. Government commitment is of major importance in the first instance by the Ministry of Education. This ideal prerequisite situation is particularly necessary where the EMIS is to be established by unifying and expanding existing information structures and services. In some countries, these services already undertake independent ongoing information activities for which they have sole responsibility (MoE, 2015). Hence a set of well-coordinated and clearly defined legislative and Administrative measures would be the first requirement in order to bring these services together under the same EMIS.

This is even necessary today as, in most countries; the formal education system includes EMIS with quality of education, which often operates at both national and sub-national levels. It often handles information, some of which is also relevant to the responsibilities of the central government, for example, for curriculum development or teacher training certification. A well-planned and designed EMIS will facilitate the undertaking of sequential activities relative to the development of a functional EMIS (Plan for-action, 2013-2015).

2.7. Importance of Education Management Information Systems

Education Management Information Systems provides management and other personnel within an organization with up-to-date information regarding the organizations performance. It is usually linked to computer network, which is created by joining different computers together

in order to share date. It is designed to capture, transmit, store, retrieve, manipulate, and or display information used in one or more processes (Bennetc, 2016).

Management Information Systems performs three main functions. One, to generate reports such as, financial statements, inventory status reports or performance reports for routine and non-routine purposes, two, to answer what if questions from management and to support decision making by integrating the decision maker, the data base and the quantities model being used (Crouch and Enache, 2001).

Contribution of information systems to schools include among others; support to the school manager and other staff in doing their duties, developing their performances, effectiveness and efficiencies by saving time (Bodo, 2006)).

Information supports strategic planning for education and acts as a diagnostic tool to assess the existing capacity and characteristics of the education system. These assist in identifying and setting priorities for future development and areas that need greater resource allocation (Supanc, 2001).

EMIS is an early warning and learning system for Education leaders that provides a framework for Education Policy and Planning. It provides the basis for monitoring and evaluation, policy development, planning and budgeting. It facilitates the identification of particularly well performing units, so that good practice can be transferred to the poorly performing for intervention (Cassidy, 2006).

Statistical information especially in the poor countries of the African region is important for the optimal allocation of scarce resource. However, in most of these countries the capacity for providing requisite information is low, limiting the ability of decision makers less ability to make informed decisions. This is a major obstacle to effective planning and management of education in Africa. In twenty-one African countries available statistics revealed serious information gaps in terms of coverage, reliability, and timeliness in pupil enrollment, teachers, facilities, teaching and learning materials and finance among others (UNESCO, 2006).

A distinguishing feature of the EMIS is its emphasis on the flow of information within the MOE because information is the common link binding the MOE and schools. As the MOE grows in size and complexity, the need for efficient information and for improved decision making techniques becomes critical. Recent advances in computer and communications technology mean it is practical to integrate planning and control with data and information. Moreover, there is evidence that the EMIS can potentially provide a powerful management tool capable of contributing to the improvement of educational performance (Davis, 2014). It enables decision makers to identify problem areas, reduce operational costs and provides a

systematic way of addressing educational challenges. If effectively implemented, the EMIS is capable of raising educational awareness, motivating employees to search for innovative solutions and increasing educational efficiency (Gunningham, 2007).

Furthermore, the EMIS makes efforts to assess the performance of the MOE system. It monitors the distribution of resources, and plays an active role in providing information to the decision makers (Wako, 2003).

In addition, another major function of the EMIS, other than collecting, storing and processing information, is to facilitate detailed analysis and synthesis of data in order to draw upon the most relevant information to help in educational planning and policy decision-making (Assela, 2012).

2.8. Three Key Measures of EMIS Success

The success of Education Management Information System depends on the three key important measures of EMIS: timely and reliable production of data and information, data integration and data sharing among various department and efficient use of data and information for policy decisions (Huaand and Herstein, 2003).

2.8.1. Timely and Reliable Production of Data and Information

The EMIS data produced must regularly meet the needs of overall educational planning and budgeting cycle and needs of educational services (the logistics unit and other units of school supplies).Besides, it must meet needs of educational monitoring and evaluation, policy research and guidance in a timely fashion as well as the need of international collaboration and communication (Willinsky, 2003).

The timeliness of EMIS data could meet these needs within the Ministry of Education is critically important for success of EMIS development due to the fact that obsolete data, even after produced may not have much value for use besides leads to create missed intervention opportunities and pervasive distrust from information clients within or outside the organization (Hua and Herstein, 2003).

Also, the process of data collection, data entry, data processing, data integration, data analysis, and data reporting should be short, efficient and productive to assure timely production of data and information which has been required to meet the intended needs. This can be often achieved by increasing the level of effort, beginning preparations earlier, proposing and reinforcing task

deadlines, institutionalizing EMIS as a routine management process and strengthening the coordinating capacity of EMIS data-related activities (Willinsky, 2003).

To assure reliability of EMIS data production, the once produced data must report current reality, status and trend of change observed in educational development process of across country, district and school. It means that policy makers, planners, budget makers, field educational officers, principals, teachers, parents and students can trust the data and data sources. To win such a trust, data collection must be treated as a scientific process of fact finding besides, variables must be indicative and meaningfully measuring certain elements of the educational system or sub-systems (Peter, 2003).

The level of data reliability can be affected by almost all elements of data and information production procedures include the design of data collection instruments, clarity of question items, field data collection methods, educational and ethical level of respondents, design of computer database applications, data entry procedures, data aggregation methods, data integration procedures, data processing and analytical capacity. To boost the reliability of data, the overall design of the data collection process, data instrument development and computer database application development must be carefully crafted (Willinsky, 2003).

The timeliness and reliability of data and information produced significantly affect the level of users' confidence and trust on using data and information for the intended needs. Furthermore, dalliance in production and unreliable data production can easily create frustration among data users which leads to develop unproductive planning and budgeting, conducting infertile monitoring and evaluation as well as weak policy analysis and policy-making (Hua and Herstein, 2003).

Moreover, users lose trust on EMIS's ability or credibility often discourages their support for maintaining, strengthening and upgrading the EMIS system which leads data and information production capacity becomes even worsened and further jeopardizing the ability to produce timely and reliable data. Therefore, these vicious cycle that imparts some educational systems must be eradicated (Hua and Herstein, 2003).

2.8.2. Data integration and data sharing among departments

Data integration plays a crucial role in educational information management systems by enabling the seamless flow of information across various platforms and applications. This paper explores the importance of data integration in educational settings and its impact on improving decision-making processes and enhancing overall efficiency. Data integration in educational information management systems involves the consolidation of data from multiple sources, such as student records, attendance logs, and academic performance metrics. By integrating these disparate data sources, educational institutions can gain a comprehensive view of student progress and performance, enabling educators to make informed decisions about curriculum development, student support services, and resource allocation. One study by Smith *et al.* (2018) found that schools that implemented data integration strategies saw significant improvements in student outcomes, including higher graduation rates and improved academic performance. This highlights the importance of data integration in driving positive educational outcomes and enhancing the overall effectiveness of educational programs

As a result, the data cannot readily be integrated or used interactively unless a data integration strategy is implemented. Without coordinated management, there cannot be a monitoring and evaluation system, a planning and policy analysis system, or an EMIS system that is effective and policy-relevant. Without such systems, there would be no answers to policy inquiries such as: How much do teacher qualification and salary contribute to student learning achievement, given that the school environment and resource allocation are identical? What is the impact of a new teacher-training program or a new curriculum (or any new educational investment project) on student learning achievement? Clearly, we must integrate the data from multiple sources so that we can conduct the right data analysis to answer the right policy questions. Multi-level data from multiple sources and years, once centrally integrated and organized, could have a tremendous value for policy-relevant research and analysis and improvement in education management (Peter, 2003).

2.8.3. Effective use of data and information for policy decisions

In the field of education, data information plays a crucial role in informing policy decisions and driving improvements in student outcomes. With the increasing availability of data from various sources, such as standardized tests, student surveys, and administrative records, policymakers have a wealth of information at their disposal to make informed decisions. This literature review examines the importance of using data information effectively for policy decision-making in the educational system.

One key aspect of using data information for policy decisions is the ability to identify trends and patterns in student performance. By analyzing data on student achievement, attendance, and behavior, policymakers can identify areas of improvement and develop targeted interventions to address specific needs. For example, a study by Smith et al. (2018) found that schools that used data to inform their decision-making processes were more likely to see improvements in student outcomes compared to schools that did not use data effectively.

In addition to identifying trends, data information can also help policymakers evaluate the effectiveness of existing policies and programs. By tracking key performance indicators over time, policymakers can assess whether interventions are having the desired impact and make adjustments as needed. For instance, a study by Jones and Brown (2017) found that schools that regularly monitored student data were better able to identify areas of weakness and implement strategies to improve student outcomes

Furthermore, data information can also be used to inform resource allocation decisions in the educational system. By analyzing data on student demographics, performance, and needs, policymakers can allocate resources more effectively to support students who are at risk of falling behind. For example, a study by Johnson et al. (2019) found that schools that used data to target resources to specific student populations saw greater improvements in student outcomes compared to schools that did not use data in this way.

Overall, the effective use of data information is essential for driving policy decisions in the educational system. By analyzing trends, evaluating program effectiveness, and allocating resources strategically, policymakers can make informed decisions that lead to improved student outcomes. Moving forward, it is important for policymakers to continue to prioritize data-driven decision-making in order to ensure that all students have access to high-quality education.

2.9. Practices and Challenges of EMIS in Public Education Institutions of Eastern Ethiopia

2.9.1. Current Practices of EMIS in Public Education Institutions of eastern Ethiopia

EMIS is in practice by Ministry of Education (MOE) or Ministry of Science and Higher Education (MOSHE), NGOs, researchers, donors and other education stakeholders for research, policy and planning, monitoring and evaluation and decision making although it is young and creeping to make it nationwide, fast and effective(Hua&Herstein, 2003).

Whereas, regard to the current practice of EMIS in global context generally and in Ethiopian context particularly, EMIS provides a comprehensive and on-going capacity building program for Ministry of Education at multiple levels that ensures the existing staff acquire new skills as new requirements emerge (Ahmad & Adnan, 2010).

Also, effective education management information system is required to contain administrative and apprentices that includes financial & human resources and learning data in line with three basic components (people, process and technology components). The people component often comprises leadership, managerial and technical styles and the process component comprises administrative requirements, timelines, job skills and funding resources which are often difficult to align with EMIS goals intended to provide quality educational information for users (Landero and Role, 2018). Now a day, in the world education management information system is practiced by ministry of education NGOs, researchers, donors and other education stake holders for conducting research policy designing, producing productive planning and conducting effective monitoring & evaluation and making sound decision. However, the world's practices in education management information system is being young and creeping to be nationwide, fast and effective(Ahmad and Adnan, 2010).

To sum up, in world context in general and in Ethiopian context in particular, education management information system is used by ministry of education in providing a comprehensive and on-going capacity building program to assure the existing staff acquire new skills as newly emerged requirements (Ahmad and Adnan, 2010).However, the current practice of world's education management information system is not satisfactory and particularly true for Ethiopian education system for which, the design and development of EMISis limited for enhancing information technology and data storage &maintenance (Hua and Herstein, 2003).

However, to this end a number of countries around the world have invested significant resources for collecting, processing and managing more and better data through education management information system by reversing the current world' sun satisfactory practices of EMIS (Hua and Nerstein, 2003).

Moreover, Ethiopia has made huge resources investments to satisfy the pressing demand of educational managers, technical and scientific experts on education management information system required to meet national education development goals adopted from millennium education development goals (MoE, 2015).By this effort, even though an encouraging improvement has been made on educational management information systems, lack of skilled human power yet not solved due to significant expansion of primary and secondary schools and higher education institutions (colleges and universities) in the country (MoE, 2015).

Also, deprivation of maximizing student's achievement with limited resources, lack of linked information systems used for educational administration & data management and lack of systematized data collection and supervision system even at place EMIS data is used to monitor schools and staff performance are major educational challenges often affect provision of efficient and quality education service in educational institutions in general and secondary schools in particular (West, 2003).

At the end, lack of computers and devices and low computer literacy which has been existing among staff members are the major constraining factors of EMIS in education system including secondary schools which makes maintaining and dissemination of information system being expensive and need extensive training to enhance the capacity of staff in manipulating and using information technologies (Oliver, 2017).

Due to lack of knowledgeable and skilled human power in EMIS, most education sector including secondary schools has been suffering from obtaining quality, reliable and valid data which leads to make poor educational decision at both policy and operational level (Wako, 2003 and Hua and Nerstein, 2003).

In addition, EMIS is not only including administrative and pupils data, but also financial, human resources and learning data. Furthermore, maintaining quality, equality, equity, good performance and development in education system requires significant changes to the functioning of education systems particularly how education system are managed as well as

kinds of data and information that education leaders and mangers need to fulfil their responsibilities(Ahmad and Adnan, 2010).

Therefore, EMIS has significant impotence in education system for gathering and providing comprehensive, integrated, relevant, reliable, unambiguous and timely data for education leaders, decisions makers, planners and managers in education system to perform their responsibilities accurately and efficiently. However, the current practices of EMIS in global contexture not as such satisfactory and this is particularly true for Ethiopia education system including secondary education level for which the EMIS is more challenging than higher education system. This challenging situation observed in education system including secondary education level sourced from EMIS design and development which has been limited to information technology enhancements and data storage and maintenance as well as either EMIS design and development which has been limited to technology enhancements or data storage &maintenance(Hua and Herstein, 2003).

To this end, countries around the world have invested significant resources for collecting, processing and managing more and better data through EMIS (Hua and Nerstein, 2003).

Similarly, Ethiopia has been attempting to satisfy the pressing demand of high and medium level managers, technical and scientific experts through educational information management system. In this regard, even though encouraging improvements have been made in Ethiopian education system, the available human power in educational management is in significant yet now, due to high expansion of primary and secondary level schools as well as college and universities established through government and private organizations investment (MOFED, 2015).

Also, education policy document and the second growth and transformational plan adopted by federal democratic republic of Ethiopia indicated that Ethiopian government give high emphasis to delivering quality and efficient education that make sure access and equity for all). Therefore, Ethiopian higher education had strategy and has been working toward harvesting competitive workforce based on the current and far-reaching growing demand of country citizens (MoE, 2015).

2.9.2. Current challenges of EMIS in Education Institutions of eastern Ethiopia

A number of studies conducted in most developing countries regarding to materializing EMIS educational institution including high school level educations system were come up various version of educational challenges.

Also, effective education management information system is required to contain administrative and apprentices that includes financial & human resources and learning data in line with three basic components (people, process and technology components). The people component often comprises leadership, managerial and technical styles and the process component comprises administrative requirements, timelines, job skills and funding resources which are often difficult to align with EMIS goals intended to provide quality educational information for users (Landero and Role, 2018).

Now a day, in the world education management information system is practiced by ministry of education NGOs, researchers, donors and other education stake holders for conducting research policy designing, producing productive planning and conducting effective monitoring & evaluation and making sound decision. However, the world's practices in education management information system is being young and creeping to be nationwide, fast and effective(Ahmad and Adnan, 2010).

In place that uses EMIS not attending maximum student achievement with limited resources, lack of linked information systems used for education administration &management and absence of systematized data collection &supervision system used for monitoring school & staff performance are major educational challenges of most developing countries which have been often observed in most developing countries educational institutions including secondary school systems (West, 2003 and Oliver, 2017).

In most developing countries including Ethiopia EMIS can be described as poor in terms of producing quality data, providing timeliness, slow data dissemination, limited data analysis and use to develop or amend education policies (Ellison, 2004). Furthermore, application of EMIS in terms of collection, analysis and production of data, generating its outputs and dissemination to develop better education policies is still poor (Ahmad and Adnan, 2010).

As for the challenges, several studies also mentioned their plights. In the argument of Nwakesiri (2022), a significant challenge for educational progress is the lack of credible and timely data needed for policymaking and planning. In addition, effective performance

monitoring and feedback and quality advocacy were setbacks and became a challenge on their own.

In addition, lack of knowledgeable and skilful human power observed in education sector has been suffering a lot in obtaining quality, reliable and valid data timely and eventually the dissemination of information lacks accuracy and clarity. Therefore, in this regard, EMIS plays a great role to fill the gap repeatedly observed in the management and administration of the education sector (Carrizo *et al.*, 2003).

To sum up, infrastructural challenges, unavailability of computers &devices at schools and low computer literacy observed amongst staff members are major constraining factors of EMIS in education system. These constraining factors make information system being expensive to maintain and challenging to distribute information as well as requesting extensive training to increase staff capacity in IT technologies which help them to use it efficiently (Oliver, 2017).

The rapid changes in science and technology provided that, the development of competitive global market, the new moves toward knowledge production & knowledge transfer, the desire for economic growth and development have been escalating from time to time which requires qualified, knowledgeable and skilled managers in EMIS. Furthermore, education is part of the entire system of any economy which exists at continuous changes indeed calls for qualified mangers in education management information system but not sufficient in Ethiopia(MoE, 2015).

The lack of qualified, experience and skilled educational managers in EMIS seem among the major challenges confronted at various levels (central, regional, zone, district, school, colleges and universities) of education system of the country. The challenges become serious, since universities yet not harvest graduates in EMIS as needed, despite the growing demand of graduates.

Therefore, education system of the country demands better qualified educational managers to fill the gaps by understanding the role of EMIS skilled managers in providing quality education at level of education system.

2 .10. The Over View of EMIS System in Ethiopia

Although there has been statically report before the history of EMIS in Ethiopian may be dated to 1957, the year where a research and statistical department was established in history

of Education (MOE, 1998). At the end 1957 the statically work was organized in to department known as central planned and statistical division under the department of programmed plan and research (Kassaw, 2001).

Recently the new system EMIS utilization includes the restricting of the system and its management. In Ethiopia, Educational Management Information System and Information Communications Technology (EMIS-ICT) Directorate is organized in three teams. Those are EMIS Team, ICT Experts Team and ICT Support Team.

Main duties of EMIS and ICT Directorate is to collect and organize, education data, prepare Annual Education Statistics, deliver education related data for decision makers and users, and give technical support on ICT related issues (MoE, 2015).

As has been put by the Ethiopian Ministry of Education (MoE, 2015), during ESDP V, Ethiopia's EMIS system has continued to grow in strength throughout its operation for the past two sector plans. EMIS offices now exist in all woredas and the annual survey of schools is completed effectively, albeit with some delays, with information aggregated at each level from institution to federal level. As the EMIS system has grown and improved, new functions have been added (MOE, 2005).

According to the Ethiopian MOE, School Management Information System (SMIS) will be operated at the school level (and when fully established can replace the annual school survey by linking to EMIS). SMIS will support school leaders to collect, record, and analyses school performance data. SMIS will focus on school-level performance data, related to activities to be implemented by school leaders (MOE). School leaders have started to make use of information systems in the gradually increasing daily management staffs.

2.11. Theoretical Framework

The literature review, which comprises of the main ideas of the research, which includes management information systems, information technology and Data integration and data sharing among departments, along with literature related to organization resource management and practices of information systems departments. All these formed theoretical foundation for my master's thesis research. The review of literatures formed the theoretical framework of the master's thesis, which was used to reference and come up with questions for the interviews, and to discuss the research findings after data analysis.

3. THE RESEARCH DESIGN AND METHODOLOGY

Introduction

This chapter presents Description of the Study Area, Research Design, Sources of Data, Population, and Sample Size, Sampling techniques and Data Collection Instrument Collection etc…

3.1. Description of the Study Area

The study was conducted in four government secondary schools (Aboker, Harar, Jegnoch, and Abadir secondary School) of Harari regional state which is 525km far away from Addis and covers334 km^2 area of land which has been organized under 9 administrative Woreda and 39 administrative kebeles. In the region there are 10 government secondary schools which 7 and 3 of them are urban and rural secondary schools respectively. Also, more than 20 principals 47,790 student and 577 teachers have been engaged in teaching and learning process undertaken in these government schools in the regional state.

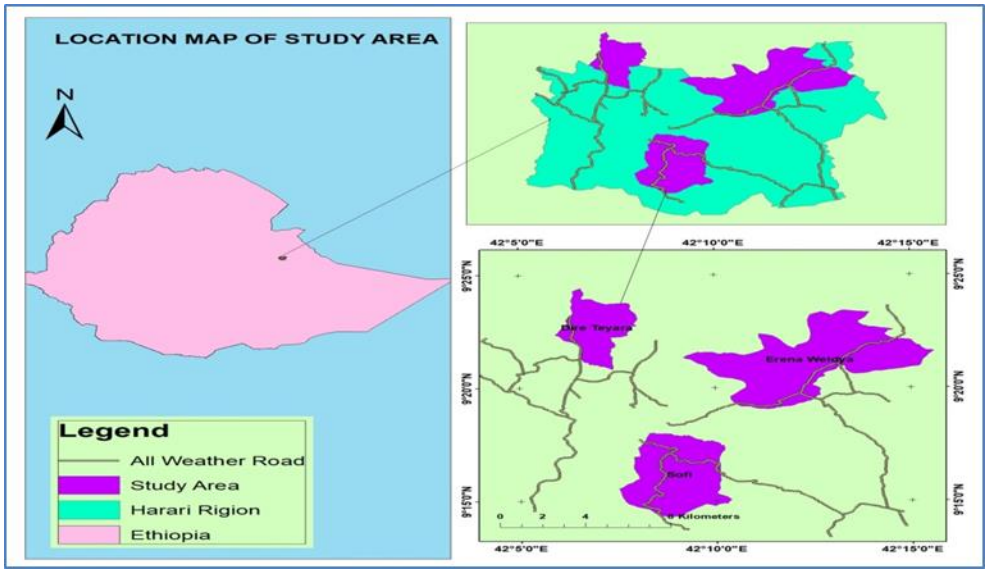

Figure – 1: Map of the study sites (CSA, 2009)

3.2. Research Design

This research used descriptive survey design. Franken and Wallen (2014) describe the survey method as that which involves asking a large group of people questions about a particular issue, the main aim is to obtain precise decision of the characteristics of the subject under the study and how frequently it happens. According Creswell and Clark (2007), such design enables data to be collected from wide area quite cheaply and produces valid and reliable generalization. Data were collected quantitatively through survey questions and qualitatively through interview and document analysis at the same time. Data was analysed and interpreted quantitatively by descriptive statistics. The advantage of descriptive survey research method, defined by Cohan (1994) and Grey (2004), are; it generates large amount of data from relatively wide area; it allows high degree of interaction by respondents; it may be adapted to collect generalize able information, it provides relatively simple and straight forward approach to the study of attitude, values and beliefs, it helps to measure particular phenomena at fixed point in time and systematic.

3.3. The Research Method

This student researcher utilized mixed method approach through collecting and analyzing both qualitative and quantitative data because the researcher used both close and open-ended questions to collect data. The researcher used quantitative method through survey questionnaires, while also used semi-structured interviews to substrate the qualitative data.

There were some rationales to use mixed method approach for this study. First using such method was important to examine the same phenomenon from multiple perspectives (Cohen *et al, 2007*). Second, mixed method approach was important to build upon the strength that exists between quantitative and qualitative method in order to understand a given phenomenon that is possible using either quantitative or qualitative methods alone (Creswell, 2003)

3.4. Sources of Data

In order to get relevant information for the study, the data was collected from both primary and secondary sources.

3.4.1. Primary data sources

Therefore, primary data were collected from district and regional education officers, government secondary school principals, teachers and EMIS experts engaged in four selected government secondary schools.

3.4.2. Secondary data sources

Secondary data sources were annual survey reports of the school, staff record information, student record information, financial reports, student record information and staff and student attendance of selected sample schools in four selected government secondary schools Harar city.

3.4. Population, Sample Size, and Sampling Techniques

3.4.1 Population and Sample size

The study was conducted in four government secondary schools (Aboker, Harar, Jegnoch and Abadir secondary schools) of Harari regional state. There are 10 government secondary schools in the Harari regional state. Among them 7 are urban schools and 3 are rural schools. Then the researcher selected four urban schools from 7 urban schools by lottery method technique. Then, stratified sampling procedure was used to identify target school teachers sample by level of their education in each four selected sample government secondary schools.

Sample size for teachers was determined by the following formula:

$$\mathbf{n} = \frac{\mathbf{Z2 * Pq * N}}{\mathbf{e2\ (N-1) + Z2 * P * q}} \quad \text{……..} \quad \text{(Kothari, 2004).}$$

Where, **n** = the required sample size.

e = 0.05 (since the estimate should be within 5 % of the true value);

z = 1.96 (as per table of area under normal curve for the given

Confidence level of 95%).

P = 0.5 and **q** = 1- p = 0.5

N= the total population = **295**

$$n=\frac{Z2*Pq*N}{e2\ (N-1)+Z2*P*q}=\frac{(1.96)2(0.5)(0.5)295}{(0.05)2\ (295-1)+(1.96)2(0.5)(0.5)}=167$$

Total sample size was 167 Teachers. Therefore total samples was 167 Teachers proportional allocation to four schools as summarized in table 1.

Table 1: proportional allocation of 167 teacher's to four schools

School/stratum	**Population size(N_h)**	**Sample size**
Harar secondary school	105	60
Abadir secondary school	44	25
Jegnoch secondary school	48	27
Abubeker secondary school	98	55
Total	**295**	**167**

The total number of teachers 167, principals 8, and EMIS experts 8, with a sum of 183 was the total population of this study.

Table 2: summary of sample size and population.

No.	Types of respondents	Population	Sample size	%	Sampling technique
1	Principals	8	8	100	census
2	Teachers	295	167	100	
3	EMIS experts	8	8	100	census
	Total	**311**	**183**		

3.4.2. Sampling techniques

In this study teachers were selected by using simple random sampling technique. It was used to select equal proportion of sample teachers from each secondary schools. Therefore, simple random sampling technique (lottery method) was used to select 167 teachers whereas education leaders (principals and EMIS Experts) was selected by using purposive sampling technique because purposive sampling technique is judgmental or mandatory sampling. Therefore, the researcher is interested or believed to include all 16 sample educational leaders from each sample secondary schools.

Also, purposive sampling techniques is appropriate to select sample from a few number of target population, hence, 4 education officers (1 from region & 3 from district education officers), 4 school principals, and 4 EMIS experts were selected through purposive sampling method, since they are right persons for providing rich data related to practices, challenges and importance of education management information system in providing quality education.

To sum up, for quantitative data collection 89 (38%) teachers were selected from 231 target teacher population in four secondary schools through multistage sampling procedures by employing both proportional stratification and simple random methods. whereas, for qualitative data collection 12 key informant participants (4 woreda education officers, 4 school principals and 4 EMIS experts) were purposively selected and treated by key informant interview questions. Totally, 91 respondents will be selected as study sample used to collect quantitative and qualitative data through questionnaire and key informant interview.

3.5. Data Collection Instruments

In this study, the quantitative data were collected by using questionnaire whereas the qualitative data were collected by using interview and document review.

3.5.1. Questionnaire

To assess current practice and challenge of EMIS in the study area self-generated close ended questionnaire was used to collect quantitative data from sample teachers. The items were 5 Point Likert-scales in nature (ranging from 1 to 5 or ranging from strongly disagree to strongly agree), with yes or no questions. The questionnaire was designed in a way that respondents give their biographic information as well as the data which the research questions intend to address. The first part of the questionnaire consisted of five variables that focused on biographical information about respondents. The second part consisted of 24 items revolving around personnel in EMIS, practices and challenges, and importance of EMIS to education sector.

This research mostly used quantitative questionnaire-based survey approach because it helped to collect numerical data from region and district level education officers, school principals (school head and teachers.

3.5.2. Key informant interview

To supplement the data obtained through questionnaires from school teachers, key informant interview questions were made with three school principals, two education officers (region and

district education officers) and EMIS experts. The item has two parts which the first part relies on personal information (Name, age, sex, education status and experience on teaching and education management) of respondents, whereas the second part moves around the practices, challenges and importance of EMIS in providing quality education.

3.5.3. Pilot Study

Pilot study is important to enhance the reliability, validity and practicability of the survey questionnaires and Key informant questions (Creswell, 2012). Therefore, before distributing the questionnaires, the pilot test was conducted at Abider secondary schools with 30 teachers and internal consistency of the materials was checked.

Before the final questionnaire was administered, pilot test was conducted in Abider secondary schools which is not included in the sample study. To ensure the quality of the tools in this study, a pilot test was conducted on the validity and reliability of the instruments prior to the actual data collection. The objective of the pilot test was to check out the clarity of the contents of each item, the consistency of items under each theme, relevance of the questions for the study area, and to see the difficulty of the language. Then lastly, the draft questionnaires distributed to 1 school principal, 1 EMIS Expert, and 30 teachers of Abider secondary schools.

After the questionnaires were filled and also returned, the reliability and validity of items were measured by using Cranach's alpha method by the help of SPSS version 20. As to Cohen, Manion and Morrison (2007) validity concerns the extent to which the tests what it was supposed to test. Consequently, in this study the content validity of the questionnaire was examined. So, the researcher first ensured that the questionnaires were based on related literature and items reflected representative themes.

3.6. Procedures of Data Collection

To collect the quantitative data from sample teachers, the researchers made contact with some selected sample respondents through school principals. Then, the questionnaire was distributed for 167 teachers in four selected schools. Also, qualitative data used to supplement quantitative data were collected by making semi structured interview with total 16 purposively selected respondents. Before conducting interview, the topics and objective of this study were communicated.

To answer the research questions raised, the researcher went through a series of data gathering procedures. These procedures helped the researcher to get relevant data from the samples.

Thus, after having letters of permission from Haramaya University and Harar regional Education Office for ethical clearance, the researcher directly went to Abider secondary schools to pre – test the data collecting instruments. In pilot test, the data were collected by using questionnaires and analyzed by Cranach Alpha (α) method. At the end of pilot test, the researcher contacted Harari education office and the principals of respective schools for consent. After making agreement with the concerned participants, the researcher introduced the objectives and purposes of the study. Then, the final questionnaire was distributed to teachers of government secondary schools, educational leaders (principals and EMIS Experts) of selected governmental secondary schools. Finally, the participants were allowed to provide their own answers to each item independently.

3.7. Methods of Data Analysis

The quantitative data collected from teachers through closed ended questionnaires were analyzed quantitatively through descriptive statistics such as frequency, percentages, mean and standard deviation by using SPSS version 20 software. Also, qualitative data collected from key informant and document review were analyzed through combination of content and narration methods of data analysis.

3.8. Ethical Considerations

Ethics is one of the most crucial areas of the research. In this research there is strong positive interaction between researcher and population of the respondent. First of all, there is permission of the some selected government secondary schools where the study will be implemented. The willingness of teachers and educational leaders have been assured and reached consensus through discussion and its participation are disrupted the respondents' regular activity.

Then the researcher is mentioned the advantage of the study to selected secondary schools (teachers, principals and EMIS Experts). For this reason, the researcher has explained the objectives and significance of the study to the respondents and then he was allowed them to exercise their right to voluntary participation. To avoid any psychological harm, questions are framed in a manner is not offensive and disturbed their personality. They are assured that the information they provide was kept. To ensure this, the researcher has removed information that requires identification of names of respondents.

4. RESULTS AND DISCUSSIONS

This part deals with the results & discussion of the research finding from the sample respondent through different data gathering methods like questionnaire, interview, FGD, observation, and document review. The study investigated the implementation status of Education management Information System (EMIS) in selected secondary schools Harari regional state. In this study the current status and challenges for the implementation of EMIs, the processes of data production, data quality & data utilization for decision making were the main attention areas. The information was gathered from the source (School Principals), data producers (EMIS staff) and data users (Stakeholders). The respondents were from education sector and other stakeholder sectors which are located in regional and local areas. The detailed analysis is presented below.

4.1. Demographic Characteristics of Participants

4.1.1. Socio-demographic characteristics of study participants

Table 1. Background information of the respondents by schools and sex

schools	targets	Gender	No. of respondents	Percentage (%)
Harar secondary school	60	Male	31	34%
		Female	8	8.98%
		Total	39	43.82%
Aboker secondary school	55	Male	25	28.08%
		Female	6	6.74%
		Total	31	34.83%
Jegnoch secondary school	48	Male	6	6.74%
		Female	2	2.24%
		Total	8	8.98%
Abadir secondary school	25	Male	5	5.61%
		Female	2	2.24%
		Total	7	7.86%
Total	167(100%)			95.49%

The respondents were asked to indicate their background information. Responses regarding their sex and schools were summarized above in Table 1

In this study, 89 participants from four different schools and educational stakeholders (Table 1) were enrolled and their current practices and challenges of educational management information system were evaluated. The study included 31 males (34%) and 8(8.98%) females from Harar secondary school, 25 males (28.08%) and 6(6.74%) females from Aboker secondary school, 6(6.74%) males and 2(2.24%) females from Jegnoch secondary school, 5 males (5.61%) and 2(2.24%) females from Harawe secondary school, . The number of males are fewer than females.

As shown in Table 1, Harar secondary School had the most participants (39, or 43.82%), while Harawe secondary school had the fewest (7, or 7.86%).four secondary schools were included, one from the rural area (Abadir secondary school), and the other three from the urban areas (Harar, Aboker and Jegnoch).

The respondents were asked to indicate their background information. Responses regarding their sex, educational level, field of study, current work position, and work experience were summarized below in Table 2.

Table 2. Background information of the respondents

No.	Variables	Category	Number	Percentage (%)
1	work experience	< 5 years	15	16.85%
		6 – 10 years	20	22.47%
		>11 years	50	56.17%
		Others	-	-
2	Educational level	Diploma	5	5.61%
		Bachelor degree	45	50.56%
		Master's degree	35	39.32%
		Others	-	-
3	Field of study	EDPM	10	11.23%
		ICT	12	13.48%
		Statistics	9	10.11%
		Others	54	60.67%

As shown in Table 2, many of the respondents have specializations in other fields of study, like ICT 12(13.48%),statistics 9(10.11%) while only 10 (11.23%) of them are qualified in educational planning and management (Ed.M.). This implies that let alone having appropriate

personnel in EMIS, there are even lack of EMIS personnel in related fields of study. Hence, this indicates that it is compulsory to produce EMIS professionals provided that there is a need to have quality data in education.

Regarding the respondents, concerning the ‟ work experience, the majority 50 (56.17%) of them are greater than 50 years of work experience. The remaining respondents, i.e., less than 5 years (16.85%) and 20 (22.47%) are in between 6-10 years. Even though the respondents have had more work experience than their positions demanded, they are not professionals in the area of EMIS.

Regarding the respondents‟ Educational level, most of them, i.e., 45 (50.56%), are Bachelor degree followed by other 5.61%35 (39.32%), and only 5 (5.61%) of them are Diploma. This indicates that there are almost not all people that suit Master's degree and one may also conclude that there is scarcity of skilled human power in the field.

As Harari regional education office structure, Statistics, ICT& EDPM professions were seen as a valid for the position of EMIS. However, this survey shows that many of the respondent in the target area were specialized the subject that was not directly related to their job. Which may lead to further investigation to find out the relationship between subject area specialization and usage of modern technology to produce reliable EMIS reports.

4.2. Current practices of Education Management Information System

As indicated in Table 4.3, the respondents were asked about current practices of EMIS and they were requested to select either **“Yes”** or “**No”** alternatives. Under this Table, the analysis focused on the current practices of EMIS in which its items are designed in yes/no answer type.

As it is evidenced in Table 3 item one, the whole respondents (100%) proved that there are no qualified personnel in EMIS in their respective organizations. To substantiate this item, the data were also gathered through key informant interview. Hence, the data obtained via interview substantiated this view. One of the respondents confirmed: There is no any graduate in this field and there is no EMIS department in our office as well. Graduates in other fields will be recruited for handling information though their performance is not satisfactory as they are far from the field and lack the necessary competence in information system. The other problem is that such employees are only temporary as they leave for the jobs in their own field. This will result in additional cost on our office. So professionals in the field are highly demanded to improve the practices (Interviewee #1).

A similar question was raised to one of the interviewees from Education Office, and he asserted that there was a department or a unit in their education office. The supervisor acts as a responsible person in the practice of EMIS in their office tentatively. There was also "EMIS Expert" without having any training in the field though they believed that it was very important to have at least one (Interviewee #2). Therefore EMIS is practiced inefficiently and unsatisfactory. Thus, role confusion has been created and hence there are many gaps.

The second issue in Table 4.3 was whether training was given by their respective organization or not. So 65(73.03) % of the respondents witnessed that there was no any sort of training given before and 20(22.47%) of the respondents proved that they received training. Therefore, this implies that EMIS units in organizations are led by those who lack the knowledge of EMIS.

Concerning item in Table 4.3, respondents were asked whether trained professionals in EMIS are sufficient enough for their organization to manage the complicated jobs of EMIS. Hence, 30(33.70%) of the respondents replied 'no' and 55(61.79 %) This implies that in order to handle the complicated jobs of EMIS, it is very crucial to produce competent graduates in this field of study.

As shown in item of table 3, 73(82.02%) of the respondents confirmed that events in their organization are recorded as per EMIS guideline whereas 12(13.48%) was not. So if such kind of problems occurs repeatedly, educational organizations are not in a position to find out accurate educational data.

In the last item of Table 3, respondents were asked whether graduates other than EMIS are able to produce timely, reliable and accurate information for national education planning. However, the majority 80 (89.88%) have confirmed that graduates other than EMIS could not handle this issue in a well-defined manner except EMIS graduates who are able to handle this issue in a well-defined manner. Al Koofi (2007) strengthens specialization/expertise in EMIS for EMIS provides comprehensive, integrated, relevant, reliable, unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities efficiently to achieve the set goals. Thus, having EMIS professionals and expert maximizes quality to produce timely, reliable and accurate information for national education planning.

Table 3. Status of EMIS

No.	Items	Responses			
		Yes		No	
		number	%	number	%
1	Is there any EMIS training given by the organization?	20	22.47	65	73.03%
2	Are there EMIS graduate professionals in your organization?	45	50.56	40	44.94%
3	Do you believe that trained professionals in EMIS are enough for your organization to manage the complicated jobs of EMIS?	55	61.79	30	33.70%
4	Does your organization keep records of what is happening based on the list of EMIS guideline?	73	82.02	12	13.48%
5	Do you believe that non EMIS graduates are able to produce timely, reliable and accurate information for national education planning?	5	5.61	80	89.88%

4.3. Problems related to EMIS

The items presented in likert type scale. 5, 4, 3, 2, 1 with Very high (V.H), High (H), Moderate (M), Low (L) Very Low (V.L) and Strongly Agree (S.A), Agree (A), Moderate (M) Disagree (D) and Strongly Disagree (S.D) respectively. The total score of an item is 15, to get the average it is calculated as $\frac{5+4+3+2+1}{5}$ = 3 during analysis, most of the mean scores Interpreted as less than 3 as less performed and greater than 3.0 as highly performed whereas 3 as average.

From Table 4, most of the school respondents considered poor design of data collection questionnaire and inadequate manpower as a moderate problem as education office respondents. The same is true for the problems poor data collection and delayed submission of reports as moderate problem for education office and for school respondents. On the other hand, poor coordination and leadership Grand Mean 3.45 and lack of data/information integration Grand Mean 3.4 were commonly perceived as moderate hindrances in both groups of respondents. In addition, the remaining two unhelpful management attitude Grand Mean 2.25 and problems related to data preparation and analysis Grand Mean 2.35 were considered as not a problem. Even though we are in information age and most of the activities and tasks are computerized, steal our school systems are suffering from different challenges facing EMIS administrative procedure. Concerning these issue different indicatives like poor coordination

and leadership is challenging factors. In relation to the problems that affect the practice of EMIS, additional information was obtained from the interview and FGD. The result have shown similarity with that of the qualitative data collected through questionnaire.

Most interview and discussion members raised the aforementioned problems as critical challenges for EMIS functions at all levels of the education system. As well, Woreda statistics mainly affirmed that problems like poor data quality, delayed submission of reports, lack of technical skill, and absence of clear data/ information hampered severely the management of EMIS in their respective organization.

On the other hand, low technical capacity and inadequacy of EMIS staff, insufficient financial investments, poor ICT infrastructure and lack of incentive were the most challenging problems to implement EMIS effectively in their schools and woreda education office. As Mulugeta (2001) explained, if there is any problem with the quality of data, it is unthinkable to obtain precise results. Therefore, the problem observed need to get solution in order to get reliable information.

Table 4. Problems related to EMIS

No	Items	V.H	H	M	L	V.L	MEAN
1	Poor data quality	16	32	14	18	5	3.4
2	Low technical capacity of EMIS staffs	34	20	11	6	14	3.7
3	Problems related to data preparation and analysis	10	70	2	1	3	2.2
4	Lack of data/information	20	36	18	6	5	3.3
5	Insufficient financial support for EMIS	5	30	22	15	15	3.7
6	Lack of incentives for those involved in EMIS activities	45	12	6	6	22	3.6
7	Poor ICT infrastructures	70	2	3	4	6	3.53
8	Poor coordination and leadership	69	3	3	4	6	3.3
9	Unhelpful managerial attitude	34	20	11	6	14	2.2
10	Absence of clear data/information policy	40	12	6	11	22	3.6
11	Poor information culture on the part of user	25	10	22	15	15	3.6
12	Poor design of data collection questionnaire	5	36	18	6	20	3.4
13	Lack of data/information	60	3	12	4	6	3.3

4.4. Possible strategies to enhance the future performance of EMIS

Data was collected on the possible strategies to enhance the future performance of EMIS in Harar city secondary schools. The five likert scales used for this part are 5(for very strong recommendation) 4(for strong recommendation) 3(for undecided to recommended) 2(for loss recommendation) 1(for not recommended response).

Table 5: Possible strategies to enhance the future performance of EMIS

No		N	Mean	Str. Deviation
1	Designing clearly stated information policy	167	4.01	.456
2	Designing clear structure up to grass root level/school/	167	3.74	.361
3	Assigning qualified manpower to all education system	167	3.80	.329
4	Preparing remuneration structure for EMIS staff	167	3.93	.298
5	Integrate with School Net program	167	3.42	.432
6	Expanding School Mapping	167	4.28	.238
7	Decentralized Database	167	3.63	.321
8	Ensuring system of accountability for the different levels who generate data or information	167	3.77	.321
9	Providing relevant trainings regularly	167	3.04	.233

With regard to possible strategies to enhance the future performance of EMIS, of the respondents replied that designing clearly stated information policy loss recommendation, majority of the respondents replied strong recommendation with (mean=4.01, Str. Deviation=.456) replied very strong recommendation. The calculated mean value was 4.01 and is greater than the expected mean 3. This shows that designing clearly stated information policy is one the strategies to enhance the future performance of EMIS.

Along with designing clear structure up to grass root level /school/, 3.3% of the respondents said the strategy loss recommendation the respondents replied that the strategy is undecided to

recommend the respondents replied that the strategy has strong recommendation and said very strong recommendation (mean=3.74, Str. Deviation=.361).The calculated mean value was 3.74 and is greater than the expected mean 3. This indicates that designing clear structure up to grass root level /school/ is possible strategies to enhance the future performance of EMIS.

Concerning with skilled man power the respondents said that the strategy is undecided to recommend the respondents replied that the strategy has strong recommendation and of the respondents said has very strong recommendation. The calculated mean value was 3.80 it is greater than the expected mean 3. This indicates that assigning qualified manpower to all education system as the possible strategies to enhance the future performance of EMIS.

In addition to preparing remuneration structure for EMIS staff, 28.9% of the respondents said undecided to recommend, of the respondents strongly recommended and of the respondents said very strongly recommended strategy to enhance the future performance of EMIS. The calculated mean value was 3.93 and it is greater than the expected mean 3. This shows that remuneration structure for EMIS staff is one the possible strategy to enhance the future performance of EMIS (mean=3.93, Str. Deviation=.298).

Integrate with School net program, 21.2% of the respondents said loss recommendation, 30% of the respondents said undecided to recommend the respondents said strongly recommended and of the respondents said very strongly recommended to enhance the future performance of EMIS. The calculated mean value was 3.42 and is greater than the expected mean 3. This indicates that integrate with school net program is one of the possible the possible strategy to enhance the future performance of EMIS.45 With regard to expanding school mapping, of the respondents said undecided to recommend the respondents said expanding school mapping is strongly recommended and the respondents replied such strategy is very strongly recommended strategy to enhance the future performance of EMIS. The calculated mean value was 4.28 and is greater than the expected mean 3. This indicates that expanding school mapping is one of the major strategies to enhance the future performance of EMIS.

In account with decentralized database the respondents said loss recommendation, 22.2% of the respondents said undecided to recommend, of the respondents said strongly recommended and 30% of the respondents said very strongly recommended strategy enhance the future performance of EMIS. The calculated mean value was 3.63 and is greater than the expected

Mean 3. This shows that such strategy is recommended to enhance the future performance of EMIS. Concerning with ensuring system of accountability for the different levels who generate data or information, the respondents said not recommended, the respondents said loss recommendation the respondents said undecided to recommend, 50% of the respondents said strongly recommended and the respondents said very strongly recommended to enhance the future performance of EMIS. The calculated mean value was 3.77 and is greater than the expected mean. This indicates that such strategy is used to enhance the future performance of EMIS.

Along with providing relevant trainings regularly, 50% of the respondents said loss recommendation the respondents said undecided to recommend and the respondents said strongly recommended to enhance the future performance of EMIS and the respondents‟ aid very strongly recommended. The calculated mean value was 3.04 and is greater than the expected mean 3. This indicates such as strategy is recommended to enhance the future performance of EMIS.

5. CONCLUSIONS, MAJOR FINDINGS AND RECOMMENDAATIONS

This chapter deals with the summary of findings of the study. Based on these findings, conclusions are drawn and recommendations which can be implemented are forwarded.

5.1. Major findings of the Study

Status of Educational Management Information System: Concerning the maximum value of mean it is possible to say that there is availability of strategic plan to use EMIS in the office. EMIS is not any EMIS training given by the organization to assess the performance of an education system or there is inadequate access of EMIS infrastructure to assess the performance of an education system. EMIS organization keep records of what is happening based on the list of EMIS guideline. EMIS is sufficient to gather information by using emerging information technology to provide comprehensive, integrated, relevant, reliable and timely data to education leaders and decisions makers to perform their responsibilities accurately and efficiently the respondents were strongly disagreed. This shows that EMIS is not sufficient to gather information by using emerging information technology to provide comprehensive, integrated, relevant, reliable and timely data to education leaders and decisions makers to perform their responsibilities accurately and efficiently.

Challenge of Educational Management Information System: Poor data quality ,Low technical capacity of EMIS staffs, Lack of data/information ,Insufficient financial support for EMIS ,Lack of incentives for those involved in EMIS activities ,Poor ICT infrastructures, Poor coordination and leadership, Unhelpful managerial attitude, Absence of clear data/information policy, Poor information culture on the part of user, Poor design of data collection questionnaire, Lack of data/information were factors that affecting EMIS performance in educational office of the study area.

Possible Strategies to Enhance EMIS Performance: along with these from the interviewed respondents, decentralized software for using data collection, analysis and interpretation because now a day the data collection using manual for the feature this change using technology like mobile append accountably EMIS data to be strong system. The demand of designing clear structure up to grass root level was very high. Therefore, special attention should be given at region level to establish clear structure of EMIS independently as a unit/department in each of the education systems up to school level.

5.2. Conclusions

The main objective of this study was to explore the practices and challenges of using EMIS in school management in secondary schools of Harar city. In order to achieve this objective, the study attempts to answer the following basic research questions. This research used descriptive survey design. This researcher utilized mixed method approach through collecting and analyzing both qualitative and quantitative data. The researcher used quantitative method through survey questionnaires, while also used semi-structured interviews to substrate the qualitative data.

The status of EMIS is extremely below the expected level since there has been lack of qualified and well-trained professionals in the area of EMIS. This implies that educational organizations need to be closely supported by EMIS professionals in order to bring about their practices to very high level, and it is found really vital to produce human capital in this field of study.

From the findings, it can be concluded that EMIS positions in many educational institutions have been held by those who do not have EMIS qualifications and/or trainings, and even some organizations do not have EMIS experts at all. Therefore, there is a gap in collecting quality data, disseminating and managing information in educational institutions. This implies there is a greater demand to produce competent graduates in this field of study.

This study revealed that respondents were in greater demands of EMIS professionals in their respective organizations though there is no skilled human power in the field. The role of EMIS in an organization can be compared to the role of the heart in a body. In the body, the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart work faster and supplies more blood when needed.

Heart regulates and controls the incoming impure blood, processes and sends it to the destination in the quantity needed. Heart fulfills the needs of blood supply to human body in normal course and also in crisis.

EMIS plays exactly the same role in the education sector. The system ensures that an appropriate data is collected from the various sources, processed and sent further to all the destinations in need of it. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries, and infrastructure in many important ways to the quality and availability of information

5.3. Recommendations

Based on the major findings of the study and conclusion drawn the researcher forwarded possible recommendations as follows:

- Ineffective institutional frameworks, leadership and management cause inefficiencies and contribute to the deterioration of trust in the regional education statistical reports.
- Harari Education Bureau must have legal framework with a clear legal mandate to collect information from all education and training institutions and bodies, produce specific work guidelines for EMIS staff.
- Further, the Bureau should give great attention to accountability & responsibilities issues regarding collection of quality data and production of reliable information.
- Higher officials should give great attention for education data and data-driven culture.
- The bureau should prepare different strategies to improve data literacy. The bureau should shift data collection techniques from manual to modern web-based application and online technology by supplying necessary ICT materials, internet access & infrastructures at all level including schools.
- Moreover, data analysis system should be modernized and the existing system should be upgraded to new web-enabling system which can produce report by itself and has a data security system as well as system adaptability.
- Responsible person should be assigned at school level for school data management. Application of school management information system (SMIS) is also vital for effectiveness of EMIS implementation.
- The data architecture of EMIS is well defined to ensure full system functionality it is a process that prescribe how data is stored in and processed from database. Therefore, data architecture and its blue-print should be prepared and implemented in the region.
- To improve serviceability of EMIS data and make it attractive and timely available the statistical report should be customized to users need at local, regional area & donors need, the statistical report should be divided in to different categories and time table so that everybody can access the data easily.
- To improve data utilization status, the bureau should have to shift ‘from data control to data share’ EMIS stakeholders should be identified, aware of EMIS data and its output, provided regular training on how to interpret, manipulate & utilize the data. Moreover, EMIS data producers should develop a strategy to collect feed- back from stakeholders to improve quality of data.

- Information dissemination strategies should be developed in a way it should be accessible at any time and all place and include leaflets, newsletters, and downloadable internet documents through the regional education bureau website & others.

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APPENDIX

Appendix I: Questionnaire
Questionnaires for Respondents in English

Questionnaires to be completed during Sample Collection

Dear respondents, I wish to carry out research to find out the current practices and challenges of educational management information system in governmental secondary schools in Harari regional state, Ethiopia**.** The achievement of the research successfully depends on the fact information you provide. Therefore, I kindly request you to give your actual response for each question. Thank you!!

INSTRUCTION: - Fill the following questions properly and correctly according to your opinion.

I. Personal information

1. Place of Work: _____

2. Sex: Male _____ Female _____

3. Educational Qualification

Diploma graduate_____

First Degree _____

Second Degree _____

4. Subject of specialization

EDPM _____

ICT ____

Statistics_____

Others subject

5. over all Work experience in years:

Below 5_____ 6-10_____ above 11_____

II. **Current practices and challenges of EMIS**

No.	Items	Responses			
		Yes		No	
		number	%	number	%
1	Is there any EMIS training given by the organization?				
2	Are there EMIS graduate professionals in your organization?				
3	Do you believe that trained professionals in EMIS are enough for your organization to manage the complicated jobs of EMIS?				
4	Does your organization keep records of what is happening based on the list of EMIS guideline?				
5	Do you believe that non EMIS graduates are able to produce timely, reliable and accurate information for national education planning?				

III. Problems related to EMIS

No		V.H	H	M	L	V.L	MEAN
1	Poor data quality						
2	Low technical capacity of EMIS staffs						
3	Problems related to data preparation and analysis						
4	Lack of data/information						
5	Insufficient financial support for EMIS						
6	Lack of incentives for those involved in EMIS activities						
7	Poor ICT infrastructures						

8	Poor coordination and leadership						
9	Unhelpful managerial attitude						
10	Absence of clear data/information policy						
11	Poor information culture on the part of user						
12	Poor design of data collection questionnaire						
13	Lack of data/information						

VI. Possible strategies to enhance the future performance of EMIS

No		Yes	No
1	Designing clearly stated information policy		
2	Designing clear structure up to grass root level/school/		
3	Assigning qualified manpower to all education system		
4	Preparing remuneration structure for EMIS staff		
5	Integrate with School Net program		
6	Expanding School Mapping		
7	Decentralized Database		
8	Ensuring system of accountability for the different levels who generate data or information		
9	Providing relevant trainings regularly		